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THEORETICAL AND METHODOLOGICAL REGULATIONS OF MANAGEMENT CONTROL IN STATE HIGHER EDUCATION INSTITUTIONS

Abstract. The research examines the works of local and foreign scientists who dedicated their studies to management accounting in general and management control in particular. After analyzing the scientific literature, it was suggested to understand the concept of "management control in state higher education institutions" as the information subsystem of management accounting of these entities. This subsystem is based on the management reporting of a state higher education institution, which assesses the effectiveness of activities in the context of a vertical and horizontal structure to ensure the influence of the management apparatus on the work of State Higher Education Institutions and structural units to achieve the mission and strategic goal of State Higher Education Institutions. It is established that not only financial but also non-financial indicators are subject to the study of management control. The evaluation of the responsibility centers' activity of State Higher Education Institutions plays an important role in management control. The research suggests that the assessment of the responsibility centers' activity of State Higher Education Institutions can be: effective and efficient; efficient, but ineffective; effective, but not inefficient; ineffective and inefficient. The main method for evaluating the performance of state higher education institution departments is comparison. The research shows how the activity of the revenue centers is carried out by comparing the actual amount of the received income with the estimated one, thus defining deviations and analyzing their causes. The elaboration of theoretical and methodological provisions of management accounting in a state higher education institution made it possible to propose its primary classification, as well as to adapt the general coefficients system for monitoring in the process of management control of the activity of a state higher education institution.

Introduction. Current trends and the state of economic development are characterized by a significant influence of the determinants of higher education, since, according to experts' estimates, from 70 to 90% of GDP is determined by scientific and technological progress and innovative economy, and in the countries with the most developed economies 60% of national income growth is determined on average increase in knowledge and education of society, which are transformed into a real product of social production [Iskakov 2014].

The place of the State Higher Education Institutions, as the main productive force of higher education, in the economic development of Ukraine should be considered in the context of various factors, in particular: actually as an economic entity engaged in economic activity; as a tool to increase the employment of the population through the employment of their employees and students in the process of engaging them in scientific activity; as bases for the development of innovation and scientific development, which are necessary elements of economic growth; as a tool for developing one's own region and city [Prokopenko, Mel'nykova 2017]. The analysis of the activity of domestic higher education institutions shows rather disappointing realities, the solution delay may lead to the destruction of higher education in Ukraine [Repko, Ruda 2017; Rubin 2019; Krikunenko 2019; A strategy for reforming higher education in Ukraine by 2020. Draft (unofficial text)]. In order to overcome the crisis of higher education at the beginning of 2019 in one of the leading local state institutions of higher education – National Technical University "Kharkiv Polytechnic Institute" an on-site meeting was held. The outgoing meeting of the Committee on Science and Education was on the topic "Higher education of Ukraine: state of legislative support, problems and directions of reform". More than 350 educational and scientific representatives, the public and the expert community took part in the work [Spivakovsky 2019]. During the discussion, several strategic vectors for the modernization of the higher education system were highlighted, namely [Spivakovsky 2019]: a general mechanism for managing higher education institutions; system of financing higher education institutions; estimation of higher education quality and educational measurement. A detailed examination of these vectors in the context of accounting has identified touch points that unify the field of management accounting. Thus, the development of the management accounting subsystem will facilitate the implementation of the established directions of reforming the higher education system in Ukraine [Svirko, Trosteniuk 2018].

Literature review and the problem statement. The problem of management accounting as a whole was taken up by a considerable number of local and foreign scientists, in particular: R. H. Ashton [Ashton 1974], M. Hrabal [Hrabal 2016], CR. Hu [Hu, Jiang 2019], W. Jiang, [Hu, Jiang 2019], L. D. Parker [Parker 1978], C. D. Ittner [Ittner, Larcker 2001], B. Kral [Kral 2006], R. Ljiljana [Ljiljana, Radivoje 2014], D. F. Larcker [Ittner, Larcker 2001], E. Mircea [Mircea 2016], S. Radivoje [Ljiljana, Radivoje 2014], J. L. Zimmerman [Zimmerman 2001], A. Apcherch [Apcherch 2002], P. Y. Atamas [Atamas 2006], M. O. Vakhrushina [Vahrushina 2000], P. Brewer [Garrison, Norin, Brjuer 2007], S. F. Golov [Golov 2003], R. Harrison

[Harrison, Norin, Brjuer 2007], V. M. Dobrovsky [Dobrovsky, Hnylyts'ka, Korshykova 2005], K. Drury [Drury 2002], O. D. Kaverina [Kaverina, 2003], T. P. Karpova [Karpova 1998], V. E. Kerimov [Kerimov 2003], A. A. Kuznecov [Kuznecov 2015], V. S. Len' [Len' 2006], B. Nidlz [Nidlz 1993], L. V. Napadovskaya [Napadovskaya 2000, 2004], S. A. Nikolaeva [Nikolaeva 1993], E. Norin [Harrison, Norin, Brjuer 2007], V. F. Palij [Palij, Vander 1997], L. P. Radetska & L. V. Ovod [Radetska, Ovod 2006], B. Ryan [Ryan 1998], S. V. Svirko [Svirko 1998, 2012], T. Skoun [Skoun 1997], E. V. Sokolov [Sokolov 1996], V. V. Sopko [Gucajljuk, Sopko, Ivanechko 2006], V. I. Tkach and M. V. Tkach [Tkach, Tkach 1994], C. Horngren [Horngren, Foster 1995], Je. S. Hendriksen and M. D. Van Breda [Hendriksen, Van Breda 1997] M. G. Chumachenko [Garrison, Norin, Brjuer 2007], A. D. Sheremet [Sheremet 2000], A. Yarugova [Yarugova 1991]; research of the issues of accounting of expenditures in the budget sphere at different times was carried out by national scientists P. Y. Atamas [Atamas 2006], L. O. Gutsaylyuk [Gucajljuk, Sopko, Ivanechko 2006], D. O. Gritsyshen [Ievdokymov, Gritsyshen, Svirko 2017], R. T. Dzhoga [Dzhoga, Svirko, Sinel'nyk 2003], O. O. Doroshenko [Doroshenko 2012], V. V. Ievdokymov [Ievdokymov, Gritsyshen, Svirko 2017], T. V. Kaneva [Kaneva 2002], I. O. Kondratyuk [Kondratyuk 2007], S. O. Levitskaya [Levitskaya 2005], L. G. Lovinskaya [Lovinskaya, Sushko, Svirko 2013], S. V. Svirko [Lovins'ka, Sushko, Svirko 2013; Dzhoga, Svirko, Sinel'nyk 2003; Ievdokymov, Gritsyshen, Svirko 2017], N. I. Sushko [Lovins'ka, Sushko, Svirko 2013], A. I. Farion [Farion 2010], O. O. Chechulina [Chechulina 2011]. National scientists' dissertations are distinguished by setting the task of determining the composition of the costs of the State Higher Education Institutions: Kondrashova T. ("Management Accounting at the State Educational Establishment" (2007)), Sysyuk S. ("Cost Accounting and Costing of Paid Educational Services" (2007), Kharchuk Yu. ("Accounting and Analytical Assurance of Financial Sustainability of Higher Educational Institutions of State and Communal Property" (2014). Despite the achieved results and the proposed innovations, it should be noted that there are no studies on management control issues in state higher education institutions, which is an integral part of management accounting. [Ievdokymov, Gritsyshen, Svirko 2017; Svirko, Zarosylo 2012].

Formulating the goals of the article. Issues of management control in public higher education institutions need to be addressed. Special and general scientific methods of cognition were used to ensure the effectiveness of the scientific search. They are methods of induction and deduction, analysis and synthesis, grouping.

Research results. According to the founder of the scientific and practical administrative (classical) school of management, Henri Fayola, control is the fifth function of management [Fayol 1916]. Continuing the work of the above scientist, modern managers argue that managerial control should be understood as a function that is the content of feedback [Menedzhment]. Accountants are tuned to a more detailed interpretation of the term: they offer to understand under "management control the system of accounting and use of information to evaluate the efficiency of using the company resources (financial, labor, tangible, intangible) and the company as a whole and aims to achieve a certain strategy". [Kuznecov 2015]. The absence of other interpretations of the concept of managerial control causes restrictions in elaborating the definition of "management control in public institutions of higher education", the authors propose to understand the information subsystem of management accounting of these entities, based on management reporting of state education institutions. Within

the management reporting of state higher education institutions, the effectiveness of activities in the context of a vertical and horizontal structure is assessed to ensure the influence of the management apparatus on the work of state higher education institutions and structural units on the achievement of the mission and strategic goal of state higher education institutions.

It should be noted that in budgetary institutions all economic means, sources of their formation and economic processes are subject to continuous control, and within the limits of management accounting all its objects are subject to control [Ievdokymov, Gritsyshen, Svirko 2017; Svirko, Zarosylo 2012]. During the control the necessary information is collected and analyzed, the deviations of the actual indicators from the established (planned, standard) and their reasons are revealed, therefore the budget control is the basis of control in the management accounting subsystem.

For the hierarchy of organization of the product creation process, managerial control should be divided into job control, control of responsibility centers, and control of the State Higher Education Institutions as a whole. According to this principle, the indicators of control are integrated, transformed from numerous specific values into more general ones, and at the level of state institutions of the State Higher Education Institutions the management controls the most important indicators characterizing the degree of achievement of the set goal according to its development strategy, position in the market of relevant services and financial status [Ievdokymov, Gritsyshen, Svirko 2017; Svirko, Zarosylo 2012].

The following types of management control should be distinguished according to its frequency [Ievdokymov, Gritsyshen, Svirko 2017; Svirko, Zarosylo 2012]:

– current control (carried out continuously through systematic monitoring of the tangible assets movement, work in progress and products of activity; its main tool is the operational accounting in the system of dispatching regulation for the process of creating some products of State Higher Education Institutions activity). Ongoing control plays an important preventive role as it enables you to respond promptly to unwanted deviations in the course of product creation;

– periodic control (carried out by examining the regular reporting of the responsibility centers from the State Higher Education Institutions on the main performance indicators (with appropriate explanations), which specifies the planned and actual performance indicators for a certain period, as well as the summary data from the beginning of the year (quarter));

– one-time control (not regular in nature and standard range of permanent entities, since its purpose and range of controlled indicators are determined in each case by the management of the State Higher Education Institutions).

Not only financial but also non-financial indicators are subject to the study of management control. Financial indicators of the State Higher Education Institutions include indicators of costs, income, financial results, cost of resources, monetary expression of liabilities, etc. Non-financial performance of the State Higher Education Institutions includes the provision of labor resources, staff turnover, use of working time, providing the institution with non-current assets and loading them, providing the institution with material resources, quality of services provided, etc.

Evaluating the activity of the responsibility centers at the State Higher Education Institutions plays an important role in managerial control, which is to determine the

effectiveness and efficiency of the respective structural subdivisions of the specified economic entity (by performance we should understand the status of the tasks of the responsibility centers (volume of activity, time, quality of products, etc.)), activity efficiency is determined by the ratio of the result of the activity to the amount of resources used and is to achieve maximum results at the lowest cost) [Ievdokymov, Gritsyshen, Svirko 2017; Svirko, Zarosylo 2012]. When assessing the activity of the responsibility centers of the State Higher Education Institutions, it can be found out what is: effective and efficient, efficient but ineffective, effective but not efficient, ineffective and inefficient. Assessment of the responsibility centers of higher education institutions is carried out with the help of a specific system of indicators that reflect the specific activity of each of them. However, there are a number of universal indicators.

The main method of evaluating the performance of public higher education institutions subdivisions according to certain indicators is comparison. The actual value of an indicator over a given (reporting) period is compared with its value, which is the basis for the estimate. Such baseline levels are largely taken to be the planned (normative) values that are considered to be targets, or actual, achieved in the past. If the basis of comparison is the planned (normative) value of the indicator, then the assessment is made by the criterion of the plan implementation degree.

$$P_{pl} = \frac{A_f}{A_{pl}} \times 100,$$

(1)

where P_{pl} – implementation of the plan for this indicator, %;
A_f, A_{pl} – respectively the actual and planned value of the indicator in the established dimension.

In-depth study of the obtained assessment requires establishing absolute and relative deviations of the actual values of the indicators from the planned ones, analysis of their causes.

$$\Delta A = A_f - A_{pl},$$

(2)

$$\Delta A = \sum_{i=1}^{n} \Delta A_i,$$

(3)

where ΔA - the total absolute deviation of the actual value of the indicator from the planned;
n – the number of factors (causes) that caused the deviation;
ΔA_i – is the deviation due to the influence of the i-th factor.

The criterion of indicator dynamics is used to evaluate the activity of the responsibility centers of state higher education institutions. In this case, the actual value of a particular indicator for the reporting period is compared with its actual value for the previous period, ie:

$$P_d = \frac{A_f}{A_{f.b}} \times 100,$$

(4)

where P_d – the ratio of the actual values of the indicator in the reporting and previous periods, %;
$A_{f.b.}$ – the value of a certain indicator in the previous (base) period in the established dimension.

For the ranking of responsibility centers or individual employees of public higher education institutions by certain indicators, the average value of this indicator for the whole population is taken as the basis of comparison.

$$P_{c_i} = \frac{A_{f_i}}{A_{f.c}} \times 100$$

(5)

where P_{c_i} is the ratio of the actual value of the index of the i-th subdivision to its average level of subdivision group, %;
A_{f_i} - a certain indicator for the reporting period of the *i*-th unit;
$A_{f.c}$ – is the average of a unit group.

$k_{t.v}$ is a general quantitative assessment of the final results of the activities of public higher education institutions subdivisions; it can also be used to evaluate the work of individual employees of the latter: then this integral indicator is called the coefficient of quality of work.

To summarize the final results of the activity of the centers of responsibility and individual employees of public institutions of higher education, the coefficient of labor contribution (for workers - the coefficient of labor quality) is calculated by adjusting its normative value by increasing or decreasing coefficients.

$$k_{t.v} = 1 + \sum_{i=1}^{n} k_{p_i} - \sum_{i=1}^{n} k_{z_i},$$

(6)

where $k_{t.v}$ – the value of the coefficient of labor contribution;
n – is the number of indicators by which the work is evaluated;
k_{pi} – increasing factor for the *i*-th indicator;
k_{zi} – downside factor for the *i*-th indicator.

The increase (decrease) coefficient is determined by the formula:

$$k_{p_i} (k_{z_i}) = (P_{pl} - 100) \times h_i,$$

(7)

where $k_{pi} (k_{zi})$ – implementation of the plan on the *i*-th indicator, %;
h_i – the rate of increase (decrease) of the coefficient of labor contribution for each percentage of over-execution (under-execution) of the plan by the i-th indicator in units of one.

The assessment of the activity of cost centers in institutions is based on a system of standard (regulatory) costs that are necessary for the creation of products of activity under its normal conditions. Within such a system different types of standards (norms) are distinguished: basic (long-term), theoretical (standard) and current (correspond to the conditions of current activity) [Ievdokymov, Gritsyshen, Svirko 2017; Svirko, Zarosylo 2012]. For the correct determination of deviations from standard (regulatory) costs, flexible estimates are used, drawn up for the actual volume of products

created by the activity by standards (norms); Comparison of actual costs with flexible budget expenditures provides an opportunity to estimate variance at the expense of performance, and comparing flexible budget with static, which specifies the standard (regulatory) costs per standard volume of product creation activity, provides the detection of deviation at the expense of activity. Factor analysis methods are used to determine the reasons for deviations of actual costs from standard ones, with the calculation being performed both per unit of created product and its entire volume.

a) deviation due to the number of:

$$\Delta g = \sum (g_1 - g_0) \times p_0 = \sum g_1 p_0 - \sum g_0 p_0, \tag{8}$$

where g_1, g_0 is the actual and standard rate of resource consumption, kg, man-hours;
p_0 – standard (planned) assessment of the resource unit, UAH;
$\sum g_1 p_0$ – the total cost of the actual amount of resources expended at regulatory prices for the product;
$\sum g_0 p_0$ – the total cost of the standard amount of resources expended at the standard prices for the product;

b) product price deviation:

$$\Delta g = \sum (p_1 - p_0) \times g_1 = \sum g_1 p_1 - \sum g_1 p_0, \tag{9}$$

where p_1 – is the actual estimate of the resource unit, UAH;
$\sum g_1 p_1$ – total cost of actually consumed resources at actual product prices.

The reasons for the deviations are the inappropriateness of non-current assets for the provision of services of state higher education institutions, the inability to provide services of state higher education institutions by its staff, the absence of employees of state higher education institutions in the workplace, inefficient use of state institutions of higher education institutions of higher education. education, poor quality of working capital and more.

Variable overhead costs are estimated in a similar order, however, the base of their distribution is chosen as a quantitative factor, and the rate of distribution of these costs is chosen as a qualitative factor [Ievdokymov, Gritsyshen, Svirko 2017; Svirko, Zarosylo 2012]. The analysis determines the impact of each factor in the context: the rejection of fixed and variable overhead costs by performing cost estimates, the rejection of fixed and variable overhead costs by changing the volume of product creation activities.

Deviation management involves taking into account only significant deviations by managers, which are determined on the basis of their size, percentage as a percentage of the total budget, repetition, controllability, economic feasibility of their study.

The activity of the revenue centers is assessed by comparing the actual amount of the received income with the estimated one, thus defining the deviations and analyzing their causes.

$$\Delta g = \sum g_1 p_0 - \sum g_0 p_0, \tag{10}$$

where g_0, g_1 – number of separate types of sold product according to the plan (budget) and actually;
$p_0 p_1$ – average unit sales price (estimated and actual).

The total amount of deviation due to the number of products sold can be decomposed into deviation:

$$\Delta gb = \left(\frac{\Sigma b_1 P_0}{\Sigma b_0 P_0} - 1 \right) \times \sum g_0 P_0,$$

(11)

where b_0, b_1 – volume of production at estimated cost and actual price and, in fact, units;

c) due to the level of commodity products:

$$\Delta gt = \left(\frac{\Sigma g_1 P_0}{\Sigma g_0 P_0} - \frac{\Sigma b_1 P_0}{\Sigma b_0 P_0} \right) \times \sum g_0 P_0,$$

(12)

Variation in sales revenue due to changes in the price of sales is determined by the formula:

$$\Delta p = \sum g_1 P_1 - \sum g_1 P_0,$$

(13)

The reasons (factors) for this deviation may be:

a) change in the specific weight of product sales by separate channels:

$$\Delta pj = \left(\sum P_{j_0} Y_{j_1} - P_0 \right) g_1,$$

(14)

where p_{jo} – is the estimated cost of implementation on separate channels;

p_o – the average estimated cost of selling the product;
y_{j1} – the relative density (units of unit) of product sales across individual channels;

b) change of structure of separate types of realized product of activity:

$$\Delta pi = \left(\sum P_{ij_0} Y_{ij_1} - P_{j_0} \right) g_{j_1},$$

(15)

where p_{ijo} – the budget price of the sale of the i-th type of product on the j-th channel;
y_{ij1} – actual specific weight of implementation of the i-th type of product by the j-th channel (unit of unit);
g_{j1} – actual volume of sales of the product on the j-th channel (units);

c) change of terms of realization of product of activity:

$$\Delta np = \sum \left(\sum P_{ijn_0} Y_{ijn_1} - P_{ij_0} \right) g_{ij_1},$$

(16)

where p_{ijno} – the budget price of the sale of the i-th type of product in the j-th channel in the n-th term (unit rate);
g_{ij1} – actual volume of sales of the i-th type of product by the j-th channel (units);

d) change of quality of product of activity:

$$\Delta mp = \sum \left(\sum P_{ijnm_0} Y_{ijnm_1} - P_{ijn_0} \right) g_{ijn_1},$$

(17)

where p_{ijnmo} – is the budget price of selling the i-th type of product in the j-th channel in n-th term and m-th quality;

y_{ijnm1} – actual specific weight of implementation of the i-th type of product in the j-th channel in n-th term and m-th quality (unit share);
g_{ijn1}– actual sales volume of the i-th product type in the j-th channel in the n-th term (units);

e) influence of organizational reasons is defined as the difference between actual sales revenue and revenue from the actual volume of sold product at budget prices, taking into account its types, channels, terms of sale and quality.

The assessment of the centers of financial results is made on the basis of reports on the implementation of estimates of income and expenditure, in which these indicators are detailed in terms of units of public institutions of higher education and deviations from the standards [Ievdokymov, Gritsyshen, Svirko 2017; Svirko, Zarosylo 2012]. For the purpose of evaluating each center of financial results, all costs are divided into variables and fixed. For each unit of a state higher education institution, marginal income (the amount of revenue – variable costs) is determined, excluding fixed costs, on the basis of which the contribution of each unit of a State Higher Education Institution is to cover the fixed costs of the institution and to create its financial result. When analyzing the variations in financial results, we use the same methods that are employed for analyzing the revenues, expenses and expenditures of State Higher Education Institutions. Assessment of financial responsibility centers is related to establishing the level of efficient and targeted use of funds of public higher education institutions, compliance with the order of financial discipline. An important area of evaluating the activity of a budgetary institution as a center of financial responsibility is the evaluation of the implementation of the targeted budget programs in terms of performance indicators, which are developed on the basis of the Model Program Lists and Performance Indicators for each industry [Pro zatverdzhennja Typovogo pereliku bjudzhetnyh program i rezul'tatyvnyh pokaznykiv i'h vykonannja dlja miscevyh bjudzhetiv u galuzi "Osvita"].

Conclusions. The elaborated theoretical and methodological principles of management accounting at State Institutions of Higher Education allowed to formulate the definition of "managerial control at State Institutions of Higher Education", to propose its primary classification, as well as to adapt the system of general coefficients for monitoring State Institutions of Higher Education. Formation of the specific coefficients system and construction of a "road map" for conducting administrative control as a component of its organization should be the ways for further development of the proposed regulations of management control in the State Higher Education Institutions. The construction of a comprehensive subsystem for management control of the State Higher Education Institutions will increase the efficiency of the process of managing these entities as a whole and financial management in particular, which will ultimately contribute to the improvement of the public finance system of Ukraine [Svirko 2012; Jaroshenko 2010].

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