Finance

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STANDARD COSTING SYSTEM – A MANAGEMENT TOOL BY DEVIATIONS

At present Standard Costing System is an effective tool to manage costs. It is based on the principle of reporting and controlling costs within established norms and standards and the deviations from them.

The method of determining costs normatively emerged in the early 20th century in the United States. Taylor, Emerson, etc. contributed to that by applying standards to find out the best way of using labour and materials.

The development of the theoretical foundations of this method is associated with the name of Charles Harrison. Harrison's idea of standard cost is expressed in the following formulations:

• all incurred costs have to be referred and compared to standards;

• the deviations established in comparing actual costs and standard costs have to be analyzed according to causes.

Standard Costing System serves as an instrument for controlling production costs. Based on the established standards it is possible to determine in advance the amount of the expected production costs, to calculate the unit cost with the aim of determining its selling price and to predict expected revenues. The information on the deviations is used for making operational management decisions.

The essence of the method is expressed by the equation:

Actual cost = Standard cost ± Deviations

According to J. Bourdin (Bourdin, 1972, p. 97) standard cost (standard price) is a special case of pre-determined price. Pre-determined cost (price) manifests itself in the form of:

• standard cost (price);

• budgeted cost;

• estimated cost.

Standard prices are worked out after a precise technical and economic analysis. These are prices relating to a future period, calculated on the basis of a higher efficiency and hypotheses relating to market conditions both at the entry and at the exit of the enterprise.

As already pointed out the normative method of reporting production costs and calculating the cost of goods manufactured is used in a planned economy.

The principles on which the normative method is built are:

• calculating the normative unit cost at the beginning of the reporting period;

• identifying the deviations from the current consumption rates and the accounts for additional costs;

• entering the changes in consumption rates in the cost of goods manufactured.

When comparing the Standard Costing System and the normative method the following differences are identified:

First, compared to working out and applying the normative cost, when working out the standard cost the impact of the market is largely taken into account both at the entry and at the exit of the enterprise seen as an economic system.

Second, which is related to the above stated, when working out standard prices there is multivariance according to the criteria used in setting them.

There are different types of standard prices:

• Theoretical standard cost. It is determined on the basis of the best possible use of the production factors in the enterprise. This is, so to speak, the ideal situation that has to be reached.

• Standard cost. It is worked out taking into account the situation in the competitors' enterprises. In that price, market conditions are taken into account. Prices thus worked out are not considered to always reflect the level of technical efficiency and to specify the consumption rates.

• Historical standard cost. It is the cost, which the enterprise has already achieved in previous reporting periods and is updated at the same time.

• Normal standard cost. It is calculated based on forecasts in normal conditions of production.

• Standard cost. It is determined during inflation and hyperinflation. In such periods it is difficult to cost the quantitative parameters of production factors. Therefore, this cost is worked out taking into account that consumption rates as quantity are determined for normal operating conditions (as is with normal standard cost), or on the basis of the best possible combination of production factors (theoretical standard cost). The prices applied to costing the consumption rates are those which operate at the time of establishing the standard.

There are three types of standards used in the USA:

• average current standard cost, which corresponds to the trends in the current situation;

• normal standard cost, which is determined by examining the internal technical conditions and the development of economy;

• ideal standard cost, which is consistent with the best possible performance, stimulating the diligence and efforts of staff at all levels.

According to IAS 2 Inventories, the content of the standard cost is formed by "taking into account normal levels of consumption of materials and supplies, labour, efficiency and capacity. They are regularly reviewed and, if necessary, revised in the light of current conditions" (International Financial Reporting Standards. Part A, 2012, p. 576).

It should be noted that in countries that apply this system there are no normative acts related to its normative regulation. There is no unified methodology for establishing the standards, either.

Cost planning in the Standard Costing System is similar to engineering design, as costs must be closely tied to technological processes. Currently in certain enterprises (Japan, etc.) the reverse situation is gaining grounds – already during the stage of developing new products (items) engineers set firm limits on the future cost of the new product (Target Costing System).

In a market economy the prices of materials are subjected to continuous fluctuations depending on supply and demand. Therefore, the standards for the materials are developed primarily taking into account the prices prevailing at the time of their establishment.

The other possible approach is to use average prices that are prevalent during the use of standards.

The average rates by technological operations are used to standardize labour costs.

The standards for the cost of materials and wages for the production staff are established for a single item. In order to control the (fixed, indirect) costs, rates are developed for the period, which comply with the quantity of output that will be produced. They are constant, however, flexible standards are developed for this type of costs in case of fluctuations in the volume of production.

The motivation for developing the standards and their adoption must be taken into account. Standards should be optimal, i.e. to motivate the staff to achieve certain goals, neither too high and unattainable nor too low and insufficiently mobilizing. Using standard cost makes it possible to compare what is achieved with what could be achieved.

The following model can be used in developing standard cost:

Standard cost of a product …   Date of the standard: ………

I. Direct materials

Technological operations	Components of the product	Quantity per unit	Standard unit cost	Cost centres			Total
				A	B	C	
1.							
2.							
…							
n.							

II. Direct labour

Technological operations	Standard time (hours)	Standard rate	Cost centres			Total
			A	B	C	
1.						
2.						
…						
n.						

III. Indirect costs

Cost centres	Standard time (hours)	Standard costs (per hour)	Cost centres			Total
			A	B	C	

One of the most important moments in the application of Standard Costing System is the analysis of deviations from standard prices. It is namely this analysis that differs significantly Standard Costing from the normative method.

In the normative method the primary reporting and accounting for the deviations and variations from the norms should be very well organized. The main aim of the normative method is the establishment of the actual cost.

The main aim of the Standard Costing method is to control the deviations, which helps to improve the cost standards themselves.

Deviations from standards are mainly caused by:
• the quantitative factor (the quantity of goods manufactured and the consumption rates);
• cost factors (prices of resources).

Global deviation is identified as the difference between the amount of the estimated cost (the product of the projected quantity and the standard unit cost) and the

amount of the actual cost (the product of the quantity actually produced and the actual unit cost). This deviation is examined in depth as a deviation which derives from the quantity and as a deviation caused by the resource prices.

An attempt can be made to systematize the deviations in the following table (see Table 1):

Table 1

Types of deviations in the Standard Costing System

	Type of deviation	Identifying the deviation
	I. By materials	
1.	Deviation from the price of materials	(Standard unit cost – actual cost) X quantity of materials bought
2-	Deviation from the quantity of the materials used	(Standard quantity of materials – actual material consumption) X standard cost of materials
3.	Total deviation of material consumption	(Standard unit cost – actual consumption per unit of material) X actual quantity of the materials used
	II. For labour	
1.	Deviation from the wage rate	(Standard hour rate – actual hour rate) X actual hours worked
2.	Total deviation for labour costs	(Standard unit labour costs – actual unit labour costs) X actual volume of output
	III. For overhead costs	
	1. For variable costs	(Normative rate of variable unit costs – actual rate of variable overheads per unit) X actual volume of output
	2. For fixed costs	(Normative rate of fixed unit costs – actual rate of fixed overheads per unit) X actual volume of output
	IV. For gross profit	
	1. Deviation from the price	(Standard selling price per unit – actual selling price) X actual volume of sales
2.	Deviation from the volume of sales	(Projected sales volume – actual sales volume) X standard profit per unit
3.	Total deviation for gross profit	Total standard profit – Total actual profit

Appropriate formulas should be used to analyze the deviations.

Global deviation can be expressed in the following way:

$$E = Q_p X c_P - Q_r X c_r, \text{ where:}$$

E – global deviation;

Q_r – actual quantity;

Q_p – planned quantity;

c_r – actual unit cost;

c_P – standard unit cost.

If eQ denotes the deviation arising from the quantity, and eV – the deviation from the price, then:

$E = eQ + eV$, where:

$$eQ = Q_p X c_P - Q_r X c_p$$

$$eV = Q_r X c_P - Q_r X c_r$$

or

$$eQ = \left(Q_p - Q_r\right) X c_p = \Delta Q c_p$$

$$eV = \left(c_p - c_r\right) X Q_r = \Delta Q c_r$$

Regarding fixed costs the deviation will depend primarily on the work done, expressed in certain units of measure – natural or labour. This can be expressed using the following designations:

F – amount of fixed costs;

N – activity that normally can be performed, expressed in appropriate units of measure;

n – the actual work done, expressed in the same units.

The deviation arising from the fixed costs in this case can be presented as a dependence of the above indicators:

$$e = F \frac{N-n}{N}.$$

It can be expected, that deviations are often inconsistent.

Example:

In the company 'Beta' the standard cost of a basic material used for the production of item 'P' is 14 000 BGN. It is worked out based on the following data:

projected quantity – 10 000 kg;

unit price – 1.40 BGN/kg

According to reporting data the actual quantity delivered is 11 000 kg, and the price is 1.20 BGN/kg.

Standard cost	= 10 000 X 1.40 =	14 000 BGN
Actual cost	= 11 000 X 1.20 =	13 200 BGN
	Total deviation	+800 BGN

Item 'P' is manufactured with materials for 13 200 BGN instead of 14 000 BGN, which is economy for the company.

This deviation is decomposed in the following way:
▪ deviation, arising from the quantity (10 000 – 11 000) X 1.40 = - 1 400 BGN;
▪ deviation, arising from the changes in the price of the material (1.40 – 1.20) X 11 000 = + 2 200 BGN.

Total deviation = 2200 + (-1400) = +800 BGN.
The actually consumed quantity of materials has an adverse effect, while the lower price works in the opposite direction.

Example:
In the company 'Alpha' the standard labour costs for the production of 1000 items of product 'A' is 450 hours. The rate per hour is 50 BGN.

According to reporting data 590 hours at 60 BGN an hour are used for the production of the same quantity.

Standard labour costs	= 450 hours X 50 BGN =	22 500 BGN
Actual cost	= 590 hours X 60 BGN =	35 400 BGN
	Total deviation	-12 900 BGN

Deviation, caused by the amount of the hours spent → (450 - 590) X 50 BGN = -7 000 BGN.

Deviation, caused by changes in the rate → (50 – 60) X 590 = -5 900 BGN.

When determining the standard costs for direct materials and direct labour two components must be taken into account: price and quantity.

Determining the standard costs by centres is based on:
▪ the volume of output of the centre;
▪ the productivity of the centre.

To predict the costs of a certain centre the so-called flexible budgets technique has to be applied.

The flexible budget allows for predicting the costs of the centre for the different levels of activity that can be achieved.

Example:
The flexible budget of centre 'A' is made in the following way:

Work unit (hour)	2 000	2 250	2 500	3 000
% of normal activity	80	90	100	120
Variable costs	180 000	202 500	225 000	270 000
Fixed costs	150 000	150 000	150 000	150 000
Total standard costs	330 000	352 500	375 000	420 000

$$S \tan dard \quad \cos t \quad per \quad 1 \quad hour = \frac{375000}{2500} = 150 \quad BGN$$

One hour is needed to produce 1 item. Under normal conditions, the centre produces 2 500 items and the standard cost per 1 item = 1 hour x 150 BGN = 150 BGN.

In May 2 200 items were produced, for which 3 000 hours were spent. The amount of actual costs incurred by the centre 'A' is 350 000 BGN.

Determining the standard cost for the actually manufactured items:

2 200 items X 150 BGN = 330 000 BGN

Total deviation = 330 000 – 350 000 = 20 000 BGN, which is unfavourable, having the nature of over-consumption.

Global deviation is decomposed in the following way:

a) budget deviation

According to the developed flexible budget, 420 000 BGN are needed for an activity for which 3000 hours are spent.

The deviation = 420 000 – 350 000 = 70 000 BGN, which has the nature of economy (favourable).

b) deviation due to the volume of activity

Knowing that the standard cost per hour is 150 BGN it can be calculated:

3 000 hours X 150 BGN = 450 000 BGN

In the flexible budget the value of 3 000 hours is 420 000 BGN.

The deviation = 420 000 – 450 000 BGN = 30 000 BGN, which is favourable in nature. This deviation corresponds to 500 hours, in the case when the volume of activities is 120 per hundred, or 3 000 hours.

в) the cause for the deviation is in the centre productivity.

The deviation = 3000 hours X 150 BGN – 2200 hours X 150 BGN = 120 000 BGN, which is unfavourable.

It corresponds to 800 items of product 'A', which are not manufactured (800 X 150 = 120 000 BGN).

In conclusion the total deviation of 20 000 BGN (unfavourable) is formed by:
• deviation on the budget – 70 000 favourable;
• deviation from the activities – 30 000 favourable;

• deviation from productivity – 120 000 unfavourable.

The application of the Standard Costing System is associated with the idea of personification of the responsibility of deviations.

The standard cost and budgets that are developed on this basis and the deviations from the adopted standards are used to evaluate the work of staff and the structural subdivisions of the enterprise.

The importance of standard prices is expressed in:
• the possibility to measure costs and cost with the aim to control them;
• the possibility to influence the increase in productivity and the decrease in cost;
• the possibility to reduce the losses caused by the unfavourable deviations;
• the possibility to personify the costs;
• the possibility to make management decisions which are based on richer information. It is particularly important when the standard price is decomposed into standard variable and fixed costs;
• the possibility to use standard prices as a starting point in determining the selling prices;
• the possibility for greater efficiency as regards cost accounting. The reporting work related to calculation is minimized;
• the possibility to stimulate the work of the entire staff for achieving certain goals.

The Standard Costing System is subject to some criticisms which most often refer to:
• inconveniences associated with standard prices. As far as they should be 'firm', i.e. fixed and unchanging, given that enterprises and their surroundings are continuously developing and changing. This refers primarily to reporting periods that are longer. In the case of a short life cycle of products, the standards that have been developed for them are short-term.

To what extent should standard prices be flexible? Should they be revised when necessitated by circumstances? The problem is how to assess achievements with prices that often change;
• the fact that too much attention is paid to cost and labour productivity;
• the fact that attention is focused on minimizing the costs rather than improving the quality of goods manufactured and fulfilling customer orders;
• the fact that not all aspects of raising production efficiency are covered.

The reality in the enterprises in our country allows for concluding that the stated shortcomings of the Standard Costing System are not topical at present and do not make it less significant for cost management.

References

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Симеонова Р. Системи Standard Costing – засіб для керування по відхиленнях

У сучасних умовах системи Standard costing служать надійним інструментом контролю та управління виробничими витратами. У цій статті аналізуються теоретичні та практико-прикладні аспекти, пов'язані з їх використанням. Розглянуто різні різновиди стандартної собівартості. Розроблена зразкова модель для її застосування. Особлива увага приділяється відхиленням у системі Standard costing, які також були систематизовані залежно від їх природи. Запропоновано формульний апарат для аналізу відхилень. Його застосування ілюструється відповідними прикладами. Зазначено призначення стандартної ціни і деякі труднощі, що стосуються їх використання.

Ключові слова: система Standard Costing, контроль, управління, виробництво, ціна, собівартість.

Симеонова Р. Системы Standard Costing – средство для управления по отклонениям

В современных условиях системы Standard costing служат надежным инструментом контроля и управления производственными затратами. В настоящей статье анализируются теоретические и практико-прикладные аспекты, связанные с их использованием. Рассмотрены различные разновидности стандартной себестоимости. Разработана примерная модель для ее применения. Особое внимание уделяется отклонениям в системе Standard costing, которые также были систематизированы в зависимости от их природы. Предложен формульный аппарат для анализа отклонений. Его применение иллюстрируется соответствующими примерами. Указано назначение стандартной цены и некоторые трудности, касающиеся их использования.

Ключевые слова: система Standard Costing, контроль, управление, производство, цена, себестоимость.

Simeonova R. Standard Costing System – a management tool by deviations

Standard Costing System nowadays serves as a reliable tool to control and manage production costs. This article studies the theoretical and practical-applied aspects related to its use. The different types of standard cost are examined and a model for applying it is developed. Particular attention is paid to the deviations in the Standard Costing System, and these are classified according to their nature. Formulas for analysis of the deviations are proposed. Their application is illustrated with suitable examples. The importance of standard prices and some difficulties relating to their use is shown.

Keywords: system of Standard Costing, control, management, administration, production, price, cost.