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UDC 657.421.3

УДК 657.421.3

M. V. Resler, Doctor of Economic Sciences,
Academician of Academy of Economic
Sciences of Ukraine

М. В. Реслер, д. е. н., доцент,
академик Академії економ.
наук України

ACCOUNTING AND ANALYTICAL SUPPORT FOR INNOVATION PROCESS

ОБЛІКОВО-АНАЛІТИЧНЕ ЗАБЕЗПЕЧЕННЯ ІННОВАЦІЙНИХ ПРОЦЕСІВ

Urgency of the research. The development of market relations depends on scientific and technology process. That is why implementation of the latest achievements is of crucial importance to the economy status. However, to provide the effective functioning of innovation processes, a sufficient system of accounting and analytical support is required.

Target setting. To study and substantiate the theory and methodology of the accounting and analysis within innovation processes and to work out practical recommendations on improving accounting and analytical support for management of enterprise innovation activity.

Actual scientific researches and issues analysis. The impact of innovation on enterprises, including in accounting and analytical support as a target subsystem innovation, pay attention to his work as foreign and domestic scholars, namely V. M. Anshyn, M. M. Benko, O. I. Volkov, O. I. Zhylynska, P. N. Zavlin, V. Y. Kochubei, V. N. Perehodov, J. Schumpeter, R. A. Fathudynov and others.

Uninvestigated parts of general matters defining. However, among issues that need further analysis we find the following: dependence of innovation types and their structure on their aspects, the development of business accounts and analysis according to the specific features of contemporary stage of economy progress, implementation of innovation activity management concept in accounting being a target innovation subsystem.

The research objective. This article aims to structure the innovation depending on the aspects of accounting, types and economic effects.

The statement of basic materials. We have suggested a generalized innovation system based on other researches, mostly those specific to accounting and analysis. We have also elaborated a structural informational support system for innovations, aimed at making effective decisions.

Conclusions. Having studied the theory and methodology of the accounting and analytical support for innovation process, we may conclude the following. Innovation process is both a data collection system and preparation of information for making strategic decisions on short-term and long-term patterns in enterprise development.

Keywords: accounting and analytical support; innovation process; management decisions; information service.

Актуальність теми дослідження. Розвиток ринкових відносин залежить від її науково-технологічного процесу. Тому використання останніх досягнень вирішальним чином впливає на стан економіки. Проте для забезпечення ефективного функціонування інноваційних процесів необхідна адекватна система обліково-аналітичного забезпечення.

Постановка проблеми. Вивчити та обґрунтувати теорії та методики обліку й аналізу інноваційних процесів та розробити практичні рекомендації щодо вдосконалення обліково-аналітичного забезпечення управління інноваційною діяльністю підприємства.

Аналіз останніх досліджень. Питанням впливу інновацій на діяльність підприємств, у тому числі і на обліково-аналітичне забезпечення як цільову підсистему інновацій, приділяли увагу у своїх працях як іноземні, так і вітчизняні вчені, а саме: В. М. Аньшин, М. М. Бенько, О. І. Волков, О. І. Жилінська, П. Н. Завлін, В. Ю. Кочубей, В. Н. Переходов, Й. Шумпетер, Р. А. Фатхудинов та інші.

Виділення недосліджених частин загальної проблеми. Проте, потребує подальших досліджень залежність змісту та видів інновацій в обліку від його аспектів, розвиток бухгалтерського обліку та аналізу у відповідності зі специфікою сучасного етапу розвитку економіки, розробка концепції управління інноваційною діяльністю в обліку як цільовій підсистемі інновацій.

Постановка завдання. Стаття покликана структурувати інновації в залежності від аспектів обліку, їх видів та економічних ефектів.

Виклад основного матеріалу. Нами запропоновано узагальнену систему інновацій, на підставі інших досліджень, що найбільш характерні для обліку та аналізу. А також для прийняття ефективних рішень розроблено структуровану систему інформаційного забезпечення інновацій.

Висновки. Досліджуючи теорію та методику обліково-аналітичного забезпечення інноваційного процесу, можемо зробити висновок, що інноваційний процес – це система збору даних і підготовка інформації для прийняття стратегічних рішень про найбільшчі й перспективні напрямки розвитку підприємства.

Ключові слова: обліково-аналітичне забезпечення; інноваційний процес; управлінські рішення; інформаційне забезпечення.

Problem statement. Under present conditions of market relations development, every country depends on its scientific and technological potential. Therefore, implementing the latest achievements of science and technological progress has a decisive impact on the economy status and, therefore, on satisfying social problems of the population.

In Ukraine, innovation activity does not get due attention. Centralized management of innovation activity used to be in practice before the market reforms started. At that time implementation of innovations was being provided by focusing state financial resources within the priority areas of the science and technology development.

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Today, economic entities are forced to make a quick respond to changes in the external environment, adapting their own economy respectively. Investments into the innovation area will considerably encourage this process. At the same time, investment is actually an adventure. The rise in production competitiveness, consolidation within the existing markets and opening the new ones is impossible without the development and implementing investments to innovation processes. At present, innovation has become the most important factor of economic growth, and a must-do for survival and long-term functioning of enterprises.

However, to ensure for the effective functioning of innovation enterprises, an appropriate system of accounting and analytical support is required.

Analysis of the latest studies and publications. The issue of innovations influencing enterprise activity, including accounting and analytical support as a target innovation subsystem has been studied by both foreign and national scientists, namely by the following scholars: V. M. Anshyn [3], M. M. Benko [8], O. I. Volkov [2], O. I. Zhylinska [7], P. N. Zavlin [6], and V. Iu. Kochubei [9], V. N. Perehodov [1], Y. Shumpeter [5], R. A. Fatkhudynov [6] and others.

However, among issues that need further analysis we find the following: dependence of innovation types and their structure on their aspects, the development of business accounts and analysis according to the specific features of contemporary stage of economy progress, implementation of innovation activity management concept in accounting being a target innovation subsystem.

Problems of innovation activity in national science and practice are still studied least of all. Respectively, it is impossible to obtain accurate assessment of profitability, enterprise's soft assets and practicality of making payments. This leads to decline in profits.

The aim of the research is to substantiate and to extend the theory and methodology of accounting and analysis of innovation processes, as well as to provide some practical recommendations regarding improvement of the accounting and analytical support to the innovational activity at an enterprise.

The main results of the research. In terms of legislation, the economic essence of "innovation" is defined in the Law of Ukraine "On innovation activity". According to this regulation, innovation is newly established (applied) and (or) improved competitive technologies, products or services, as well as organizational and technical solutions, those of industrial, administrative and commercial and other types, significantly improving the production structure and quality and (or) social sphere. However, both national and foreign scholars have not yet arrived on any unanimous approach to the innovation essence. Today, innovations are affecting all aspects of our life, and depending on their area, they have their own distinguishing features. It should be noted that accounting innovations are aimed at optimizing the spread of information. That is the focus area is the core and objectives of social and technological progress in society. One of the main system elements of contemporary society are economic information systems. They refer to the complex ones, having an integral hierarchical structure with diverse interrelations and complicated management functions. Modern management system of an enterprise, organization, or a company is characterized by a sophisticated informational system, related to external and internal exchange of information streams, multivariance in information types circulating in the management system. In addition, the top-priority role in this process still belongs to accounting information system. The reason behind is that reliable and complete information, both for accounting demands, and auditors, analysts, economists and managers of all ranks is formed here.

The term "innovation" derives from the English word "innovation" denoting "renewal, novelty, changes" [1, p. 7]. In some works [4; 3] the concept of innovation is interpreted in different ways:

- as a process where an invention or idea get economic essence, and where a scientific idea or technology is taken up to the stage of practical application, with an economic effect;
- as a new breakthrough in scientific and technical knowledge ensuring market success;
- as a process aimed at creating, producing, developing and improvement of quality in new products, technologies and forms of incorporation.

Other sources [7; 8] define innovation in the following way: "a set of technical, industrial and commercial activities aimed at implementation of new techniques, technologies, inventions etc to the economy, making new products appear to the market, improving industrial processes and equipment".

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The next definition is “a new phenomenon”; Another one sounds as “a new scientific and organizational combination of production factors, motivated with entrepreneurial spirit. Then, innovation can be explained as “a new product or service, a way of their production. Then again, as “innovations in organizational, financial, research and other areas, with any improvement providing cost savings or enabling such savings; as the final result of implementing innovation aimed at changing of the target asset and obtaining economic, social, environmental, scientific and technical or other effects.

The innovation process includes several stages, starting from scientific and technical ideas development to implementing them on a commercial basis. According to P. N. Zavlina: “The innovation process is the process of converting scientific knowledge into innovation, a consistent chain of events where innovation matures from an idea to a specific product, technology or service and gets widely applied in practice” [6].

The innovation process is unique with its integration into a single system, consisting of science, technology, economics, business and management.

Scholar O. I. Zhylynska considers innovation process as that of creating, implementing and exhausting of scientific, technical, social, organizational, industrial and economic innovation potential in innovations, the latter consisting of the following stages: Fundamental research. This is a basic stage, with new scientific and technical lore created. Next come applied researches. Here perspectives of practical implementation of new available scientific (technical) knowledge are estimated. Pilot projects which include designing of a sample (test pattern) of a new product (device, substance) or significantly improved one. The next stage would be implementation. Here innovations get patented, new product is certified, an innovative technology is implemented, or the existing technology is prepared for an innovative product release. The stage to follow is production, innovation products are issued. It is followed by market research Here a potential demand for innovative products is assessed and priority market segments are defined. Finally comes the sales stage. The innovative products get worked off at the next stage, which is disposal of goods. And then innovations get distributed via the licensing agreements [7, p. 322], which is called diffusion.

Unlike science and technology progress, the innovation process is not completed only with implementing innovations (equipment, technology, and product) into production. It has a rather continuous nature, since it is with the spreading (diffusion) of innovation it is improved, becoming more effective, acquiring new consumer-friendly features. Diffusion of innovation is the process of transmitting (transferring) the technology to enterprises of various countries, with time considered. As a result, innovations penetrate into various industries and attract more and more consumers. It opens new application possibilities, new markets, and respectively, new consumers to take the product, technology or services as “new for them only” [6, p. 147]

The innovation, process in its economic and organizational meaning, is further divided into separate periods, stages, phases, different in their purpose, management features, and financing, final activity results. National scientists mostly stick to the “research - development - production - marketing – selling” scheme.

Meanwhile American researchers consider innovative process in a more detailed way, and their scheme looks as follows:

- fundamental research - applied research – development - market research - designing - pilot production - a market test - commercial production. All these stages are interdependent and ensure innovation success only if integrated together.

The peculiarity of the innovation process supposes the focus gradually move from research to the sale area, as innovation gets developed. At the same time, elements of the innovation process are closely connected, constantly exchanging information [7, p. 48].

Thus, the innovation process is not only a difficult one, but also an interrelated one. It includes creating innovations, applying a whole of knowledge, research and marketing activities, the totality of labor tools to facilitate human work and make it more productive (such as machinery, tools, equipment, organization of production). The innovation process is also a complex of different sequential activities based on the labor division and cooperation. It starts from obtaining new theoretical knowledge and finishes with consuming goods produced on its basis.

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Professor M. M. Benko [8] suggested a generalized system of innovation, which is mostly typical for accounting (Tab. 1). It is to assess the effectiveness more precisely and objectively while detecting innovation in their heterogeneity and finally choose management methods.

Table 1

Classification of innovations in the accounting as a target subsystem of innovation activity

| Innovation as classified in groups | Features |
|------------------------------------|--|
| Organizational and management | Here the process of optimal accounting organizing, as application area, is considered |
| Information | Meant to solve the problem of organizing rational information flows in accounting, increase their reliability and efficiency |
| Economic | Innovation is focused on economic efficiency of accounting |
| Innovations as processes | They aimed at new technologies, management process organization being the object of innovation activity |
| Improving innovations | Conducted either within the framework of developing and improving new and (or) activity trends or processes as reasons to appear, with accounting process included |
| Following | Conducted as a follow-up to actual changes in the external environment |
| Local | Conducted as part of a dedicated unit within the company structure, including the Accounts department as an innovation target subsystem |
| Compound | Deal with changes affecting several activity directions and processes at a time. This includes innovation area (e. g. implementation of new innovative software products and new innovation processes) |
| System-based | System innovations affecting all of the enterprise activities or innovations target subsystem only, inclusive of all relationships and Interdependence |
| Main | Main innovations concern the main activity processes and management functions |
| Additional | Caused by the major innovations and ensure their implementation |

Source: Generalised by the author based at [8]

Different innovation types are closely interrelated and put forward specific requirements for the innovative mechanism. To our mind, the optimal approach to the definition of accounting as an enterprise information system, would be the one to take into account scientific, technical, technological, economic, organizational, informational, managerial and process aspects. Professor M. M. Benko [8] suggested a definition of innovation, depending on the accounting aspects (Tab. 2).

Table2

The innovations definition based on accounting aspects, their types and economic effect

| Aspect | Definition | Essence | Economic effect |
|--------------------------|--|---|--|
| 1 | 2 | 3 | 4 |
| Scientific and technical | Innovation is the result of solving problems using new ideas and discoveries, inventions, brought up to the stage of practical usage and economic effect | It is the result of solving problems in the accounting process with the help of new ideas, discoveries and inventions, brought up to the stage of practical usage and economic effect | Providing investments to the changes of technology generations (new equipment being the result of scientific and technical progress) |
| Technological | Innovation is an overall process of development, quality improvement and the technology application in accounting, based on researches and project engineering | It is the total process itself, including development, quality improvement and technology application in accounting, based on research and development | Investments into changes of technology (new technology as the result of scientific and technical progress) |
| Economic | Innovation is the result of solving economic tasks in accounting system, namely those constantly changing and providing economic efficiency and market success | It is the result of solving tasks in accounting system, namely those constantly changing and providing economic efficiency and | Improvement of accounting methodology. A systematic approach to of accounting automatization |

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Continuation of Table 2

| 1 | 2 | 3 | 4 |
|-----------------|---|--|--|
| Organizational | Innovation is an important change in the accounting system, based on new organizational knowledge shapes, new technology and technologies that are at direct or aim mediated and improvement in (or) outside the system | They are important system changes, wich are based on new knowledge of organizational forms, new technics and technologies, wich are aimed at direct or mediated improvement inside and (or) outside the system | Improvement of accounting organization |
| Administrative | Innovation is an invention in management bringing efficiency to the activity and accounting system | The invention itself, done in management to bring efficiency to the activity and accounting system | Improving accounting methodology. System approach to accounting automatization |
| Process related | Innovation is all process changes to the accounting system | All of the process changes, done at the enterprise for the first time | Improving accounting methodology. System approach to accounting automatization. Transformation of accounting methodology |
| Informational | Innovation is the result of solving tasks related to organizing rational information flows, aimed to ensure the rise in confidence and promptness, while obtaining accounting information | It is the result of solving tasks related to organizing rational information flows, aimed to ensure the rise in confidence and promptness, while obtaining accounting information | System approach to automation in accounting. Transformation of accounting method |

Source: Generalised by the author based at [8]

To sum up, innovation in accounting, to our mind, should be first of all considered as obtaining economic benefit, depending on actions.

Thus, the innovation process is a system of data collection and its preparing for making decision regarding short and long-term directions of the enterprise development. Account data analysis allows one to choose among several alternative options aimed at implementation different types of innovation, moving from units aimed at improving to more global ones, meant to replace.

At the same time, during the analysis of any strategic innovation project development of the company, certain aspects of the adopted and implemented innovation strategy can be highlighted the so-called proper goals. These can also to be subdivided into smaller ones. Each of these purposes of the lowest level is achieved by making the so-called fragmented management decisions. Each unit is a launch of a strategic innovation program. Therefore, decisions are important since they are aimed at implementation innovations to the production process. The aim of such implementation would be to get an economic effect or to launch an independent stage of a major innovation. It is obvious that to carry out management logs of such facility an information system will be required. Applying such a system will simultaneously reduce costs for its maintenance and will make it more flexible to the constantly changing demands of the whole Institute for innovation management.

To have a methodological basis for the innovation activity analysis, an informational system is to be built up, the one to include the required analytical tools, methods and techniques for analysis and evaluation of innovative projects. Which, in its turn, should help make effective management decisions for project implementation.

Both external and internal information is important during the innovation development, so the information exchange system between the different units becomes increasingly important for effective work. At the stage getting approvals to a decision regarding innovations, informational support for this process gets so much the more important. To make effective decisions, it is necessary to have objective, reliable and complete information (Fig. 1).

Also at this stage, the coherence between internal and external information is growing more important. The necessary features of an innovative product should be compared with the enterprise capabilities for the production of a new product (production capacity, personnel, financial status, etc.) [9].

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The lack of external information and problems while obtaining it may lead to making unreasonable decisions, because certain important features and characteristics were not taken into account. Due to the incompleteness of information about innovations during the development process side effects may appear. This will lead to additional expenditures or the production technology will have to be changed.

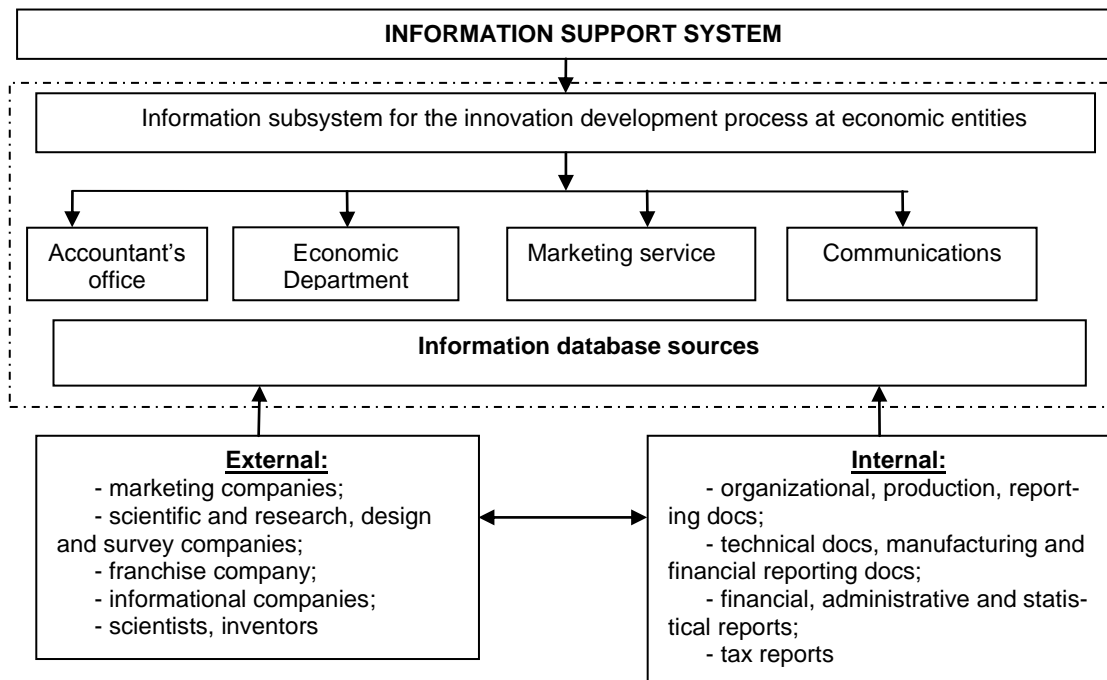


Fig. 1: Structural system of innovation information support

Source: Developed and calculated by the authors

Providing information support of innovation activities includes the following:

- creating and updating the databases of scientific and technical results and services given by providers of scientific and technical programs and projects within the priority area;
- communication with remote information centers and databases data, including foreign ones;
- ensuring access of the interested organizations and individuals to databases and Internet information resources within the innovation field;
- search and selection of innovative projects, proposals for the production of high-tech products, to be done for organizations and individuals, interested in financing such ones;
- creating and updating of databases on consumer properties of goods, done by leading companies [9].

External information required for the innovation process is determined by such groups of factors:

1. Tasks solved by the participants of the innovation process (repeated or one-time ones). The information system should be constantly ready to providing external information to employees performing such tasks, and to give them the access to other sources of information, in the case they need to address one-time task.

2. The nature of the decisions taken by the participants of the innovation process. Within the framework of the information system a database containing solutions of similar tasks should be built, to assist in decision-making.

3. The ability to create and support the required databases of the innovation process by participants. This process can be performed or supplemented by updating such databases with either information available to this information system, or from other information systems containing the neces-

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sary information. Such databases within the information system should be first of all focused on helping several employees, while satisfying individual employees' demands would be a secondary goal [9].

Taking into account available financial and other capabilities companies in Ukraine, to launch the informational environment for innovative activities, one should start with the creation of integrated informational system. This will help gain immediate access to information, within the first level of informational area, and will provide access to other free information resources of the same level.

Conclusions. Having studied the theory and methodology of accounting and analytical support for the innovation process, we conclude on the following. Innovation process is a system of data collecting and getting ready for making strategic decisions on short-term and long-term of the company development. One of the important stages of innovation development is occupied by internal and external information. For this reason, the information exchange system becomes more important, and the suggested structure of innovation informational support system will allow for objective, reliable and complete information. By analyzing it, we may select one of several alternative options on implementing innovations of various types.

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Received for publication 19.01.2017

Бібліографічний опис для цитування :

Resler, M. V. Accounting and analytical support for innovation process / M. V. Resler // Науковий вісник Полісся. – 2017. – № 1 (9). ч. 2. – С. 54-60.