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# CONSTRUCTION OF A MODEL OF STRATEGIC MANAGEMENT OF COSTS AT THE MACHINE-BUILDING ENTERPRISE

*Об'єктом дослідження є система стратегічного управління витратами на машинобудівному підприємстві. Одним з найбільш проблемних місць є побудова моделі стратегічного управління витратами, що пов'язано з моделюванням процесів обліково-аналітичного забезпечення і складністю адаптації методів управління витратами. Забезпечення комплексного і системного підходів допоможе управлінському персоналу підприємства отримати достатню кількість інформації для управління як на операційному, так і стратегічному рівнях.*

*Проведено аналіз сучасного стану машинобудування в Україні на прикладі комплексного аналізу структури і динаміки витрат ТзОВ «Компанія ВЕЕМ-Металлавтопром» (м. Львів, Україна). Це допоможе знайти слабкі та сильні сторони діяльності підприємства стосовно стратегії витратоутворення. Прийнявши рішення на стратегічному рівні (наприклад, змінити технологію) можна відразу позбавитися від великої кількості факторів операційного рівня (виробничих, комерційних носіїв витрат).*

*В ході дослідження застосовувалося моделювання процесів обліково-аналітичного забезпечення щодо стратегічного управління витратами досліджуваного підприємства на основі реалізації комплексного підходу із складовими: стратегічний облік, стратегічний аналіз, інформаційне забезпечення. Зокрема, стратегічний облік, як елемент обліково-аналітичного забезпечення надасть інформацію про стан зовнішнього і внутрішнього середовища компанії; фінансові і нефінансові показники для прийняття обґрунтованих рішень. Використання стратегічного аналізу забезпечить вплив факторів на стратегію компанії, її поведінку на ринку, можливості конкурування і позиціонування, а також на стратегічну результативність.*

*Однак, впровадження моделі на досліджуваному машинобудівному підприємстві пов'язано з незначними фінансовими, організаційними витратами, які не завжди в опріорі забезпечать високу її ефективність. Додаткові можливості отримує досліджуване підприємство, використовуючи переваги стратегічного обліку, стратегічного аналізу, управлінського підходу:*

- поліпшення рівня автоматизації;
- впровадження заходів, що впливатимуть на покращання якісних характеристик продукції;
- використання прогресивних методик щодо планування, ведення обліку;
- перегляд асортименту виробів;
- вдосконалення організації виробництва і праці.

**Ключові слова:** витратоутворюючі чинники, стратегічне управління витратами, стратегічний облік, стратегічний аналіз, модель Демінга-Шухарта.

## 1. Introduction

In the context of the globalization of the world economy, the recovery of the strategic role of the engineering industry and the improvement of its competitiveness largely depends on the system of strategic cost management. Machine-building enterprises as a whole have the basic principles of cost formation, and the amount of their income and expenses is an important indicator for evaluating the effectiveness of activities [1].

Strategic cost management is defined as a set of economic, organizational and managerial procedures, tools and methods that are characterized by interconnections and continuity of implementation, and is aimed at achieving the competitive advantages of producing products with minimal costs [2].

However, in practice, the bases ignore these approaches. As a result, there are separate cases of bringing to a loss-making level.

In this case, there is a need to use additional features of the strategic behavior of the enterprise in the market:

- cost leadership;
- product differentiation (works, services);
- leadership in a narrow field of activity, on which the structure and behavior of its expenses substantially depend, the level of business risk.

Because of this, the system of strategic cost management is an urgent problem and requires research based on progressive tools of strategic analysis, modern methods and models of strategic cost accounting that can enhance competitive advantages in engineering enterprises.

## 2. The object of research and its technological audit

*The object of research* is a system of strategic cost management at a machine-building enterprise. The subject is the heads of structural divisions, managers, and

specialists involved in incurring expenses and developing strategic management decisions. Mechanisms (methods) of management are defined as a set of ongoing procedures corresponding to management functions: analysis, planning, motivation, control.

The existing approach to managing costs in Ukrainian enterprises does not correspond to modern business conditions – increasing production efficiency in the long term and maintaining the target level of profitability is un-systematic and fragmented. To ensure production, an enterprise uses various types of resources, the valuation of which affects the level of profitability of products/services. This determined the need to form a model of strategic cost management.

As an example, an analysis of expenses of LLC VEEM-Metallavtoprom Company (Ukraine) [3] was carried out on the basis of its financial statements for 2013–2017. The main activity of the company is the production of passenger seats for all types of vehicles. The main objective of this company is the manufacture of modern, high-quality and competitive products that meet the requirements of international standards for the safe transportation of passengers.

The process is complicated by the lack of a systematic approach to the implementation of cost management functions and stages of management decision-making, taking into account existing methods. To make informed decisions on the strategic management of an industrial enterprise, it is necessary to model its accounting and analytical support. Cost management in a strategic aspect should not be viewed as a separate issue, but as an integrated approach. As an increase in efficiency, it is recommended to use a foreign scheme (Fig. 1). Because «reducing time, improving product quality, increasing revenue, reducing overhead and operating costs, customer satisfaction, continuous improvement» are examples of increased productivity in which strategic cost management plays an important role.

So, one of the most problematic places is the study of aspects of the formation of a strategic cost management model with its constituent elements [4]:

- accounting and cost analysis;
- formulation of strategic alternatives and choice of strategy;
- planning and forecasting the level of costs, etc.

### 3. The aim and objectives of research

The aim of research is development of a model of the system of strategic cost management in the conditions of intensification of the production cycle.

To achieve this aim, the following objectives are defined:

1. To analyze the current state of the engineering industry and production costs on the example of the Ukrainian enterprise.
2. To investigate the conceptual position of strategic cost management.
3. To determine the role of accounting and analytical support for the purposes of strategic cost management.

### 4. Research of existing solutions of the problem

Among the main directions of solving the problem of strategic cost management, identified in the resources of world scientific periodicals, is the approach, «Strategic management accounting or strategic cost management (a term that is more commonly used in the USA) can be defined using the used methods» [1, 2]. But at the same time, the practical aspects of the formation, introduction of a cost management model in the enterprise, and the implementation of this strategy are not considered.

The work [4] is devoted to the direction of strategic management of costs to improve the efficiency of economic activity of an enterprise due to the interrelation of strategic goals, factors, resources and results. However, the problems of its information and accounting and analytical support for decision making have not been resolved.

At the same time, in work [5] it was noted that «the information base for making strategic decisions is the analysis of the strategic elements of cost management and the interpretation of modern cost accounting systems». However, in this work the practical aspects of the formation, organization of strategic cost management are not disclosed, and the methods described do not have actual evidence of application.

The authors of [6] review the methodology for finding competitive advantages and a general strategy, the practice of lean accounting and strategic cost management, but the issues of the strategy of consumption formation remain unaddressed. An alternative solution to the problem of strategic cost management is described in [7].

In this work, it is determined that the essence of strategic cost management «creates a logical connection between concepts and procedures and ways to use them in practice by business organizations». The study [8] substantiated the essence, basic tools and methods of strategic cost management.

Interesting to use is the practical experience of the interaction of competitive strategies, cost strategies with the product development process, shown in [9, 10]. But in these works the influence of the cost accounting methods on the efficiency of economic activity is not justified. The development of strategic cost management is

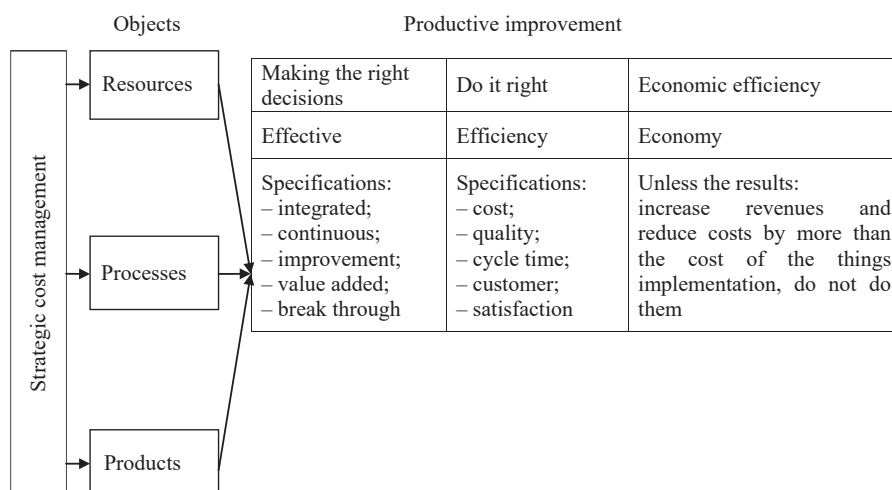


Fig. 1. Strategic cost management and increasing productivity [4]

investigated in [11, 12]. Let's agree with this approach and consider it the most perfect from the point of view of strategic analysis and determination of the competitive advantages of an enterprise. Works [13, 14] emphasize the importance of «strategic cost management as an interactive process of analysis, planning, organization, accounting and control, providing for the regular correlation of relevant accounting information with the company's strategy for making tactical and strategic management decisions». However, the authors of these works found that none of the existing methods of cost management that applied separately can't fully ensure the implementation of accounting and management functions necessary for the organization of an effective system of cost management. The diagram in Fig. 2, where the goal of the functioning of the system of strategic cost management should be consistent with the strategy of the enterprise.

Thus, the results of the analysis allow to conclude that the formation of strategic cost management in conjunction with existing methods still requires constructive isolation and methodological research. It acquires particular urgency in the conditions of an unstable market environment, the development of information technologies and the provision of competitive advantages.

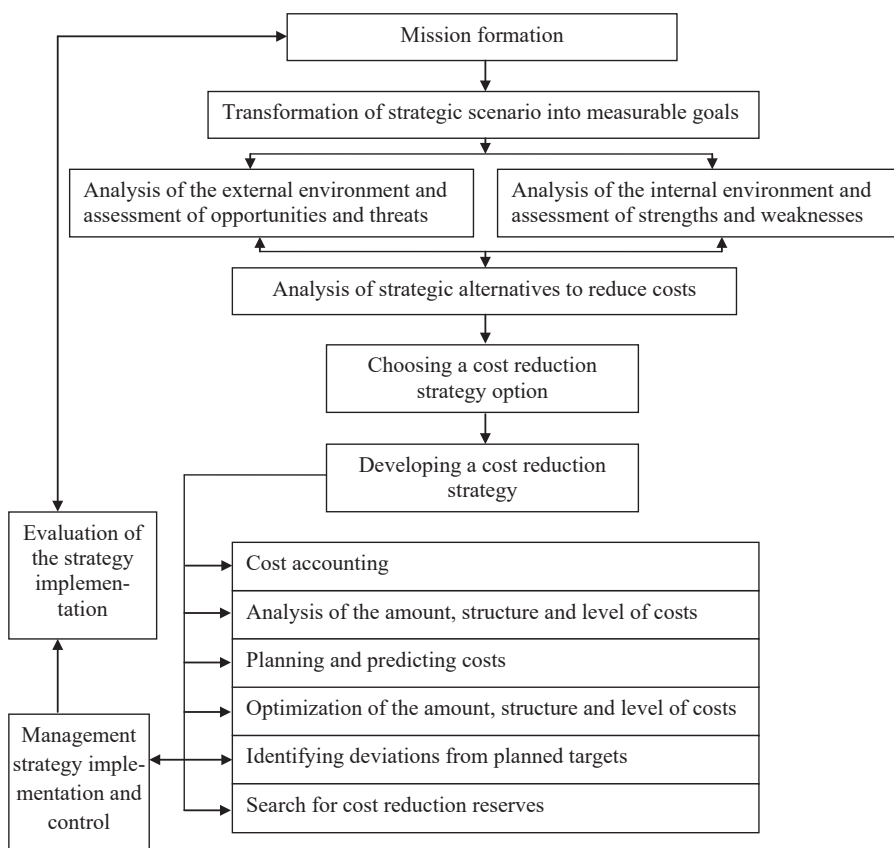


Fig. 2. Scheme for the implementation of cost reduction strategies [14]

**5. Methods of research**

During the execution of the work applied general scientific and special research methods:

- a systematic approach to the study of the problem of research, the fundamental theoretical principles set forth in the literature;

- methods of analysis and synthesis – for a preliminary analysis of strategic cost management with the formation of the problem, the definition of goals, objectives, principles, cost analysis of the enterprise using reporting, as well as determining the stages of the sequence of building the system;
- methods of analogies, grouping and comparative comparison – to clarify the concept of «strategic cost management», definition of characteristics, prospects for implementation, differences in strategic and conventional cost management, the influence of factors;
- decomposition method – for detailing the stages of building a cost management process using a cycle model; role of accounting and analytical support.

**6. Research results**

**6.1. Analysis of production costs as an important link in the effective management of machine-building enterprises.**

The problem of ensuring the competitiveness of engineering products in the long term on the basis of a strategic analysis of the external and internal environment in order to obtain maximum profit is becoming increasingly

important in the management of enterprises and expenses. According to the Statistics Committee of Ukraine [15], since 2015 Ukraine has seen an increase in sales of products of engineering enterprises:

- in 2016, Ukrainian enterprises sold at 1400.3 million USD more than in 2015;
- in 2017 at 1252.2 million USD more than in 2016, due to changes in the country.

So, in 2015, the machine-building industry in Ukraine as a whole was unprofitable, and in 2016, although machine-building enterprises suffered losses, however less than in 2015. In 2017, there was a tendency to improve activities, in particular, income was received at 226.7 million USD [15].

Analysis of the costs of the company allows to rise to the highest level of their causes.

By making a decision at the strategic level (for example, by changing the technology), it is possible to immediately get rid of a large number of factors at the operational level (production, commercial cost carriers).

The analysis of the structure and dynamics of expenses of LLC VEEM-Metallavtoprom (Ukraine) was carried out on the basis of reports on financial results for 2013–2017 in two ways. To search for reserves of cost optimization, let's analyze the cost structure for the economic elements of LLC VEEM-Metallavtoprom (Table 1), which indicates that the production of seats for engineering enterprises remains quite material-intensive.

**Table 1**

Analysis of the cost structure of the elements of the LLC VEEM-Metallavtoprom (Lviv, Ukraine) for 2013–2017

Cost elements	2013		2014		2015		2016		2017	
	Thousand USD	%	Thousand USD	%	Thousand USD	%	Thousand USD	%	Thousand USD	%
Material costs	307	62.2	351	68.9	462	67.4	553	77.3	512	70.4
Labor costs	54.7	11.0	47.7	9.4	54	7.9	59	8.3	95	13
Deductions for social events	20.5	4.2	18	3.5	21	3.1	14	1.9	20.5	2.8
Depreciation	23	4.6	19.3	3.8	41	5.9	56	7.8	69	9.5
Other operating expenses	89	18	73	14.3	108	15.7	36	5.0	30	4.1
Total expenses	495	100	508	100	686	100	719	100	726	100

**Note:** developed by authors based on [15]

There was a trend of growth in total costs due to almost all items of expenses, in addition to other operating expenses from 687 thousand USD in 2015 to 726 thousand USD in 2017. Analysis of the structure indicates a slight increase in their share in the dynamics, which were:

- in 2013 – 307 thousand USD (Specific weight – 62.2 % in the total cost structure);
- in 2015 – 462 thousand USD (Specific weight – 67.4 % in the total cost structure);
- in 2016 – 553 thousand USD (The largest share – 77.3 % in the total cost structure);
- in 2017 – 512 thousand USD (Specific weight – 70.4 % in the total cost structure).

It is worth noting the trend to:

- increase in the share of labor costs from 11 % in 2013 to 13 % – 2017;
- increase in depreciation from 4.6 % in 2013 to 9.5 % – 2017;
- decrease in the share of other operating expenses in total expenses from 18 % in 2013 to 4.1 % in 2017.

Information by type of expenditure reflects the use of all types of resources demanded in the production process. The combination of analysis of the structure and dynamics (Table 2) allows a comprehensive approach to the problem of the study of costs and to find the weak and strong points of the activity of the enterprise under study in cost management.

The data of Table 2 indicate that the most significant in the study period was an increase in both production and non-production costs in absolute terms. In particular, the increase in the cost of goods sold: from 372 thousand dollars in 2013, up to 639 thousand dollars in 2017, respectively, by 267 thousand USD, that is 58 %, is due to an increase in production volumes and rising prices for the purchase of raw materials, energy carriers, semi-finished products, and the like.

To assess the cost effectiveness, the cost of sales for 1 dollar of net income (expenses for 1 dollar of net income) = Cost of sold goods/Net income from sales of products (goods, works, services) for the period 2013–2017 was calculated.

**Table 2**

Analysis of the structure and dynamics of expenses of LLC VEEM-Metallavtoprom (Lviv, Ukraine) for 2013–2017

Item	2013		2014		2015		2016		2017		Absolute deviation (+, -), thousand USD/Rate of change, %							
	Amount, thousand USD	Structure, %	Amount, thousand USD	Structure, %	Amount, thousand USD	Structure, %	Amount, thousand USD	Structure, %	Amount, thousand USD	Structure, %								
Cost of goods sold (goods, works, services)	372	75.2	401	78.9	544	79.2	634	86.8	639	87.9	267	72	238	59	95	17.5	4.6	0.7
Administrative expenses	32.7	6.6	31	6	34	4.9	48	6.7	57	7.9	24	75	26	86	23	69.1	9.2	18.9
Sales costs	1.2	0.3	1.5	0.3	0.7	0.1	0.5	0	0.3	0	-1	-80	-1.3	-85	-0.5	-71	-0	-53
Other operating expenses	89	18	73	14.3	108	15.7	36	5	30	4.1	-59	-66	-43	-59	-78	-72	-6.4	-17.6
Total expenses	495	100	508	100	687	100	719	100	726	100	231	46	218	42.8	39	5.8	7.2	0.9
Net income from sales of products (goods, works, services)	415	-	426	-	620	-	713	-	722	-	306	73	295	69	100	16	9.2	1
The cost of 1 USD net income	3.29	-	3.38	-	3.24	-	3.29	-	3.27	-	-	-	-	-	-	-	-	-

**Note:** developed by authors based on [15]

There was a tendency of insignificant fluctuation of the indicator «Cost for 1 dollar of net income», in particular, in 2013 – 89 %, and in 2017 – 88.4 %. As can be seen from the Table 2, in the study period, there was an increase in administrative expenses, in particular, in 2013 – 32.7 thousand USD, in 2016 – 48 thousand USD, and 57 thousand USD in 2017. Accordingly, the decrease in other operating expenses (in 2013 – 89 thousand USD (share – 18 % in the total cost structure), 2014 – 73 thousand USD, in 2016 – 36 thousand USD and up to 30 thousand USD in 2017 (share – 4.1 % in the total cost structure)). Sales expenses: in 2014 – 1.5 thousand USD, in 2016 – 0.5 thousand USD, and 0.3 thousand USD in 2017. During the study period, an increase in net income from sales of products is observed: 2013 – 415 thousand USD, in 2014 – 426 thousand USD, 2015 – 620 thousand USD; 2016 – 713 thousand USD; 2017 – 722 thousand USD.

To assess the cost effectiveness, the cost of sales was calculated for 1 USD of net income. The choice of performance indicators depends on the strategy chosen by the enterprise and the method of forming the competitive advantages of production. Conducted studies analyzing the structure and dynamics of costs allow to determine the strengths and weaknesses of the enterprise's cost management activities.

**6.2. Investigation of conceptual statement of strategic cost management.** The conducted studies confirm that there is no exact and unambiguous definition of the concept of «strategic management costs», since it is the subject of scientific discussion. Some believe that «the development of strategic cost management is the result of the merger of three areas of strategic management [11, 16]:

- 1) value chain analysis;
- 2) strategic positioning;
- 3) analysis and management of cost drivers».

In studies [7, 17], «strategic cost management» (SCM – Strategic Cost Management) is associated with an enterprise achieving a sustainable competitive advantage in modern business, the emergence of a strategy and definition of long-term development, compared with current cost management.

In a period of globalization, customer awareness and rapid technological change, the efficient production of high-tech products based on the developed strategy is crucial, regardless of whether the enterprise has started operations, is a veteran in this field.

In papers [4, 12], it is determined that «strategic cost management» (SCM) creates basic strategic installations for a cost management system, while traditional methods «clean out» cost, including using the dependence of costs on production volumes.

In [18], «strategic cost management» is a system of accounting and cost analysis methods, provides a choice of strategy based on rational use of expenditure planning and control over ensuring its necessary level in the process of financial and business activities and informational support when making decisions.

So, the defining approaches to strategic cost management is the focus on cost reduction, the basis of accounting is the product of the activity (product, service), and practically does not use accounting techniques in contrast to current cost management. Cost management is carried out by type of activity leading to a reduction in final costs,

and accordingly leads to an increase in customer satisfaction. Significant costs affect possible strategic decisions in the formation of price competition. In the case of current cost management, the understanding of cost behavior is based on their dependence on the volume of production, which necessitates the analysis of fixed, variable and mixed costs. The implementation of an integrated cost management mechanism suggests that strategic cost management differs significantly from current cost management [4, 7, 17]. Formation of operational tasks for the production of products is:

- accounting of incurred expenses (the amount of used resources, their acquisition and expenditure);
- identification of deviations of actual indicators from the planned ones;
- carrying out measures to prevent the occurrence of deviations (premiums for proposals for rationalization, fines for waste of materials, excess production of products).

Strategic objectives (promising) include [19]:

- rational use of available economic resources;
- analysis of the financial and economic activities of the enterprise;
- study of the cost structure and the search for reserves to reduce them.

The main differences in the criteria are given in Table 3.

Scientists and practitioners consider the cost management system as an integral part of a single enterprise management system at the operational or strategic levels, it has a goal, objectives, an object, a subject, and management mechanisms (methods). The influence of the subject on the object of management is carried out with the help of management functions that affect the strategic management of costs and the adoption of organizational management decisions, their dependence on the essential features are presented in Table 4.

Also at the enterprise it is necessary to take into account a set of factors that form the expenses of the activity, while the cost-generating factors are divided into structural and functional. The structural factors include the scale, range, experience, technology, complexity of operating activities, that is, such cost-forming factors that operate with the management of the cost of goods sold. Functional factors include the effectiveness of planning, attracting an experienced workforce, integrated quality management, choosing the best option for using capacities, using partnerships with suppliers and customers. Structural factors determine the choice that the company will make to reduce, that is, allow to determine their impact on costs. While the functional factors affecting the costs associated with the ability of the enterprise to function successfully. Functional factors are also compared proportionally with performance indicators, in contrast to structural factors that cannot be compared. In the formation of a strategic model of cost management of an enterprise, in addition to the factors influencing the choice of an enterprise strategy, the following factors are identified: technological; organizational; financial and economic [18]. Factors, problems, competitive advantages of strategic cost management are identified in the Table 5.

Essential methods of strategic cost management include «ABC and XYZ», «SCA», «FSA», «LCC», «Target-costing», «Kaizen-costing», «VCC», «Strategic positioning», «Cost-drivers analysis» [19]. In economic practice, methods of cost management are actively used, the essence of which is highlighted in the Table 6.



**Table 3**

Comparison of strategic and current cost management

No.	Comparison criterion	Current cost management	Strategic cost management
1	Cost management goal	Current cost management	Ensuring sustainable competitive advantage of the enterprise
2	Cost management tasks	Maximizing company profits by minimizing costs	Creation of long-term competitive advantages of an enterprise at the expense of cost leadership
3	Control object	Curbing spending growth, maximizing profits in the short term	The costs of the various stages of the common value chain, of which the enterprise is part
4	Management focus	Expenses by type of goods (product groups) and services	An enterprise is considered in a single value chain with suppliers and consumers (buyers)
5	Management benchmarks	The internal state of the enterprise	Orientation to a set of cost-forming factors
6	Reason for cost change	Cost Factor – Sales Volume	Costs are a function of strategic choices that are related to structural and functional factors
7	Foundation of management decisions	Costs are a function of sales (turnover)	The overall strategy of the company, quantitative and qualitative performance indicators
8	Management character	Quantitative indicators of the enterprise	Long-term management, strategic planning
9	Management tools	Short-term management, situational nature: – identification of reserves to reduce costs; – development of cost reduction programs; – use of identified reserves in order to ensure cost savings; – budgeting; – controlling; – analysis of the system «costs, sales volume – profit»; – analysis of deviations; – functional cost analysis	– cost optimization, taking into account the life cycle of the enterprise; – value chain analysis; – analysis of cost-forming factors; – process-oriented management; – cost benchmarking; – strategic positioning

**Note:** developed by the authors based on [4, 7, 17]

**Table 4**

The relationship of functions and stages of cost management

Control functions	Stages of cost management		
	Development, decision making	Solution implementation	Performance evaluation
Analysis	Strategic analysis of the enterprise (internal and external environment)	Strategic cost analysis (retrospective): – functional qualities of the product; – production technology; – resource potential; – organizational structure of the enterprise	Present period
Forecasting	Forecasting the level of future expenses	Forecasting changes in the level of costs during the implementation of decisions	Estimated cost estimate
Planning	Development of a strategic business development plan	Strategic cost management perspectives	Planning assessment
Organization	Involving individuals in decision making	Organization of the implementation of management decisions	Evaluation of the level of interaction of strategic management
Implementation	Decision making	Processing information to fulfill decisions	Assessment of the degree of implementation of decisions
Accounting	Accounting for actual costs of previous periods	Accounting of actual expenses of the current period	Evaluation of accounting
Control and regulation	Control over the process of strategic development of the enterprise	Control and regulation of strategic cost management	Monitoring the implementation of decisions
Coordination	Regulation of relations and their coordination	Coordination of actions of implementers to implement decisions	Coordination of integrated assessment activities
Motivation	Stimulation of performers to make optimal and rational decision	Stimulation of executors to comply with established plans and identify cost reduction opportunities	Stimulation of executors for an objective assessment of actual costs and the possibility of their further reduction

**Note:** developed by authors based on [18, 19]

Table 5

## Identification of perspectives and problems of strategic cost management

Influence factors	Prospects	Problems	Additional competitive advantages	System features
Dynamism – change in prices for resources, materials, components, parts, energy, transport services	Identification of technical means, methods of cost control, search for reserves to reduce costs	Optimization and structuring of information flows	The ability to use price variation when establishing market value	Accounts structure (autonomy/integration)
Diversity – the degree of the impact of costs on the results of operations, assessment of the level of certain types of costs	Implementation of cost management strategy	Creation of forms of management reporting with the adoption of cost forming decisions on transactions, customers, functions, etc.	Flexibility and maneuverability due to high-quality and well-formed information system	Cost grouping: – by elements and items of expenditure; – for the needs of calculation
Feature of costs – measurement, accounting and evaluation	Formation of accounting information flows, focused on providing strategic management of expenses	Design and systematically update cost management methodology	Pricing flexibility – knowledge of cost structure, methodology of their management	Comprehensiveness of the cost of costing (calculation for full and incomplete costs)
Feature of costs – the impact on the economic result	Preparation of the accounting and information base allows to estimate the costs of decision making	Staff availability, owns a cost management methodology to ensure self-development of the system	Objectivity and validity of planning and rationing costs with technology-based equipment, staffing	The presence or absence of regulatory costs

**Note:** developed by the author

Table 6

## Strategic methods (concepts) of cost management of enterprises

Methods	Feature
ABC-method (Activity Based Costing)	The essence of the ABC method is that, based on the purpose of the analysis, a classification attribute is selected, then costs are ranked in the order of its reduction. All expenses (of the same type or direction) are divided into three groups according to the cost basis: – Group A – expenditure items, the proportion of which is more than 20 %; – Group B – expenditure items with a specific weight of 5–20 %; – Group C – expenditure items, the proportion of which is less than 5 %. Stages of the implementation of the ABC method: 1) compiling a list of all operations (activities, functions); 2) determining how much the organization spends on each operation; for this, the drivers expenditure of resources associate the expenses of the organization with the performed operations/functions; 3) compiling a list of all value objects of the company; 4) definition and selection of cost drivers for transactions with valuable objects
Direct-costing	It is based on the distribution of the total costs of an enterprise to fixed and variable. Variables are included in the cost of production, and fixed costs are written off directly to financial results. Through the application of the method, it is possible to study the relationships and interdependencies between costs (cost), sales volume and profit
Absorption-costing	It assumes the calculation of the cost of goods with the distribution of all costs between the products sold and product residues. At the same time, direct (target) costs are attributed to specific types of products (services), and indirect costs are indirectly distributed according to uniform conditional overhead rates for types of goods or cost centers
Standart-costing	It involves the analysis of deviations of actual costs from the standard, which is important information for management. Standart-costing is an ideal system, for example, if have two or more enterprises of the same type (however, only with the right choice of indicators for standardization)
Target costing	Changing view of the interdependence of price, profit, and cost. It is expected that the new products will be able to realize at the price, fully cover the costs and provide the profit necessary for further business development in the following components: Target cost price = Target price – Target profit
Cost killing	It is aimed at maximal reduction of expenses in the shortest possible time without prejudice to the activity of the enterprise and the prospects for its development. Used in crisis management and competitiveness management. The result of the application is a reduction in labor costs and, as a result, a reduction in the number of employees, the release and sale of unused or under-utilized assets, and a decrease in social spending
Benchmarking	A way to assess the strategies and goals of an organization's work compared with successful business organizations to determine their place in a particular market. The advantages of cost benchmarking are the absence of the need to invent own ways of reducing costs and improving processes in an enterprise, since this has already been done by the market leader or an enterprise taken as a model
Balanced Scorecard (BSC)	The management system provides for the systematic implementation of the company's strategic plans, their interpretation in the language of operational management and control over the implementation of the strategy based on key performance indicators. And also «a tool to transform the mission and strategy of an enterprise into an exhaustive set of performance indicators, which are used for strategic management, control and analysis»
Strategic positioning	Implementation of activities other than competitors or similar activities, but in other ways. The key idea is to include in the sphere of management accounting and cost analysis detailed information on the strategic development of the enterprise, industry
EVA (Economic Value Added)	Provides more useful information than accounting data, such as accounting profit, return on equity, growth rate of earnings per share. The only indicator for assessing the value of a business since its inception

**Note:** developed by authors based on [17]

Thus, the term «strategic cost management» of an enterprise should be understood as the process of ensuring a rational level of costs from the point of view of a strategic perspective, which aims to achieve a sustainable competitive advantage by an enterprise at the expense of cost leadership.

And it is carried out with the help of a system of techniques and methods (concepts) that provide forecasting, planning, accounting, analysis, control and regulation of the level of costs at the stages of formation, implementation, control and regulation of the enterprise strategy.

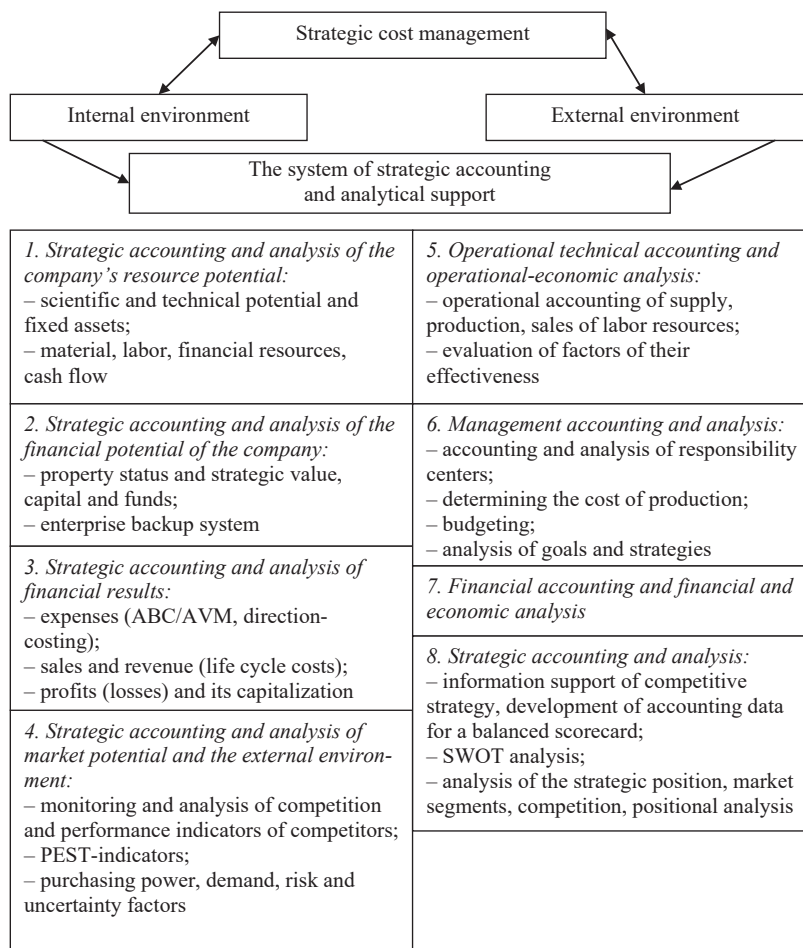
**6.3. Analysis of the structure of accounting and analytical support for the purposes of strategic cost management.** The competitive environment is constantly changing, forcing enterprises to adapt to new conditions, finding effective and less costly methods of production. Cost management and optimization – one of the most profitable opportunities to maximize profits – should be not fragmentary, but complex. The current state of cost management is at the intersection of accounting and management systems. The accounting system (disclosure of reliable, complete, financial and non-financial information by various groups of users with the formation of internal reporting), its elements, and stages of creation have a direct impact. So, accounting is defined as an information system that includes a feedback mechanism and a warning mechanism. One of the parts of the management information system is management accounting, the area of intersection of which is primary accounting – primary registration of facts, events, processes in observation forms and other primary accounting documents. From an accounting point of view, accounting and management accounting subsystems are based on the same array of primary data. They are submitted in different interpretations and provide for the implementation as a result of grouping in different summary information in accordance with the objectives of each type of accounting. Strategic management accounting is aimed at providing top management with assessment information about the external environment in order to find and use internal opportunities – achieving sustainable competitiveness of the company in the long term. Subsystems identified provide cost management objectives.

Researchers suggest that accounting and analytical support should include a set of information resources and organizational, regulatory, and technical resources. In particular, information resources (technologies) provide for the collection, transfer, accumulation, storage and processing of information about cost-generating objects in the necessary analytical sections, in a user-friendly form in accordance with the needs and timelines.

The integration of global approaches contributed to the formation of a strategic

accounting and analytical framework for strategic cost management, to create a unified information base for the implementation of an integrated approach, which may include (Fig. 3):

- *strategic accounting* – a comprehensive system designed to detect, fix, accumulate, classify, summarize and present primary accounting information about the state of the external and internal environment of the enterprise. At the same time use special methods (concepts) necessary for the development of promising and strategic management decisions on competitive positioning and enterprise development;
- *strategic analysis* – a system designed to study economic phenomena and processes from the position of the future positioning and development of the enterprise. The process of assessing the effectiveness of the enterprise and the progress in its activities through continuous monitoring of the internal and external environment, as well as the search and selection of optimal strategic decisions;
- *information support* – a set of information resources, various ways of organizing them – a unified system of classification and coding of information, unified documentation systems, information flow schemes circulating in the enterprise. The database construction methodology is designed to implement management and analytical procedures that ensure the implementation of the process of strategic cost management.



**Fig. 3.** The scheme of accounting and analytical support for strategic cost management



The implementation of accounting and analytical support for strategic cost management in an enterprise is the unity of interaction between accounting systems, analysis, control, information and organizational support, united by information flows and communication channels for making strategic-oriented management decisions.

The formation of information flows for effective cost management does not provide a priori relevant outcomes, because with an inappropriate choice of tools and a lack of understanding of its specifics, the best tool will fail and work with problems. Thanks to cost management from the standpoint of strategic accounting and analysis and the management approach, it is possible to obtain benefits and establish an effective management system for the enterprise being studied as a whole.

**6.4. Justification of the mechanism for constructing a model of strategic cost management.** The construction of strategic cost management involves the use of paradigms of global strategic management, accounting display, control, analysis and economic and mathematical modeling, modern information technologies.

Modern strategic cost management is carried out on the basis of the principles: complexity and system, development, efficiency, accessibility, balance and integrativity, transformation, hierarchy, functional utility, flexibility. Requirements for cost management from a strategic perspective: relevance, sufficiency, external analysis, discretionary allocation of costs, strategic approach, control, multi-criteria, decision choice.

The problem of ineffective management of the studied machine-building enterprise LLC «VEEM-Metallavtoprom» is established. In particular, the unjustified excess of production volumes over sales volumes, disproportionate capacity utilization, increase in stocks, the loss of some market segments and attractive customers. Any activity is accompanied by expenses that are necessary for the object of strategic planning, accounting, analysis and control. Cost management as an object of strategic management accounting includes:

- the organization's costs of value chain, product life cycle stages and strategic business units;
- the costs of competitors.

It has been determined that strategic cost management contributes to an increase in the efficiency of an enterprise's business through the interconnection of strategic goals, resources and results. The success of the enterprise depends on the choice of the cost accounting method, and has contributed to the adaptation of the methods. In particular, LCC analysis (calculation of costs for the stages of the product life cycle) (eng. Life Cycle Costing) – a method of cost management with respect to the life cycle: development, market launch, growth, maturity and recession. Strategic cost management at the stages of the life cycle involves the formation of the cost of goods on a strategic perspective for the entire time of its market turnover. The application of methods of accounting and cost analysis at the stages of the life cycle is effective in implementing the strategy of development, positioning and maximizing the performance of the enterprise. The method allows at any time to determine the amount of costs allocated to the production of a particular type of product or implementation of an activity, helps to identify the places of their formation and reserves of reduction.

Within the framework of the method, proper information support was carried out in order to identify compliance with the level of costs and the stage of the product life cycle. At the same time, the target costing method was used to support the strategy of reducing costs to the target cost even at the product design stage. Using the ABC-method costs for each activity are structured. Accordingly, the cost management methods of ABC and partly targeted costing ensured current planning, control and cost reduction, and determining the costs for the product life cycle and the Deming-Shewhart model will be the basis for making strategic long-term decisions.

A mechanism has been developed for constructing a system of strategic cost management based on an adaptation of the ABC method along with target costing, cost management for the product life cycle stages (LCC analysis) and the Deming-Shewhart model (PDCA). The managerial staff of the enterprise will receive a sufficient amount of information to manage both at the operational and strategic levels. The qualitative organization of strategic cost management and the study of the advantages of the model contributed to its adaptation to the practical implementation of the company LLC VEEM-Metallavtoprom (Fig. 4). The application of the model will ensure the continuity of the processes of accounting and analysis of cost management, as well as continuous improvement. The model includes:

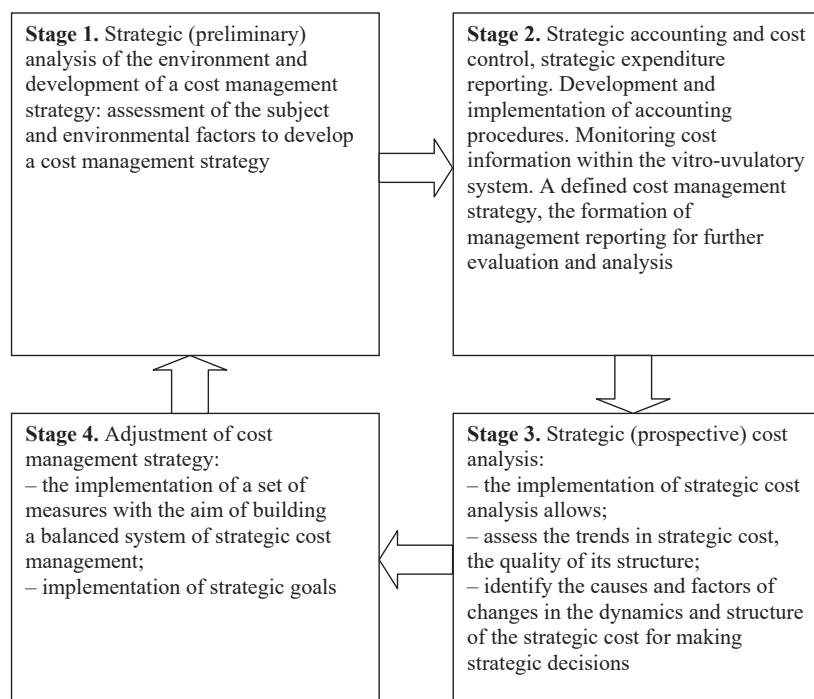
- strategic analysis (preliminary) of the external environment and the development of a cost management strategy;
- strategic accounting (calculation) and cost control, strategic expenditure reporting;
- perspective strategic cost analysis;
- adjustment of cost management strategy.

An efficiently organized system of strategic cost management will ensure effective long-term management with the advantages of:

- interconnection of the strategic cost management system with the strategic management system and its component subsystems;
- the possibility of choosing the tools, methods and techniques that contribute to the increase in the effectiveness of strategic cost management;
- availability of high-quality information on expenses, reflecting the activity of the enterprise in space and time, from all levels of management;
- ensuring a minimum level of expenses.

It is proposed to manage the strategic costs of the enterprise [20] in sequence:

- determine the strategic goals of the enterprise;
- clarify the objectives of the enterprise and ways to achieve them;
- choose the direction of the strategic positioning of the enterprise;
- carry out the analysis of cost formation factors;
- build a common value chain for the production of products and the value chain of the enterprise;
- subordinate the strategic cost management strategies that are implemented in the enterprise (strategy analysis);
- analysis of the total value chain for the production and value chain of the enterprise;
- making management decisions;
- assess the effectiveness of the strategic management of enterprise costs (deviation analysis).



**Fig. 4.** Strategic cost management model

Conducted research allows to determine the direction of reducing production costs of the enterprise:

- improving the automation level (the purchase of high-quality high-tech machines), mechanization, ensuring effective computerization of the production process using the latest innovative technologies, upgrading existing equipment and technology;
- introduction of measures that will affect the improvement of the quality characteristics of products (for example, the use of a different type of raw material and the development and introduction of new products);
- use of advanced methods for planning, accounting (improved information system) and analysis of production costs;
- viewing the range of products, finding ways to reduce non-production costs of the enterprise, improving the organization of production and labor, the use of alternative methods to reduce costs.

## 7. SWOT analysis of research results

*Strengths.* The strengths of research and the formation of a strategic cost management model with its implementation are that these measures help to improve the final result of implementation. Compared with other approaches to the introduction of cost-effective strategies in the enterprise, this can be done by modeling the process of accounting and analytical support with the adaptation of cost management methods. Thus, the proposed model will allow the development of effective models for reducing costs associated with the introduction of other management processes for long-term improvement.

To make informed strategic decisions, the management of LLC VEEM-Metallavtoprom (Ukraine) conducted a comprehensive analysis of the structure and dynamics of expenses. The perfect will help to find the strengths and weaknesses of the strategic activities of the enterprise

on the basis of cost-forming strategies. By deciding at a strategic level (for example, changing technology), it is possible to immediately get rid of a large number of factors at the operational level (production, commercial cost object).

*Weaknesses.* The analysis of the formation mechanism of strategic cost management shows that one of the key processes that have high dynamism and heterogeneity, complexity and consistency is its accounting and analytical support. So, to the components of accounting and analytical support of strategic cost management include the following: strategic accounting, strategic analysis, information support. The analysis reveals the shortcomings of the scheme for its use in the enterprise. In particular, the weak point of the proposed approach is the complexity and duration of implementation based on the relationship of cost management methods and the interaction of accounting, analysis, control, information and organizational support systems. In addition, it is necessary to take into account the relatively high cost of this process.

*Opportunities.* However, in the future to build a model of strategic cost management, it is advisable to complement the introduction of new solutions in the field of information systems and technologies, accounting and storage of information (database creation) and accounting and analytical platforms.

Additional opportunities can bring the purchase and implementation of engineering enterprises of Ukraine, and in particular, for example:

- MS Dynamics CRM system, which will be used to increase the efficiency of interaction with partners and customers in the framework of the procurement and contract execution processes, attracting customers, participation in tenders, pricing, sales expansion, logistics, shipping, transportation, etc. As well as analyzing performance indicators and further business development forecast;
- deductor platform, to support the development of the company's strategy and build a cross-cutting business processes, sales and customer service. It is proposed to integrate MS Dynamics CRM with Microsoft 1C 8.0 systems (or other domestic products).

*Threats.* However, the proposed approach does not provide a priori relevant outcomes, because with the wrong choice of tools and a lack of understanding of its specifics, the best tool will fail and work with problems.

The external environment factors directly related to the production process and costs have a negative impact on the object of research:

- the instability of the dollar affects the purchase of components, raw materials and expensive equipment by machine-building enterprises;
- the emergence of new competitors, the impossibility of entering foreign markets, high interest rates on loans;
- expensive information and software.

The situation is complicated by the fact that not all risks can be pre-identified and minimized.

## 8. Conclusions

1. The analysis of the current state of the engineering industry and the analysis of the structure and dynamics of expenses of LLC VEEM-Metallavtoprom for 2013–2017. Studies have confirmed that production is material-intensive, a significant share in the costs of the enterprise is the cost of production. The indicators of expenditures and incomes of the respective activity lines were compared, which allowed identifying the strengths and weaknesses of the enterprise's cost management, increasing the output of marketable products, expanding the product range, and strengthening its authority in the global market.

2. Conceptual approaches to strategic cost management are reviewed. It is confirmed that the system of strategic cost management is an integral part of the unified enterprise management system at the levels: operational or strategic, which has a goal, objectives, object, subject and mechanisms (methods) of management. «Strategic cost management» are defined as the process of ensuring a rational level of costs from the point of view of a strategic perspective, which, given the influence of a combination of factors, aimed at achieving an enterprise sustainable competitive advantage at the expense of cost leadership. And also carried out using a system of techniques and methods that provide forecasting, planning, accounting, analysis, control and regulation of the level of costs at the stages of formation, implementation, monitoring and regulation of the development strategy of the enterprise.

3. The role of accounting and analytical support for strategic cost management is defined. A scheme of the accounting and analytical support system (Fig. 3) is developed to create a unified information base for implementing an integrated approach to managing the costs of an enterprise from the position of a management approach. Research has confirmed the decisive role of strategic accounting and strategic analysis in assessing the complex or individual impact of internal and external factors on a company's strategy, its behavior in the market, its ability to compete and position, and strategic performance.

4. A study is conducted on the development of a strategic cost management model. Operational cost management methods (ABC and partly target-costing, Table 6), which would provide current planning, control and cost reduction, and strategic methods for determining the costs of product life cycle with the development of the Deming-Shewhart model (PDCA) are studied. A mechanism is developed for constructing a strategic cost management system based on an adaptation of the ABC method along with target costing, strategic cost management for the product life cycle stages (LCC analysis) and the Deming-Shewhart model (PDCA) (Fig. 4). This will allow management staff to obtain sufficient information for management at both operational and strategic levels. Thus, a rationally organized system of strategic cost management will ensure effective management in the long term of all the activities of the enterprise. Results will provide benefits:

- improvement of cost optimization programs;
- revision of approaches to cost formation;
- optimization of the product portfolio;
- reengineering of business process models;
- optimization of the logistics system;
- revision of budget policy and forecasting policy;
- restructuring of the system of strategic cost management with signs of cyclicity and iteration.

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