

ЗАХОЖАЙ

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A TECHNICAL APPROACH TO
ASSESSMENT OF THE LEVEL OF
INFORMATION SUPPORT FOR
AN INDUSTRIAL ENTERPRISE
COSTS MANAGEMENT

ЧЕРНЯЄВА

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ОЦЕНКЕ УРОВНЯ
ИНФОРМАЦИОННОГО
ОБЕСПЕЧЕНИЯ УПРАВЛЕНИЯ
ЗАТРАТАМИ
ПРОМЫШЛЕННОГО
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Modern transformations of the national economy require enterprises find effective ways to costs management. Their optimization will support and develop competitive advantage in the market with limited resources and financial capabilities. Under these circumstances, the key criterion of efficiency cost management processes of enterprises is their level of information support. Identification and assessment of such level is very important procedure both for the enterprise and external users for a variety of information, so today is the object of close attention of many experts and scientists. Researches have shown that the existing methods of assessment of the level of information support for costs management have several disadvantages and therefore require careful development, in particular the formation of such a technical approach to assessment, which will complex determine the level of information support for an enterprise costs management and the factors affecting it. This, in turn, will improve the efficiency of management decisions to optimize costs of enterprises.

The Purpose of the article is to substantiate the technical approach to assessment of the level of information support for an industrial enterprise costs management based on determination of four blocks of partial parameters, calculation of generalizing and integral indicators of information support assessment, which enable to identify its level on an appropriate scale.

An integral component of the costs management system of enterprises stands its information support, which is a complex and dynamic process, and therefore requires adequate assessment. Determined that the substance of information support for cost management (ISCM) it is advisable to form on functional grounds for the purpose of assessment. This was the basis for the foundation of partial parameters of ISCM assessment for four blocks subject to specific of industrial enterprises activities: block A (general cost information parameters); block B (functional parameters of ISCM); block C (communication parameters of ISCM); block D (organizational and managerial parameters of ISCM). It is proposed to determine the level of ISCM by using the integral indicator, which consists of generalizing indicators by blocks of partial parameters. For the purpose of economic interpretation of the integral indicators of ISCM assessment it is develop a scale that characterizes its level (high, adequate, mean, low or critical). The suggested technical approach to assessment of the ISCM level was tried in practical activities of industrial enterprises of the Kyiv region.

Consequently, the assessment of the level of information support for costs management by the present technical approach will allow to industrial enterprises complex determine the level of ISCM by blocks of parameters, timely detection of deviations from the set standards, implement measures to improve or correct deficiencies in order to improve the general level of ISCM and process optimization of cost management.

В статье рассмотрена необходимость и сущность информационного обеспечения для целей управления расходами предприятия, а также его содержательное наполнение по функциональному признаку такого управления. Для устранения недостатков существующих методик оценки уровня информационного обеспечения управления расходами (ИОУР) обоснован методический подход, основанный на определении уровня ИОУР на основе интегрального показателя. Расчет данного показателя предлагается проводить с помощью вычисления обобщающих показателей оценки ИОУР по четырем блокам частных параметров, характеризующих общие параметры информации о расходах, функциональные, коммуникационные и организационно-управленческие параметры ИОУР. Для характеристики уровня информационного обеспечения управления расходами разработана шкала значений его интегрального показателя. Также в статье проведена апробация представленного

методического подхода к оценке уровня ИОУР в практической деятельности промышленных предприятий. Выявлено, что уровень информационного обеспечения исследуемых предприятий разный, что соответственно отражается на процессах управления расходами.

Keywords: *information support; costs management; assessment; technical approach; blocks of parameters assessment*

Ключевые слова: *информационное обеспечение; управление расходами; оценка; методический подход; блоки параметров оценки*

INTRODUCTION

In the context of Ukraine's emerging economy, ensuring an optimum cost level is one of the key areas of improving competitive advantages and increasing profits of industrial enterprises due to resources saving and their rational use. However, the efficiency of costs management and optimization processes currently depends on proper organization of their information support. Such a requirement necessitates assessment of the level of information support for an industrial enterprise costs management, which serves as a very significant procedure for both the enterprise itself and various external information users that can include public authorities, financial organizations, suppliers, consumers, business associates, competitors and others. Under such circumstances, shaping a technical approach to assessment of the level of information support for costs management becomes a prerequisite for improving the effectiveness of managerial decisions as to their optimization and rational use of enterprises' resources.

BRIEF LITERATURE REVIEW

Substantial contributions to development of issues concerning enterprise costs management, including by explaining the theoretical and methodological aspects of their assessment, have been made by such outstanding domestic and foreign scholars as A.A. Mazaraki (2016) [1], P. Drucker (2012) [2], J. Dehez (2014) [3], A.A. Pylypenko, I.P. Dzyobko, O.V. Pysarchuk (2011) [4], D. Jobin (2008) [5], L.D. Vorobyova, L.A. Kvyatkovska (2013) [6], I.V. Lisovskyi (2015) [7] and others. The problems of information support for an enterprise management processes are considered in the works of such scholars as S. Ashmarina, A. Zotova (2016) [8], R.T. Rust, T. Ambler, G.S. Carpenter, V. Kumar, R.K. Srivastava (2004) [9], I. Chernyavska (2009) [10], S.M. Petrenko (2007) [11], P.O. Kutsyk, L.H. Medvid, V.O. Shevchuk, D.O. Kharynovych-Yavorska (2015) [12], V. Kuziv (2008) [13], S.A. Kuznetsova (2007) [14], B. Barmakov (2009) [15] and others. At the same time, a number of issues relating to creation of an effective base for assessment of the level of information support for an enterprise costs management that would provide complete, reliable and timely information on them for management purposes remain open. In particular, the following ones can be mentioned among them: defining the constituent elements of information support for cost management and the system of indicators for its assessment; search for a single criterion of information support for cost management efficiency with due regard for the specifics of enterprise activity; choice of a method for assessment and

construction of a generalizing and integral indicators which characterize the level of information support for an enterprise costs management.

STATEMENT OF THE PROBLEM

The **PURPOSE** of the article is to substantiate the technical approach to assessment of the level of information support for an industrial enterprise costs management based on determination of four blocks of partial parameters, calculation of generalizing and integral indicators of information support assessment, which enable to identify its level on an appropriate scale.

RESEARCH METHODS: marketing methods (the setting of the parameters of the evaluation), analytical methods (analysis of the current literature and statistical data of enterprises), of comparison (the comparative analysis of the level of information support of cost management of industrial enterprises), table method (to build tables), scientific methods: integrated and systemic approaches (when you define the stages assess the level of information support of cost management, the choice of the generalizing and integrated indicators).

RESULTS

Our study of the process of operation of the enterprise costs management system showed that information support represents its integral part underpinning the entire costs management functional block – from their accounting, assessment and planning to identification of their optimization areas. In this connection, information support is a complex, meaningful and dynamic process requiring adequate assessment in order to improve costs management efficiency at an enterprise. A study of the existing literature [4, 6-8, 10-14] enabled to conclude that there is no single technique, single approach to assessment of the level of enterprise information support; what is more, the assessment process becomes more complicated due to the following factors: multi-directionality of the components of information support for costs management and complexity of their combination into a single system; lack of a generally accepted system of criteria and indicators of ISCM assessment; presence of various types of costs accounting, various approaches to and methods of their planning and rationing at enterprises; limited possibilities of enterprises in obtaining necessary information for costs management purposes from external sources within specified time and of required quality; and lack of a single integral indicator characterizing the ISCM level. To eliminate negative influence of the above factors there is a good reason to primarily consider the contents of information support for costs management, which is

suggested to be formed along functional lines of such management:

- 1) an information base for accounting and assessment of costs, which is composed of accounting and analytical support for costs management;
- 2) an information basis for performing diagnosis of costs management efficiency;
- 3) an information base for costs planning and rationing;
- 4) an information basis for search, identification and substantiation of reserves for cost optimization;
- 5) an information base for costs management organization and control over implementation of managerial decisions.

Based on specialist literature studied [5, 10, 11, 12, 14], we suggest assessing the level of information support for an industrial enterprise costs management in stages presented in Figure 1.

Accounting and analytical support for enterprise costs management serves as an information basis for assessment of the ISCM level. The above-proposed structural elements of ISCM have become a basis for

substantiation of partial parameters of ISCM assessment by the following blocks:

- 1) block A – contains general cost information parameters (a_i), which reflect information acquisition and transmission quality, as well as its potential value for costs management processes;
- 2) block B – contains functional parameters of ISCM (b_i), which reflect the information support level by functions of industrial enterprise costs management with identification of sectoral specifics of such management;
- 3) block C – contains communication parameters of ISCM (c_i), which reflect the level of efficiency of costs-related information flows motion and processing, the degree of information exchange among organization departments, enterprise management levels and cost centers, as well as technological effectiveness and the degree of communicativeness of information users;
- 4) block D – contains organizational and managerial parameters of ISCM (d_i), which reflect qualification profiles of information support specialists, as well as processes of organization and coordination of managerial functions with ISCM.

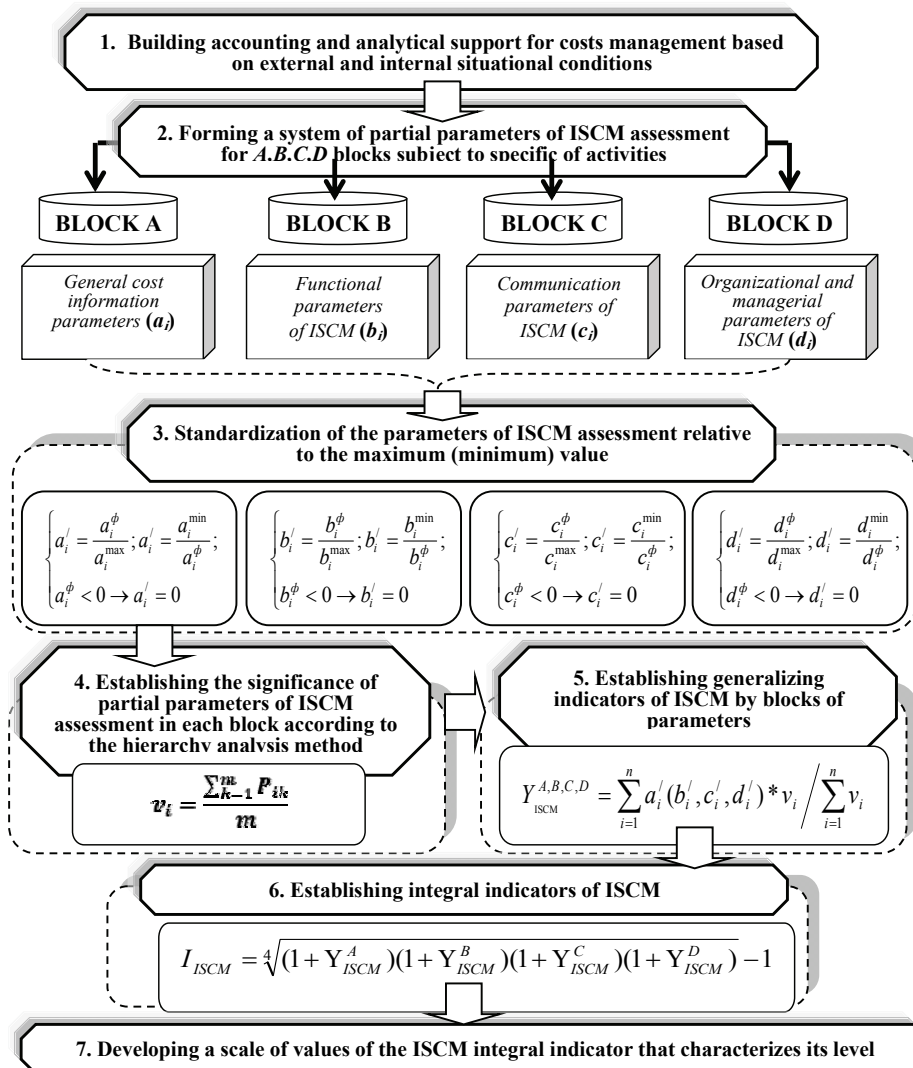


Fig. 1. Stages of assessing the level of information support for industrial enterprise costs management [developed by the authors based on [3,5, 6, 10-14]]

Assessment of parameters by blocks is carried out through both quantitative (based on calculation of appropriate coefficients) and expert methods (based on calculation of parameters in points). This is due to multidirectionality of the partial assessment parameters and the qualitative nature of ISCM, which are impossible to assess only through quantitative methods.

Generalization of the partial parameters of ISCM assessment is performed by means of their standardization pursuant to the maximum (minimum) value and synthesis into generalizing indicators according to the following formula:

$$Y_{ISCM}^{A,B,C,D} = \sum_{i=1}^n a_i'(b_i', c_i', d_i') * v_i / \sum_{i=1}^n v_i, \quad (1)$$

$$I_{ISCM} = \sqrt[4]{(1 + Y_{ISCM}^A)(1 + Y_{ISCM}^B)(1 + Y_{ISCM}^C)(1 + Y_{ISCM}^D)} - 1, \quad (2)$$

An economic interpretation of the integral indicators of ISCM assessment comes down to the fact that it can take on values over the range of $0 \leq I_{ISCM} \leq 1$. The value $I_{ISCM} \approx 1$ corresponds to a high level of information support for industrial enterprise costs management meaning an almost full compliance of the ISCM elements with the requirements and needs of information users at a certain point of time. If I_{ISCM} approaches zero, this is indicative of the lack of ability of the enterprise information system to meet information needs of cost management processes [4]. In fact, the level of ISCM cannot be unambiguously characterized based on the digital number of any indicator; there is always some range of allowed values within which transition from one level of ISCM to another occurs. In addition, a limit value of the ISCM level has a probabilistic nature, therefore its true value (I_{ISCM}^{lim}) is within some range (Δ), while boundaries (limits) of intervals are identified correspondingly. In view of the above said, it is possible to suggest the following scale characterizing the level of ISCM based on the value of its integral indicator (Table 1).

The suggested technical approach to assessment of the ISCM level was tried in practical activities of industrial enterprises of the Kyiv region (Table 2).

where $Y_{ISCM}^{A,B,C,D}$ -- generalizing indicators of ISCM assessment by respective blocks of parameters $A, B, C,$ and D ;

$a_i'(b_i', c_i', d_i')$ -- standardized value of the i^{th} partial parameter of ISCM assessment in, respectively, blocks $A, B, C,$ and D ;

v_i -- significance of the i^{th} partial parameter of ISCM assessment in each block established using the hierarchy analysis method;

n -- number of partial parameters of ISCM assessment in each block.

It is suggested to calculate the integral of ISCM assessment using the following formula:

Calculation results suggest that the level of information support for managing costs of the studied industrial enterprises varies depending on obtained values of the ISCM assessment parameters by corresponding blocks.

Consequently, the overall level of information support for managing costs of PHC *Bila Tserkva Reinforced Concrete Structures Plant* is mean due to the parameters of blocks B and C. Comparing such results with other industrial enterprises, it is worth noting that PHC *Brovary Plastics manufacturing Plant* has the highest value of the integral indicator of ISCM assessment among the studied enterprises as a result of the high values of the parameters in all blocks. Therefore, the enterprise has an adequate level of ISCM. The lowest values of the integral indicators of ISCM assessment are observed at PHC *Bila Tserkva Mechanical Rubber Goods Works* and PHC *Hrebinky Machine-Building Plant* that have, respectively, critical and low levels of ISCM. Hence, it should be noted that industrial enterprises must place greater focus on the suggested parameters of assessment of information support for cost management, control their conformance to standard values, impose measures to improve them or to remove shortcomings in order to raise the overall level of ISCM and optimize cost management processes.

Tab. 1

Scale of the ISCM integral indicator values and respective ISCM levels

[developed by the authors based on [4, 11, 12, 14]]

Interval of the I_{ISCM} values	ISCM level characteristic
$I_{ISCM}^H \approx 1$	High (H)
$(1 + \Delta)I_{ISCM}^{lim} < I_{ISCM}^A < 1$	Adequate (A)
$I_{ISCM}^{lim} < I_{ISCM}^M \leq (1 + \Delta)I_{ISCM}^{lim}$	Mean (M)
$(1 - \Delta)I_{ISCM}^{lim} < I_{ISCM}^L \leq I_{ISCM}^{lim}$	Low (L)
$0 < I_{ISCM}^C \leq (1 - \Delta)I_{ISCM}^{lim}$	Critical (C)

Results of overall assessment of the level of information support for industrial enterprises cost management
[calculated by the authors according to business and management accounting data of enterprises]

Enterprises	Generalizing indicators of ISCM assessment by blocks of parameters				Integral indicator of ISCM assessment	Conclusion of the ISCM level
	<i>BLOCK A</i>	<i>BLOCK B</i>	<i>BLOCK C</i>	<i>BLOCK D</i>		
PHC Bila Tserkva Reinforced Concrete Structures Plant	0.618	0.704	0.697	0.664	0.670	$0.665 < I_{ISCM}^M < 0.775$ – mean level of ISCM
PHC Bila Tserkva Mechanical Rubber Goods Works	0.679	0.524	0.498	0.345	0.507	$0.000 < I_{ISCM}^C \leq 0.554$ – critical level of ISCM
PHC Brovary Plastics Manufacturing Plant	0.797	0.814	0.752	0.752	0.779	$0.775 < I_{ISCM}^A < 1.00$ – adequate level of ISCM
PHC Hrebinky Machine-Building Plant	0.564	0.596	0.603	0.587	0.587	$0.554 < I_{ISCM}^L \leq 0.665$ – low level of ISCM

CONCLUSIONS

Consequently, the technical approach to assessment of the level of information support for industrial enterprise cost management the authors suggest is characterized by a number of advantages, namely: it is of a comprehensive nature; is focused on open-source (available) official accounting, financial and managerial information; takes account of the sectoral specifics of cost management processes; combines quantitative and expert methods of calculating indicators of ISCM assessment; has a comparatively simple and clear procedure for making calculations and interpreting findings. These advantages will further improving efficiency of industrial enterprise costs management, their optimization, which in its turn will create a basis for expansion of activities, more efficient and effective enterprise capacity utilization, mastering of new products, assimilation of novel technologies and so on.

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