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## INNOVATION PROCESS AS THE OBJECT OF ACCOUNTING

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**O. Prokopishyna**

The results of research aimed at further development of accounting methods for innovation activity are given. On the basis of revealing the essence of innovation process and its stages the systematization and specification of the procedures of financial and management accounting are carried out. The above-mentioned procedures are aimed at forming the information and analytical complex of decision-making support concerning innovations development and commercialization. The distinct accounts for innovation processes expenses and sales of innovative products that may enrich analytical features of accounting system of innovation activity are proposed to use.

*Key words:* innovation, innovation process, accounting.

## ІННОВАЦІЙНИЙ ПРОЦЕС ЯК ОБ'ЄКТ БУХГАЛТЕРСЬКОГО ОБЛІКУ

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**Прокопішина О. В.**

Висвітлено результати досліджень у напрямку обґрунтування та подальшого розвитку методичного забезпечення обліку інноваційної діяльності. На основі виявлення сутності інноваційного процесу та його стадій проведено систематизацію та уточнення змісту процедур, які повинні здійснюватися підсистемами фінансового та управлінського обліку для забезпечення формування інформаційно-аналітичного комплексу підтримки управлінських рішень щодо розробки та комерціалізації інновацій. В обліковій роботі інноваційно активних підприємств запропоновано до використання спеціальні рахунки бухгалтерського обліку, які дозволяють розширити можливості аналізу результатів інноваційної діяльності.

*Ключові слова:* інновації, інноваційний процес, облік.

## ИННОВАЦИОННЫЙ ПРОЦЕСС КАК ОБЪЕКТ БУХГАЛТЕРСКОГО УЧЕТА

УДК 657.421.3

**Прокопишина Е. В.**

Освещены результаты исследований, направленных на обоснование и дальнейшее развитие методического обеспечения бухгалтерского учета инновационной деятельности. На основе выявления сущности инновационного процесса и его стадии проведена систематизация и уточнение содержания процедур, которые должны осуществляться подсистемами финансового и управленческого учета для обеспечения формирования информационно-аналитического комплекса поддержки принятия управленческих решений относительно разработки и коммерциализации инноваций. В учетной работе инновационно активных предприятий предложено использовать специальные счета бухгалтерского учета, которые позволяют расширить возможности анализа результатов инновационной деятельности.

*Ключевые слова:* инновации, инновационный процесс, учет.

In actual global high competitive environment only enterprises that permanently implement effective innovations are able to follow the path of sustainable development. To ensure success of innovation activity managers have to consider the information, that is not typically accumulated by standard accounting system, thus requirements to accounting has been changing significantly due to significant increase of innovation process success impact.

Caused by the practical need, the information content of accounting system is expanding both in the subsystem of financial accounting, where new objects and methods of accounting arise permanently, and in the subsystem of management accounting and controlling, which focuses on providing internal users with comprehensive analytical information on business processes, involved resources and achieved results.

On the request of the current management practices a wide cohort of scientists, including B. Valuiev [1], V. Zhuk [2], O. Kantaieva [3], S. Labunska [4], A. Pylypenko [5 – 7], M. Pushkar [8], conducts scientific substantiation of methodology and technology of accounting of innovation activity. The researchers note that one of the main components of information and analytical support of innovative business is accounting, development of which should be conducted in the direction of ensuring effective information support of key management functions. Thus, M. Pushkar [8] emphasizes the necessity of forming such a system of management accounting of innovation processes that would allow information support of effective innovation policy both at the national level and at the level of distinct enterprise in conditions of uncertainty and economic globalization. A. Pylypenko [6] expresses the belief that the enterprise accounting system is the instrument for foundation of management of knowledge as a key resource of the new economy.

Despite the extreme urgency and considerable practical importance of relevant researches, at the time scientists agree that "unlike other objects of accounting – inventory, liabilities, production costs, revenue and others, which are topics for constant research aimed on the improvement of accounting, methods and organization of accounting of innovation processes are not so well designed" [1, p. 28]. One

of the major shortcomings of existing record-keeping standards is the absence of unified system of registers and accounts for allocating costs, incomes and results of innovation activities. O. Kantaieva argues [3] that the existing accounting models do not match the diversity of innovation processes and do not generate enough reliable data for economic analysis and regulation in the field of innovations.

So, the purpose of this paper is further development of accounting methods for innovation activity and revealing rational accounting techniques grounding on the essence and stages of enterprise innovation process.

Deeping in scientific literature it may be found out, that innovation process is the core component of innovation activity. Oslo Manual [9] defines innovation activity as all scientific, technological, organizational, financial and commercial steps which actually, or are intended to, lead to the implementation of innovations. A common feature of the innovation is that it must have been implemented [9]. The process of transformation of idea into product, introduced on the market, may be considered as the innovation process. M. Sotarauta and S. Srinivas [10] reasonably propose to define innovation process as evolutionary process, the development of an invention into innovation and its further dissemination beyond its inventors. The essence of defining the innovation process may be revealed via disclosing its stages. However in this respect the agreement between scholars has not been achieved.

According to E. Rogers [11] five stages may be distinguished in the innovation process: agenda-setting (when a company reveals the problem to be solved by means of innovation); matching (when this problem is being aligned with an innovation); redefining/restructuring (when the innovation is modified to meet specific requirements of the company); clarifying (when the way of innovation implementing is elucidated) and routinizing (when the innovation becomes a part of day-to-day work in the company). M. Sotarauta and S. Srinivas [10] as the stages of innovation process discriminate variation, selection, retention and struggle.

Researches also assume that the stages of innovation process depend upon company innovation strategy. Moreover, there is no strong agreement upon strategy classification and definition.

Some theorists distinguish "exploration" and "exploitation" strategies. According to J. March [12] under exploration strategy innovation process have stages as follows: search, variation, risk taking, experimentation, play, flexibility, discovery, innovation. While under exploitation strategy a company fulfills refinement, choice, production, efficiency, selection, implementation and execution as consecutive steps of innovation process. J. March [12] also suggests that the exploitation strategy will give positive, proximate and predictable results, whereas for exploration strategy the results are often uncertain, distant and even negative. Thus, exploitation strategy may be employed in short-term perspective and the burdens of proof for explorative strategies are much more challenging.

Van de Ven et al. [13] argue that a company may choose "divergence" or "convergence" behavior. Divergence is the type of innovation strategy when a company explores and expands its activity in different directions. The stages of innovation process under this strategy are: a) creating ideas and strategies; b) learning by discovery; c) building relationships and porous networks; d) creating infrastructures for collective advantage; e) R&D collaboration with other firms or universities, or participation in standard setting activities. In contrast to divergence, convergence behavior is a strategy of integrating and narrowing that focuses on testing and exploiting a given direction. Following activities are conducted during the innovation process: a) implementing ideas and strategies; b) learning by testing (trail and error); c) executing relationships in established networks; d) operating within infrastructures for competitive advantage.

On the highest level of abstracting innovation process may be depicted as the life cycle of innovation, which starts with novelty spring and ends when after implementation innovation loses features of novelty and becomes a part of everyday routine. This approach to revealing stages of innovation process allows its structurization in time and grounding the sequence of accounting procedures execution. The proposed matching of accounting procedures to the stages of innovation life cycle (ILC) is presented in the Figure. The Table discloses the composition of accounting support system for innovation process distinguishing management and financial accounting spheres.

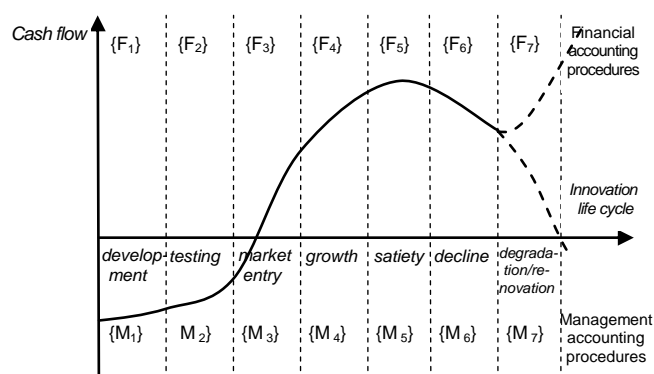


Fig. Systematization of accounting procedures by stages of innovation life cycle

For accounting of innovation process at the stage of development the requirements of the National Standard of Accounting 8 "Intangible Assets" are highly important. According to the National Standard of Accounting 8 the developments obtained at this stage should be reported as assets only if an enterprise intends and has technical ability and resources to commercialize innovative products and receive economic benefits from its sale or use, as well as has information for reliable determination of the costs associated with the development of innovations. In case an enterprise intends to develop tangible assets the National Standard of Accounting 9 "Supplies" and the National Standard of Accounting 7 "Fixed Assets" are applied, so all costs incurred with innovative activities are reflected on the account 39 "Deferred Charges", and on the end of testing stage of innovation life cycle are posted to the account 15 "Capital Expenditures" (in case the result of innovation process is positive) or to sub-account 941 "Expenses on Research and Development" (if the result is negative). Thus, according to the National Standards of Accounting expenses incurred during development and testing stage of innovation life cycle cannot be capitalized if these do not meet the requirements upon assets recognition; so the main task of financial accounting on development and testing stages is correct documentation and calculation of expenses, which increase the expenses of the referenced period and reduce income.

Table

Decomposition of accounting procedures set by stages of innovation life cycle

Stage of ILC	Financial accounting procedures		Management accounting procedures	
1	2		3	
Development	{F1}	Accounting for research and development (R&D) expenses; accrual of expenses of the referenced period	{M1}	Controlling the amount and composition of expenditure on R&D; justification of management decisions on "indoor or outdoor" innovation
Testing	{F2}	Organization of accrual of deferred charges as assets, estimating original value of newly created intangible assets (IA), justification and selection of depreciation method for newly created IA	{M2}	Assessment of the competitiveness of innovative product (IP), calculation payback period of innovation project, justification of management decisions on optimization the weighted average cost of capital in case additional financing is needed
Market entry	{F3}	Justification, selection and implementation of procedures of deferred charges allocation, organization of documents workflow upon IP production and sale, analytical and synthetic accounting of IP revenue	{M3}	Budgeting of full IP production and sale costs; selection of rational methods of production costs allocation; justification of management decisions in pricing policy

Table (the ending)

1	2	3	4	5
Growth	{F4}	Organization of document workflow, analytical and synthetic accounting for payments to contractors in operations of IP production and sale, accounting for innovation activity income, establishment/ replenishment of reserve for further R&D expenses	{M4}	Formation of information to find the reserves to reduce costs, determining the level of reserve for further R&D expenses
Satiety	{F5}	Analytical and synthetic accounting for transactions of transferring ownership on IP production technology	{M5}	Justification of management decisions on optimization of technology of IP production
Decline	{F6}	Revaluation of created IA and/or unwanted IP, accounting for receivables on IP based on allowance of uncollectible debts	{M6}	Justification for changing the production program and determination of the reasonable amount of IP production based on CVP-analysis, justification of decisions upon the transfer pricing
Degrada- tion/ renovation	{F7}	Documentation of created IA decommissioning, accounting of revenue and expenses on operations of elimination of IA and/or non-liquid leftovers of produced IP	{M7}	Information and analytical support for management decisions regarding the termination of IP production based on allocation of fixed costs

To fulfill this task it is rational to introduce distinct synthetic account "Innovation Processes Expenses" in class of accounts 8 "Expenses". In this case all expenses incurred during the development and testing stages of innovation process as wages, utilities, costs of materials used, depreciation expenses etc. may be accrued by posting on debit of this account. Introduction of transfer account "Innovation Processes expenses" allows detailed analytical accounting, which may be conducted:

1) by origin: a) indoor R&D (including capital expenditures on acquisition of facilities and equipment for R&D); b) outdoor R&D; c) acquisition of equipment and software; d) acquisition of other knowledge; e) other innovation processes expenses;

2) by types of innovations: a) product innovation expenses; b) process innovation expenses; c) marketing innovation expenses; d) organisational innovation expenses.

It seems to be reasonable if innovation process is financed by own capital, it follows from the purpose of any business activity which should be conducted to receive and accumulate income and in the current economic conditions this is not possible without constant improvement and amelioration of products, production processes, marketing, management. Therefore, at the growth stage of ILC it is necessary to accumulate adequate reserves that will serve as a source of funding for further innovation processes. Establishing such reserves is in conformity with prudence concept of accounting and allows ensuring the appropriate level of enterprise innovation activity. In part of financial accounting the reserve for further R&D expenses is accrued with credit of account 47 "Provisions for Future Liabilities and Charges". Determining the level of reserve for further R&D expenses is fulfilled by management accounting subsystem and is based on key indicators of enterprise innovation activity.

However, expenses are not the only object of innovation process accounting. The basis of sustainable development is systematic development and marketing of new competitive products. The need for accounting of sales of innovative products is also confirmed by the requirements of the State Statistics Committee of Ukraine on the submission of relevant information in the forms of statistical reporting. Thus, it is reasonable to offer to record sales of innovative products on separate analytical accounts of the account 701 "Revenue of Products". Implementation of the proposed approach not only ensures the information sources for statistic reports, but also enables comparison of revenues and

expenses of innovation activity and analysis of efficiency of innovation processes in the enterprise as a whole.

Back-to-back accounting processes of information generation and processing can support and ensure effective decision-making upon innovations. As only permanent successful innovation activity can guarantee business success, to be an effective part of innovation management accounting subsystem should innovate successfully and constantly. Proposed suggestions aim not only on broadening information base of accounting but on increasing relevancy and significance of gathered and processed information for decision-making upon innovation. One of the important tasks for further researches lies in the sphere of scientific grounding of document workflow in innovation activity.

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## ОСОБЛИВОСТІ РОЗВИТКУ ВЕРТИКАЛЬНОЇ ІНТЕГРАЦІЇ В АГРОПРОМИСЛОВОМУ КОМПЛЕКСІ

УДК 338.436

Томілін О. О.

Розглянуто питання особливостей розвитку вертикальної інтеграції в агропромисловому комплексі. Обґрунтовано проблемні питання в інтеграції підприємств аграрної сфери. Показано значення агропромислової інтеграції для аграрного сектору економіки. Запропоновано схему вертикальної інтеграції підприємств в агропромисловому комплексі. Розкрито галузеві особливості ефективного становлення вертикально інтегрованих структур. Показано напрями суттєвої підтримки розвитку аграрної економіки в умовах фінансової кризи. З метою створення сприятливих умов для сільського населення запропоновано шляхи підвищення рівня доходів та розширення сфери застосування праці.

**Ключові слова:** агропромисловий комплекс, аграрний сектор економіки, вертикальна інтеграція, міжгалузеві зв'язки, міжгалузеві відносини, агрохолдинги.