

MANAGEMENT ACCOUNTING UNDER THE APPLICATION OF PARTIAL CALCULATION METHODS

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Abstract

In the content of this paper we aim to present the organization of management accounting, a component of the accounting system, which is an important tool in the life of any enterprise, being an important source of information for company management in making decisions regarding efficient asset management. society and the orientation of production policies in order to achieve a maximum level of profit. Management accounting is a tool that managers use in decision making. It helps the company's management and leadership by allowing them to manage efficiently, making the most of their time and resources, and to make the most of the favorable opportunities that arise. The main objective of management accounting is to record production costs and calculate costs so that the managers of a company can manage its internal activity.

Key words: *management accounting; modern calculation methods; variable cost method; direct costs; unit cost*

JEL Classification: *M40*

I. INTRODUCTION

Management accounting and costing is defined as the process of recording, processing, analyzing, interpreting and transmitting internal financial information used by managers to budget, evaluate and control the company's activity, as well as to ensure a correct estimation of resources.

In order to observe some leading objectives, an entity needs a strategic management able to guarantee the performance that creates a value superior to that of the competitors, so that this might be sustainable in time (Bostan & Grosu, 2011). Management accounting and costing serve to provide managers with strategic information to help them make decisions regarding the future activity of the company, such as: the possibility to enter a new market, the creation of new products and the specification of the range of products, choice of distribution channels, etc.

Costing is one of the value management tools, it is one of the oldest and used tool in management processes (Ponisciakova, Gogolova & Ivankova, 2015).

The objectives of management accounting are very comprehensive and comprehensive. This is how we identify (Iacob, 1998):

- a) calculation of costs in order to study the contribution to the results obtained by the operations carried out;
- b) analysis of management efficiency;
- c) drafting budgets to ensure short, medium and long-term efficiency.

From the above we deduce that the main objective of management accounting is the recording of production costs and the calculation of costs so that the managers of a company can manage its internal activity.

According to Patterson (2008: 168), "management accounting focuses primarily on the sources and trends of income, costs and financial results, aiming to reflect the economic reality of an enterprise".

From an accounting perspective, the cost calculation method can be defined as a system of techniques used to go through methodological steps, in order to determine the unit cost per product, by using specific costing procedures (Căpușneanu, 2008).

II. COST CALCULATION METHODS – DEFINITION AND CLASSIFICATION

Under the conditions of a developed economy, in which a multitude of production methods and technologies are used and enterprises are differentiated according to these technologies and types of production used, the method of calculating costs can be performed in several forms, depending on certain criteria.

As a result, costing methods under the influence of these criteria can be classified as follows:

- a) Depending on their evolution over time we can distinguish two categories of costing methods, namely:

- *classical calculation methods* (global method, command method, phase method);
 - *modern calculation methods* (*variable cost method, GP method, standard cost method, THM method, PERT-cost method*).
- b) Depending on the object of the calculation we distinguish:
- *calculation methods on cost carriers* (*standard cost method, order method, product / product group method, global method*);
 - *methods of calculation by place of expenditure* (*ABC method, method by responsibility centers*);
 - *mixed calculation methods* (*phase method, command method*).
- c) Depending on the scope of expenses we differentiate:
- *total calculation methods* (*global method, order method, phase method, standard-cost method, PERT-cost method, GP method, ABC method, THM method*);
 - *partial calculation methods* (*variable cost method, direct cost method*).
- d) Depending on the objectives we have:
- *mono-objective methods* (*phase method, command method, global method*);
 - *pluriobjective methods* (*standard-cost method, THM method, GP method, PERT-cost method, variable cost method*).
- e) Depending on the way of integrating the calculation in the programming and value tracking system of the enterprise:
- *calculation methods with predictive character* (*standard cost method, THM method, PERT-cost method*);
 - *post-factual calculation methods*.
- f) Depending on the periodicity of performing the calculation we distinguish:
- *methods of periodic calculations*;
 - *non-periodic calculation methods*.

Partial calculation methods are characterized by including in the cost of the product, service provided or work performed only a part of the total expenses incurred in order to achieve this product, service or work (Dumitru, 2008:141).

III. APPLICATION OF THE VARIABLE COST METHOD (DIRECT COSTING)

The calculation of the unit cost of production only from the variable costs determined the literature to mention the direct-costing method and under the name of the variable cost method (Popescu & Băluță, 2007:77).

The direct cost method is a calculation method which, although it cannot be used in financial reporting, is a very powerful analysis tool available to the company's management, because the "direct-costing model" is future-oriented; allows the development of forecasts and simulations that highlight the main factor of profit or loss of the company: the volume of activity or the volume of sales (Albu & Albu, 2003).

Developed and applied by Jonathan N. Harris in US economic practice in 1934 and later by G. Carter Harrison in 1935, the direct cost method was taken over and applied by a number of European countries, such as Germany, France, England, Italy and others.

According to Lentillon (1964), the direct cost method causes a decrease in the value of the stock, because fixed costs are not taken into account when calculating the unit cost of the product.

The application of the direct cost method for the calculation of unit costs implies the distribution on the cost bearers only of the direct expenses, the indirect ones to be allocated on the cost of the period and which will be covered by the direct cost margin of the sold production.

At the same time, Lee Brumet (1955) considers that the direct cost method requires at the beginning a study of cost trends and the separation of fixed and variable elements.

Seiler (1959) considers that direct costs attribute only variable costs to products and treats all fixed costs as costs for the period.

If sales are constant, total fixed costs and variable unit costs will not change and production volume will vary (Edwards, 1958).

Given that only variable costs are included in the cost of production, calculated using the variable costs method, an analytical development of the calculation accounts is necessary so that variable costs and fixed costs are highlighted separately.

To analyze the application of the variable cost method and the calculation of unit variable costs we will use as an example a winery. Thus, analytics will be developed for:

- account 902 "*Internal settlements on production obtained*" will be developed on analytical as follows:
 - 902. Cost of the Period - for the record of the expenses allocated over the period;
 - 902.A - for the record of the cost of production obtained from product A (white wine);
 - 902.R - for the evidence of the production cost obtained from the R product (red wine);

- calculation account 921 "*Basic activity expenses*", which highlights the collection of direct expenses, which are fully variable, will be developed analytically by second-hand places and cost bearers. Thus we will have:
 - 921.01.A - for the collection of variable direct costs for product A (white wine) from processing section 01 (processing section);
 - 921.01.R - highlights the variable direct costs collected from section 01 (processing section) for product R (red wine);
 - 921.02.A - for the variable direct expenses from section 02 (microvinification section) for product A (white wine);
 - 921.02.R - for the variable direct expenses related to product R (red wine) occasioned in section 02 (microvinification section);
 - 921.03.A - for the variable direct expenses from section 03 (bottling section) related to product A (white wine);
 - 921.03.R - for variable direct costs in section 03 (bottling section) for product R (red wine).
- calculation account 922 "*Expenses of auxiliary activities*", analytical will be developed on the places of occurrence of expenses, distinct on the two categories of expenses, variable and fixed, so we will have:
 - 922.M.CV – for the collection of variable expenses (CV) of section M (maintenance section);
 - 922.M.CF – for the collection of fixed expenses (CF) of section M (maintenance section);
 - 922.CR.CV – for highlighting the variable expenses (CV) of the CR section (construction and repair section);
 - 922.CR.CF – for highlighting the fixed expenses (CF) related to the CR section (construction and repair section);
 - 922.T.CV – for variable expenses (CV) related to section T (transport section);
 - 922.T.CF – for fixed costs (CF) corresponding to section T (transport section);
- calculation account 923 "*Indirect production costs*" will be developed analytically for the places of occurrence of expenses and by types of expenses, variable and fixed, so we will have:
 - 923.01.CV - for the collection of variable indirect costs (CV) related to section 01 (processing section);
 - 923.01.CF – for fixed indirect costs (CF) related to section 01 (processing section);
 - 923.02.CV – for variable indirect costs (CV) due to section 02 (microvinification section);
 - 923.02.CF – for the collection of fixed indirect costs (CF) belonging to section 02 (microvinification section);
 - 923.03.CV – for variable indirect costs (CV) related to section 03 (bottling section);
 - 923.03.CF – for fixed indirect costs (CF) related to section 03 (bottling section);
- the calculation accounts 924 "*General administrative expenses*" and 925 "*Sales expenses*" are not developed analytically, because they highlight expenses that are not incorporated in the cost of products but are distributed over the cost of the period;
- account 931 "*Cost of production obtained*" analytical will be developed for each cost bearer. Thus we will have:
 - 931.A - for recording the production obtained at a predetermined cost of product A (white wine);
 - 931.A - for recording the production obtained at a predetermined cost of product A (white wine);

In order to collect the expenses, it is necessary to delimit them into variable expenses and fixed expenses in order to be subsequently recorded in the accounts.

1) *Collection of expenses with raw materials.*

The consumption of raw materials at the wine factory for products A (white wine) and R (red wine) are in the total amount of 1.171.802 lei, of which:

- section 01 (processing section):
 - product A (white wine) = 491.849 lei [1];
 - product R (red wine) = 662.073 lei.
- section 02 (microvinification section):
 - product A (white wine) = 9.100 lei;
 - product R (red wine) = 8.780 lei.

Their accounting entry is as follows:

921	=	901	1.171.802
- 921.01.A = 491.849			
- 921.01.R = 662.073			
- 921.02.A = 9100			
- 921.02.R = 8780			

2) *Collection of expenses with consumables*

The statement of expenditure on consumables is as follows (see Table 1):

Table 1. Statement of expenditure on materials

Section	Auxiliary materials	Combustible	Packaging materials	Other consumables	Total
01 (processing section)	7.970	-	-	2.153	10.123
02 (microvinification section)	6.856	-	-	1.974	8.830
03 (bottling section)	5.283	-	-	1.199	6.482
M (maintenance section)	2.129	1.116	-	3.437	6.682
CR (construction and repair section)	2.341	2.674	-	2.145	7.160
T (transport section)	2.626	244.016	-	4.257	250.899
General administration	5.728	6.148	-	12.346	24.222
Commercial department	-	-	133.069	7.463	140.532
Total	32.933	253.954	133.069	34.974	454.930

Source: author processing

The related accounting record is as follows:

%	=	901	<u>454.930</u>
922			264.741
- 922.M.CV= 6.682			
- 922.CR.CV= 7.160			
- 922.T.CV= 250.899			
923			25.435
- 923.01.CV= 10.123			
- 923.02.CV= 8.830			
- 923.03.CV= 6.482			
924			24.222
925			<u>140.532</u>

3) *Collection of expenses with materials of the nature of inventory objects*

At the wine factory, the consumption of materials such as inventory items is 61,234 lei, of which:

- section M (assembly section)= 7.752 lei;
- CR section (construction and repair section)= 13.465 lei;
- section T (transport section)= 9.174 lei;
- section 01 (processing)= 1.875 lei;
- section 02 (microvinification section)= 1.648 lei;
- section 03 (bottling section)= 1.100 lei;
- general administration of the enterprise = 17.280 lei;
- commercial direction = 8.940 lei.

The accounting record of expenses with materials of the nature of inventory items is presented as follows:

%	=	901	<u>61.234</u>
922			30.391
- 922.M.CF= 7.752			
- 922.CR.CF= 13.465			
- 922.T.CF= 9.174			
923			4.623
- 923.01.CF= 1.875			
- 923.02.CF= 1.648			
- 923.03.CF= 1.100			
924			17.280
925			<u>8.940</u>

4) *Collection of energy and water costs*

Table 2. Energy and water expenditure situation

Place of consumption	Electricity	The water	Total
Section 01 (processing section)	58.548	19.283	77.831
Section 02 (microvinification section)	53.783	6.878	60.661
Section 03 (bottling section)	47.473	3.755	51.228
Section M (maintenance section)	8.682	2.754	11.436
CR section (construction and repair section)	10.244	4.434	14.678
Section T (transport section)	5.311	1.929	7.240
General administration	24.840	7.256	32.096
Sales direction	3.663	2.312	5.975
Total	212.544	48.601	261.145

Source: author processing

The related accounting record is:

%	=	901	<u>261.145</u>
922			33.354
- 922.M.CV= 11.436			
- 922.CR.CV= 14.678			
- 922.T.CV= 7.240			
923			189.720
- 923.01.CV= 77.831			
- 923.02.CV= 60.661			
- 923.03.CV= 51.228			
924			32.096
925			5.975

5) *Collection of expenses with services performed by third parties.*

The expenses with services performed by third parties, in total amount of 653,678 lei, are made up of:

- postal and telecommunications services:
 - the general administration of the enterprise = 187.884 lei;
 - the commercial direction = 114.495 lei.
- current repairs:
 - car repairs = 51.859 lei;
 - plant repairs section 01 (processing section) = 3.112 lei.
- notary services = 274.002 lei;
- building evaluation services:
 - section 01 (processing section) = 3.980 lei;
 - section 02 (microvinification section) = 4.500 lei;
 - section 03 (bottling section)= 4.720 lei;
 - section M (maintenance section) = 1.265 lei;
 - CR section (construction and repair section) =1215 lei;
 - section T (transport section) = 1140 lei;
 - general administration = 2870 lei;
 - the commercial direction = 2636 lei.

The related accounting record is as follows:

%	=	901	<u>653.678</u>
922			55.479
- 922.M.CF= 1.265			
- 922.CR.CF= 1.215			
- 922.T.CF= 52.999			
923			16.312
- 923.01.CF= 7.092			
- 923.02.CF= 4.500			
- 923.03.CF= 4.720			
924			464.756
925			117.131

6) *Collection of expenses with taxes, fees and assimilated payments.*

Taxes, fees and assimilated payments are as follows:

- taxes in the vineyard and wine fund in the total amount of 201,880 lei, of which for:
 - section 01 (processing section) = 45.800 lei;
 - section 02 (microvinification section) = 76.180 lei;
 - section 03 (bottling section) = 53.490 lei;
 - section M (maintenance section) = 2.100 lei;
 - CR section (construction and repair section)= 1.970 lei;
 - section T (transport section) = 2.350 lei;
 - general administration = 17.360 lei;
 - the commercial direction = 2.630 lei .
- the total building tax of 169,754 lei, of which for:
 - section 01 (processing section) = 29.400 lei;
 - section 02 (microvinification section) = 37.850 lei;
 - section 03 (bottling section) = 43.352 lei;
 - section M (maintenance section) = 4.480 lei;
 - CR section (construction and repair section) = 4.625 lei;
 - section T (transport section) = 13.970 lei;
 - general administration = 20.517 lei;
 - the commercial direction = 15.560 lei.

The related accounting record is as follows:

	%	=	901		
	922			371.634	
– 922.M.CF=	6.580			29.495	
– 922.CR.CF=	6.595				
– 922.T.CF=	16.320				
	923			286.072	
– 923.01.CF=	75.200				
– 923.02.CF=	114.030				
– 923.03.CF=	96.842				
	924			37.877	
	925			18.190	

7) *Collection of personnel expenses.*

Information on staff costs is presented as follows:

Table 3. Staff costs

Explication	Salary	CAS [2]	CASS	CFS	Total contributions
Section 01 (processing section)	208.754				
- product A (white wine)	61.451	10.201	3.718	461	14.380
- product R (red wine)	90.183	14.970	5.456	676	21.102
- TESADP staff	57.120	9.482	3.456	428	13.366
Section 02 (microvinification section)	182.357				
- product A (white wine)	51.570	8.561	3.120	387	12.068
- product R (red wine)	69.937	11.610	4.231	525	16.366
- TESADP staff	60.850	10.101	3.681	456	14.238
Section 03 (bottling section)	172.705				
- product A (white wine)	54.000	8.964	3.267	405	12.636
- product R (red wine)	63.480	10.538	3.841	476	14.855
- TESADP staff	55.225	9.167	3.341	414	12.922
Section M (assembly section)	77.362	12.842	2.865	355	16.062
Secția CR (secția construcții și reparații)	81.257	13.489	4.916	609	19.014
Secția T (secția transport)	166.425	27.627	10.069	1.248	38.944
TESADP staff of the company	265.555	44.082	16.066	1.992	62.140
Commercial department	144.426	23.975	8.738	1.083	33.796
Total	1.298.841	215.609	76.765	9.515	301.889

Source: author processing

Based on the data presented in the Table 3, the accounting records are prepared:

- registration of salary expenses:

%	=	901	
921			<u>1,298,841</u>
- 921.01.A= 61.451			390.621
- 921.01.R= 90.183			
- 921.02.A= 51.570			
- 921.02.R=69.937			
- 921.03.A= 54.000			
- 921.03.R= 63.480			
922			325.044
- 922.M.CF= 77.362			
- 922.CR.CF= 81.257			
- 922.T.CF= 166.425			
923			173.195
- 923.01.CF= 57.120			
- 923.02.CF= 60.850			
- 923.03.CF= 55.225			
924			265.555
925			144.426

- registration of social contributions:

%	=	901	
921			<u>301,889</u>
- 921.01.A= 14.380			91.407
- 921.01.R= 21.102			
- 921.02.A= 12.068			
- 921.02.R= 16.366			
- 921.03.A= 12.636			
- 921.03.R= 14.855			
922			74.020
- 922.M.CF= 16.062			
- 922.CR.CF= 19.014			
- 922.T.CF= 38.944			
923			40.526
- 923.01.CF= 13.366			
- 923.02.CF= 14.238			
- 923.03.CF= 12.922			
924			62.140
925			33.796

8) *Collection of operating expenses related to depreciation and depreciation adjustments related to property, plant and equipment.*

The total expense with the depreciation of tangible assets is in the amount of 227.426 lei, which is distributed on places of exploitation of fixed assets as follows:

- section 01 (processing section) = 41.130 lei;
- section 02 (microvinification section) = 44.209 lei;
- section 03 (bottling section) = 39.500 lei;
- section M (maintenance section) = 5.485 lei;
- CR section (construction and repair section)= 1.990;
- section T (transport section) = 44.375 lei;
- general administration = 48.104 lei;
- the commercial department = 2.633 lei.

The related accounting record is as follows:

%	=	901	
922			<u>227,426</u>
- 922.M.CF= 5.485			51.850
- 922.CR.CF= 1990			

– 922.T.CF= 44.375 923	124.839
– 923.01.CF= 41.130	
– 923.02.CF= 44.209	
– 923.03.CF= 39.500 924	48.104
925	2.633

9) *Recording in the accounting of the production obtained at a predetermined cost.*

At the end of the period, 38.000 liters of product A (white wine) and 50.000 liters of product R (red wine) were obtained. The predetermined variable cost of product A (white wine) is 22 lei / liter, and of product R (red wine) of 23 lei / liter.

The default cost of production obtained is:

- product A (white wine) 38.000 x 22 lei/l = 836.000 lei;
- product R (red wine) 50.000 x 23 lei/l = 1.150.000 lei;
- total production at predetermined cost 836.000 + 1.150.000 = 1.986.000 lei.

The production obtained at a predetermined cost is recorded according to the accounting item:

931	=	902	1.986.000
– 931.A= 836.000		– 902.A= 836.000	
– 931.R= 1.150.000		– 902.R= 1.150.000	

During the period, production costs were collected on different management accounts, depending on their nature, the possibility of identifying by bearers of costs and places of expenditure, so in order to be able to calculate the variable unit cost, it is necessary to make a string of preliminary operations, these being:

- 1) *Allocation of variable costs of ancillary production over the places benefiting from it (see Table 5):*

Table 5. Distribution of variable production costs

Explanations	Section M	Section CR	Section T
1. Total expenses	18.118	21.838	260.322
2. The activity carried out in total	500 man-hours	420 man-hours	325.402,50 km
- for section 01 (processing)	150 man-hours	89 man-hours	80.000 km
- for section 02 (microvinification)	120 man-hours	80 man-hours	-
- for section 03 (bottling)	135 man-hours	65 man-hours	-
- for section M (maintenance)	-	-	-
- for the CR section (construction and repair)	-	-	-
- for section T (transport)	-	42 man-hours	-
- for general administration	55 man-hours	90 man-hours	35.000 km
- for the commercial department	40 man-hours	54 man-hours	210.402,50 km
3. Unit cost	36,236 lei	52 lei	0,8 lei
4. Distributed expenses:	18.118 lei	21.838 lei	260.322 lei
- for section 01 (processing)	5.435,40 lei	4.628 lei	64.000 lei
- for section 02 (microvinification)	4.348,32 lei	4.160 lei	-
- for section 03 (bottling)	4.891,86 lei	3.380 lei	-
- for section M (maintenance)	-	-	-
- for the CR section (construction and repair)	-	-	-
- for section T (transport)	-	2.183 lei	-
- for general administration	1.992,98 lei	4.680 lei	28.000 lei
- for the commercial department	1.449,44 lei	2.807 lei	168.322 lei

Source: author processing

The related accounting records are as follows:

- for the distribution of the production of section M (maintenance section):

%	=	922	<u>18.118</u>
923		- 922.M.CV= 18.118	14.675,58
- 923.01.CV= 5.435,40			
- 923.02.CV= 4.348,32			
- 923.03.CV= 4.891,86			
924			1.992,98
925			1.449,44

- for the distribution of the production of the CR section (constructions and repairs):

%	=	922	<u>21.838</u>
923		- 922.CR.CV= 21.838	12.168
- 923.01.CV= 4.628			
- 923.02.CV= 4.160			
- 923.03.CV= 3.380			
922			2.183
- 922.T.CV= 2.183			
924			4.680
925			2.807

- for the distribution of the production of section T (transport section):

%	=	922	<u>260.322</u>
923		- 922.T.CV= 260.322	64.000
- 923.01.CV= 64.000			
924			28.000
925			168.322

2) *Settlement of fixed expenses.*

The variable cost method does not involve the inclusion of fixed costs in the cost of products, they are distributed over the cost of the period.

The accounting record of the fixed expenses settlement is presented as follows:

902. Cost of the Period	=	%	<u>1.211.846</u>
		922	566.279
		- 922.M.CF= 114.506	
		- 922.CR.CF= 123.536	
		- 922.T.CF= 328.237	
		923	645.567
		- 923.01.CF= 195.783	
		- 923.02.CF= 239.475	
		- 923.03.CF= 210.309	

3) *Allocation of indirect variable expenses by cost bearers.*

The distribution of indirect variable expenses will be done using as a basis the distribution of staff expenses. For this we will first calculate the weights of staff costs within each section and on each product.

- For section 01 (processing) the weights will be:

$$G_A = \frac{75.831}{187.116} = 0,4;$$

$$G_R = \frac{111.285}{187.116} = 0,6.$$

- For section 02 (microvinification) the weights will be:

$$G_A = \frac{63.638}{149.941} = 0,42;$$

$$G_R = \frac{86.303}{149.941} = 0,58.$$

- For section 03 (bottling) the weights will be:

$$G_A = \frac{66.636}{144.971} = 0,46;$$

$$G_R = \frac{78.335}{144.971} = 0,54.$$

Table 6. Variable costs by cost bearers

Variable expenses	Total	Related to product A (white wine)	Related to product R (red wine)
923.01.CV	162.017,40	64.806,96	97.210,44
923.02.CV	77.999,32	32.759,71	45.239,61
923.03.CV	65.981,86	30.351,66	35.630,20
Total	305.998,58	127.918,33	178.080,25

Source: author processing

The related accounting record is:

921		=	923		305.998,58
-	921.01.A= 64.806,96		-	923.01.CV= 162.017,40	
-	921.01.R= 97.210,44		-	923.02.CV= 77.999,32	
-	921.02.A= 32.759,71		-	923.03.CV= 65.981,86	
-	921.02.R= 45.239,61				
-	921.03.A= 30.351,66				
-	921.03.R= 35.630,20				

4) *Determination of the total effective production cost and the unit variable production cost.*

Table 7. Total production cost and unit variable production cost

The product	Collected expenses (Lei)			Total expenses (Lei)	Quantity of products (L)	Variable unit cost (RON /liter)
	Section 01	Section 02	Section 03			
A (white wine)	632.486,96	105.497,71	96.987,66	834.972,33	38.000	21,973
R (red wine)	870.568,44	140.322,61	113.965,20	1.124.856,25	50.000	22,497
Total	1.503.055,40	245.820,32	210.952,86	1.959.828,58	-	-

Source: author processing

From the above data (see Table 7) it results: the variable cost of product A (white wine) is 21.973 lei, and of product R (red wine) is 22.497 lei. To complete the accounting records, we will also record:

a) Reimbursement of the actual cost of production obtained:

902		=	921		1.959.828,58
-	902.A= 834.972,33		-	921.01.A= 632.486,96	
-	902.R= 1.124.856,25		-	921.02.A= 105.497,71	
			-	921.03.A= 96.987,66	
			-	921.01.R = 870.568,44	
			-	921.02.R= 140.322,61	
			-	921.03.R= 113.965,20	

b) Registration of price differences:

Default cost A (white wine) = 836.000 lei;

Actual cost A (white wine) = 834.972,33 lei;

Favorable difference A (white wine) = 1.027,67 lei (836.000 – 834.972,33);

Default cost R (red wine) = 1.150.000 lei;

Actual cost R (red wine) = 1.124.856,25 lei;

Favorable difference R (red wine) = 25.143,75 lei (1.150.000 – 1.124.856,25).

The related accounting record is:

903	=	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 5%;"></td> <td style="width: 10%; text-align: center;">902</td> <td style="width: 85%;"></td> </tr> <tr> <td style="text-align: center;">-</td> <td style="text-align: center;">902.A=</td> <td style="text-align: right; border: 1px solid black;">1.027,67</td> </tr> <tr> <td style="text-align: center;">-</td> <td style="text-align: center;">902.R=</td> <td style="text-align: right; border: 1px solid black;">25.143,75</td> </tr> </table>		902		-	902.A=	1.027,67	-	902.R=	25.143,75	26.171,42
	902											
-	902.A=	1.027,67										
-	902.R=	25.143,75										

c) Settlement of expenses that are distributed on the cost of the period.
The related accounting record is:

902. Cost of the Period	=	%	1.630.904,42
		924	986.702,98
		925	644.201,44

d) Settlement of the total expenses related to the period.
The related accounting record is:

901	=	%	4.802,579
		931	1.986.000
		-	931.A= 836.000
		-	931.R= 1.150.000
		903	26.171,42
		902. Cost of the Period	2.842.750,42

IV. ANALYSIS OF INDICATORS PROVIDED BY THE VARIABLE COST METHOD

The variable cost method provides information based on which the cost-volume-profit relationship can be analyzed. This relationship is expressed by means of indicators such as: equilibrium point, coverage factor, dynamic safety factor and safety interval.

In order to calculate these indicators we need to know the unit selling price of the products.

The company sells its production at the price of 37 lei / l for product A (white wine) and 43 lei / l for product R (red wine).

a) Calculation of the equilibrium point (Pe).

The formula for calculating the equilibrium point, in the case of a winery with a heterogeneous production, is $Pe = \frac{CF}{\overline{mcv}}$

\overline{mcv} is calculated as a weighted arithmetic mean of the variable unit cost margins (m cvi).

$$\begin{aligned}
 mcv_A &= pv_A - cv_A = 37lei - 21,973lei = 15,027lei/l \\
 mcv_R &= pv_R - cv_R = 43lei - 22,497lei = 20,503lei/l \\
 \overline{mcv} &= \frac{38.000l * 15,027 lei/l + 50.000lei * 20,503 lei/l}{38.000l + 50.000l} = \frac{1.596.176 lei/l}{88.000l} = 18,138 lei/l
 \end{aligned}$$

$$Pe = \frac{CF}{\overline{mcv}} = \frac{1.211.846lei}{18,138 lei/l} = 66.812,55 l$$

Knowing the equilibrium point we can calculate the level of sales of the enterprise at the equilibrium point, ie the critical turnover.

The critical turnover calculation formula is $CA_{cr} = Pe * p\bar{v}$.

Because the production of the enterprise is not homogeneous the formula used for the calculation will be: $CA_{cr} = Pe * p\bar{v}$.

$$p\bar{v} = \frac{38.000 * 37 + 50.000 * 43}{38.000 + 50.000} = \frac{3.556.000}{88.000} = 40,41lei/l$$

$$CA_{cr} = 66.812,55l * 40,41lei/l = 2.699.895,15 lei$$

Therefore, in order to ensure the coverage of fixed expenses, ie the equality between the level of sales and that of fixed costs, the company must sell 66.812,55 liters of wine or 2.699.895,15 lei. Any unit of product sold in excess will generate profit for the company and the decrease of sales below these values will lead to loss.

b) Calculation of the coverage factor (Fa).

The coverage factor is calculated using the formula $Fa = \frac{Mcv_i}{CA} * 100$.

The coverage factor will be calculated on each product as follows:

$$Fa_A = \frac{Mcv_A}{CA_A} * 100 \text{ for product A (white wine);}$$

$$Fa_R = \frac{Mcv_R}{CA_R} * 100 \text{ for product R (red wine).}$$

In order to be able to apply these formulas, we will first calculate:

$$Mcv_A = mcv_A * qv_A = 15,027lei * 38.000l = 571.026 lei$$

$$CA_A = qv_A * pv_A = 38.000l * 37 lei/l = 1.406.000 lei$$

$$Mcv_R = mcv_R * qv_R = 20,503lei * 50.000l = 1.025.150 lei$$

$$CA_R = qv_R * pv_R = 50.000l * 43 lei/l = 2.150.000 lei.$$

Substituting in formulas we obtain:

$$Fa_A = \frac{571.026lei}{1.406.000lei} * 100 = 40,61\%$$

$$Fa_R = \frac{1.025.150lei}{2.150.000lei} * 100 = 47,68\%$$

Knowing the values of these indicators, decisions can be made regarding increasing the level of production. In the case under analysis, the coverage factor is higher for product R (red wine), so if an increase in production is desired, the company must focus on increasing it for product R (red wine), so that it has a contribution higher to cover fixed expenses and profit.

c) Calculation of the dynamic safety factor (Ks).

The formula for calculating the dynamic safety factor is $Ks = \frac{CA - CA_{cr}}{CA} * 100$

For CA, in this formula, we will use the total turnover (CA_t) which is the sum of the turnovers of the two products. It turns out that:

$$CA_t = CA_A + CA_R = 1.406.000lei + 2.150.000lei = 3.556.000 lei$$

and

$$Ks = \frac{3.556.000lei - 2.699.895,15lei}{3.556.000lei} * 100 = 24,07\%$$

The dynamic safety factor can also be calculated according to the formula $Ks = G - Ge$

Ge represents the degree of activity at the equilibrium level and is calculated according to the relation:

$$Ge = \frac{CA_{cr}}{CA} * 100.$$

$$Ge = \frac{2.699.895,15lei}{3.556.000lei} * 100 = 75,93\%$$

and Ks will be:

$$Ks = 100\% - 75,93\% = 24,07\%$$

So the company's sales can decrease by 24.07% or up to the level of 75.93% for it to be at equilibrium. If the decrease in sales exceeds this indicator, the company will record losses.

d) Calculation of the safety interval (Is).

Indicator, which expresses in absolute size how much sales can decrease for the company to stay at the equilibrium point, is calculated by the relationship $Is = CA - CA_{cr}$.

By replacing the data in the formula we will get

$$Is = 3.556.000lei - 2.699.895,15lei = 856.104,85 lei.$$

It results that the sales can decrease, in absolute size, by 856.104,85 lei so that the company is at the level of the equilibrium point and does not enter the area of losses, which can happen if the sales will fall above the level of the safety.

V. CALCULATION MODEL BY DIRECT COST METHOD

The recording of expenditure in the accounts is marked by their separation into direct and indirect expenditure so that it can be subsequently reflected in the relevant management accounts.

The application of the direct cost method, compared to the absorbent type methods, has the advantage of eliminating the laborious work of allocating indirect costs to products (Rotilă, 2013).

The chain of accounting records characteristic of the direct costs method is similar to that of the variable costs method, the difference arising from the need to separate expenses not into variables and fixed, as they were separated in the method analyzed above, but directly and indirectly. Following the application of the direct cost method, the entries in the management accounting will be:

1) *Recording the collection of expenses with raw materials.*

The situation of material consumption was previously presented in the analysis of the application of the variable cost method.

Their accounting record is:

921	=	901	1.171.802
- 921.01.A = 491.849			
- 921.01.R = 662.073			
- 921.02.A = 9100			
- 921.02.R = 8780			

2) *Collection of expenses with consumables.*

The situation of consumption of consumables is the same, previously presented in the analysis of the variable cost method.

The registration in accounting will be done as follows:

%	=	901	454.930
922			264.741
- 922.M= 6.682			
- 922.CR= 7.160			
- 922.T= 250.899			
923			25.435
- 923.01= 10.123			
- 923.02= 8.830			
- 923.03= 6.482			
924			24.222
925			140.532

3) *Recording the expenses with the materials of the nature of the inventory objects*

The cost of materials with the nature of inventory items is the same, previously presented in the analysis of the variable cost method.

The corresponding accounting entry is:

%	=	901	61.234
922			30.391
- 922.M= 7.752			
- 922.CR= 13.465			
- 922.T= 9.174			
923			4.623
- 923.01= 1.875			
- 923.02= 1.648			
- 923.03= 1.100			
924			17.280
925			8.940

4) *Collecting energy and water expenses*

The situation of energy and water expenditures was previously presented in the analysis of the variable cost method.

The accounting record of electricity and water consumption is:

%	=	901	261.145
922			33.354
- 922.M= 11.436			
- 922.CR= 14.678			
- 922.T= 7.240			
923			189.720
- 923.01= 77.831			
- 923.02= 60.661			
- 923.03= 51.228			
924			32.096
925			5.975

5) *Collection of expenses for services performed by third parties*

The situation of expenses with services performed by third parties is the same, previously presented in the analysis of the variable cost method.

The accounting record is presented:

%	=	901	<u>653.678</u>
922			55.479
- 922.M= 1.265			
- 922.CR= 1.215			
- 922.T= 52.999			
923			16.312
- 923.01= 7.092			
- 923.02= 4.500			
- 923.03= 4.720			
924			464.756
925			117.131

6) *Collection of expenses with taxes, fees and assimilated payments.*

The situation of expenses with taxes, fees and assimilated payments is the same, previously presented in the analysis of the variable cost method.

The related accounting record is as follows:

%	=	901	<u>371.634</u>
922			29.495
- 922.M= 6.580			
- 922.CR= 6.595			
- 922.T= 16.320			
923			286.072
- 923.01= 75.200			
- 923.02= 114.030			
- 923.03= 96.842			
924			37.877
925			18.190

7) *Collection of personnel expenses.*

The statement of staff expenditure is presented above in the analysis of the application of the variable cost method.

The related accounting records will be:

- for salaries:

%	=	901	<u>1.298.841</u>
921			390.621
- 921.01.A= 61.451			
- 921.01.R= 90.183			
- 921.02.A= 51.570			
- 921.02.R= 69.937			
- 921.03.A= 54.000			
- 921.03.R= 63.480			
922			325.044
- 922.M= 77.362			
- 922.CR= 81.257			
- 922.T= 166.425			
923			173.195
- 923.01= 57.120			
- 923.02= 60.850			
- 923.03= 55.225			
924			265.555
925			144.426

- for social contributions:

%	=	901	<u>301.889</u>
921			91.407
- 921.01.A= 14.380			

- 921.01.R= 21.102	
- 921.02.A= 12.068	
- 921.02.R= 16.366	
- 921.03.A= 12.636	
- 921.03.R= 14.855	
922	74.020
- 922.M= 16.062	
- 922.CR= 19.014	
- 922.T= 38.944	
923	40.526
- 923.01= 13.366	
- 923.02= 14.238 lei	
- 923.03= 12.922 lei	
924	62.140
925	33.796

8) *Collection of operating expenses related to depreciation and depreciation adjustments related to property, plant and equipment.*

The statement of depreciation expenses and adjustments for impairment of property, plant and equipment was presented in the analysis of the application of the variable cost method.

The accounting record is as follows:

%	=	901	<u>227.426</u>
922			51.850
- 922.M= 5.485			
- 922.CR= 1990			
- 922.T= 44.375			
923			124.839
- 923.01= 41.130			
- 923.02= 44.209			
- 923.03= 39.500			
924			48.104
925			2.633

9) *Recording in the accounting of the production obtained at a predetermined cost.*

At the end of the period, 38,000 liters of product A (white wine) and 50,000 liters of product R (red wine) were obtained. The direct predetermined cost of product A (white wine) is 18.70 lei / liter, and of product R (red wine) of 19.50 lei / liter.

The default cost of production obtained is:

- product A (white wine) 38.000 l x 18,70 lei/l= 710.600 lei;
- product R (red wine) 50.000 l x 19,50 lei/l= 975.000 lei;
- total production at predetermined cost 710.600+975.000= 1.685.600 lei.

The accounting record is as follows:

931	=	902	1.685.600
- 931.A= 710.600		- 902.A= 710.600	
- 931.R= 975.000		- 902.R= 975.000	

❖ **Calculation of direct unit cost**

Table 8. Determination of the total actual production cost and the direct unit production cost

The product	Cheltuieli directe colectate (lei)			Total (lei)	Production quantity (l)	Direct unit cost (lei / l)
	Section 01	Section 02	Section 03			
Product A (white wine)	567.680	72.738	66.636	707.054	38.000	18,61
Product R (red wine)	773.358	95.083	78.335	946.776	50.000	18,94
Total	1.341.038	167.821	144.971	1.653.830	-	-

Source: author processing

Following the calculations performed, we determined the direct unit cost of the products, of 18,61 lei for product A (white wine) and 18,94 lei for product R (red wine). We also know the total actual direct production cost, which is 1.653.830 lei (see Table 8).

In order to complete the accounting records chain, the following operations will also be performed:

- a) Settlement of the actual cost of production obtained.

The characteristic accounting record is:

902	=	921	1.653.830
- 902.A= 707.054		- 921.01.A= 567.680	
- 902.R= 946.776		- 921.01.R= 773.358	
		- 921.02.A= 72.738	
		- 921.02.R= 95.083	
		- 921.03.A= 66.636	
		- 921.03.R= 78.335	

- b) Registration of price differences.

Default cost A (white wine) = 710.600 lei

Actual cost A (white wine) = 707.054 lei

Favorable difference A (white wine) = 3.546 lei (710.600 – 707.054)

Default cost R (red wine) = 975.000 lei

Actual cost R (red wine) = 946.776 lei

Favorable difference R (red wine) = 28.224 lei (975.000 – 946.776)

The related accounting record is:

903	=	902	31.770
		- 902.A= 3546	
		- 902.R= 28.224	

- c) Settlement of expenses related to the period.

The related accounting record is:

902. Cost of the Period	=	%	3.148.749
		922	864.374
		- 922.M= 132.624	
		- 922.CR= 145.374	
		- 922.T= 586.376	
		923	860.722
		- 923.01= 283.737	
		- 923.02= 308.966	
		- 923.03= 268.019	
		924	952.030
		925	471.623

- d) Closing the expense accounts.

The related accounting record is:

901	=	%	4.802.579
		931	1.685.600
		- 931.A= 710.600	
		- 931.R= 975.000	
		903	31.770
		902. Cost of the Period	3.148.749

VI. ANALYSIS OF VARIABLE COSTS AND DIRECT COSTS

As a result of the application of the partial cost calculation methods, the variable cost method and the direct cost method, unit costs were established by the two methods, which are also partial in nature. Their values are:

- unit costs calculated by the variable costs method:
 - variable unit cost of product A (white wine) = 21,973 lei;
 - variable unit cost of product R (red wine) = 22,497 lei;

- unit costs calculated by the direct costs method:
 - direct unit cost of product A (white wine) = 18,61 lei;
 - direct unit cost of product R (red wine) = 18,94 lei.

As can be seen, the unit costs calculated by the direct cost method have lower values than the unit costs calculated by the variable cost method. This is explained by the incorporation into the cost of products, calculated by the variable cost method, of a part of the indirect costs, namely the variable indirect costs. The direct cost method allocates these costs to the cost of the period, which means that they are not part of the cost of the products. Thus, a lower share of total expenditure is allocated to the unit cost calculated by the direct costs method than by the variable costs method.

We notice that the difference between the unit costs of product A (white wine) is smaller than the difference of unit costs calculated for product R (red wine) (A 3,363 lei < R 3,557 lei). This difference is the result of the separation of production costs into variable and fixed, direct and indirect, and the incorporation into the cost of products of only a part of the costs, respectively of the variable or direct costs, depending on the method applied.

The calculation of production costs by the variable cost method and by the direct cost method, partial calculation methods, involves allocating to the cost bearers only a part of the total production costs and the undistributed costs are allocated to the cost of the period.

The application of the variable cost method involved the distribution on the production cost only of the expenses that are characterized by variability compared to the change in the physical volume of production. Guided by this principle, the cost of production consists of both direct and indirect costs, but which are variable. The following were incorporated in the cost of production calculated using the variable cost method:

- expenses with raw materials;
- expenses with variable consumables;
- energy expenditures, only the part of variable expenditures;
- expenses with the directly productive staff of the basic sections (salary and related social contributions);
- variable expenses related to auxiliary departments.

In order to be able to perform an analysis of the costs that make up the cost of products calculated using the variable cost method, the following data are presented (see Table 9):

Table 9. Expenditures that make up the cost of products

The costs that make up the variable cost	Default level	Effective level	□	I	%
Expenditures on raw materials	1.200.000	1.171.802,00	-28.198,00	97,65%	-2,35
Expenses with consumables	300.000	290.176,00	-9.824,00	96,73%	-3,27
Ch. cu energia și apa	220.000	223.074,00	+3.074,00	101,40%	+1,40
Staff costs	480.000	482.028,00	+2.028,00	100,42%	+0,42
Variable expenses of the auxiliary sections	315.000	305.998,58	-9.001,42	97,14%	-2,86
Total	2.515.000	2.473.078,58	-41.921,42	98,33%	-1,67

Source: author processing

We deduce that the expenses, incorporable in the production cost through the variable costs method, have a favorable evolution in total, decreasing by 41.921,42 lei at the effective level compared to the predetermined level, ie by 1,67%. This decrease is determined by the economy, at the actual level compared to the default level, which is achieved at several items of expenditure.

For details we specify that:

- the expenses with raw materials decreased by 2,35%, ie by 28.198 lei, at an effective level compared to the predetermined level, these presenting a favorable evolution;
- an economy also exists at the level of expenditures on consumables, decreasing by 3,27%, the equivalent of the amount of 9.824 lei, favorable evolution;
- energy and water expenses show an increase at the effective level compared to the default level of 3.074 lei, ie an increase of 1,40%, which means an unfavorable evolution;
- personnel expenses show an unfavorable evolution, increasing by 2.028 lei, respectively by 0.42%, at an effective level compared to the predetermined level;
- the expenses of the auxiliary sections, which are included in the cost of the products, have a favorable evolution, decreasing by 2,86%, respectively by 9.001,42 lei.

Although energy and water expenditure and staff expenditure have actually increased from the pre-established level, the resulting savings on the other cost items are higher, so that overall expenditure is favorable.

The cost of production calculated by the direct cost method, as it results from the name of the method, consists of expenses that are direct to the cost bearers, not taking into account their variability compared to the change in the physical volume of production. That is, both variable and fixed direct costs can be incorporated into the cost of production. Indirect expenses will be distributed on the cost of the period. Taking into account the separation of costs according to this criterion, the cost of production calculated using the direct costs method contains:

- raw material costs;
- energy and water expenses in order to carry out the technological process;
- the expenses with the salaries of the directly productive workers, as well as the afferent contributions;

In order to analyze the expenses that make up the direct cost, we present the following data (see Table 10):

Table 10. Costs that make up the direct cost

Expenses that make up the direct cost	Default level	Effective level	□		I	%
Expenditures on raw materials	1.200.000	1.171.802	-28.198		97,65%	-2,35
Staff costs	480.000	482.028	+2.028		100,42%	+0,42
Total	1.680.000	1.653.830	-26.170		98,44%	-1,56

Source: author processing

*Note: * Energy and water costs, in the example analyzed, were considered to be entirely indirect, for this reason they are not included in the table above either.*

We note that expenses, which can be incorporated into the cost through the direct costs method, decreased, at an actual level compared to the predetermined level, by 1,56%, which means a favorable evolution.

In detail, the evolution of expenditure is as follows:

- an economy of the expenses with raw materials, their value at effective level being lower than the default value by 2,35%, ie by 28.198 lei;
- an unfavorable evolution at the level of personnel expenses, their value increasing by 2.028 lei, ie by 0,42%.

Even if the personnel expenses increased, the raw material expenses decreased by a higher value, thus, in total, the expenses incorporable in the cost of products through the direct costs method have a favorable evolution, registering a saving of 26.170 lei.

Analyzing the structure of expenses that were included in the cost of production through the two partial calculation methods, we clearly see their partial nature, because, in addition to general administrative expenses and sales expenses, part of the total expenses, as they are the fixed expenses, in the case of the variable costs method, respectively the indirect expenses, in the case of the direct costs method, were not distributed on the cost of the products but formed the cost of the period.

Referring to the expenses that were incorporated in the cost of production, we deduce some similarities but also particularities.

The similarity between the two methods of calculation is the allocation on production costs, by applying both methods, of the expenses occasioned by the consumption of raw materials and of those with the remuneration of the directly productive personnel for the work performed in production..

The differences are marked by the inclusion in the production cost, calculated by the variable costs method, of the part of variable expenses related to the consumption of consumable materials and those related to the auxiliary production sections, expenses that are not included in the production cost calculated by the cost method. being distributed over the cost of the period because they are indirect in relation to the cost bearers.

The allocation of energy and water costs to the cost of production is, at the same time, both a similarity and a difference between the two methods. To clarify, we note that the variable cost method includes variable energy and water costs. In the case of the direct cost method, it includes the energy and water costs that have been incurred by the technological process, ie the energy and water costs directly identified on the cost carriers.

VII. CONCLUSIONS

Partial calculation methods, modern methods, involve the calculation of partial unit costs and which are considered to be very useful in the management of a company, refusing the arbitrary distribution of expenses on

the cost carriers and offering the advantage of forecasting and cost modeling. The application of these calculation models presents simplicity and operability, especially the variable cost method, which, from the perspective of cost analysis, performed by researching the cost-volume-profit relationship and interpreting the information obtained, provides an image of product efficiency through equilibrium indicators, factor coverage, dynamic safety factor and safety range.

Another indicator characteristic of partial methods, and which can be calculated by both partial methods, is the margin on unit costs, which determines the contribution of each cost bearer to cover the costs of the period, as fixed or indirect, and to make a profit. The partial methods are also highlighted from the point of view of including in the cost only the expenses that strictly refer to the production activity, classified separately to satisfy the needs of both methods, the general administration expenses and the selling expenses constituting the cost of the period regardless of the approached method.

Management accounting is inconceivable without the calculation of costs, regardless of the method that will be used for this purpose.

End notes:

[1] Romania's national currency, 1 leu = 0.208 Euro

[2] In the calculations in the following table, the quotas of 16.6% for CAS were considered (15.5% of the unit's contribution to social insurance and 0.8% of the contribution for work accidents and occupational diseases), 6.05% for CASS (5.2% contribution of the unit to the social health insurance and 0.85% contribution to the leave and allowances fund), 0.75% for CFS (0.5% contribution of the unit to the unemployment fund and 0.25% contribution to the guarantee fund for the payment of salary claims).

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