

PLACE OF PRODUCTION COSTS SYSTEM ANALYSIS IN SYSTEM ANALYSIS

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Abstract:

Current economic conditions require the development and implementation of an adequate system of production costs, which would ensure a steady profit growth and production volumes in a highly competitive, constantly increasing input prices and tariffs. This management system must be based on an integrated production costs system analysis (PCSA), which would provide all operating costs management subsystems necessary information to design and make better management decisions. It provides a systematic analysis of more opportunities in knowledge, creating conditions of integrity mechanism knowledge object consisting of elements that show intersystem connections, each of which has its own defined and limited objectives, relationship with the environment.

Key words: Business Analysis, System Analysis, Production Costs, Cost Management.

JEL classification: M21, M11

1. INTRODUCTION

A significant contribution to the development of system analysis (SA) as a common methodology for the study is made by such scholars as V. Afanasiev, R. Ackoff, L. von Bertalanffy, S. Bogdanov, C. Barnard, V. Volkov, V. King J. Clear, E. Kunz, A. Lange, E. Laszlo, V. Sadovsky, Art. Optner, A. Uyemov, A. Urmantsev, Y. Chernyak, S. Young. But there remain unexplored questions about place of production costs system analysis in system analysis, the use of fixed principles and categories of system analysis to the formation of production costs analysis methodological bases.

The term "system analysis" first appeared in 1948 in the work of the RAND Corporation in connection with the tasks of the military government [4] and became widespread after the publication of S. Optner's book "System analysis of business and industrial problems" [5] and works of such scientists as Y. Cherniak, C. Yang [6, 7]. But till today there is no consensus among scientists about the interpretation of the essence of the category of "systems analysis".

2. MAIN PART

Considering the concept of "systems analysis" from the perspective of different approaches, it should be noted that its definition as it is given in the big encyclopedia [8], the economic encyclopedia and encyclopedia of economics and law [9], philosophical encyclopedia [10] modern encyclopedia [11] and dictionary of business terms [12], generally treat it as a set of methodological tools used to prepare and inform decisions on complex issues. But most complete definition is given in the economic dictionary, where systems analysis is considering as a set of methods and tools for complex, multi-level and multi-component systems, facilities, processes, based on an integrated approach, taking into account the relationships and interaction between elements of the system.

Ambiguous interpretation of "system analysis" is given in scientific publications as well. Some authors define SA as a "systematic application of concepts to management functions associated with planning [13, p. 38] or with strategic planning and target planning stage [6]. Others use the term "system analysis" synonymously with the term "analysis systems" [14] or "system management of the organization" [7].

Some authors believe that SA is a methodology of defining targeted system.

In our view, the most complete system analysis features are identified by O. Emelyanov. He claims that a system analysis:

- 1) is used in cases where the problem (issue) cannot be provided immediately and resolved through formal, mathematical methods so that there is a large initial uncertain problem situation;
- 2) focuses on the process of problem formulation and uses not only formal methods, but also methods of formal analysis; in [15, 16] these methods groups are called methods of formalized system representation. Those are methods aimed at enhancing the use of intuition and experience of specialists;
- 3) is based on basic concepts of systems theory and philosophical concepts underlying the wide patterns;
- 4) helps to organize the process of collective decision-making, bringing together specialists from different fields of knowledge;
- 5) requires the mandatory development of system analysis methods for the research process and the decision that determines the sequence of analysis methods and their implementation;
- 6) explores the processes of goal formation and development means, development objectives, including the development of techniques involved in structuring purposes;
- 7) Is one of the main method of this analysis is the method of distribution of large uncertainty on more defined, it is better exposed to research (which corresponds to the concept analysis) while maintaining the whole (system) understanding of the object of study and the problematic situation [3, p.13-14].

However, the author notes that the most important feature of the SA, which distinguishes it from other areas, is work with objectives (research, development, structuring or decomposition of objectives).

In addition, as T. Kovalchuk noted, SA helps to take into account all necessary linkages and interactions within management system while constructing purposes comprehensively weigh all the factors and direct management mechanisms to achieve the objectives [4, p.41].

Different definitions of system analysis are provided into the table 1.

Table 1. Definitions of system analysis

Author	Definition
V. Anfilatov, A. Emelyanov, A. Kukushkin [17, p. 351]	SA is the methodology of problem solving based on the structuring of systems and quantitative comparison of alternatives
V. Alekseeva, A. Maleeva [18, p. 12]	SA is a set of specific methods and practical methods of solving various problems through a system approach and presentation of the research object in the form of system
E. Golubkov [21]	SA is the combination of certain scientific methods and practical methods of solving various problems through a system approach and presentation of the research object in the form of system
B. Gerasimov, G. Popova, N. Zlobin [20, p. 13]	SA is based on the ability of handling complex methods of research, methods development and decision making on the study of the behavior of complex systems while managing them
T. Kovalchuk [4, p.96]	SA is the combination of scientific methods and means of practical techniques used in the study and design of complex and complicated objects, especially the development of methods, decision-making in the design and management of economic, social, technological systems. Theoretical and methodological basis of system analysis constitute a system approach and system theory
Y. Lapyhin [22]	SA is a system of research methods or design complex system, searching, planning and implementing changes designed to eliminate problems
V. Makrusyev [24]	SA is the set of procedures based on system ideas, approaches, theories and methods, combined analysis of

	the goals and objectives of a real object, process or phenomenon as a system
S. Optner [27]	SA is the methodology of solving complex problems by successive decomposition of interrelated partial problems
Y. Surmyn [23, p. 13]	SA is a process, some deployment of system principle into a methodological complex. In addition, system analysis carried out not only in relation to the operation and development of various systems, but also in relation to the totality of facts, events, ideas, etc.

So, summarizing the above definitions, we note that system analysis is a set of procedures, theories, system concepts, approaches, methods, techniques, tools, combined to develop effective quality management solutions.

The main features of the system analysis are [24, c. 19]:

1. SA is associated with the adoption of the optimal solution of many possible alternatives;
2. Each alternative is evaluated from the long-term perspective;
3. SA is a methodology of depth clarification (understanding) and organizing (structuring) problems;
4. SA is a development of new principles of scientific thinking, taking into account the relationship of a contradictory trend. Specifically, at all stages of the life cycle of any system it is comparing the alternatives, where possible in quantitative form, based on a logical sequence of steps.
5. Sharpening expert's intuition.
6. Applies above all to solve strategic problems.

Thus, the result of system analysis is the choice of many alternatives the one that best meets the conditions of the problem. The choice of alternatives is made on the basis of system analysis, allows the system to develop optimally and rationally, allocate and spend resources, generate conditions for its further development and subsequent implementation of the basic functions of the system.

Since the production process on the one hand is a process of industrial consumption of resources (means of production and labor), and on the second is a creation of new product, the production process should be considered as a system of production and consumption as a process of creating a new product in the natural-material form in value terms.

Considering the natural-material form of production process, "input" displays resources - labor and production means, and "output" displays product produced.

Considering the production process in terms of value, "input" displays elements of production costs as production and consumption, "output" displays the cost of the product as a result of its creation in the manufacturing process.

Consequently, production costs are difficult economic category that reflects real movement and transformation of resources, so they need to be examined as a complex system.

Based on the above, for the analysis of production costs on the basis of the modern enterprise system approach, we suggest the using of following main subsystems of enterprise production costs analysis system:

1. Input of system that includes all kinds of resources (financial, material, information, labor, time, new technologies, research and experimental development) which are needed for the production process and forming the operating expenses elements.
2. The processes in the system that are represented technologically and provide analysis of the transformation of input.
3. Exit of system defined the optimum level of cost of finished goods with appropriate level of quality.

Therefore, a system analysis of operating costs is a set of methods for integrated and comprehensive study of the production costs by considering them as a system, which consists of an ordered set of elements of operating costs, the study of relationships, interdependencies and mutual dependence, to assess the level of functioning of the specified parameters, goals and objectives;

survey of factors of external and internal environment that caused the deviation from the set parameters at the input of system, the processes in the system and output, explore possibilities and ways of its stabilization to develop evidence-based management decisions to ensure the implementation of tactical and strategic objectives of the enterprise.

Thus, the above-said allows applying the basic principles and categorical apparatus of system analysis to the process of teaching the principles of production costs system analysis.

A system analysis of operating expenses based on the general principles of systems analysis, which include:

1. The principle of deductive sequence - consistent review of operating costs system by stages from the environment and relations with connections to the whole parts of the whole.
2. The purposefulness principle directs that in the study of production costs as a system is first necessary to justify the purpose of operation. Purposefulness is a constructive principle, subject to two conditions:
 - The purpose of the system analysis of operating expenses should be formed so that it could in structuring and sub-components, the degree of achievement can be assessed (specify) quantified;
 - The system must be a mechanism to diagnose and assess the achievement of the set goals.
3. The principle of resources coordination and objectives review, updating system. Resources directed to the system should be coordinated in magnitude and time according to the degree of importance and relevance of the objectives and tasks undertaken operating costs analysis system.
4. The congruence principle means conflict absence between parts of the whole, objectives whole and parts, leading to conflict.
5. The principle of duality you follows from the principle of purpose and means the system analysis of production costs must be considered as a subsystem (part of) management system operating costs and at the same time as a separate part that acts as a unit in interaction with the environment. In turn, each element of the system has its own structure and can also be seen as a system.
6. The principle of integrity requires consideration of production cost analysis system as a complex object, selected from among other objects (system planning and forecasting production costs, accounting system, organizations, etc.), which is perfect in relation to the environment, has its own specific functions and develops for its inherent laws. This does not deny the need to study individual aspects.
7. The principle of difficulty points to the need for research operating costs analysis system as a complex entity and if the difficulty is very high, you need to consistently simplify the presentation of the system so as to maintain all of its essential properties.
8. The principle of plurality requires the researcher to submit the description of the analysis of production costs on many levels: morphological, functional, information.
9. The principle of historicism requires the researcher to disclose the past operating costs system analysis and identify trends and patterns of development in the future.

Selection of system analysis object of operating expenses requires clarification of the costs and patterns of their formation. It is worthwhile to consider the costs in terms of the goal of analysis. To the overall efficiency of the facility cost analysis it is necessary to enter all operating expenses of the company, as well as the final outcome of its activities. In this case, it is advisable to use the classic scheme of formation expenses (by economic elements and items costing) of profit from production and sales.

That system analysis of operating costs should be considered not as a comparison of subjective opinion, but as a structural basis which provides expert opinions for the use of the results that are superior to any individual opinion.

The value of a system approach to the issue of cost analysis is that consideration of the categories of system analysis provides the basis for a logical and consistent approach to the tactical and strategic decision-making on operational costs.

3. CONCLUSIONS

Thus, the real rationale choice, optimal and effective solution is an important task of production costs system analysis, the basic methodological principles which, in turn, are based on the general methodology of system analysis. The purpose of this analysis to a specific problem in the management of production costs is to increase the degree of validity of the decisions taken. Therefore, for effective management of operating costs, the company must first create a system analysis of production costs as the methodological basis of management.

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