Analysis of approaches to determining the cost of production

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Abstract

The article is of interest to managers and scientists involved in the study of dealing with determining the cost of production in all economic activity areas, regardless of the organization's ownership. The article has a theoretical nature and aims to generalize the current understanding of the formation of production costs. The article aims to analyse the production cost in further search for scientifically sound ways to clarify it. To achieve the article's goal, an analysis of many publications from the subject publication was conducted. A large number of scientific papers in this field have been established. The article analyses the components of product formation, briefly characterise them. It is determined that the cost of marketable products is calculated on the basis of cost elements reflected in the estimate. The question of the formation of the prime cost of production of the enterprise is investigated. It is determined that the cost of production is one of the most multifaceted indicators of economic activity of enterprises that characterises the work of enterprises and organisations. The article emphasises that the cost of products (services) comprehensively characterises the use of all enterprise resources of the enterprise, it is one of the most critical indicators of production efficiency at the enterprise, and it is reflected. The article is the starting point in a thorough study of the formation of production costs to improve the existing methodology of the subject area.

Keywords: prime cost, the prime cost of production, elements of prime cost, the formation of prime cost.

Introduction

The transition to a market economy requires the company to increase production efficiency, the competitiveness of products and services through scientific and technological progress, effective forms of management and production management, and intensification of entrepreneurship. An essential role in implementing this task is given to the analysis of enterprises' economic activity. The analysis develops strategy and tactics of enterprise development, substantiates plans and management decisions, monitors their implementation, identifies reserves to improve production efficiency, and evaluates the enterprise's results, divisions, and workers. Economic analysis is an in-depth study of economic phenomena in the enterprise, identifying the causes of deviations from the plan and shortcomings in work, disclosing reserves, studying, promoting integrated economic work and production management, and active influence on production, improving its efficiency and improving quality. Reducing the cost of production is an essential factor in the development of the economy. The cost of production is one of the most multifaceted indicators of economic activity of enterprises. The cost of products, works and services mean the monetary costs of all types of resources: fixed assets, industrial raw materials, materials, fuel and energy, labour used directly in the manufacture of products and works, as well as to preserve and improve production conditions and its improvements.

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**The purpose of the article** is to analyze the cost of production to find scientifically sound ways to clarify it.

**Material and methods**

It is proposed to achieve the goal of the article:

1) to analyze the value of cost as an economical category, to determine the tasks and objects of analysis of the cost of production;
2) analyze the formation of the cost of production of the enterprise;
3) to formulate conclusions and directions for further research in the subject area.

The study used methods of scientific knowledge:

- **Material and methods** – in the course of research of the conceptual apparatus of the subject of research, components of the cost of production;
- **System approach** – in the study of the cost of production as a holistic system of elements, taking into account previously studied components;
- **Synthesis** – in the formulation of conclusions based on the results of the analysis and prospects for further research.

**Results and discussion**

During the implementation of international accounting standards in Ukraine, the approach to cost formation has changed. However, this does not mean a fundamental change in the total cost of production and sales. Until 2000, most scholars did not distinguish between the concepts of “costs” and “cost”. All types of indirect costs, including administrative costs, were distributed to each unit of output. From now on, only direct costs and a part of overhead costs are directly or indirectly connected with the production of this product, are distributed to each unit of production (Skrypnyk, M. I., 2009). Types of fixed (overhead) costs that are not directly related to the manufacture of products are not included in the production cost and are not allocated to each unit. Such costs include marketing and administrative expenses. These may include other costs directly related to the manufacture of products.

The cost of production is the most critical indicator of economic efficiency of its production. It reflects all aspects of economic activity, accumulates the results of the use of all production resources. The financial results of the enterprise's activity, rates of the expanded reproduction, a financial condition of business subjects, and the competitiveness of production depend on its level (Putri, F. A., & Desi, E., 2020; Sorokina, V., & Shaparina, S., 2017).

The cost of production is expressed in monetary terms the total cost of production. There is production cost and full, the cost of all goods and individual products. Depending on the impact on the cost of production, there are variable and fixed parts of the production cost.

Analysis of the cost of products, works and services is an essential tool in the cost management system. It allows it to study trends in its level, to determine the deviation of actual costs from the normative (standard) and their causes, to identify reserves to reduce the cost of production and develop measures to develop them. The effectiveness of the cost management system largely depends on the
organization of their analysis, which, in turn, is determined by the following factors:

1) The form and methods of cost accounting used in the enterprise;
2) The degree of automation of the accounting and analytical process at the enterprise;
3) The state of planning and rationing of the level of operating costs;
4) The availability of appropriate types of daily, weekly and monthly information of internal reporting on operating expenses, which allow to identify deviations, their causes and take timely corrective action to eliminate them; the presence of specialists who can competently analyze and manage the process of cost formation.

The objects of analysis of the cost of production are the following indicators:

1) The absolute amount of operating costs in general and by elements;
2) The cost of hryvnia products;
3) The cost of individual products;
4) Separate items of expenditure;
5) Costs in the centres of responsibility.

Sources of information: statistical reporting form № 5-C “Report on costs of production (works, services)”, form № 1-PV “Report on work”, business plan data, planned and reported cost estimates of products, data of synthetic and analytical cost accounting for main and auxiliary productions. Planning and cost accounting in enterprises are based on cost elements and cost items.

Cost elements: material costs (raw materials and materials, purchased components and semi-finished products, fuel, electricity, heat, labour costs, social security contributions, depreciation of fixed assets, other costs (depreciation of intangible assets, rent fees, mandatory insurance payments, interest on bank loans, taxes included in the cost of production, contributions to extra-budgetary funds) (Hul’, I., 2019).

The grouping of costs by elements is necessary to study the material, energy, labour, and capital and determine the impact of technical progress on the cost structure (Suk, P. L., 2018). If the share of wages decreases and the share of depreciation increases, it indicates an increase in the enterprise's technical level, the growth of labour productivity. The share of wages decreases even if the share of purchased components and semi-finished products increases, which indicates an increase in the level of cooperation and specialization.

The grouping of costs by purpose by costing items shows where, for what purpose, and what amount the resources are spent. It is necessary to calculate the cost of certain types of products in multi-item production, determine the centres of concentration of costs, and find reserves to reduce them.

Main calculation items: raw materials, returnable waste (deducted), purchased products and semi-finished products, fuel and energy for technological needs, basic and additional salaries of production workers, contributions to social and medical insurance of production workers, costs of maintenance and operation of machinery and equipment, overhead costs, overhead costs, losses from marriage, other production costs, commercial costs. There are also direct and indirect costs.

Direct costs are associated with producing certain products (raw materials, materials, and wages of production workers). They are directly attributed to one or another object of calculation (Suk, L. K., & Suk, P. L., 2019).

Indirect costs are associated with the production of several types of products; they are distributed by objects of calculation in proportion to the relevant base (basic and additional wages of workers or all direct costs, production area). Examples of indirect costs are overhead costs, maintenance costs of fixed assets (Varibrus, O. Yu., Systun, O. S., & Ryzhykova, N. I., 2020).

Costs are also classified into explicit and implicit (implicit). Explicit include costs that take direct payments to suppliers of factors of production and intermediate products. Explicit costs include salaries of workers, managers, employees, commissions to trading companies,
payments to banks and other providers of financial and material services, payment of transportation costs, and so on.

Implicit (implicit) costs are the opportunity costs of using resources that belong to the firm’s owners or are owned by the firm as a legal entity. Such costs are not provided for in contracts that are mandatory for explicit payments, they are not reflected in the financial statements, but they do not become less real. For example, a firm uses premises owned by its owner and does not pay anything for it. Therefore, the implicit costs will be equal to the possibility of receiving cash payments for renting this room to someone (Kuchyns’ka, A. S., & Danylenko, V. I., 2019).

The following indicators are used in the analysis:

1) Gross costs;
2) The cost of marketable products;
3) Costs of one UAH marketable products;
4) The cost of certain products.

Analyzing the cost of production, you need to solve the following main tasks:

1) Evaluation of the implementation of the plan at the cost of production at the enterprise as a whole, as well as by individual types of products;
2) Study the reasons for the deviation of actual costs from the planned in terms of articles, as well as for individual types and groups of products;
3) Search for reserves to reduce the cost of production and develop appropriate measures for their use.

During the analysis, it is necessary to use the report’s data on the cost of production and the report of the enterprise on work. Planned and reporting calculations of certain types of products and relevant accounting data are also involved.

Analyzing the types of cost, it should be noted: shop cost – is the cost that includes costs incurred within one shop. Shop cost is used to determine the cost of semi-finished products, the cost of the final marriage, and analysis – to determine the share of shops in the total cost of the product.

Production cost includes the shop cost and overhead costs (costs of ancillary production, overhead, and administrative costs). The production cost indicator allows revealing deviations from the accepted norms of expenses of these or those resources.

Total cost is the cost that includes production costs and marketing costs (non-production costs). The full cost is used to determine the financial result. Both shop, and production, and full cost can be planned and actual. Planned (regulatory) cost is the estimated value of the costs calculated based on each cost item’s standards. The planned cost is formed at the beginning of the planned period.

Actual (reported cost is the cost determined based on accounting for actual costs).

The planned and actual cost for their further comparison are determined by the same method and by the same calculation items.

3.2. The cost comprehensively characterizes the use of all types of enterprise resources. It is one of the most important indicators of production efficiency at the enterprise, and it reflects: the level of organization of the production process; technical level; labor productivity and more.

The cost of production as an indicator is used to control the use of production resources, determine organizational and technical measures’ economic efficiency, and set prices for products. Under conditions of self-financing, cost reduction is the main source of profit growth of the enterprise (Myronova, YU. YU., 2018).

Types of costs and their elements are defined in the table (Table 1) (Roman’kova, O. M., & Horholyuk, K. V., 2019).

Estimation of production costs – the establishment of the total amount of production costs in the planning year.

Production estimates, summarizing the enterprise's element-by-element costs, show their resource structure (costs of materials, personnel, fixed assets). This is extremely
important for the analysis of factors of formation and reduction of production costs.

Table 1. – Types of costs and their elements

<table>
<thead>
<tr>
<th>Group</th>
<th>Elements</th>
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<tbody>
<tr>
<td>According to the composition of products, the cost is:</td>
<td>a. marketable products</td>
</tr>
<tr>
<td></td>
<td>b. gross output</td>
</tr>
<tr>
<td></td>
<td>c. sold products</td>
</tr>
<tr>
<td></td>
<td>d. Unfinished production</td>
</tr>
<tr>
<td>According to the degree of coverage of enterprises:</td>
<td>a. individual</td>
</tr>
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<td></td>
<td>b. sectoral</td>
</tr>
<tr>
<td>Depending on the time of cost formation:</td>
<td>a. planned</td>
</tr>
<tr>
<td></td>
<td>b. actual</td>
</tr>
<tr>
<td></td>
<td>c. normative</td>
</tr>
<tr>
<td></td>
<td>d. estimated</td>
</tr>
<tr>
<td>Depending on the place of cost formation:</td>
<td>a. shop</td>
</tr>
<tr>
<td></td>
<td>b. production</td>
</tr>
<tr>
<td></td>
<td>c. full</td>
</tr>
<tr>
<td>Depending on the length of the settlement period:</td>
<td>a. monthly</td>
</tr>
<tr>
<td></td>
<td>b. quarterly</td>
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<td></td>
<td>c. annual</td>
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The procedure for developing an estimate of production costs depends on the enterprise's size, information support of the planning process and its stage. At the stage of forecast estimates, the number of cost estimates can be invested by adjusting the actual costs for the past period. Elements of actual costs are adjusted for the forecast coefficients of change in production volume, the number of staff, value of fixed assets, taking into account changes in resource consumption rates, prices.

The cost estimate for production reflects the cost of goods, gross and sold products of the enterprise.

The cost of marketable products is calculated because of cost elements reflected in the estimate, with their subsequent adjustment to the number of costs that are not included in the production cost of production (costs of preparation and development of new products, non-production costs, reimbursement of defects) future periods. The amount received is the cost of gross output. After its adjustment to change the balance of work in progress, the production cost of marketable products is obtained. It, together with the amount of non-production costs is the full cost of goods sold. The cost of goods sold is calculated by adjusting the cost of goods sold to change the balance of unsold goods.

Product costing is the process of limiting the unit cost of production. There are the following calculation methods:

1) Normative (costs per unit of production are set according to the norms);
2) Parametric (costs for the designed choice are set based on the dependence of the level of these costs on changes in technical and economic parameters of the product);
3) Calculation and analytical (direct costs of production per unit of output are distributed based on current regulations, and indirect - in proportion to wages).

The composition of individual cost items is formed in the context of:

1) Raw materials and supplies;
2) Fuel and energy for technological purposes;
3) Wages of production workers;
4) Deductions for social activities of production workers;
5) Overhead costs;
6) Administrative costs;
7) Preparation and development of production;
8) Other production costs;
9) Sales costs.

The sum of the first five articles in the shop

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cost of production; eight – production, and all articles – the full cost.

In the early stages of new product development, when the regulatory framework is not fully formed, resource prices are not known, and there is no set of technical documentation, the cost of production can be determined only as a forecast value. Knowledge of the patterns of change in the cost of production in the process of development of production makes it possible to manage the cost of it.

Conclusions

This study shows the importance and necessity of applying cost analysis in the enterprise. The current state of analysis can be described as a reasonably thoroughly developed in theoretical terms science. Several techniques are used in production management at different levels.

The most important indicator that characterizes the work of industrial enterprises is the cost of production. The financial results of the enterprises' activity, the rates of expanded reproduction, and the financial position of economic entities depend on its level.

Analysis of the cost of products works and level of services allows identifying trends in this indicator, implementing the plan from its level, determining the impact of factors on its growth and basis assessment of the enterprise using opportunities, and establishing reserves to reduce production costs.

In theoretical and practical terms, prospects for the development of analysis are closely linked with the underdevelopment of related sciences, especially mathematics, statistics, accounting, and more.

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