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NEW PRODUCT COST ACCOUNTING – NOW AND FUTURE

- ▣ *The article investigates the specific characteristics of cost accounting for new product development. Advantages and disadvantages of present practice are presented. Ways to improve cost accounting in accordance with present legislation are presented.*
- ▣ *development costs, research, development, pre-production model, costs of future periods, prime cost of the finished product.*

ОБЛІК ВИТРАТ НА РОЗРОБКУ ТА ОСВОЄННЯ НОВОЇ ПРОДУКЦІЇ: СУЧАСНИЙ СТАН ТА ПЕРСПЕКТИВИ РОЗВИТКУ

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- ▣ *У статті розкрито особливості вітчизняної практики формування, обліку та списання витрат на розробку та освоєння нових видів продукції. Вказано переваги та недоліки наявних методик обліку та списання цих витрат. Визначено шляхи їх удосконалення відповідно до сучасних потреб у галузі управління витратами підприємства та вимог бухгалтерського законодавства.*
- ▣ *Витрати на розробку та освоєння нової продукції, дослідження, розробка, дослідний зразок, витрати майбутніх періодів, собівартість готової продукції.*

УЧЕТ ЗАТРАТ НА РАЗРАБОТКУ И ОСВОЕНИЕ НОВОЙ ПРОДУКЦИИ: СОВРЕМЕННОЕ СОСТОЯНИЕ И ПЕРСПЕКТИВЫ РАЗВИТИЯ

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- ▣ *В статье раскрыты особенности отечественной практики формирования, учета и списания расходов на разработку и освоение новых видов продукции. Указаны преимущества и недостатки существующих методик учета и списания этих расходов. Определены пути их совершенствования в соответствии с современными потребностями в сфере управления расходами предприятия и требованиями бухгалтерского законодательства.*
- ▣ *Расходы на разработку и освоение новой продукции, исследования, разработка, опытный образец, расходы будущих периодов, себестоимость готовой продукции.*

Statement of the problem

Processes of globalization and integration of Ukraine's economy into the world's economic space stimulate domestic enterprises to search for new sales markets. This forces them to pay more attention to the development and mastering of new types of product, which will be able to compete with foreign analogues. Therefore, there is a problem of improvement of accounting and deduction of costs for the development and mastering of new types of product.

This type of accounting is considered to be one of the most difficult, as its objects function on the meeting-point of material and non-material fields of production. Nevertheless, successful developments are closely connected with both laboratory investigations and mastering

of the production of the new product in main and auxiliary shops of an enterprise.

Analysis of recent researches and publications

Problems of accounting of costs for the development and mastering of new types of product were investigated in papers of such domestic and foreign economists as L. Hulko [1], T. Kaminska [2], I. Kryshchyna [3], V. Saprykin [4] and others. However, mentioned publications disclose only separate aspects of accounting of costs for the development and mastering of new types of product in the context of innovative development of the enterprise. At the same time, a number of problematic questions, which have applied nature, take place at domestic enterprises during implementation of production of new types of product. In particular:

- weak theoretical grounding of stages, which are connected with the process of the development and mastering of new types of product, that causes difficulties in the process of recognition of products, that are being created as a result of every stage, in the structure of separate assets of the enterprise;
- recording of costs for the development and mastering of new types of product in various balance accounts;
- imperfection of ways of including costs for the mastering of the new product into the prime cost of the stock-produced items.

The goal of the article

The main goal of this research is to develop theoretical and practical recommendations that are aimed at creation of effective system of accounting of costs for the development and mastering of new types of product in the capacity of informational support of making managerial decisions concerning appropriateness of financing of R&D.

Presentation of the basic material

Nowadays measures concerning mastering of the new product are fully financed by own funds of the enterprise (funding for extremely important, basic research, which is carried out at the expense of the state budget, is an exception), and their development and realization is rested on the design and technology bureau (DTB), where the main engineering and design potential of the enterprise is focused. In case of absence of the DTB, enterprises turn for help to organizations, specializing at solving scientific and technical problems (scientific research institutes, design offices etc.).

The process of the development and mastering of the new product covers several stages:

- research (scientific research and drawing up of the design documentation);
- development (design and development of the new product; creation of the research sample);
- mastering (testing the new product; adjusting the design documentation and its transferring to production for making the first silicon; producing the first silicon)
- production (serial or mass production of the new product)

It is important to disclose economic essence of these stages in order to understand differences between mentioned stages and also to understand the process of formation the structure of costs, which are typical for them. In particular, according to the point 4 of the Regulation (Standard) of Accounting 8 the term “research” means investigations that are planned and conducted for the first time and their goal is to receive and to understand new scientific and technical knowledge [5]. The

essence of the research is to receive new knowledge, to search for alternative materials and processes, formulation, evaluation and selection of alternatives in order to improve the technologies.

Successful research turns into development. In particular, the point 4 of the Regulation (Standard) of Accounting 8 mentions, that the term “development” means the usage of the results of the research and other scientific and technical knowledge for the creation of new or considerably improved materials, products, instruments, devices, systems, technological and operational processes before the beginning of their industrial usage, serial production or fulfillment of works and provision of custom-built services [5]. Designing, engineering of models and pre-production models, tools, designing and testing of the pilot installation, alternative materials and so on are the stages of the development.

Finished research and development works find their expression in created models of the new engineering, the new product, the new materials, the new technologies and other scientific and research innovations.

In contrast to the research and development, which are conducted in laboratories (of the plant or of the scientific research institute), mastering of the new production as well as the serial production are done in the shops of the plant. Mastering of the new production can be named as implementation of industrial innovations in the enterprise. Output of experimental production and comparison of its quality and terms of production with the company’s accepted standards take place in the process of implementation of innovations. The goal of this stage of introduction of the new product is preparation for its commercial production.

And when the production of the new product is mastered, the enterprise may do long-term deals with byers of the new product and can begin its mass production for the market.

Accounting of costs for the development and mastering of the new product is regulated by the Tax Code of Ukraine [6], the Guidelines on the formation of prime cost of products (works, services) in the industry [7], the Regulation (Standard) of Accounting 8 “Intangible Assets” [5]. However, despite of this fact, it should be noted, that there is a complete lack of coordination between these legislative acts in the field of justification of the structure of the costs.

In particular, according to the point 140.1.2 of the Tax Code of Ukraine, the structure of costs, which are connected with the preparation to the production of the new product and its mastering, includes costs for scientific and technical support of economic activity; costs for research, experimental and developmental activities; costs for production and research of models and

samples, which are related to the core activities of the taxpayers [6].

The Guidelines on the formation of the prime cost of products (works, services) in the industry defines next list of cost items, which are connected with the development and mastering of new types of product: costs for the designing and development of the new product; costs for the designing of the special instrumentation and for the development of the technological process of its production; costs for the designing and legalization of established standards; costs for the testing of materials, instruments and devices for the production of new types of product; costs for the engineering setup; costs for the production of the initial unit of special instruments and devices for the industrial prototype of the product; costs for the production of the industrial prototype of the product [7].

At the same time the Regulation (Standard) of Accounting 8 “Intangible assets” does not detail the structure of these costs at all.

The absence of clear recommendations concerning the structure of costs for the development and mastering of new types of product leads to their dispersion in different accounts. This complicates further control of costs and reduce reliability of data acquisition for each stage of the process of the design and development of the new product.

Therefore, taking into consideration the domestic practice of division-of-work decisions in the context of the stages of the process of preparation and mastering of new types of product and taking into account methodological peculiarities of accounting of costs, it will be reasonable to separate out next composite items of costs for the development and mastering of new types of product:

- costs for the research and preparation of the design documentation;
- costs for the design and construction of the new product;
- costs for the design of the special instrumentation, material testing and development of the technological process of manufacturing of the new product;
- costs for the engineering setup, for the production of the initial unit of special instruments for the research prototype of the product, and for the production of the research prototype of the product;
- costs for the production of the pilot batch of the new product.

This approach allows to differentiate these costs in the context of places of their origin and ensures fulfillment of requirements of national legislation concerning their recognition in the structure of costs of the period, inclusion into the prime cost of the finished product, or capitalization in the value of assets.

The last one is very important due to that fact, that under certain conditions the part of costs of this type may be recognized as intangible asset, which was obtained as a result of the development (point 7 of the Regulation (Standard) of Accounting 8 “Intangible assets”). Hence, costs for the development, that meet the requirements of the Regulation (Standard) of Accounting 8, must be recorded in the subaccount “Purchasing (development) of intangible assets” with their further recording in the account “Intangible assets”.

In case of impossibility to draw a boundary between costs for the research and costs for the development, the total sum of costs must be included in the prime cost of the created product. It means that costs for the development are capitalized in the value of intangible asset. This is an issue of current importance for the costs for the research and preparation of the design documentation; for the costs for the design and construction of the new product; for the costs for the design of the special instrumentation, material testing and development of the technological process of manufacturing of the new product, which are usually done by the engineering and design department of the enterprise.

Domestic practice of accounting allows to separate out these costs and to determine their total sum. Every development has a subject (order), which was opened for him. This subject has a certain code, which is written down in all documents concerning deduction of material costs and charging labor costs that directly related to the subject. All costs are gathered in the cards of analytical accounting, opened for every development. They are recorded in the context of items of costs of contracted nomenclature, which includes: costs for the raw materials and materials; costs for the basic and additional wages; deductions for social events; overhead costs.

Costs for the research and development of new types of product, which were generated by the engineering and design department of the enterprise, are recorded in subaccount “Costs of the engineering and design department” to the account “Production”. After that they are recorded in the subaccount “Purchasing (development) of intangible assets” in case of meeting the requirements of recognition of intangible assets. If they do not meet these requirements, these costs are recorded in the subaccount “Costs for the research and development”.

The subject can be closed on the basis of the Certificate of acceptance - transmission of fulfilled works.

Another feature of this stage of works is that spending on research and development of new types of product almost cannot be rationed. It means, that certain departments and services of the enterprise create norms of spending of materials, components and also standards of time and rates of wages for the production of a research prototype of a first silicon. There are no such

norms for the development of the design documentation and for the design and construction of the new product. This practice significantly reduces control of costs, which are associated with it.

Accounting of costs for the engineering setup, for the design of the primary set of special instrumentation for the industrial prototype and also for the prototype are recorded in the subaccount "Auxiliary production", which is related to the account "Production". This practice can be explained by the fulfilment of these works in the shops that produce optional equipment. This work is not done in the engineering and design department of the enterprise. To do this, the order must be opened basing on the estimate, which was compiled by the planning department. This order can be closed basing on the returning rolls (bills) of transmission of the equipment (the prototype) from the production shop to the storehouse of the engineering and design department by the shop cost.

These costs are recorded in accounting as:

Debit of the subaccount "Low-value fixed assets" —
Credit of the subaccount "Auxiliary production"

The cost of the research prototype is included in the cost of the serial product by means of charging the depreciation and recording it in the line item of the calculation sheet "Compensation for the depreciation of special equipment and special tools" in the amount of 50% when transmitting to the production of the research prototype and in the amount of 50%, remaining after its retirement.

Retirement of equipment, which is connected with the production of research prototype that has low cost or can be used for the production of different types of related product in the future, is done by means of charging depreciation in the amount 100% in case of transmission of this equipment into exploitation.

Costs for the production of first silicon of the new product are recorded on the subaccount "Main production". In order to do this, it is necessary to open an order valid for one occasion. Its implementation period does not exceed one year. This subject has a certain code, which is written down in all documents concerning deduction of material and labor costs. Summarizing of costs of this period is done in the cards of analytical accounting in the context of full nomenclature of items of costs. On the contrary, summarizing of costs of previous two periods is done in the context of brief nomenclature of items of costs.

Production of the pilot batch of the new product has complete cycle of production and it can be sold to the customer as well as its serial analogue. That is why its release is drawn up by the invoice of transmission to

the warehouse of finished product. This fact must also be recorded in accounting:

Debit of the account "Finished product" —
Credit of the subaccount "Main production"

Thus, the main advantage of domestic methodology of cost accounting of the development of the new product lies in their grouping by places of their origin. This helps to locate them more accurate and to organize monitoring of the level of spending.

However, recording of costs for the development and mastering of new types of product in different balance sheet accounts, that characterize cost centers, does not allow to evaluate for sure the prime cost of the process of the development and mastering of the new product and to compare it with the cost of mass-produced units. This greatly complicates the decision making process on the appropriateness of funding of actions of innovative character.

In order to improve methodology of stage-by-stage accumulation of costs for mastering of the new product and its subsequent deduction to the order of serial production, it is reasonable to record these costs in the subaccount "Costs for the development and mastering of the new product" of the account "Costs of future periods". In justification of this opinion we proceeded from the following considerations.

Firstly, modern methodology of cost accounting for the development and mastering of the new product is based on the functional approach and causes a number of contradictions concerning their further generalization and inclusion in the prime cost of the serial product (as was mentioned above). In my opinion, these difficulties may be avoided by generalizing costs, which are connected with mastering of new types of product, according to the process (not functional) approach. In order to do this, the activity on creation of the new product must be singled out into the separate business-process of the enterprise.

Secondly, costs for the development and mastering of new types of product by their nature are used resources in the reporting period, which must be referred to financial results of future reporting periods (inexhaustible costs). Consequently, it is reasonable to record them in one of sub-accounts of the account "Costs of future periods" according to types of mastered product in the context of proposed nomenclature of complex items of costs and stages of performed works by progressive total sum since the moment of preparation of the design documentation and production of research prototype (experimental batch).

In order to ensure the systematic report on these costs, a special code is assigned to the mastered product.

This code can't be changed until the moment of the production of the prototype or the pilot batch of the stages of works: design of documentation, designing, manufacturing and testing of the research prototype.

The proposed methodology provides for sequential accumulation of costs at all stages of the development and mastering until the moment of serial (mass) production of the new product. Thus, costs for the development and mastering are included in the prime cost of serial analogues and have impact on the financial result of the period of realization of the new product.

Thus, the existing (traditional) methodology of cost accounting for the design and development of the new product includes in the prime cost of the serial product only those costs, which directly relate to the stage of mastering. At the same time, costs of such stages as research and development are covered at the expense of the financial results in the period of their occurrence. This practice causes an unwarranted reduction of the financial result at that time when the developments have not even been implemented in life.

The way of inclusion of costs for the development and mastering of new types of product in the prime cost of the serial production has the same level of importance as the problem of the sequence of recording costs for the development and mastering of new types of product in the accounts of the system of accounting. Industrial enterprises use different, often imperfect methods of deduction of these costs, which cause mistakes in case of inclusion in the prime cost of the enterprise because of their uneven deduction. According to the practice, the most widespread ones are:

- the way of allocation of costs using the account "Overhead costs";
- the way of allocation of costs using the depreciation of the account "Low-value fixed assets".

The author believes that allocation of costs for the development and mastering by means of their deduction to the structure of overhead costs provides for inclusion in their prime cost of all (with no exception) products, which have been produced until the moment of such deduction. This causes the loss of the direct link between the costs incurred in mastering and development of the new product and the prime cost of this product at the time of its serial production.

In turn, the way of allocation of costs using the depreciation of the account "Low-value fixed assets" provides for double inclusion of total sum of costs generated in the value of research prototype:

- in the prime cost of the prime batch of the new product in the amount of 50% of the value of the research prototype when transmitting it to the production

- in the prime cost of the last batch in the amount of 50% of value remaining after retirement of the research prototype.

Thus, an unjustified distortion of the prime cost for these batches of the new product takes place.

Overcoming of these deficiencies lies in implementation of the inclusion of costs for the development and mastering of new types of product in the prime cost of mass-produced product basing on estimated rates. At the same time inclusion of the total amount of costs for the development and mastering of the product in the prime cost of serial product is done partly during the established (no longer than two years) term from the moment of the beginning of their serial or mass production, according to the pre-compiled estimates of these costs and the number of products that are scheduled to be released during this period. It is necessary to correct estimated rates in conditions of changing planned volumes of the new product output.

This helps to overcome another one shortcoming of the existing methodology of cost accounting of mastering new types of product – their dispersion in different items of calculation. We propose to distinguish the item "Costs for the development and mastering of the new product" among the items of the calculation in order to record there data about costs for the mastering, which were calculated with the help of estimated rates.

Conclusions

Conducted research allows to formulate a number of generalizing provisions, that reveal directions of the improvement of theoretical and methodological basics of accounting in terms of recording of costs for mastering of new types of product and to clarify the role of accounting information as an essential factor of supporting of decisions regarding appropriateness of financing of R&D:

1. Among the most problematic questions of the process of implementation of production of new types of product, that have applied nature and require theoretical and methodological foundation on the basis of accounting, one should name: weak theoretical foundation of the structure of costs, that are associated with R&D of new types of product; recording of costs for the development and mastering of new types of product in various balance sheet accounts; imperfection of ways of inclusion of costs for mastering of the new product in the prime cost of the mass-produced product.

2. The absence of clear guidelines on the structure of costs for the development and mastering of new types of product leads to their fragmentation in different accounts. This causes difficulties in further control of costs and reduces reliability of data acquisition for each stage of the development and mastering of the new product.

Thus, taking into consideration domestic practice of allocation of works in terms of stages of the process of the development and mastering of new types of product and taking into account methodological peculiarities of recording of costs in the system of accounting, it will be appropriate to single out next complex items of costs for the development and mastering of new types of product: costs for the research and preparation of design documentation; costs for the design and construction of the new product; costs for the design of special tooling, material testing and the process of the development of production of the new product; costs for the adjustment of the equipment, production of the initial set of special tools for the prototype and the prototype by itself; costs for the production of the pilot batch of the new product.

3. In order to improve methodology of accounting of costs for the development and mastering of the new product, which is based on the functional approach and causes a number of contradictions concerning their further generalization and inclusion in the prime cost of the serial product, the author proposed process (activity) approach to generalization of costs. This approach is based on the singling out of the activity concerning the production of the new product in the separate business-process of the enterprise.

It will be reasonable to single out the subaccount to the account "Costs of future periods" for the practical implementation of the proposed approach of accounting of costs, which are connected with the development of the new product. This subaccount will generalize costs

by the stages of works, which are being fulfilled, on an accrual basis from the moment of preparation of design documentation and until the production of prototype (pilot batch) in terms of types of product, which are being mastered.

4. In order to improve the accuracy of inclusion of costs, which are connected with the process of the development and mastering of the new product into the prime cost of serial production, the author proposed to write them off basing on estimated rates. At the same time, inclusion of the total sum of costs for the development and mastering of the product in the prime cost of the serial product is made by parts during fixed (no longer than two years) period from the moment of the beginning of their serial or mass release, basing on a pre-compiled estimates of these costs and the number of products that are scheduled to be released during this period.

5. Presented recommendations, concerning improvement of the existing methodology of cost accounting and cost allocation of new types of product, will be reasonable for those enterprises, which have considerable period of mastering of the new product and comparatively high level of costs that appear during this process. If the period of mastering of the new product is insignificant and the level of costs that appear during this process is low, they can be planned and recorded as the part of transaction costs (if they concern research and development) and as the part of general manufacturing costs (if costs are connected with mastering of the new product).

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