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DEVELOPMENT OF METHODS FOR FORMING THE COST OF PRODUCTION AND ASSESSMENT OF ITS IMPACT ON THE EFFICIENCY OF AN INDUSTRIAL ENTERPRISE

The paper considers the influence of the level of production cost on the overall efficiency of the functioning of industrial enterprises in the conditions of the modern economy and its economic potential. The value of the cost of production as one of the key factors determining the efficiency of an industrial enterprise and the level of its economic potential is considered. The main components of the cost, methods of its accounting and optimization opportunities are analyzed. Practical recommendations for improving production efficiency through cost management are given. A comprehensive analysis of the structure and dynamics of production costs has been carried out, the main factors influencing the formation of the cost of production, in particular, resource intensity, energy consumption, organizational and technological level of production and managerial approaches have been identified. In this research, let's focus on the importance of cost rationalization and increasing the level of accounting and control over costs as key tools for ensuring the competitiveness of the enterprise. To control the cost, such methods as break-even analysis, accounting by centers of responsibility, regulatory accounting, calculation by types of products are proposed for use. The effective use of these methods allows to identify inefficient costs, conduct a comparative analysis of costs by periods, and make informed management decisions. Among the main ways to reduce the cost of production, was identified: introduction of energy-saving technologies, automation of production processes, improvement of logistics, inventory management, revision of supply contracts, as well as motivation of employees to increase labor productivity. On the example of a generalized profile of an industrial enterprise, the influence of various components of costs on the profitability of products is analyzed. It has been found that timely changes in the market situation and avoid unprofitable decisions.

Keywords: cost of production, methods of formation, efficiency, economic assessment, industrial enterprise, costs, resources.

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1. Introduction

In the conditions of a modern market economy, increasing the efficiency of industrial enterprises is one of the key prerequisites for their stable development and competitiveness. The efficiency of management depends on many factors, among which the cost of production plays a special role. In the work [1], attention is focused on the efficiency of the “just-in-time” system in small and medium-sized enterprises, and in the study [2] – in the field of information technologies. The authors of the article [3] pay attention to the efficiency of goal costing, while recommendations are given to pay attention to the quality of products [4]. The classical theory of efficiency and competitive advantages [5] and the theory of meta-analysis [6] pay attention to the level of profit received. Reducing production costs without losing quality allows not only to increase the profitability of the enterprise, but also to ensure its stable functioning in the market [7], which is impossible without the active

use of intellectual developments of the enterprise [8, 9]. The mechanism of using intellectual property on the example of the efficiency of the production of asynchronous motors is presented in [10, 11]. In view of this, the issues of cost management [12], in particular the formation and analysis of the cost of production, are of particular importance. Researchers of tile production [13] and construction production [14] pay attention to this aspect, focusing on the use of artificial intelligence [15]. Cost is an integral indicator that reflects the totality of all resources consumed in the production process [16], and directly affects both the financial results of the enterprise [17] and its ability to respond promptly to changes in the market situation [16, 18]. Let's draw attention to the fact that the cost of production affects market supply and market demand in different ways. If the cost increases, it is less profitable for manufacturers to produce products, so the supply decreases [19]. Conversely, at low cost, it is profitable to produce more, which is important in the aviation industry [20] and in transport [21, 22].

Cost price does not directly affect demand, but due to a change in price (because the higher the cost price, the higher the price of the product) demand may decrease, because consumers buy less expensive goods [23]. Therefore, high-cost price can lead to lower supply and lower demand due to price increases.

The relevance of the chosen topic is due to the need for a comprehensive approach to studying the structure and dynamics of cost price, its components, as well as identifying factors that influence its change. In modern conditions of digitalization, globalization of markets and increased competition, reducing the cost price of products without losing its quality is becoming a strategic task of every industrial enterprise [24]. This requires not only careful internal cost control [24], but also the implementation of effective mechanisms of economic analysis and management [25, 26].

Most modern studies associate the development of cost formation methods with Japanese developments [27, 28], especially those that examine in detail the target costing [29] and kaizen costing [30, 31] systems.

The issue of the impact of product cost on the efficiency of enterprises is considered in numerous scientific works by both Ukrainian and foreign researchers. These studies cover a wide range of aspects – from the methodology of accounting and cost calculation to strategic cost management at the enterprise level. Among Ukrainian authors, it is worth noting the studies [3, 32], which developed a detailed concept of cost management taking into account financial performance indicators. This approach has high practical value, but is focused mainly on financial indicators, while the operational aspects of cost optimization are considered less deeply. The works [33, 34] emphasize the importance of management accounting in the cost control system. These studies are thorough from the point of view of organizing analytical work at the enterprise, but have a somewhat limited empirical base, which complicates practical application at various types of industrial enterprises.

In foreign scientific literature, the concept of “Just in Time” has received wide recognition, which considers cost management as a tool for increasing the efficiency of production and commercial activities of an industrial enterprise and creating competitive advantages [1, 4]. The value chain is extremely relevant for modern industrial enterprises [5]. The disadvantage can be considered that these approaches require significant investments and changes in corporate culture, which is not always possible in the conditions of the Ukrainian economy. Some scientific research focuses on the industry-specific nature of cost formation – for example, in energy [15], mechanical engineering [6], transport [21, 22], aviation [20], construction [25, 30] and light industry [12]. The advantage of these studies is the detailing of costs by technological stages of production. However, most of them are based on outdated or incomplete data, which reduces the relevance of the conducted studies for modern business conditions.

Among the current trends, it is worth highlighting research based on conceptual approaches to the formation of the cost of industrial products using the “target costing” [26, 29] and “kaizen costing” [30, 31] systems. These systems are becoming increasingly important in conditions of fierce competition, especially in industries with a high level of product standardization (automotive, electronics, household appliances). In the modern business environment, the consumer dictates the price [12], and this is what determines the need for enterprises to control costs already at the product design stage [18]. Their comprehensive use allows for maximum cost efficiency, ensuring both strategic planning and tactical improvement [6].

Existing research focuses on the use of digital technologies for cost analysis, in particular ERP systems [23], Big Data [27] and artificial intelligence [15]. Although this area is only beginning to develop in domestic practice, it opens up prospects for accurate real-time cost monitoring [33, 34].

The general advantages of existing research, in our opinion, are largely related to the development of a theoretical basis for cost calculation and accounting [33].

Studies [18, 32] present various approaches to cost classification and cost formation. In particular, works [3, 23] provide examples of successful integration of cost management methods into quality and efficiency control systems.

The shortcomings of existing publications are mainly manifested in insufficient attention to practical cases with Ukrainian industrial enterprises. This in some way affects the limited adaptation of foreign models to the domestic economy, explains the lack of an interdisciplinary approach (economics – management – IT) and in-depth analysis of the impact of external factors on changes in the cost structure.

Insufficient adaptation of modern cost accounting methods to the conditions of Ukrainian enterprises, as most enterprises continue to use outdated approaches to cost calculation, not taking into account flexible methods (ABC costing, direct costing, etc.). Many enterprises still practically do not use digital integration in the cost accounting and analysis system. Despite the existence of modern IT solutions (ERP, BI analytics), their implementation in manufacturing companies is minimal or superficial. Attention should also be paid to the low automation level of cost management. Decision-making processes for reducing costs are often based on intuition or manual analysis, which reduces accuracy and efficiency. In Ukraine, there is no single approach to determining and analyzing cost in different industries, which complicates comparison and benchmarking. Exchange rate fluctuations, changes in energy policy, global logistics crises are not included in the scenario analysis of the impact on the cost structure. Many managers do not have sufficient knowledge to interpret analytical data on costs or to implement cost management tools. Enterprises rarely use dynamic KPIs to track changes in costs and do not link them to the profitability of specific products or divisions. The identified problems create the basis for further research and practical implementations in the field of industrial management.

Thus, there is a need for more practically oriented research that takes into account the specifics of the functioning of Ukrainian enterprises, as well as the integration of modern information technologies into the process of cost analysis and management.

The aim of research is to determine the impact of product cost on the efficiency of an industrial enterprise in order to identify reserves for increasing its economic efficiency and justify ways to optimize costs.

The objectives of research:

- to reveal the theoretical and methodological foundations of the concept of product cost and its structure in industrial production;
- to improve the process of forming the cost of industrial products through clearer phased planning;
- to form and substantiate a list of influence directions of the cost of industrial products on the indicators of efficiency of production and commercial activity of the enterprise;
- to determine the relationship, nature and strength of influence of each of the identified directions on the efficiency of the enterprise.

2. Materials and Methods

The object of research is the activity of an industrial enterprise in a market economy, which covers the processes of production, sales of products and cost management in a modern competitive environment. In particular, the research focuses on the economic aspects of the enterprise's functioning, such as production costs, financial results, profitability and effectiveness of management decisions.

The subject of research is the relationship between the cost of products and the efficiency of the functioning of an industrial enterprise, the research of the influence of the level and structure of the cost of products on the efficiency of the activities of an industrial enterprise. This includes an analysis of the components of the cost of products and the mechanisms of their formation, as well as an assessment of the impact of changes in cost on key performance indicators.

The main hypothesis of research is that targeted management of the cost of products, in particular through the analysis of its structure and the implementation of effective cost optimization measures, allows to significantly increase the economic efficiency of the activities of an industrial enterprise.

In other words, while maintaining product quality, reducing production costs will lead to increased profits; increased profitability; increased competitiveness of the enterprise in the market; greater resilience to external economic challenges.

To achieve the objectives set in research, a set of methods was used that cover both theoretical and applied aspects of analysis. Theoretical methods for analyzing and summarizing scientific literature, for studying theoretical approaches to the concept of cost, its structure and role in the functioning of the enterprise; abstraction and modeling – for building theoretical models of the relationship between cost and efficiency of activity. Empirical (economic and statistical) methods, in particular, factor analysis, comparative analysis, index and graphical methods. These methods allowed to conduct the research systematically and ensured the validity of the conclusions drawn.

3. Results and Discussion

3.1. Development of methods for forming the cost of industrial products

The cost of production is the totality of all costs of the enterprise associated with the production and sale of products. Its correct formation is the basis for sound pricing, profitability planning and making strategic management decisions. The cost of production reflects the totality of the cost of enterprise for the production and sale of products. It includes direct and indirect costs, fixed and variable costs, material costs, labor costs, depreciation, production maintenance costs, etc. The formation of the cost depends on the chosen cost accounting system and the specifics of production. Fig. 1 presents a visualization of the cost structure of industrial products in our country (in general, by industry according to data [35]).

Material costs (45%) are the largest component of the cost. Includes costs for raw materials, basic and auxiliary materials, components, fuel, spare parts, packaging, etc. In industries with a high resource load (for example, metallurgy, chemical production), this share can reach 60–70%.

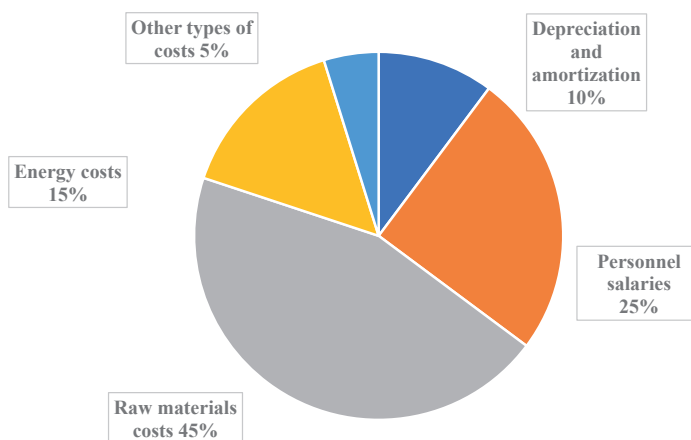


Fig. 1. Modern structure of the cost of production of Ukrainian industry

Labor costs (25%) include wages of the main and auxiliary personnel, including bonuses, allowances, vacation pay. This also includes deductions to social funds. Energy costs (15%) include electricity, gas, water, steam, heat, etc. Depending on the type of activity of the enterprise, the share can vary significantly. Depreciation deductions (10%) include costs associated with the depreciation of fixed assets (machine tools, equipment, transport), which are distributed over the period of their useful life. Other costs (5%) – these include costs for production maintenance (repairs, security, communications), administrative costs, costs for personnel training, product certification, etc.

As follows from the data in Fig. 1, the largest share in the cost structure is occupied by material costs, energy costs and wages. Their level is determined by both internal and external factors – changes in resource prices, efficiency of production organization, level of technology, company policy on labor remuneration, etc.

This structure is typical for an average industrial enterprise in Ukraine, but may vary depending on the industry, scale of production and automation level. Analysis of this structure allows enterprises to identify the costliest areas and determine priorities for cost optimization.

The proposed system for forming the cost of production at industrial enterprises in our country includes seven main stages (Table 1).

Table 1

Stages of forming the cost of industrial products

No.	Stage name	Economic content of the stage
1	Classification and grouping of costs	The enterprise establishes which costs are subject to accounting (direct/indirect, fixed/variable). At this stage, costs are divided into direct and indirect (according to the possibility of their direct attribution to a certain object of calculation); variable and fixed (by behavior depending on the volume of production); production and non-production (whether they are included in the production cost). This stage lays the foundation for the correct formation and analysis of cost
2	Collection and primary accounting of costs	Costs are recorded on the basis of invoices; write-off acts; payment orders; time sheets, etc. It is important to ensure completeness and timeliness of accounting, because errors here can distort the actual cost
3	Grouping of costs by economic and costing elements	At this stage, costs are grouped according to established categories. Economic elements: material costs, wages, social contributions, depreciation, other operating costs; Costing items: raw materials and supplies, semi-finished products, wages, energy, equipment maintenance and operation costs, general production costs, etc. This allows for inter-enterprise and inter-industry analysis
4	Distribution of general production and administrative costs	Indirect costs (such as rent, security, workshop repairs, management costs) are distributed between costing objects based on: labor standards; number of machine hours; production area; direct costs, etc. Choosing the right distribution base is critical for the accuracy of costing
5	Calculation of the cost of a unit of production	A costing is formed, i. e. the calculation of the full cost of a unit of production: an estimate is drawn up; all direct and distributed indirect costs are taken into account; the actual cost per unit of production, batch or order is determined. Various methods can be used: non-order, process-based, regulatory, etc.
6	Analysis of deviations from the standard or planned cost	Actual costs are compared with planned ones, deviations by cost items are analyzed. The goal is to identify the causes of: overspending; downtime; inefficient use of resources; errors in rationing
7	Formation of the full production and total cost	Added to the production cost are: sales costs; administrative costs; storage, packaging, and transportation costs. This allows the company to determine the full cost of sales for profitability accounting purposes

The development and improvement of currently existing methodological approaches to the formation of the cost of industrial products, in our opinion, should be more closely linked to the use of modern methods of cost management. These include the formation and use of modern methods of cost calculation, the introduction of cost accounting automation processes, updating cost norms, the development of internal methodological regulations and standards, etc. [12]. A more detailed list of areas for improving the methods of forming the cost of industrial products and their economic content is presented in Table 2.

Table 2

Author's proposals for improving the methods of forming the cost of industrial products

No.	Stage name	Economic content of the stage
1	Implementation of modern cost calculation methods	Using the ABC method (Activity-Based Costing) – an accounting method by activity allows to accurately determine the costs of products, especially in conditions of multi-product production and using the standard costing system – forming the cost price based on standard costs with subsequent analysis of deviations
2	Automation of cost accounting	Implementation of ERP systems (for example, SAP, Oracle, 1C: Enterprise) to integrate cost accounting into the general information system of the enterprise. Using digital monitoring panels to track changes in costs in real time
3	Regular updating of cost norms	Conducting a feasibility study of resource usage rates in accordance with changes in technological processes and market prices. Implementing cost rationing systems with the involvement of production personnel
4	Differentiation of costs by responsibility centers	Implementation of a cost center system (Cost Centers), which allows to determine the responsibility of department heads for specific cost items. Using indicative planning and analysis of budget execution by centers
5	Accounting for environmental and energy components of cost price	Including environmental costs (disposal, cleaning, fines) in the calculation of the full cost price to increase accuracy. Taking into account the energy efficiency of equipment when assessing energy costs
6	Development of internal methodological regulations and standards	Formalization of methods of accounting and distribution of costs in the form of internal regulations. Conducting periodic audits of the methodology for forming costs
7	Development of analytical function in accounting	Using factor analysis to identify the causes of changes in costs

The practical implementation of the proposed measures will allow to improve the system of cost formation at industrial enterprises, will contribute to the adoption of sound management decisions and increase the overall efficiency of activities. As an example, Table 3 shows the formation of the cost of production of metal doors of the Kharkiv door factory "MAD STEEL" using the traditional and proposed approach.

Table 3

Calculation of the cost of metal entrance doors of the Kharkiv door factory "MAD STEEL"

Calculation article	Amount, UAH	
	Traditional approach	Proposed approach
Direct material costs		
Sheet steel	1832	1832
Insulation (mineral wool)	254	254
Hardware (locks, hinges, etc.)	612	612
Coating (powder paint)	307	307
Total materials	3005	3005
Direct labor costs		
Wages of workers	816	816
Deductions for social needs	204	204
Total labor costs	1020	1020
General production, sales and administrative costs		
Equipment depreciation	154	–
Electricity and other energy resources	106	–
Current repairs	52	–
Administrative costs	150	–
Sales costs	108	–
Variable general production losses (electricity, auxiliary materials, etc.)	–	118
Fixed costs (per unit)	–	236
Total general production costs	570	354
Total cost price	4595	4379

As follows from Table 3, the proposed method of forming the cost of industrial products allows to better assess the impact of changes in production volume on profit, because it practically allocates only variable costs. Fixed costs (depreciation, administrative costs, etc.) are taken into account separately in the profitability analysis, and are not included in the cost of each product. However, it is important to include both variable and fixed costs in the cost of each specific product, since this is how it is possible to get a complete picture of the cost of a single product. Fixed costs (for example, depreciation of equipment, administrative costs, rental of premises) do not depend on the volume of production, so they must be recalculated for each unit of production. To do this, it is necessary to determine how many units of production are produced in a certain period (for example, per month or year) and divide the total fixed costs by the number of units of production. Then each unit of production will bear its share of fixed costs.

This approach allows for a more accurate determination of the cost level by removing fixed costs from the direct cost accounts of a single product, which can be more accurately determined for the entire production program of the enterprise.

3.2. Formation and study of the influence directions of the cost of production on the efficiency of the industrial enterprise activities

Optimization of the cost of enterprise for the production and sale of products is the basis for increasing the efficiency of the enterprise. The cost of production is one of the key factors that determines the financial results, competitiveness and overall economic stability of an industrial enterprise [35]. Its level and structure directly affect pricing, profit, profitability, sales volume and investment attractiveness. The main directions of the direct influence of the cost of industrial products on the efficiency of production and commercial activities of enterprises have formed (Fig. 2).

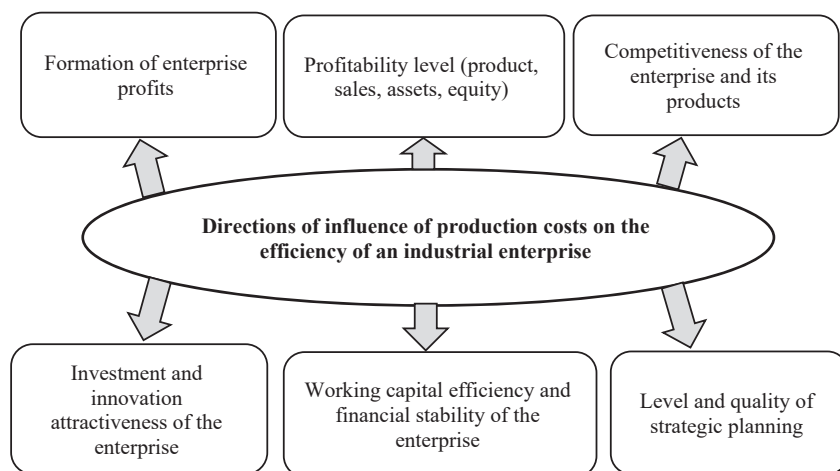


Fig. 2. Formation of influence directions of cost of production on efficiency of production and commercial activity of industrial enterprise

The economic essence of influence directions of cost on efficiency of production and commercial activity of industrial enterprise, presented in Fig. 2, is proposed to be reduced to the following theoretical and methodological provisions.

Influence of cost on profit of the enterprise. Profit is the key result of economic activity of the enterprise, which is formed as the difference between income from sale of products and its full cost. Accordingly, cost is a direct factor that either increases or decreases profitability of production. There is a direct connection between cost level and profit volume: reduction of cost at constant selling prices directly increases profit per unit of production. For example, at a product sales price of 100 UAH, the cost of product No. 1 at 80 UAH results in a profit of 20 UAH; if the cost is reduced to 70 UAH, the profit is 30 UAH, i. e. a difference in cost of 10 UAH gives a 50% increase in profit. Profit is significantly affected by the cost structure. A high share of variable costs (raw materials, energy, wages) makes profit sensitive to production volumes. Inefficient use of resources (overspending, low energy efficiency, downtime) leads to an increase in costs that reduce profit. Scaling the effect is also important. In mass production, even a slight decrease in cost per unit of production brings a significant overall increase in profit. For example, saving 5 UAH per 100,000 units provides the enterprise with 500,000 UAH in additional profit. It is also necessary to pay attention to the dependence of profit on accounting for full or incomplete cost. Using incomplete cost (direct production costs only) can lead to overestimation of profit in the short term, but distorts the picture in strategic planning. Only full cost, which includes sales, administrative, depreciation costs, gives a realistic assessment of profitability. There is no doubt that cost is related to price levels. If cost is too high, the company is forced to raise prices, which can reduce demand. If cost is competitive, prices can be lower, which increases sales and profit. Comparing cost by period allows to identify trends and determine whether profit growth is a result of effective cost management, or only the result of increased volumes or price increases. Unjustified cost growth can negate even high production volumes. Cost is one of the strongest levers of profit management. Its optimization allows to achieve higher margins, improve financial stability, and increase the investment attractiveness of the company. A systematic approach to cost analysis and the implementation of modern accounting methods (ABC, standard costing) contribute to more accurate profitability forecasting.

The impact of cost on the profitability level. Profitability is an integral indicator of economic efficiency, demonstrating the ability of an enterprise to generate profit relative to the resources spent. In industry, the key types of profitability are product profitability (profit to cost); sales profitability (profit to revenue); asset profitability (profit to the

value of the enterprise's property); return on equity. Cost directly affects all of these indicators. Product profitability is the main indicator of production efficiency, the lower the cost at fixed revenue, the higher the profitability level. Cost has a significant impact on sales profitability, since an increase in cost reduces profit, and accordingly – sales profitability. High cost at a stable selling price automatically reduces sales margins. The impact of cost on the profitability of assets and capital can be explained by the following provisions. If high-cost leads to low profit, the profitability of not only operating activities but also investors' capital decreases. This makes the enterprise less attractive for external financing and reduces the possibilities of business expansion. The profitability level is also affected by the scale effect. In industry, when production volumes increase, fixed costs are distributed over a larger number of products;

the average cost of a unit of production decreases; profitability increases due to the scale effect (economies of scale). The use of a responsibility center (RC) accounting system allows to accurately localize the causes of reduced profitability. Tools such as ABC cost analysis and standard costing methods allow to identify inefficiencies and increase profitability in a targeted manner. Reducing cost is one of the most effective and fastest ways to increase profitability. Real-time cost management, resource rationing, and technological modernization should become a priority for industrial enterprises that seek to increase their economic efficiency and profitability in the long term.

The impact of cost on the competitiveness level. The competitiveness of an enterprise is the ability to ensure a stable presence in the market, withstand competition, attract buyers and make a profit. For industrial enterprises, one of the key prerequisites for competitiveness is the optimal level of product cost, which determines the possibilities for pricing, flexibility and financial stability. Cost is the basis for price formation. If an enterprise has a lower cost, it can reduce the price and increase sales volume; maintain the price, but get a higher profit; implement price differentiation (flexible strategy for different markets or segments). In industries with high competition (metallurgy, chemical industry, building materials), price is often a decisive factor when choosing a supplier. The level of product cost has a real impact on quality and innovation. Due to savings in production (rational use of resources, modernization of equipment), the enterprise can reinvest funds in innovations, which increases competitiveness: updating the range; improving design, ergonomics; increasing energy efficiency of products. The high cost of outdated production limits the possibilities of renewal. Attention should also be paid to flexibility in changing market conditions. An enterprise with optimized cost is more easily adaptable to market changes, that is, it can reduce prices in response to competitors' actions; withstands fluctuations in demand; maintains profitability even in crisis conditions. Of course, the possibilities of entering foreign markets also increase. For export, it is often necessary to offer products with a competitive price, especially in saturated or underdeveloped markets. Reduced cost makes it possible to take into account logistics costs; adapt the price to the exchange rate; work with traders and networks that require low purchase prices. The cost level contributes to the formation of long-term partnerships. Constant economic stability and competitive price allow the enterprise to conclude long-term contracts; become a reliable supplier for large customers (construction holdings, automobile concerns, exporters); receive loyalty bonuses, preferences. Cost is not only an internal indicator of costs, but a strategic factor of the market position of the enterprise. Cost optimization allows to reduce the price, increase quality, respond to the market and invest in innovations.

In modern conditions, low and stable cost is a guarantee of competitive advantage in the domestic and foreign markets. This is especially critical in conditions of price competition (metallurgy, agro-processing, mechanical engineering).

The impact of cost on working capital and the financial stability of the enterprise. The cost of production directly affects not only profit, but also the structure, volume and speed of turnover of working capital, as well as the overall financial stability of an industrial enterprise. Due to the high share of material, energy and labor costs in the cost of production, changes in its level can significantly change the financial proportions of the enterprise. The higher the cost of production, the more working capital is required to ensure the purchase of raw materials, components; payment for energy and wages; covering the costs of the production cycle until the moment of sale. This increases the burden on cash flow, reduces liquidity and leads to the risk of gaps in financing. High cost is often accompanied by a longer production cycle or inefficient use of resources, which slows down the turnover of funds. This worsens the turnover of current assets and can lead to a shortage of cash. Financial stability is defined as the ability of an enterprise to independently finance its activities without resorting to external sources on an ongoing basis. Reducing the cost of production reduces the burden on short-term loans; contributes to the formation of free cash flow; improves the coefficients of autonomy, liquidity and cost coverage. On the contrary, high cost of production leads to a lack of own working capital; increases dependence on bank loans; reduces the creditworthiness and investment attractiveness of the enterprise. If the enterprise has a lower cost of production, it can accumulate profit faster; finance the expansion of activities without external involvement; withstand negative economic shocks (inflation, decline in demand). Cost of production is an indicator of the financial health of the enterprise. Its optimization reduces the need for working capital, accelerates the circulation of cash resources and increases financial stability. In difficult economic conditions, it is control over cost of production that allows the enterprise to maintain liquidity, stability and autonomy.

The impact of cost on investment attractiveness. Investment attractiveness is a comprehensive assessment of the ability of an enterprise to attract internal and external investments on favorable terms. For investors, the key indicators are profitability, financial stability, profitability, and stability of operating activities. One of the fundamental factors that forms these indicators is the cost of production. Low and stable cost allows the enterprise to generate higher net profit with the same sales volumes; demonstrate stable profitability in conditions of market fluctuations; maintain competitive prices while maintaining profitability. For the investor, this means lower risks and higher return on capital. A modern approach to cost formation (ABC costing, cost center calculation) is a sign of effective management. A clear cost structure demonstrates process control; low level of financial losses and embezzlement; the enterprise's readiness for audit and cooperation with investors. Investors prefer companies with transparent cost accounting systems that allow them to assess risks at the business unit level. Cost optimization has a positive impact on return on assets (ROA); return on equity (ROE); debt coverage ratio; cash flow from operating activities (OCF). These indicators are included in the mandatory analysis when making investment decisions. If a company effectively manages costs, it can accumulate its own funds for development; reduce the need for external financing; improve investment autonomy. This is an important signal for venture, private and public investors, especially in conditions of limited credit. Cost affects the value of the enterprise (enterprise value), which is used to evaluate the business using the multiplier method. The higher the operating profit, the greater the market value of the company and its attractiveness in mergers and acquisitions (M&A); attracting strategic investors; initial public offering (IPO). Cost is a strategic factor of investment attractiveness. Its optimization increases the profitability, financial transparency and manageability of the enterprise, which greatly facilitates the attraction of investments. In today's conditions of fierce

competition and limited access to capital, an effective cost management policy becomes a key advantage in the eyes of investors.

The impact of cost on strategic planning. Strategic planning is the process of determining the long-term goals of the enterprise, ways to achieve them and allocate resources. In industrial enterprises, where the production component dominates, the cost of production is the basic guideline for making strategic decisions. It determines the available opportunities for investment, expansion, innovation, as well as restrictions in financial and market aspects. Analysis of the structure and level of cost allows to form a strategic pricing policy, that is, to determine the limit of the minimum acceptable price; to model options for pricing strategies (cost leader, premium segment, price competition); to plan price flexibility in the long term. With a consistently low cost, the enterprise can build a cost dominance strategy (as in M. Porter's model), which opens up opportunities for scaling. Cost data allows to plan assortment policy and product innovations, which is reflected in the assessment of the profitability of various product groups. This allows to identify products with high costs and low returns, optimize the portfolio by withdrawing or re-equipping individual products. The results provide the opportunity to allocate resources to the development of new products, where lower cost and higher margin are expected.

Cost is proposed to be considered as a certain criterion for forming an investment strategy, which includes two important aspects. First, justification of investments in modernization, automation, energy saving. Second, assessment of the effectiveness of capital investments (due to changes in the level of costs); planning the payback of projects. Reducing cost after the implementation of investments is the main argument for approving long-term projects [35]. Cost helps determine the strategy for entering new markets – to determine the possibility of adapting prices to new market conditions; the feasibility of entering foreign markets with complex barriers (customs, logistics); margin of profitability during currency fluctuations. With high cost, the market entry strategy can be risky or unprofitable. Analysis of labor costs, energy, depreciation in the cost structure allows for effective personnel and production strategic planning. This includes planning for personnel needs, training or reduction, making decisions on outsourcing or automating functions, adjusting the resource supply strategy (energy, materials). Cost is a key analytical element of strategic planning. It forms the basis for making decisions on prices, investments, products, markets and resources. Enterprises that regularly analyze the dynamics and structure of cost can effectively plan their activities, minimize risks and increase long-term competitiveness.

3.3. Discussion of the research results on the development of methods for forming the cost of products and its impact on the enterprise efficiency

The practical significance of research is that the results can be directly used by industrial enterprises to improve the methods of accounting and calculating the cost of products. The proposed approaches contribute to increasing the transparency of costs, allow for a more accurate determination of the profitability of individual types of products and make informed management decisions to optimize costs and increase the efficiency of activities. The research results are of significant practical importance for specialists in accounting, economics and management of industrial enterprises. Improving the methods for forming the cost of products allows enterprises to increase the accuracy of financial calculations, improve cost planning and form realistic prices for products. The proposed approaches can be used as strategic management tools, since the correct determination of the cost is the basis for assessing the efficiency of production processes and the overall competitiveness of the enterprise. In addition, the use of analytical tools to assess the impact of costing methods on financial results makes it possible to identify cost reduction reserves, optimize production processes, and form a sound pricing policy. This is especially important in conditions of economic instability and increased competition in domestic and foreign markets.

It is worth noting certain limitations of research. First, the analysis of costing methods was carried out on the example of one industrial enterprise, which reduces the possibility of broad generalization of the conclusions obtained. Although an attempt was made to take into account general patterns, the results may be less relevant for enterprises in other industries, in particular those with complex technological processes or operating according to a project type of production. Second, the research does not cover the impact of external factors (for example, changes in tax legislation, currency fluctuations, global market trends), which can also significantly affect the cost structure and cost formation. Attention is also limited to modern digital solutions that change approaches to costing in conditions of automation and digitalization of business processes. In general, the limitations of the research are that the analysis was conducted on the basis of data from a single enterprise, which may limit the generalization of the results for the entire sector. In addition, the research does not take into account the specifics of industries with a high level of innovation or an unstable external environment, where costs are formed in the relevant areas using unique approaches.

Prospects for further research are to expand the sample of enterprises for a deeper comparative analysis of costing methods, as well as to study the implementation of digital technologies (for example, ERP systems) in the cost formation process. Particular attention should be paid to the analysis of the adaptation of management accounting methods in an unstable economic situation. Further study of the topic should be aimed at expanding the empirical base of the study by involving data from several enterprises from different industries. This will allow comparing the effectiveness of different costing methods and forming more universal recommendations for practice.

A separate vector of future research is the study of the role of modern information technologies in the process of cost formation, in particular the integration of ERP systems, cloud accounting platforms and cost analytics. These tools allow to automate the accounting process, increase the transparency of financial data and ensure flexibility in decision-making. Also promising are studies that focus on adapting traditional cost accounting methods to the conditions of an unstable external environment, when enterprises are forced to respond quickly to changes in the market, resource prices, logistical challenges, etc.

4. Conclusions

The conducted research allows to draw a number of important conclusions that have theoretical and applied significance for managing the activities of industrial enterprises. First, the theoretical and methodological foundations of cost are revealed and the close relationship between the level of product cost and the overall efficiency of the enterprise is confirmed. Reducing cost, taking into account the preservation of product quality, is one of the main ways to increase profitability and competitiveness. Second, the process of forming the cost of industrial products is improved through clearer phased planning; research. It is shown that direct material costs, energy resources and labor costs have the greatest impact on cost. These components require careful analysis and optimization, especially in conditions of an unstable resource market and changes in tariff policy. The introduction of innovative production technologies, automation of processes, and improvement of logistics schemes can significantly reduce costs and, accordingly, the cost of products. Thirdly, a list of directions of influence of the cost of industrial products on the indicators of efficiency of production and commercial activity of the enterprise has been formed and substantiated by implementing a system of management accounting, break-even analysis and control over cost centers, which allows to promptly identify inefficient costs and influence the economic behavior of the enterprise's divisions. This contributes to more flexible and adaptive management of financial flows and resources. Fourthly, within the framework of this

research, the relationship, nature and strength of influence of each of the identified directions on the efficiency of the enterprise's activities have been determined. A thorough analysis of the influence of the level and structure of the cost of production on the overall efficiency of production activities has been carried out. Particular attention is paid to determining the key elements of costs, their relationship with financial indicators and the possibilities of optimizing costs through modern management approaches. The research results have practical value for managers of industrial enterprises, economists and financial analysts who seek to increase the efficiency of economic activity through effective cost management.

The conducted research confirms that the cost of production is one of the key factors determining the efficiency of an industrial enterprise. Its optimization through the improvement of production processes, the introduction of innovations, resource management and the use of effective cost accounting ensures an increase in the profitability and competitiveness of the enterprise. Further research can be aimed at studying the industry-specific features of cost formation and the use of digital technologies for a deeper analysis of costs.

Thus, it has been proven and scientifically substantiated that cost is not only a tool for increasing the efficiency of the enterprise, but also a strategic factor for its development in the long term. Further research in this direction can focus on the industry-specific features of cost formation and the use of digital technologies for more accurate and efficient cost control.

Conflict of interest

The authors declare that they have no conflict of interest in connection with the current research, including financial, personal, authorial or any other that could affect the research and results presented in this article.

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Data availability

All data are available in the main text of the manuscript.

Use of artificial intelligence

The authors confirm that no artificial intelligence technologies were used in the creation of the current work.

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