

Functions of Cost Management Systems in Modern Organizational Management

Marina Evgenievna Ordynskaya*, Tatyana Alexandrovna Silina, Lala Eldarovna Divina, Irina Fedorovna Tausova, Saida Aslanbievna Bagova

Adyge State University, 208 Pervomayskaya Street, Maykop, 385000, Russian Federation

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Abstract The purpose of the study is to analyze the functions of a cost management system in modern organizational management. Based on general scientific research methods and an expert survey, the key functions of cost management are defined. The authors justify the feasibility of developing a cost management system with the determination of cost management functions. The key approaches to cost analysis are formulated. It is important to ensure stable connections between the elements of the management system at the management level of the business hierarchy during the implementation of cost management functions. Moreover, one must build a mutual cost regulation mechanism at the stages of planning, organization, technological process development, and production, i.e. during the creation of the entire business process. There is a need for coordinated work by all the structural departments at the enterprise with strong horizontal and vertical logistical connections and established responsibility centers during the development of the general management system that the cost management system should be integrated into it. The tried and tested communication plan for information transmission and coordination between structural units at an enterprise determines the efficiency of the management and control systems aimed at maximum impact from management at the executive level when management decisions are made. The practical significance of analyzing the functions of cost management systems in a modern organization management system consists in increasing the

efficiency of management decisions made based on the data from the analytical assessment of the costs of the enterprise. The theoretical significance lies in the chance to use the study results during the development of a general organization management system.

Keywords Cost, Organization Management System, Responsibility Centers, Functions of Management System, Automated Cost Management System, Management System Efficiency

1. Introduction

In day-to-day operations, all business entities spend certain resources on production, management, sales, purchasing, and the like. The amount of costs largely determines the competitiveness and profitability of products, as well as the efficiency of production and economic activities of economic entities in the end. In today's conditions, some of the important issues of the enterprise management system are the assessment of the cost level and the search for ways to reduce them and the study of sales markets for products (goods, services) to obtain the maximum income.

Therefore, the stability and development of any business entity in a competitive market will depend, first of all, on the creation of an effective cost management

system (CMS). The lack of relevant practical developments concerning the CMS and the formation of its improved model indicate the need to deepen the theoretical, methodological, and practical foundations of this problem. The first is associated with a variety of different types of costs, which contributes to their classification for generalization, to optimize the formulation of management accounting at enterprises. The second problem lies in the change in the composition of the costs themselves. The third problem lies in the impossibility of accurately measuring the composition of costs, which affects the implementation of accounting operations and, accordingly, the financial result of the enterprise as a whole.

To form a CMS, one must determine the structure of this system which should contain components (elements) interacting with each other following the tasks set. Because of this, cost management requires detailed study and improvement since cost management serves as a guarantee of the efficiency of making management decisions based on the analytical assessment of the costs of the enterprise. Therefore, one must determine the main functions of the CMS in the modern organization management system.

2. Literature Review

A lot of specialists have studied the CMS of an organization.

A significant contribution to the development of theoretical aspects of cost accounting and calculating the prime cost of products (works, services) was made in works [1-4]. Various aspects of cost management automation are considered in the works [5-8].

Work [9] is devoted to the direction of cost management to improve the efficiency of economic activities of an enterprise through the relationship of strategic goals, factors, resources, and results. Work [10] indicates that "the information base for decision-making is the analysis of strategic elements of cost management and the interpretation of modern cost accounting systems". However, this work does not disclose the practical aspects of the formation and organization of the CMS, and the described methods do not have actual evidence of their

application. The authors of [11] considered the methodology of searching for competitive advantages and general strategy, as well as the practice of lean accounting and cost management. However, the issues of cost formation were not considered. An alternative solution to the cost management problem is presented in [12]. This paper defines that the essence of cost management as "creating a logical connection between concepts and procedures and how they are used in practice by business organizations".

Practical experience of interaction of cost management with the product development process shown in [13] is interesting for application. However, in these works, the influence of cost accounting methods on the efficiency of economic activity is not substantiated. The work [14] emphasizes the importance of "cost management as an interactive process of analysis, planning, organization, accounting, and control, which provides for the regular correlation of significant accounting information with the firm's strategy for making tactical and strategic management decisions". However, the author found that none of the existing cost management methods applied separately can fully ensure the implementation of accounting and management functions necessary to organize an effective CMS.

As for the definition of "cost management", in most studies, it is characterized as a process of cost formation and rational use of resources (Table 1).

Therefore, researchers approach this definition in a process-based or systematic way.

We believe that each of the interpretations has a deep meaning. However, regardless of the above definitions, costs cannot be considered independently from such indicators as profit and income since efficient cost management provides conditions for businesses to achieve positive results. Thus, cost management can be characterized as a system of interrelated elements (subject, object, tasks, tools, methods) that has the corresponding functional aspects (organization, planning, accounting, control, analysis, regulation).

Research hypothesis: the efficiency of the implementation and operation of CMS depends on adequately defined cost management functions (CMFs), which further leads to cost control and cost reduction.

Table 1. Interpreting the notion of "cost management"

Author, source	Cost management is
R. Cooper, R. Slagmulder [15]	the process of target costing and facilitation of cost reduction
G. Favato, R. Mills [16]	the process of targeted formation of the optimal level of costs for the enterprise
S. Aluko et al. [17]	the development and implementation of managerial actions for the formation and regulation of enterprise costs according to strategic and current goals
R.L. Tichacek [18]	the dynamic management process of regulating the rational use of material, labor, financial, and natural resources and conditions of the organization's business to ensure competitive advantages, aimed at achieving the best economic result of the activities of the enterprise
A. Kumar [19]	the system of management decisions on the formation and regulation of costs, ensuring the efficient use of resources and capital of the enterprise in various types of its activities in accordance with strategic and current development goals
A. Garg et al. [20]	activities associated with an analytical assessment of the formation of costs by types of activities and products (goods, works, services), efficiency of use, and the search for saving resources to determine the so-called "effect", profitability, and competitiveness

Research objectives:

- based on the analysis of scientific literature, to define the concept of "cost management";
- based on an expert survey, to indicate the main CMF with the construction of a generalized system of CMF of the organization;
- to substantiate the feasibility of introducing and forming a CMS in the organization with the definition of the CMF and to determine the conditions for integrating the CMS of the organization into the overall management system.

The article consists of an introduction, a literature review, research methods, results, discussion, and conclusion.

3. Methods

Study design

To prove the research hypothesis and achieve the set goals, a qualitative study of the functions of the CMS in the modern management of the organization was carried out. We used a complex of general and special scientific methods including:

- methods of comparison and generalization in the analysis of academic literature – to define the concept of "cost management";
- the expert survey method – to determine the main CMF and build a generalized CMF system of the organization and the conditions for integrating CMS of the organization into the general management system.

The main research method was the expert survey method. Experts in the field of financial accounting and control were invited to voluntarily answer the questions in a semi-formalized questionnaire.

Based on the method of an expert survey, CMFs and their elements and characteristics were determined. The feasibility of forming a CMS with the determination of a

CMF was substantiated, and the conditions for integrating the organization's CMS into the general management system are also defined.

Procedure, research tools

The survey involved 26 experts including specialists, employees of industrial companies, whose professional activities had been related to financial accounting and control for more than seven years.

All participants were informed about the purpose of the survey and the research organizers' plans to publish the summarized research results.

Statistical analysis

During the mathematical processing of the research results, the percentage of expert mentions of the CMS functions with their subsequent element-by-element characteristics was determined, as well as the percentage of expert mentions of the capabilities of the information base of costs and the condition of the organization's CMS integration into the general management system.

4. Results

The experts argued that to form an efficient CMS, one must focus on the functions that the system should perform (Table 2).

Table 2. Basic CMF

No.	CMF	%
1	Cost planning	88.5%
2	Organization of the cost management process	84.6%
3	Communication between the hierarchical levels of the CMS	77.0%
4	Cost control	73.1%
5	Motivation for cost optimization at all levels of bearing and managing the costs	69.2%

Note: compiled based on the expert survey; * percent of references by the experts

The generalized system of CMFs is outlined in Table 3.

Table 3. The generalized system of an organization's CMFs

CMF	CMF element	CMF element features
Cost planning	Strategic cost planning	Involves forecasting costs based on standard cost indicators and a production plan for finished products (goods, works, services)
	Tactical cost planning	Is based on a strategic plan considering the state of the internal and external environment, market requirements, and probable risks
	Operational cost planning	Is calculated based on actual needs and production volumes for each of the areas and workplace. Provides for the development of organizational and managerial measures to adjust the production process by identifying and mobilizing measures to optimize costs through improving manufacturing technology, organizing supply logistics, organizing a closed production cycle, etc.
Organizing the cost management process	Building an efficient CMS	Is aimed at creating a system of actions focused on uniting all elements in various areas of the enterprise's activities into a single spatiotemporal process, forming a single information database, segmented by levels of access to information on the corresponding hierarchical management levels
	Coordination of cost management (development of logistical connections)	The organization of the cost management process provides for the establishment of costs centers and centers of responsibility for possible manifestations of excess costs, losses with the determination of responsible persons, and the boundaries of their responsibility area for each of the sections of the production process
Communication between the hierarchical levels of the CMS	Forming an informational database	When organizing a production system, one must organize a system of information resources for making efficient management decisions. This is possible only with a single information database with differentiated hierarchical levels of access. A system for coordinating the actions of executives by levels of responsibility should be formed based on internal information links uniting all levels of management. The development of a communication channel scheme based on creating linear and nonlinear communication links
	Continuous analysis of situations with discrepancies between target indicators and actual costs	The formation of relevant information and its assessment over time makes it possible to quickly respond to deviations from the target indicators and follow the main goal of the organization
Cost control	Reflection of the actual costs by a certain level of detail	Forms an information database on the actual state of costs incurred by cost items and elements with the definition of centers of their responsibility
	Cost analysis by cost items and elements with responsibility centers	A constant comparative assessment between the actual incurred costs and their planned value serves as the basis for making efficient, well-grounded management decisions
Motivation for cost optimization at all levels of bearing and managing the costs	Financial motivation for cost optimization	Financial motivation incentivizes workers to look for the most feasible methods for optimizing costs and achieving the goals of the enterprise
	Moral and ethical incentives for cost optimization	Through moral and ethical incentives, managers influence the employees' performance and efficiency, encourage them to realize the main strategy of the enterprise and make management decisions based on certain principles of the enterprise

Note: compiled based on the expert survey.

5. Discussion

A CMS is a set of actions focused on achieving goals, not aimed at reducing but at optimizing costs.

In the process of forming a CMS, it is important to reasonably define the main goal of the process. Since each company was created to make a profit, the level of profitability is an important indicator that management actions are aimed at. Management actions towards cost optimization to increase the level of profitability of the enterprise are focused on using material, labor, and financial resources more efficiently.

For this purpose, an enterprise should implement a planning (forecasting) enterprise cost mechanism, which will make it possible to develop economic measures focused on the long term.

The most accurate calculation and determination of all influencing costs factors with the development of alternative actions in the event of changes in the

conditions of the enterprise's functioning affecting the result can be done using a general automated control system based on the use of information databases and modern software.

The experts believed that during the development of a general management system that will feature the CMS, the work of all structural departments at the enterprise should be coordinated with the development of strong horizontal and vertical logistics ties with the establishment of responsibility centers. The presence of a well-developed communication scheme for information transfer and interaction between structural divisions of the organization determines the efficiency of the management and control systems.

Due to such connections, the following processes are optimized:

- the level of detail of information on costs in the accounting system and indicators for calculating the product cost;

- the ratio between the income and the costs incurred;
- the relationship between the results of activities and the actions of the persons responsible for the processes;
- the ratio between the efficiency of the costs incurred and the accuracy of calculations in the process of planning resource requirements, etc.

To optimize costs, one must establish responsibility for the use of resources for each workplace. For this purpose, it is advisable to keep records of costs based on technological processes and plan the costs based on clearly developed standards. Only with such a system of organizing cost management will there be an efficient control system based on planned indicators and data on actual costs incurred by types of resources and based on the volume of items produced.

The structure of the control system should have a hierarchical vertically integrated scheme, where each of the levels is controlled: from a production site, workshop or branch, to an enterprise or association [21].

Responsibility centers should be monitored according to a certain list of items that are indicated in the corresponding estimates or budgets. Estimates for hierarchical levels of responsibility form the overall summary budget for the enterprise. Therefore, an activity-based analysis of costs helps to manage the cost more efficiently, looking for reserves for their optimization [22].

A CMS built according to this scheme forms an information database in such a way that the employees who are authorized to make operational management decisions focus actions on achieving the strategic goal of the enterprise and contribute to the production of competitive products (goods, works, services). Since, having complete information about the actual state and target (planned) indicators of costs for each of the responsibility centers and the process, it becomes possible to react in time to probable deviations, investigate them to

identify the causes, and develop methods for their elimination.

The control function makes it possible to set the level of costs, compare their actual value with target indicators, and identify the reasons for their incurrence, indicating those at fault. Efficient management decisions in the area of costs involve the choice of the most appropriate solution to the problem among the existing alternatives, which is focused on the stable development of the organization, and not only on obtaining the economic effect over a particular period [23].

According to the experts, among the CMFs of an enterprise, in addition to the functions of planning, organization, and control, the state of the internal communication system between the structural units of the enterprise (that is, internal logistical connections) and the implementation of the function of motivating employees are important.

The enterprise's executives need to understand that the implementation of the cost control function is possible only with an efficient system for cost analysis. Continuous in-depth analysis of the state and structure of costs by elements and cost centers provides the management of the corresponding hierarchical level with up-to-date information on the efficiency of using the existing resources of the organization, both as a whole and for individual processes [24]. Such an information database, according to the experts, offers the following features (Table 4).

Organized in this way, the CMS will provide for the development of actions focused on optimizing the costs both for individual processes and for the enterprise as a whole. The construction of a production process will be organized in the form of a closed cycle and focused on a stable gradual distribution of costs according to calculated indicators of the need for them according to the technological process.

Table 4. Features of the cost information database

No.	Features of the cost information database	%
1	Identifying reserves for reducing the cost of products, goods, works, or services by operations	80.8%
2	Formation of a vision of the actions of each employee towards the efficient use of resources	73.1%
3	Development of corrective actions focused on making efficient management decisions to optimize costs for each stage of the life cycle of production (provision of services), from the stage of acquiring means of production to the organization of the actual production process and sale of finished products, goods, or works	65.4%
4	Unification of all elements of the production chain closely related to each other into the process of a control system	61.5%

Note: compiled based on the expert survey; * percent of references by the experts

CMS at an enterprise organized based on clearly calculated needs will ensure the highest possible indicators of financial stability and will help to improve the level of the organization's profitability [25].

The experts clarified that, while integrating the organization's CMS into the general management system, one must meet the following conditions (Table 5).

At the executive level of the hierarchical structure of the enterprise in the process of implementing the CMF, it is important to ensure strong connections between the elements of the management system and build a mechanism for mutual cost regulation at the stages of planning, organization, development of the technological process, production, that is, in the process of building the entire economic mechanism of activity [26].

All this becomes possible only with an automated control system, which operates based on an information database. It is a source of information for the work of the analysis system for each operation that occurs in the organization and the basis for the operation of algorithms for making management decisions [27].

According to an expert, "with the emergence of groundbreaking innovations such as robotic process automation and cognitive technologies, cost management is now becoming a strategic tool that can revolutionize the way we do business".

According to the results of the Deloitte biennial global

cost management survey report [28], cost reduction is currently a global imperative. The report that features insights from over 1,000 senior executives offers a conclusion that cost reduction has become a standard business practice in all regions surveyed (the USA, Latin America, Europe, and Asia-Pacific), with 86% of global respondents saying their companies are likely to undertake cost reduction initiatives over the next 24 months. At the same time, nearly half of all organizations surveyed are pursuing cost reduction targets of less than 10%. Yet, despite relatively low targets, almost two-thirds (63%) are failing to achieve their goals. Worldwide, the top external risk for organizations surveyed is "macroeconomic concerns/recession" (30%), followed by "commodity price fluctuation" (19%). Simultaneously, companies in all regions have been actively developing and improving their cost management capabilities. The top three focus areas are: "forecasting, budgeting, and reporting" (55%); "new policies and procedures" (51%), and "IT infrastructure, IT systems, and business intelligence platforms" (49%). Many companies surveyed continue to focus on tactical cost actions (40%), such as streamlining business processes and reducing external spend, versus strategic cost actions (33%), such as outsourcing, centralization, and business reconfiguration. This tactical focus tends to limit the magnitude of cost savings that can be achieved.

Table 5. Conditions for integrating the organization's CMS into the general management system

No.	Conditions for integration	%
1	Development of actions focused on cost optimization at each stage of the production process, which will help to maximize profit	84.6%
2	Implementation of the function of planning and forecasting costs for each stage of production, based on the data of an automated information database on cost centers and their standard and target indicators, calculated based on production process sheets which will provide an efficient control system for their value	80.8%
3	Adaptation of modern approaches to the CMS focused on the automation of both production processes and the processes of forming a management system (organization, planning, budgeting, analysis, etc.), which will maximize the economic effect	77.0%
4	Development of methods for motivating personnel for the optimal use of resources in places of their origin, which will contribute to obtaining a positive economic effect for the organization and improving the quality indicators of the goods, works, or services produced	73.1%
5	Formation of an automated control system for the costs incurred by comparing target and actual values, which will make it possible to quickly identify the outlying indicators and find out the reasons for their occurrence	73.1%
5	Accounting reflection of identifying costs and their values both by elements and by cost items in the context of responsibility centers, which will provide executives with information resources for making efficient management decisions	69.2%
6	Formation of an efficient control system based on information received from the cost accounting system, which will make it possible to identify deviations from planned and forecast indicators within the formed cost budgets for production cycles and operations and will contribute to the development of the most efficient measures and actions aimed at cost optimization	65.4%
7	Development of the most efficient actions towards improving the production system, technological processes, accounting, and control based on relevant cost data, which will ensure the implementation of the principle of continuous improvement	57.7%

Note: compiled based on the expert survey; * percent of references by the experts

6. Conclusions

In conclusion, the following can be inferred.

1. Costs in the management system are an object that directly impacts the economic efficiency of the enterprise, the pricing mechanism in the production process, and, as a result, the state of competitiveness in the market.
2. To efficiently operate the enterprise and make informed management decisions, one must implement cost management through a planning system. We believe that one should organize cost management at all stages of the planning process and the production process. Cost management involves the development of a system of constant targeted impact on the structure of costs and their composition and behavior.
3. The process of cost optimization at an enterprise is carried out continuously at all hierarchical levels and stages of production, from the process of planning activities and organizing accounting records to monitoring the efficiency of bearing the costs. With the application of automation and information systems in the process of analyzing the database on the actual results of the enterprise's activities and the state of assets, liabilities, and capital, management decision-making is balanced and economically justified.
4. The developed information database of the structure and cost system of the enterprise determines the procedure for collecting operational information, its processing, and the analysis methodology with the subsequent application by the management level of the organization. This serves as a guarantee of the efficiency of making management decisions based on an analytical assessment of the organization's costs. Therefore, it is necessary to determine the main functions of the CMS in the modern enterprise management system.
5. As a result, it is possible to implement certain functions of the CMS only if an automated CMS is introduced and integrated into the general management system of the organization, which may become a prospect for further research.

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