

ON SOME METHODOLOGICAL ERRORS IN CALCULATIONS OF PROFITABILITY OF THE PRODUCTS SOLD

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Abstract. *The essence of the concept of profitability of products sold is clarified, four indicators are proposed, both as a separate type of product and for the whole range of products. It is noted that they have the same economic meaning, and therefore each of them can be equally used in analyzing the effectiveness of manufactured and sold products. Formulas for the interdependence of some indicators from others are proposed, as well as their graphic interpretation. Typical inaccuracies in the interpretation and calculation of economic indicators of the profitability of products sold are given. The efficiency of the entire enterprise is recommended to be assessed using indicators of economic and financial profitability.*

Keywords: *product profitability, profit, costprice, income, calculation methodology, cost recovery.*

JEL: D2, F61, M21

UDC: 338.2

Formulation of the problem. Increase of profitability of sold production is the most important component of acceleration of economic development of the enterprise. In modern conditions of management, when the transition from a planned to a market economy is completed, there is a need for a clearer interpretation of the concept of profitability of products, a new look at the generally accepted methods of calculating and analyzing an indicator of such importance for each enterprise. However, the existing methodological base, as the analysis shows, contains significant shortcomings, discrepancies, which leads to bias, and often to the impossibility of comparing the indicators of profitability. In this regard, we should regularize both the methodology for assessing the achieved levels of profitability, and the features of their comparative analysis.

When calculating the profitability of products sold, enterprises use a system of indicators. However, both in training and in real production conditions, a clear distinction of the significance of each of them, as well as the interrelations between them, are not sufficiently substantiated. In this regard, it is relevant to study the methodological aspects of the calculations of these indicators. In addition, very often in the conduct of profitability calculations, serious methodological errors are made, which from the point of view of economic science is not permissible.

Analysis of recent research. Modern science is looking for new ways of assessing the achieved levels of profitability, adjusting the direction of scientific search associated with the development of the theory of efficiency. In this sense, the work of A. Shafronov, in which he justified a new approach to production efficiency, is of interest, believing that an assessment of profitability levels should be made on the basis of their comparison with planned (potential) indicators [1, p. 82]. A systematic approach to the assessment of economic efficiency, including the profitability of products, claimed Professor Gataulin A. [2, p.8].

Purpose of the article. The author aims to streamline the use of economic terms relative to the efficiency of products of operational activities, while excluding the possibility of discrepancies, and to familiarize the readers with new approaches to calculating the profitability of products sold, making them available for practical use in scientific research and practical activities.

Statement of the main results of the study. Statement of the main results of the study. Profitability indicators characterize the final results of management more fully than profits do, because their value shows the relationship of effect with cash or used resources. They are used to assess the activities of the enterprise and as an instrument of investment policy and pricing. More often in the practice of enterprises, the

indicators characterizing the profitability of products, assets and investment projects are calculated. It is very important to calculate the levels of profitability of each type of products sold, which allows us to identify the most profitable of them.

The economic efficiency of production and sales reflects the profitability and revenue. As is known, it is measured by such generalizing indicators as:

- *profitability of products sold*

$$P = \frac{\Pi}{Z}, \text{ lei/lei} \quad (1)$$

- *profitability of sales of a given type of products*

$$P_{\Pi} = \frac{\Pi}{N}, \text{ lei/lei} \quad (2)$$

where: P - profit from the sale of products, lei;

Z – costprice, lei;

N - is the volume of sales, lei.

The profitability of the sold products shows how much profit is received from the sale of this product per 1 leu of costs, the profitability of sales is the same in terms of 1 lei of sales.

It should be kept in mind that in the practice of economic calculations, there are being used three forms of profitability indicators which have the same economic meaning [3, p.213]:

level of profitability

$$P = \frac{\Pi}{Z} \cdot 100, \%$$

profitability

$$P = \frac{\Pi}{Z}, \text{ lei/lei}$$

coefficient of profitability

$$P = \frac{\Pi}{Z}$$

The generalizing indicator of the efficiency of production and sales of products includes the *recoupment of costs* (P_o) and *the input intensity* (3_e) [4, p.176-177]:

$$P_o = \frac{N}{Z}, \text{ lei/lei} \quad (3)$$

$$3_e = \frac{1}{P_o} = \frac{Z}{N}, \text{ lei/lei} \quad (4)$$

The cost recovery shows how many lei are received from the sale of products per 1 lei of costs, and the intensity, on the contrary, shows the amount of costs that an enterprise incurs per 1 lei of the products produced and sold.

Profitability of sold products, profitability of sales, recoupment of costs and intensity are indicators of the economic efficiency of production and sales of products. They have a single economic essence and, knowing one of them, it is easy to determine the rest (Table 1).

The interdependence between product profitability (P), profitability of sale (P_{Π}), cost recovery (P_o) and intensity (3_e) can be represented graphically (Fig. 1)

Table 1. Interrelation of indicators of profitability of sold products

	Profitability of Sold products (P)	Profitability of sale (P _n)	Cost recovery (P _o)	Intensity (3 _e)
Profitability of sold products (P)		$P = \frac{P_n}{1-P_n}$	$P = P_o - 1$	$P = \frac{1}{3_e} - 1$
Profitability of sale (P _n)	$P_n = \frac{P}{1+P}$		$P_{\Pi} = 1 - \frac{1}{P_o}$	$P_{\Pi} = 1 - 3_e$
Cost recovery (P _o)	$P_o = 1 + P$	$P_o = \frac{1}{1-P_n}$		$P_o = \frac{1}{3_e}$
Intensity (3 _e)	$3_e = \frac{1}{1+P}$	$3_e = 1 - P_n$	$3_e = \frac{1}{P_o}$	

Source: developed by the authors

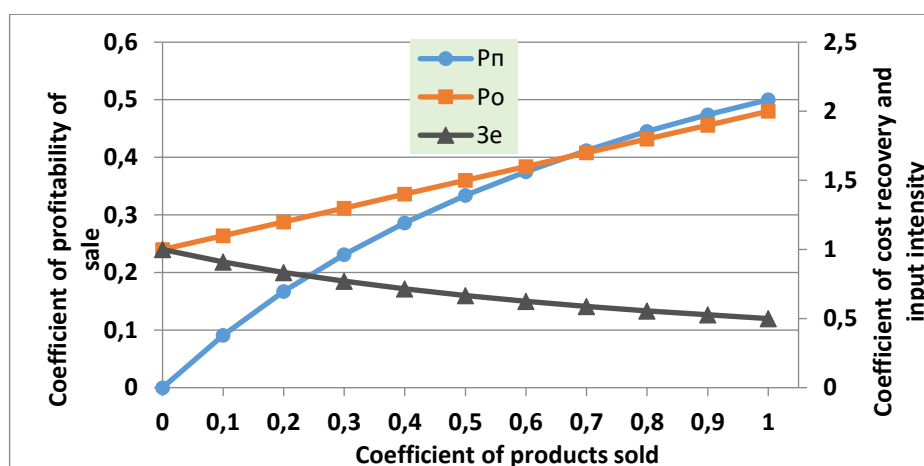


Fig.1. Dependence of profitability of sales, cost recovery and intensity from profitability of sold production

Source: performed according to data from Table 1

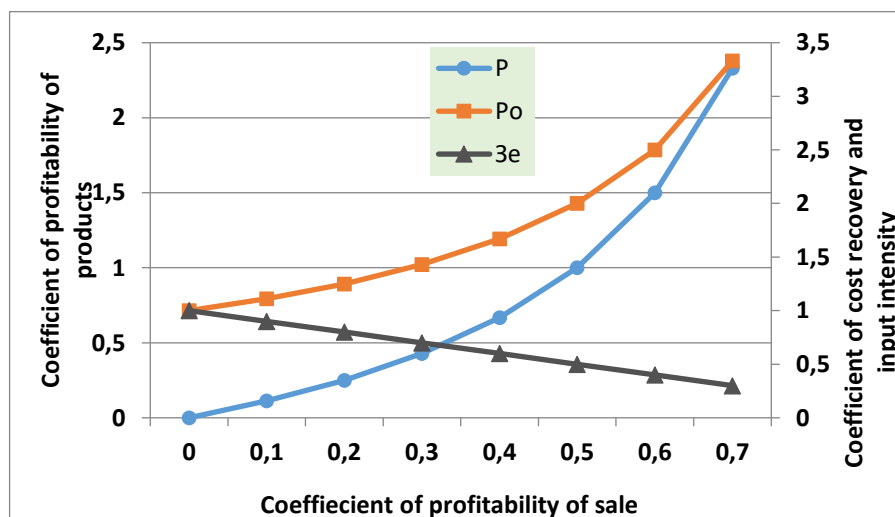


Fig.2. Dependence of product profitability, cost recovery and input intensity on sales profitability

Source: performed according to data from Table 1

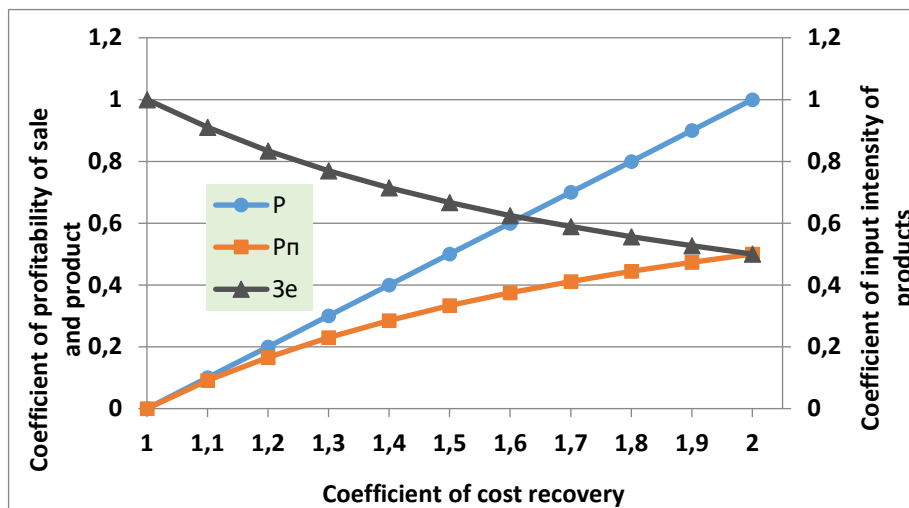


Fig.3. Dependence of product profitability, profitability of sale and intensity on cost recovery

Source: performed according to data from Table 1

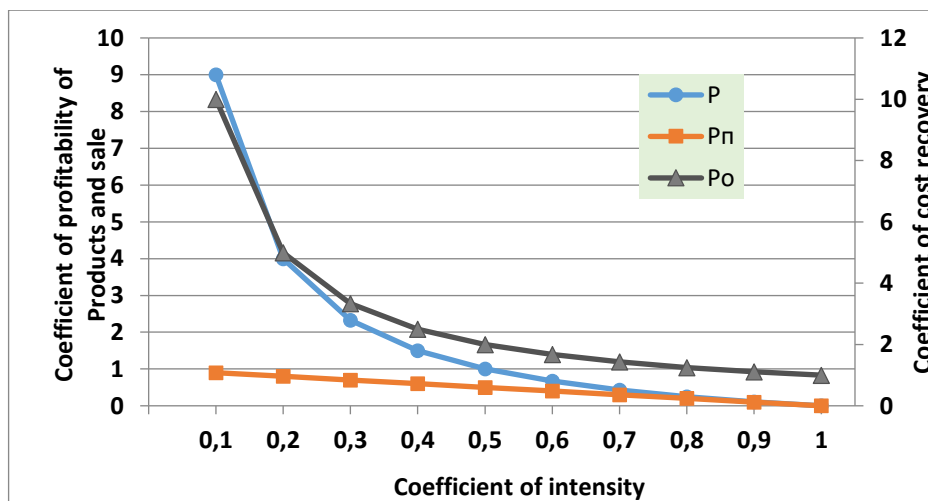


Fig.4. Dependence of product profitability, profitability of sales and cost recovery on the input intensity.

Source: performed according to data from Table 1

Using the above formulas, one can calculate the economic efficiency for each type of product (service). Given that the enterprise, as a rule, is not limited to the release of one type of product, it is important to assess its work related to the production and sale of the entire range of products.

It is also important to note that in calculating the effectiveness of products sold it is not correct to use profit before tax or the net profit of the enterprise. The fact is, that these types of profits are formed taking into account the indicators of the investment and financial activities of the enterprise, which go beyond the operational activities of the enterprise and therefore have no direct relation to it.

Here are some examples of incorrect recommendations for determining the profitability of products sold in domestic textbooks. Thus, in the textbook of N. Ciornai and I. Blaj "The Economics of Modern Firms" it is emphasized on p. 214 that "profitability, or the level of profitability, is expressed as a

percentage" (other indicators are not provided) [5, p. 214]. And further "economic profitability is the ratio between gross profit and the amount of used assets, i.e. Average annual amount of fixed and working capital". There are two inaccuracies in this statement:

- this statement does not take into account that in the calculations of economic profitability there could be additional income (losses) from the investment and financial activities of the enterprise, since in the numerator only gross profit is taken into account;

- the amount of used assets is the aggregate of own and borrowed capital, rather than the average annual amount of fixed and working capital as indicated in the quoted source.

In the textbook "Analysis of financial statements" by N. Țiriulnicova and other authors on p. 91 it is stated that "in analytical practice one can find various variants of calculating the profitability of sales, depending on what profit is taken in the numerator when determining the level of profitability. So, in the numerator you can use gross profit, profit from operating activities, profit before tax and net profit. Based on this, you can calculate four indicators of profitability of sales". The last 2 profitability indicators, calculated on the basis of profit before tax (p.91) and on the basis of net profit (p. 92), do not have economic sense and therefore cannot be used methodically. On p.97, the profitability of the product is analyzed, which the author understands, in one case, as the ratio of the product's profit to the selling price, in another - as the ratio of the product's profit to the cost of the unit of the product sold. At the same time, as we see, the types of profitability are not subdivided [6, p.91-97].

It should be clarified that enterprises can determine the amount of profit from the sale of a particular type of product as the difference between sales revenue and cost. At the same time, we emphasize again that the taxable profit and net profit are formed taking into account three types of the enterprise's activities: operating, financial and investment. In this regard, accounting for the amount of profit before tax or net profit by type of product is not conducted at enterprises and therefore it is not correct to calculate the profitability of products with their use.

In order to prevent the use of profit before taxation and the net profit of the enterprise in calculating the effectiveness of the produced and sold products, as well as the efficiency of all operating activities, it is expedient to use the difference between income and costs (cost price) instead of the profit indicators in the numerator.

The economic efficiency of the enterprise's activity in the production and sale of all types of goods (services) is characterized by the following generalizing indicators:

Level of profitability of all types of products sold (P_{pn}):

$$P_{pn} = \frac{\sum_{i=1}^n N_i - \sum_{i=1}^n Z_i}{\sum_{i=1}^n Z_i} \cdot 100, \% \quad (5)$$

Level of profitability of all types of products (P_{np}):

$$P_{np} = \frac{\sum_{i=1}^n N_i - \sum_{i=1}^n Z_i}{\sum_{i=1}^n N_i} \cdot 100, \% \quad (6)$$

The level of costs recovery for the production and sale of all types of products (P_o):

$$P_o = \frac{\sum_{i=1}^n N_i}{\sum_{i=1}^n Z_i} \cdot 100, \% \quad (7)$$

Intensity of all types of products (3_e):

$$Z_e = \frac{\sum_{i=1}^n Z_i}{\sum_{i=1}^n N_i}, \text{ lei/lei} \quad (8)$$

where: N_i – Income from the sale of all types of products;

Z_i – Prime cost of all types of products sold;

n – Number of products produced (types of products).

If we take into account that in addition to production activities the enterprise is engaged in financial, investment and other activities that are not connected with the production of goods or services, then the economic efficiency of the enterprise as a whole should be assessed with the help of economic and financial profitability [4, p. 180]:

– Economic profitability (return on assets)

$$P_{\text{э}} = \frac{\Pi_{\text{н.о}}}{K_c + K_3} \cdot 100, \% \quad (9)$$

– Financial profitability

$$P_{\text{ф}} = \frac{\Pi_{\text{ч}}}{K_c} \cdot 100, \% \quad (10)$$

where: $\Pi_{\text{н.о}}$ – profit before taxation;

K_c and K_3 – own and borrowed capital respectively.

In conclusion, we note that the proposed 4 indicators of profitability as a separate product, and the entire range of products have a single economic meaning, and therefore each of them can be equally used in analyzing the effectiveness of manufactured and sold products. The efficiency of the entire enterprise is recommended to be assessed using indicators of economic and financial profitability.

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