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THE PROFITABILITY ANALYSIS OF PRODUCTS IN THE WOOD INDUSTRY DIRECT COSTING METHOD

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Abstract. *This paper highlights the approach, by calculation and analysis, to achieve profitability of wooden products, using direct costing method or variable costs. This method will enable correlation between fixed and variable expenses, sales and profit and will allow the company to provide management information for decision-making. It will do so in the calculation of gross margin variable cost and punch steady, and indicators specific derivatives direct-costing. Since the direct-costing method based on simplified, product profitability analysis is done by calculating the gross margin on products and fixed costs are deducted from gross contribution to the profit margin becomes impertinent notion.*

Keywords: analysis, profitability, direct costing, variable expenses, fixed expenses

1. Introduction

The method direct-costing consists in the imputation on products only the variable costs whether direct or indirect. In order to avoid some regrettable confusion which under the name might identify as direct costs method, the name was replaced with the "variable cost method" or "variable costing method". The first characterization of the method was made by J. N. Marris in 1936, "what we gained in the last mount" published in Bulletin of the National Association of accountants, United States. The most important principle of this method consists in the strict interpretation of the principle of causality by highlighting the functional relationships between cost and activity and also the functional relationship between sales and activity.

The direct costing method it's a simple, efficient and economic method of calculation. Simple because its calculating easily the cost per unit of product based on variable expenses without being assigned fixed costs, efficient because it provides information regarding the final result and economic because by reducing the consumption of work required to calculate the cost and the financial result reduces the expenses occasioned by obtaining of theses information.

2. Scientific Research Methodology

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The schientific research methodology proposed for realizing this paper and also for achieving the proposed objectives is based on the following demarches:

1. The preliminary documentation in order to understand the theoretical aspects regarding the direct costing method and the correlation of some specific indicators of these method that leads to calculate the profitability of products within the enterprises as well the tools necessary of correct informing in order to adopt the best decisions regarding production, thus leading to improvement in the company. The theoretical research analyze and describes the actual stage of knowledge, its starting point being represented by theoretical documentation through reading the literature related to the field of study in the context of different national and international accounting references. The applied research to be taken into consideration entails identifying the competitive advantage in terms of production efficiency and complements the theoretical approach.
2. Identification of specific information which meets the requirements of the scientific approach.
3. Establishing the procedures in which information obtained during the theoretical and practical research will be interpreted.

The theoretical documentation will take place in parallel with the empirical research trying to identify profitable products within the enterprise, launching proposals and recommendations to the problems identified and distributed throughout both the entire article and in its final.

3. Analysis of the profitability of products based direct-costing method

Profitability is defined as synthetic capacity of the company to make profits for both its development and to pay capital. Next we calculate specific indicators and analysis of direct-costing method so as to identify the most profitable products in the wood industry. We will consider three items: white wooden library, office of fir, living room sofa.

3.1. The profitability analysis of products based on gross margin variable cost

White wooden library

Given the data attached to this material, we calculate:

- Gross margin per unit: m_u

$$m_u = p_v - c_u = 5.500 - 3.932 = 1.568 \text{ lei}$$

- Total gross margin: M

M = Q_v x m_u = 49 pcs x 1.568 = 76.832 lei/pcs

Office of fir

- Gross margin per unit: m_u

m_u= p_v-c_u = 1547-993 = 554 lei

- Total gross margin: M

M = Q_v x m_u = 30 pcs x 554 lei = 16.620 lei/pcs

Living room sofa

- Gross margin per unit: m_u

m_u= p_v-c_u = 3.094 – 2.300 = 794 lei

- Total gross margin: M

M = Q_v x m_u = 69 pcs x 794 lei =54.786 lei/pcs

Following the approach of calculating the total gross margins of the three products made of wood, the best-selling product on the market is White wooden library because it is the product with the highest total gross margin, equal to 76.832 lei / piece.

3.2. Analysis of the balance point

Balance point expresses the volume of activity in which revenue from the sale of production and total costs are in balance. Determination processes are mathematically and graphically. According DEX, the balance point is the "point along a profile where the rate of change is equal to the Eustatic subsistence rate ".

- The production volume at the balance point: Q*

Q* = $\frac{CF}{\overline{m_u}} = \frac{18564}{1001,6}$ = 18 pcs

$\overline{m_u} = \frac{M}{\sum_{i=1}^{n} Q_i}$, $\overline{m_u} = \frac{148238}{49+30+69}$, $\overline{m_u}$ =1001,6 lei/pcs

The structure of the physical volume of production in the balance point is determined based on the total weight of each product production obtained.

Table 1. Production structure in the balance point

Product	*Production sold*	*Production structure in the balance point*

	Units	*Relative digits*	
White wooden library	49	33,11	6
Office of fir	30	20,27	4
Living room sofa	69	46,62	8
Total	148	100	18

- Critical Turnover: CA*

  CA* = Q* x $\overline{p_v}$

  CA* = 18x 3.577 = 64.386 lei

  $\overline{p_v} = \frac{CA}{\sum_{i=1}^{n} Q_i} = \frac{529396}{148} = 3.577$ lei

The structure of turnover in the balance point is determined in Table 2.

Table 2. *Critical turnover of product*

Product	*Structure of production in the balance point*	*Selling price*	*Critical turnover of product*
White wooden library	6	5.500	33.000
Office of fir	4	1.547	6.188
Living room sofa	8	3.094	25.198
Total	18	-	64.386

3.3. The analysis of product profitability based on the derivatives indicators

The derivatives indicators used for the analysis of product profitability, namely the coverage factor, the coefficient of dynamic safety and confidence interval are calculated as follows:

- The coverage factor: Fc

  White wooden library: $\frac{M}{CA} = \frac{76832}{269500}$ x 100 = 29 %

  Office of fir: $\frac{M}{CA} = \frac{16620}{46410}$ x 100 = 36 %

  Living room sofa: $\frac{M}{CA} = \frac{54786}{213486}$ x 100 = 26 %

- The coefficient of dynamic safety (k_s)**,** shows how much the sales can decrease in a relative way so that the company reaches the profitability

threshold. In this case, the sales of wood products may drop by 99.15% for the company not to enter the loss area, otherwise, any decrease will do so.

$k_s = \frac{CA-CA^*}{CA}$ x 100, $k_s = \frac{529326-4471,2}{529326}$ x 100, k_s = 99,15%

- Safety interval (I_s) Like the previously calculated indicator, the safety margin shows how much the sales can decrease in absolute terms, this time for the company to reach its profit margin. In this case, the sales of wood products can decrease by 524854.7 for the company not to enter the area of losses or even to maintain it, otherwise it will bring losses.

I_s = CA – CA^* = 529326 – 4471.2 = 524854,7

3.4. Structural analysis of the costs

Structural analysis of expenditures will be made on the total of the three products

Table 3. *Critical turnover of product*

Expenses	*Sum*	*Percent*
Variable expenses regarding:		
- Raw materials	398,184.0	89.27%
- Salaries	20,642.8	4.63%
- Insurance and social protection	7,039.2	1.57%
- Fuel, energy, water	1597,7	0.36%
Fixed expenses	18,564.0	4.17%
Total expenses	446,027.8	100

It can be seen from the table above that the largest share of the expenses within their structure over the total expenses of the three products are the variable expenses on raw materials and materials (89.27%), and the lowest share is spent on fuel (0.36%).

3.5. The analysis of the dynamics of expenses

The analysis of the dynamic of expenses is realised in Table 4.

Table 4. *The analysis of the dynamic of expenses*

Expenses	*February*	*Mach*	*Deviation*
Variable expenses regarding:			
- Raw materials	362,500.0	398,184.0	35,684.0
- Salaries	15,800.3	20,642.8	4,842.4
- Insurance and social protection	4,200.2	7,039.2	2,839.0

- Fuel, energy, water	1,008.3	1,597.7	589.4
Fixed expenses	14,324.7	18,564.0	4,239.2
Total expenses	397,833.5	446,027.8	48,194.2

It is found that the slightest deviation, i.e., the most cost-effective is that of variable expenses relating to fuels, energy and water (589.4), while the largest expenditure is with raw materials and materials (35,684).

3.6. The analysis of the product profitability based on direct costing evaluated method

Increasing the share of fixed expenditure makes the concept of variable expenses margin to lose its relevance. This has led to the emergence and development of direct costing method, which involves identifying within the fixed expenses of specific parts of the various products, i.e. expenses broken down by product.

The particularity of this method is the grouping of such expenses: expense variables (production and sales) and fixed expenses: common and specific.

Table 5. *The rate of return*

No.	Indicators	Product 1	Product 2	Product 3	Total
1.	**Turnover**	269.500	46.410	213.486	529.396
2.	**Variable production costs**	173.401,2	26.811	142.830	343.042,2
3.	**The variable cost margin of production**	96.098,8	19.599	70.656	186.353,8
4.	**Variable Selling Expenses**	19.266,8	2.979	15.870	38.115,8
5.	**The variable cost margin**	76.832	16.620	54.786	148.238
6.	**Specific fixed costs**	2.000	1.500	2.500	6.000
7.	**Specific margin**	74.832	15.120	52.286	142.238
8.	**Fixed shared expenses**	-	-		12.564
9.	**Economic and financial result**	-	-		129.674
10.	**Rate of return**	25,32%	29,71%	22,31%	25,49%

In order to obtain the rate of return, we will use the following formula:

$$R_r = \frac{Re\ z.}{CA} \text{ x } 100$$

$$R_{rP1} = \frac{68.246,7}{269.500} \text{ x } 100 = 25,32\%$$

$$R_{rP2} = \frac{13.789,4}{46.410} \text{ x } 100 = 29,71\%$$

$$R_{rP3} = \frac{47.637,7}{213.786} \text{ x } 100 = 22,28\%$$

Conclusions

What we can conclude from the calculations of the rate of profitability is that the product with the highest percentage rate is the fir wood bureau (29.71%). So, it is a product that we have to produce further, taking into account the above costs.

Since management accounting, which responds to the information requirements formulated by decision-makers, depends on the chosen calculation method, the way it is oriented towards the operational leadership at the unit level, we have tried to change the traditional method of ordering with the direct- costing. From the data we collected from the wood industry, we found it to be used as a full-cost, order-based calculation method. It has been remarked over time that this method has some drawbacks, which has made our research point out that the direct-costing method would be the most appropriate to use.

The essence of the method we attempted to put into practice is the net separation of production costs from the physical volume of production and disposal in fixed and variable costs and taking into account only variable costs in the calculation of unit cost per product. Thus, fixed costs will be deducted from the total of the enterprise's gross financial result. As each method of calculation, depending on the company's specificity, there are advantages and limitations as well. The direct-costing method highlights the most cost-effective products (with the highest margin), hierarchy that allows analysis to eliminate low-margin products.

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