

ON IMPROVEMENT OF THE METHODOLOGY OF ANALYSIS OF MAJOR DEVIATIONS IN ACCA PAPER F5 PERFORMANCE MANAGEMENT

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Abstract

All events and processes of economic activity of enterprises are in interrelation, interdependence and mutual conditioning. One group of them is directly dependent on each other, and the other group – indirectly. Each event can be considered as a cause or consequence. If in the process of analysis this or that indicator is seen as the result of one or more reasons and presented as an object of research, then when studying the relationship it is called resulting, and the indicators that determine the behavior of the properties of the resulting indicator are called factor indicators. Each of the resulting indicators depends on many different factors. The more detailed the deviations of the main factors, their causes and their impact on the value of the resulting indicator are investigated, the more accurate the results of the analysis and evaluation of the company's work will be. Without a thorough and in-deep study of factor deviations, it is impossible to draw reasonable conclusions about the results of activities, identify hidden reserves for improving production efficiency and make optimal management decisions.

Keywords: *Resulting indicator; Factor indicators; Major deviations; Favorable deviation; Unfavorable deviation; Quantitative factor; Quantitative factor; Deterministic factor analysis; Absolute difference method; Integral method.*

JEL Classification: *L53, M20, M21*

I. GENERAL ANALYSIS

Regardless of who is conducting the analysis and what the object of its research is, it must be carried out in a certain sequence, between which there must be a logical connection. The stages of the analysis should be formulated as follows:

- ✓ Preliminary, general acquaintance with the research object and assessment of the results of its work according to the performance of quantitative and qualitative indicators approved by the business plan;
- ✓ Obtaining primary materials and processing analytical tables in order to identify the reality of planned indicators and deviations from them;
- ✓ Determination of the factors that caused the change in the resulting indicator, and measurement of the level of the impact of each of them;
- ✓ The formation of specific proposals and measures by summarizing the results of the analysis, the timely implementation of which will contribute to further improvement of production efficiency, and monitoring their implementation.

Analysis of deviations is the process by which the differences between norms and actual results are analyzed. If the results are better than expected, then the deviation is favorable (F), and if worse, then – unfavorable (U).

In the analytical conclusion, it is necessary to explain the possible causes of each deviation. After calculating the deviations, it is possible to prepare an operating statement, where the actual profit will be reconciled with the budget, using marginal cost calculation or full cost calculation methods. The main deviations may be calculated for sale, materials, labor costs, variable and permanent overhead costs.

It is true that the ACCA Paper F5 Performance Management textbook notes that the training material includes many elements that help simplify the learning process, but we cannot say this in chapter 10, which discusses the methodology for analyzing the main deviations, where the conditions of tasks are unclear, also, the methodology for analyzing the relationship between the resulting indicator and the factors affecting it.

First, let's consider the methodology for analyzing individual deviations, which the authors of ACCA Paper F5 Performance Management Chapter 10 offer with specific illustrative examples, and further - our comments and ways to perfect the analysis methodology.

Example N2 – Deviation on materials

The company "James Marshall" produces one kind of products, the budget costs of the material per unit of which are:

Cost of 2kg of A type material - 10\$;

Actual data:

Manufactured products amount to 1000 units

Purchased and used materials - 2200kg;

Costs of material - 20 900\$.

Calculate deviations in price and use of materials

Solution according to ACCA F5 Book

Deviation in price of material	\$
Actually purchased material - 2,200kg	
The value for per kg should be \$ 10 =	22, 000
Actually purchased - 2,200 kg	
The value of which was =	<u>20, 900</u>
Deviation	<u>1,100 F</u>
Deviation in use of the material	kg
Actual production - 1, 000 units	
Per unit consumption should be 2kg	2, 000
Actual production - 1,000 units	
	2, 200
Per unit consumption was =	
Deviation	<u>200 U</u>
Deviation = 500 kg (U) x Normative unit cost \$ per 10 kg = \$2, 000 (U)	
Deviation in price of material - Alternative method	
Actual Qty . Actual Price = \$ 20,900	
	Deviation- \$ 1, 1000
Actual Qty. Normaive Price = 2, 200 × \$ 10 = \$ 22, 000	
	Deviation- \$ 2,000 U
Normative Qty., Normative Price = (1, 000 × 2)× \$ 10= \$ 20, 000	

Note:

- a) AQ - Actual quantity;
- b) AP - Actual Price
- c) NP - Normative Price
- d) NQ- Actual quantity;
- e) "F" – Favorable
- f) "U" – Unfavorable

Our version of solving the task:

The requirement for calculating deviations in the price and use of materials is vague in this task as well. In fact, there should be a demand about the impact of changes (deviations) of these factors on the resulting indicator, in particular, on the overall deviation from the normative costs of materials. Here, the sum of the impacts of both factors should give the value of the deviation of the resulting indicator.

Under the concept of "Factor" in economic researches, the conditions that are necessary for the implementation of economic processes and the reasons that affect the results of these processes, are understood.

Under factor analysis we mean the method of complex and systematic study of the impact of factors on the resulting indicator. One of its varieties is deterministic factor analysis. It is a methodology for researching the impact of factors whose impact on the resulting indicator is functional in nature, that is, the resulting indicator can be represented as a product, a quotient or an algebraic sum of factors.

When solving the Example 2 given in Chapter 10 of ACCA F5 Book, it is also unclear the relationship between the price of a unit of material (quantitative factor) and the materials spent on the production of a unit of products (qualitative factor) on the one hand, and the resulting indicator (cost of the spent materials) on the other hand

According to the methodology of economic analysis, in deterministic factor analysis, using such traditional methods as: chain insertion method, absolute difference method, relative difference method, one must first determine the impact of quantitative factors on the result indicator, and then – on qualitative indicators. And, as

for the use of such methods of analysis as integral method and logarithmic method, when measuring the value of the impact of factors on the resulting indicator, no matter where will stand the quantitative or qualitative factor.

When solving Example 2, instead of introducing „hieroglyphs“ or “symbols” such as: AQ, AP, NP, NQ, etc., in our opinion, it would be better to create an analytical table based on the task condition.

Data on the cost of spent material

Table 2

Indicator	Conditional designations	Norm	Actual	Deviation (±)
1. Cost of spent material (\$)	Q	20000	20900	+900
2. Production output volume (unit)	X	1000	1000	-
3. Price of 1kg material (\$)	Y	10,0	9,5	-0,5
4. Material spent on manufacturing a unit of product, kg	Z	2,0	2,2	+0,2

Note

In the condition of Example 2 in the book, Nothing is said about how many products were planned to be produced. Suppose it coincides with the level of Actual Production (1000 to one.). However, the total deviation from the normative cost of the material does not affect the volume of planned (budgetary) output of products.

Total deviation in normative costs of material = actual cost of materials - normative cost of material recalculated according to the actual output of products.

When solving Example 2, the relationship between the resulting indicator and the factors affecting it should be identified by the following multiplicative model:

$$Q = X * Y * Z$$

Where: Q – is the cost of the material spent;

X – is the volume of output of the products ;

Y – cost of 1kg material

Z - is the material spent on the production of per unit of products (kg)

$$\Delta Q = Q_1 - Q_0 = 20900 - 20000 = + 900\$ \text{ (Unfavorable) .}$$

To measure the influence of certain factors on the research (result) indicator, let’s use the method of absolute difference.

I Factor - Impact of changes in the volume of products output

$$\pm \Delta_1 = (X_1 - X_0) \times Y_0 \times Z_0 = (1000 - 1000) \times 10 \times 2 = 0;$$

II Factor - Impact of changes in the cost of per kg material

$$\pm \Delta_2 = (Y_1 - Y_0) \times X_1 \times Z_0 = (9,5 - 10,0) \times 1000 \times 2 = -1000\$ \text{ (Favorable);}$$

III Factor - - Impact of changes in material (kg) spent on production per unit of productis

$$\pm \Delta_3 = (Z_1 - Z_0) \times X_1 \times Y_1 = +0,2 \times 9,5 \times 1000 = -1900\$ \text{ (Unfavorable);}$$

$$\pm \Delta = \pm \Delta_1 \pm \Delta_2 \pm \Delta_3 = 0 - 1000 + 1900 = 900\$.$$

Therefore, the deviation from the normative costs of materials was unfavorably affected by the increase in costs for the production of a unit of products by 0.2 kg during the reporting period, and the decrease in the purchase cost of 1 kg of materials by 0.5\$ has a favorable impact. The sum of the impacts of both factors gives us a total deviation (-1000+1900= 900\$).

Example 3 - Deviation of labor costs

Extract from the account of normative expenses of Kay LLC.

Direct labor costs:

15 hours, cost of one hour 4, 80\$ (total-72\$)

Drawing up the actual direct wage:

15 500 hours, with total cost amounted to 69750\$;

In fact, 1000 units were produced.

Calculate the deviations in the remuneration rate and labor productivity

Solution according to ACCA F5 Book

Deviation in the remuneration rate	\$
Actual hours paid - 15, 500 hours,	
The cost of one hour should be \$ 4,8 =	74, 400
Actual hours paid - 15, 500 hours,	
The cost of which was=	<u>69, 750</u>
Deviation	<u>4,650 F</u>
Deviation in the labor productivity	Hours
Actual production - 1, 000 units	
15 hours must be required to produce one unit	15, 000
Actual production - 1, 000 units	
For the production of the unit was spent:	15, 500
Deviation	<u>500 U</u>
Deviation = 500 hours (U) × Normative costs (\$ 4,80 per unit) = \$2, 400 (U)	
Deviation in the remuneration rate – Alternative method	
Actual hours Actual output = \$69,750	
Actual hours Normative rate = 15,500 x \$4.80=\$74,400	
Deviation =\$4.650 F	
Deviation in the labor productivity - Alternative method	
Actual hours Normative rate = \$ 69,750	
	Deviation -
	\$ 4,650F
Actual hours Normative rate = 15,500 × \$ 4,80 = \$ 74, 400	
	Deviation –
	\$ 2,400 U
Normative hours Normative rate =	
(1, 000 × 15 hours) x \$4,80 = \$ 72, 000	

Note:

- a) NH - Normative hours
- б) AH - Actual hours
- г) NR - Normative rate
- д) AO – Actual output

Our version of solving the task:

Like in case of Examples N1 and N2, the condition of Task 3 has a vague requirement for calculating deviations in the remuneration rate and labor productivity N1 and N2. In fact, there should be a requirement about the effect of changes (deviations) of these factors on the resulting indicator, in particular, on the overall deviation from the normative labor costs. In addition, the sum of the impacts of both factors should give a value of the deviation of the resulting indicator.

Data on remuneration expenses

Table 3

Indicator	Conditional designations	Norm	Actual	Deviation (±)
1. Remuneration expenses (\$)	Q	72000	69750	-2250
2. Output volume (unit)	X	1000	1000	-
3. Price of 1 kg material (\$)	Y	4,80	4,5	-0,3
4. Time spent for the production of a unit of products, h.	Z	15,0	15,5	+0,5

Note: The actual and budgetary volumes of output coincide to each other and amount to 1000 units.

Total deviation in the Normative labor cost = Actual expenditure on labor remuneration - Normative costs of Labor recalculated on the actual output of products

Total deviation = 69750-72000= -2250\$ (Favorable)

When solving task 3, let's use the absolute difference method again to measure the impact of certain factors on the resulting (research) indicator

I Factor - Impact of changes in the volume of products output

$$\pm\Delta_1 = (X_1 - X_0) \times Y_0 \times Z_0 = (1000-1000) \times 4,8 \times 15, 0 = 0;$$

II Factor - Impact of changes in the 1-hour remuneration rate

$$\pm\Delta_2 = (Y_1 - Y_0) \times X_1 \times Z_0 = (4,5 - 4,8) \times 1000 \times 15 = -4500$ (Favorable);$$

III Factor - Impact of changes in time spent on production unit of products

$$\pm\Delta_3 = (Z_1 - Z_0) \times X_1 \times Y_1 = +0,5 \times 4,5 \times 1000 = 2250$ (Unfavorable);$$

$$\pm\Delta = \pm\Delta_1 \pm \Delta_2 \pm \Delta_3 = 0 - 4500 + 2250 = -2250$$$

Therefore, the total deviation from the normative labor costs was favorably impacted by the reduction of the remuneration rate for 1 hour by 0.3\$, and the unfavorable impact was caused by an increase in the time spent on the production of a unit of products by 0.5 h. The sum of the impacts of both these factors gives us a total deviation (2550-4500= -2250\$).

We have similar remarks on the analysis of variable overhead cost deviations in Chapter 10, of ACCA Book F5.

II. CONCLUSION

- ✓ The analysis of deviations discussed in Chapter 10 of the ACCA book F5 does not rely on the general methodology of the stages of conducting the analysis. In the economic literature, these stages are formulated as follows:
 - Preliminary, general acquaintance with the research object and assessment of the results of work according to the quantitative and qualitative performance indicators approved by the business plan;
 - Obtaining primary materials and processing analytical tables in order to reveal the reality of budgetary indicators and deviations from them;
 - Identifying the factors that caused the variation of the resulting indicator and determining the value of the impact of each of them
 - Formulation of specific proposals and measures by generalizing the results of the analysis.
- ✓ In the conditions of Examples 1, 2, 3, 4 in Chapter 10 of ACCA book F5, the requirements are raised incompletely (as if we are interested in deviations from the indicators, only?!), and when solving tasks, the relationship between the resulting indicator and the factors affecting it is unclear. In our opinion, it would be better to show this relationship with the multiplicative model of deterministic factor analysis, and to determine the value of the impact of factors using the absolute difference, integral, or logarithmic method;
- ✓ The analysis of deviations using the methods proposed by us is methodologically more sophisticated and complete, and easier to perceive and understand

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