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PRODUCTION COST PLANNING: PROBLEMS OF THEORY AND PRACTICE

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The article examines approaches to planning production costs and ways to reduce them. The main methods of cost calculation are considered. One of the main issues covered in this article is the choice of an appropriate method of calculating the cost price at the enterprise. Every business entity is faced with the issue of cost reduction, as it makes up more than 70% of the price of sold goods, works and services. Since the final result depends on the choice of the method of calculating the cost of the production facility, therefore, this article considers the methods of calculation by each specified method. Each of the above methods has an appropriate number of advantages and disadvantages, taking into account the production features of each business entity. Another aspect that should be paid attention to is that the methods given in the article may be technologically appropriate for a certain production, but from an economic perspective have certain limitations.

ПЛАНУВАННЯ СОБІВАРТОСТІ ВИРОБНИЦТВА: ПРОБЛЕМИ ТЕОРІЇ І ПРАКТИКИ

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Ключові слова:
собівартість, витрати на калькулювання, калькулювання собівартості продукції, виробниче підприємство, методи калькулювання

У статті досліджуються підходи планування собівартості продукції та шляхи її зниження. Розглянуті основні методи калькулювання собівартості. Одним з основних питань, які висвітлені в цій статті є вибір доцільного методу розрахунку собівартості на підприємстві. Кожен господарюючий суб'єкт стикається з питанням зниження собівартості, оскільки вона складає більше 70% ціни реалізуємих товарів, робіт та послуг. Оскільки від вибору методу розрахунку собівартості виробничого об'єкта залежить кінцевий результат, тому в даній статті розглянуті методи розрахунку кожним зазначеним методом. Кожний з наведених методів має відповідну кількість переваг та недоліків, зважаючи на виробничі особливості кожного суб'єкта господарювання. Ще одним аспектом на який слід звернути увагу, що наведені методи в статті можуть бути технологічно доцільними для певного виробництва, однак з економічного ракурсу мати певні обмеження.

Formulation of the problem

Modern economic realities testify to the need to identify and eliminate deficiencies in the activities of enterprises, search for and involve in production reserves that are not used or not fully used. The efficiency of the enterprise and obtaining the maximum result depends on this. Those who receive the highest economic result from it have the strongest «immunity»; the same enterprises that work inefficiently, are unsustainable and cannot withstand tough competition. In the system of indicators characterizing the efficiency of production, one of the leading places belongs to the cost of production. It, as a synthetic indicator, reflects all aspects of the enterprise's production and financial and economic activities: the level of use of material, labor and financial resources, the quality of work of individual employees and management as a whole.

Determining the cost of production is one of the main accounting tasks. The basis for solving a significant number of management tasks is precisely the estimation of the cost price. Information on the formation of the cost price should be used to determine its impact on the efficiency of the enterprise, and production costs are the basis for setting the selling price, and information on the cost price is the basis for forecasting and production management.

Analysis of latest research and publications

A significant number of works by foreign and Ukrainian scientists testify to the significant interest of scientists in the issues of theoretical substantiation of the cost of production and methods of its planning.

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Among the foreign scientists researching the problems of cost accounting and cost planning, Drury K., Upchurch A., Scone T., Foster J., Horngren C. and others should be singled out. Scientists considered the cost of production from the point of view of management accounting. Ukrainian scientists made a significant contribution to the development of the theoretical and practical principles of the process of planning the cost of production. Among them, we can highlight such as: Cherep A., Butynets F., Vasyuk G., Ivanyuta P., Orlov O., Sopko V., Tsal Tsalko Y. and others.

Formulation of the purposes of the article

The purpose of the work is to study the concept of cost of production as an indicator of the effective operation of the enterprise, planning of cost of production; consider the importance and ways of reducing the cost of production; determination of ways to reduce the cost of production.

Outline of the main material of the research

The study of theoretical and practical aspects of determining the cost of production allows us to understand that the cost reflects in monetary form the individual costs of the enterprise for the production and sale of a unit or a certain volume of products in the conditions of the established economic environment.

.In the amount of the cost price, the costs of production resources involved in the production of products in the specifically defined conditions of operation of a specific enterprise are reimbursed at current market prices. At domestic enterprises, it is customary to distinguish the following types of cost of production: production, industry, commercial, workshop and technological cost of the product, as well as finished products and other types thereof.

This type of classification distinguishes types of costs not only by their structure and composition, but also by certain methods of planning both individual costs and the general cost level[1].

Quantification of costs for the production of certain types of work and products is generally called costing or costing. Three costing methods are used to plan the cost of the company's products:

– normative – on the basis of currently active progressive standards and norms of spending of economic resources per unit of production and other market indicators;

– planned – on the basis of planned indicators of direct costs and comprehensive cost estimates developed for a certain period (year, quarter, month);

– reporting – on the basis of actual (accounting) production costs in the reporting period.

Planned costings, as a rule, are formed for all types of products provided for in the annual production and sales plan of the enterprise. Given the wide assortment and nomenclature of manufactured goods, planned cost calculations can be carried out on the basis of division into so-called parts representing homogeneous groups of products or works. Let's consider in more detail the normative method of calculating costs for the production of goods and services in the conditions of market relations[2].

In modern conditions, the structure of planned production costing includes the following typical cost items: raw materials and materials; returnable waste (excluded); purchased component products, semi-finished products and services of cooperative enterprises; fuel and energy for technological purposes; total material costs; basic salary of production workers; additional wages of production workers; deduction for social insurance; costs for preparation and mastering the production of new products; manufacture of tools and devices for the purpose; equipment maintenance and operation costs; shop expenses; losses due to failure; other production costs; workshop cost price; general economic expenses; production cost; non-production costs; commercial cost.

The development of planned cost estimates for individual types of products involves the use of progressive cost standards for such production resources as raw materials and materials, fuel and energy for technological purposes, labor costs and tariff rates, etc. In particular, the standards of indirect general workshop or general production, general factory or general economic, non-production or commercial and other costs are also necessary, for example, for the maintenance of technological equipment, payment of administrative and management personnel.

The full (planned) cost of a product unit is determined by the sum of direct and indirect costs according to formula 1:

$$C_i = \left[M + З_o \left(1 + \frac{K_1 + K_2}{100} \right) + З_o \frac{\alpha}{100} + \left(З_o + З_o \right) \frac{\beta}{100} \right] \left(1 + \frac{K_3}{100} \right), \quad (1)$$

where C_1 and – unit cost of production, hryvnias. / pcs.; M – direct costs for materials and components, hryvnias; $З_o$ – basic salary, hryvnias; K_1 – general indirect production costs for equipment maintenance and workshop costs, %; K_2 – general factory (general economic) costs, %; α – percentage of additional payment and bonuses to workers; $З_d$ – additional salary, hryvnias; β – percentage of deductions for social insurance; K_3 – non-production costs, %.

On the basis of the planned costings of individual products, a cost plan for the manufactured products is developed. In general, the cost price of the enterprise's finished products can be determined by formula 2:

$$C_n = \sum_1^n C_n N_r, \quad (2)$$

where N_r – annual volume of production; n – the number of species (nomenclature) produced[3].

In the process of developing a production cost plan, it is advisable to first identify reserves for reducing production costs due to technical, organizational and other factors. Planning to reduce the cost of production can be carried out with the help of refined and consolidated methods of calculation. Refined calculations are based on a comparison of indicators of the planned and basic unit cost of production. In this case, the total annual savings can be calculated as the difference between the reported and new planned cost values for the entire product range according to formula 3:

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$$\Delta C = \sum_{1}^{n} (C_1 - C_2) N_r, \quad (3)$$

where C_1 – basic unit cost of production; C_2 – the planned cost of one part.

Planning to reduce the cost of production based on consolidated calculations, as a rule, involves preliminary justification of the percentage reduction of individual costs at the expense of relevant factors.

In the process of planning the cost of production by the normative method, the accuracy of calculations is determined by the selected methods of distribution of complex costs per unit of manufactured goods or service [4].

In the course of cost planning, the components of its costs are included in the period to which they belong, regardless of the time of payment. Non-production costs are recorded in the reporting month when they are discovered. Expenses in foreign currency are converted at the current exchange rate on the date of transactions.

In the theory and practice of product cost planning, indirect costs are distributed mainly in proportion to the wage rate of production personnel. However, given the presence of a diverse range and the quality and quantity of goods produced, this method does not provide the necessary level of accuracy in planning the cost of products in market conditions.Therefore, under the condition of limited resources in market conditions, a more justified and acceptable way of transferring complex costs for the products produced, in particular for the maintenance of technological equipment, can be the use of indicators of worked machine-hours or machine-hours. The essence of this method is that the total amount of indirect costs associated with the operation of the equipment is set at the rate of 1 hour or 1 minute. his works, with the help of which are subsequently determined in monetary terms and the corresponding costs per unit of production[5].

The experience of American companies working in the industry shows that costs, as a rule, should be divided into two main categories depending on the functional types of activity: production and non-production. In turn, the detailed division of production costs is represented by three categories: direct costs of material resources, direct costs of labor and firm (corporate) overhead costs. Direct material costs include all costs for materials that are components of the final product; to direct labor costs – wages of production workers who directly participate in the process of manufacturing the product.

Company-wide overhead costs include costs for auxiliary (expendable) materials, as well as salaries of management and service personnel, depreciation costs, rent, tax deductions, insurance premiums, additional salary payments, and downtime payments. Company-wide overhead costs are called both in foreign companies and in Ukrainian enterprises, general economic overhead costs or indirect costs for the production of products[6].

The total amount of direct material and labor costs forms the main cost. Direct labor costs, along with manufacturing overhead costs, are called conversion costs or conversion costs. This term reflects in foreign economic science the fact that the accounting of these costs allows transferring the cost of raw materials and materials to finished products. At the same time, it should be borne in mind that in the process of production activity, a significant number of types of costs overlap within their economic categories.

The main method of determining various types of costs for the production of products in foreign parks is normative. Regulatory costs in leading American companies are the yardstick against which actual costs of economic resources are compared. Therefore, all regulatory costs reflect the optimal methods and conditions of work, and are also the basis for planning production costs per unit of production. In general, production costs represent the sum of standard costs of materials, labor and overhead costs. Regulatory costs can be calculated using formula 4:

$$I = MB + TB + HB, \quad (4)$$

where I – standard production costs per unit of production; MB – regulatory material costs; TB – regulatory labor costs; HB – regulatory overhead costs.

Standard overhead costs are determined as a percentage of standard direct labor costs. Normative labor costs are used to plan labor costs, the value of which is calculated according to formula 5:

$$PC = T\Im \cdot Ч_c, \quad (5)$$

where PC – planned labor costs; $Ч_c$ – hourly wage rates (without bonuses).

As a rule, in the planning of the cost price of the company's products, there is a need to determine the total and specific costs. In this regard, it is customary to divide all costs into fixed and variable. The full cost includes the total costs for the production of the total volume of products, the specific cost – for the production of a unit of goods and services. Specific cost is the average value of costs, which is determined by the ratio of total costs to the number of common units of production that make up the annual production plan [7]. Analytically, the relationship between total and specific cost and their components – constant and variable costs is expressed by formulas 6–7:

1) full cost price:

$$C_{пов} = S + V \cdot N_r; \quad (6)$$

2) unit cost:

$$C_{уд} = \frac{S}{\mathrm{N_r}} + V, \quad (7)$$

where S – fixed costs; V – variable costs; N_r – annual output volume.

As can be seen from formulas (6) and (7), the total cost is the sum of fixed and variable costs for annual output, the specific cost is the sum of fixed and variable costs per unit of production [8]. It is important to keep in mind that the unit cost (7) decreases with an increase in the volume of production, since the amount of fixed costs that remain unchanged under the condition of performing a usual series of economic operations is detailed and distributed over a significant number of units of manufactured products.

Conclusion

The article theoretically summarizes and proposes measures to solve an important scientific problem related to modern approaches to planning the cost of industrial

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products. The research results made it possible to draw the following conclusions:

1. The essence of the production cost as an economic category is clarified. In the conditions of the transition to a market economy, the cost of production is the most important indicator of the production and economic activity of enterprises. The calculation of this indicator is necessary for evaluating the implementation of the plan for this indicator and its dynamics; determination of the profitability of production and certain types of products; implementation of intra-production budgeting; identification of reserves for reducing the cost of production; determination of product prices; calculation of national income on a country scale; calculating the economic efficiency of the introduction of new equipment, technology, organizational and technical measures; substantiation of the decision to produce new types of products and to withdraw obsolete ones from production.

2. Total costs and cost of production are characterized. The cost of production is interrelated with indicators of production efficiency. It reflects most of the cost of products and depends on changes in production conditions. Technical and economic factors of production have a significant impact on the level of costs. This influence will be manifested depending on changes in equipment, technology, organization of production, in the structure and quality of products, the amount of costs and its production. The correctness and timeliness of determining the actual cost of products produced by the enterprise directly depends on the timeliness and effectiveness of management decisions, the correctness of determining priorities for the further development of production. The financial condition of the enterprise may depend on how correctly the cost of production (works, services) is formed and the gross and taxable profit is determined.

References

1. Prysiazhnyuk S.V., Peresunko Z.M. Methods of calculating production costs: domestic and foreign experience. URL: http://www.rusnauka.com/34_NIEK_2010/Economics/74551.doc.htm (access date: 04/14/2023).
2. Budnyak T. Factors for reducing the cost of production. *Theoretical-methodological and scientific and political foundations of investment, financial and accounting support for the development of the economy* : materials of the International of science practice Internet Conf. (Kamianets-Podilskyi, November 15–16, 2011). Part 1. Ternopil : Krok, 2011. 372 p.
3. Vasyuk H.V. Peculiarities of the audit of production costs and production costs. *State and regions. Series «Economy and entrepreneurship»*. 2012. No. 4(67). P. 91–95.
4. Parfinenko Yu.A., Melnikova K.I. Determination of cost reduction reserves in order to increase the efficiency of the enterprise. *Bulletin of NTU "KHPI". Seriia "Actual problems of management and financial and economic activity of the enterprise"*. 2013. No. 52(1025). P. 124–128.
5. Cherep A.V. Cost management : monograph. Kharkiv : INZHEK, 2005. 373 p.
6. Horodnia T.A. Optimizing the production cost of the enterprise. URL: http://archive.nbuv.gov.ua/portal/chem_biol/nvnltu/21_1/326_Gor.pdf (access date: 04/16/2023).
7. Kostecka N. A factor approach to the formation of a strategy for reducing enterprise costs. *Galician Economic Bulletin*. 2011. No. 1(30). P. 159–166.
8. Theory Of Production: Cost Theory. URL: https://www.intelligenteconomist.com/theory-of-production-cost-theory/ (access date: 16.10.2018).