DIFFERENCES REGARDING COST CALCULATION IN ABSORPTION COSTING METHOD AND VARIABLE COSTING METHOD

Lecturer PhD., Cristina Aurora BUNEA-BONTAȘ
"Constantin Brancoveanu" University of Pitesti,
Faculty of Management Marketing in Economic Affairs of Braila, Romania
E-mail: bontasc@yahoo.com

Abstract: *The cost of the product is the basis for calculating the cost of goods sold, and the net operating income. Given the difference between the accounting treatment of fixed overhead, the variable and absorption-costing methods may lead to different operating income figures. Absorption costing method allocates all manufacturing costs to the product cost that is direct materials, direct labour, and variable and fixed manufacturing overhead. Under this method, fixed overhead is assigned to the product cost and is expensed in the reporting period that the product is sold. Variable costing method takes into account the difference between fixed and variable manufacturing costs. This method assigns only variable manufacturing costs to the cost of the product and fixed overhead is treated as a period expense being excluded from the product cost.*

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1. Introduction

Costs are divided into product costs and period expenses.

Product costs consist in all costs incurred in manufacturing a product. These costs include direct materials, direct labour, and manufacturing overhead (fixed and variable).

Period expenses are all costs incurred during a reporting period that have not been capitalized into inventory and include any expenses that are not directly related to the production of the goods sold.

Product costs are only incurred if products are produced, and period expenses are associated with the accounting period in which they occurred. A business that has no production activities during a reporting period incurs no product costs, but only period expenses.

Product costs are initially recorded as an inventory asset. Once the related goods are sold, these capitalized costs are charged to the cost of goods sold and they appear as expenses on the income statement. Thus, the revenue from a product sale matches with the associated cost of goods sold, so that the entire effect of a sale transaction appears within one reporting period's income statement.

2. Differences between absorption costing method and variable costing method

Manufacturing companies may use one of the following methods for determining the cost of inventories for financial accounting purposes: absorption costing or variable costing.

Absorption costing is a method that allocates the following costs to the cost of the product: all direct costs, variable manufacturing overhead and fixed manufacturing overhead. The value of inventory under absorption costing includes direct material, direct labour, and all overhead.

Variable costing is a method that allocates all variable costs to the cost of the product: direct materials, direct labour, and variable overhead. The fixed overhead is expensed in the period incurred.

The difference between the absorption and variable costing methods consists on the treatment of fixed manufacturing overhead costs. Absorption costing includes fixed manufacturing overhead as product costs (Figure no 1).

Figure no 1. Differences between absorption costing and variable costing

<table>
<tr><th colspan="2">Absorption costing</th><th>Variable costing</th></tr>
<tr><td rowspan="4">Product costs</td><td>Direct materials (variable)</td><td rowspan="3">Product costs</td></tr>
<tr><td>Direct labour (variable)</td></tr>
<tr><td>Variable manufacturing overhead</td></tr>
<tr><td>Fixed manufacturing overhead</td><td rowspan="3">Period expenses</td></tr>
<tr><td rowspan="2">Period expenses</td><td>Variable selling and administrative expenses</td></tr>
<tr><td>Fixed selling and administrative expenses</td></tr>
</table>

Absorption costing is in accordance with IFRS, because the product cost includes fixed overhead. According to IAS 2 Inventories, cost of inventories should include all:

- costs of purchase (including taxes, transport, and handling) net of trade discounts received
- costs of conversion (including fixed and variable manufacturing overheads) and
- other costs incurred in bringing the inventories to their present location and condition.

Under the variable costing method, fixed overhead are considered period expenses, regardless the production volume and generally concerning the ability of the company to produce. Thus, they are estimated and tracked globally or in relation to a small number of responsibility centres and they are not included in the cost of the product but are charged against revenue for each period.

The company's management should apply absorption costing method in order to be compliant with IFRS, but would prefer one method over the other for internal decision-making purposes.

The following example emphasises the differences between net operating income under absorption and variable costing, considering the basic format of the income statement: sales revenue less the cost of goods sold equal gross profit, and the gross profit less the selling and administrative expenses equals the net operating income. In order to simplify the calculation, the selling and administrative expenses are neglected in this example.

Assume that Company ABC manufactures 1,000 units of product A. The following costs are incurred:

- direct materials cost is CU 40 per unit,
- direct labour is 80 per unit,
- variable manufacturing overhead is 60 per unit and

- fixed manufacturing overhead is 200,000.

The cost of finished goods inventory is not the same under absorption and variable cost methods because of the different accounting treatment concerning the fixed manufacturing overheads (Table no 1).

Under the absorption costing method, fixed overhead is capitalized as part of the cost of inventories. Under variable cost method, fixed overheads are expensed related to the period they occurred.

Table no. 1. Cost of finished goods inventory using absorption costing method and variable costing method

	Absorption Costing	Variable Costing
Direct Materials (1,000 units x CU 40 per unit)	40,000	40,000
Direct Labour (1,000 units x CU 80 per unit)	80,000	80,000
Variable Manufacturing Overhead (1,000 units x CU 60 per unit)	60,000	60,000
Fixed Manufacturing Overhead	20,000	0
Product Cost	200,000	180,000
Product Cost per unit	200	180

Assuming that all the products are sold for CU 350 per unit, the net operating income for both the absorption and variable costing methods is the same (Table no 2).

Table no. 2. Net operating income using absorption and variable costing methods in case of selling the entire inventory

	Absorption Costing	Variable Costing
Sales Revenue (1,000 units x CU 350 per unit)	350,000	350,000
(-) Cost of Goods Sold	200,000	180,000
(=) Gross Profit	150,000	170,000
(-) Fixed Manufacturing Overhead	0	20,000
(=) Net Operating Income	150,000	150,000

We conclude that when the entire inventory is sold, the total fixed cost is expensed as the cost of goods sold under the absorption method or it is expensed as a period cost under the variable method; net operating income is the same under both methods.

Assuming that only 700 units are sold, the inventory at year-end is 300 units of product A.

Under the absorption costing, the cost of goods sold should be the amount of cost to produce the 700 sold units (Table no 3). The ending inventory would be the cost for the 300 unsold units (Table no 4). The amount of the fixed manufacturing overhead is not totally expensed, because the number of units in ending inventory has increased. The fixed overhead will be expensed when the inventory is sold in the future period.

The fixed manufacturing overhead is divided as follows:

- the fixed overhead allocated to the 700 sold units is expensed on the income statement as cost of goods sold: 700 units × CU 20 per unit = CU 14,000

- the fixed overhead allocated to the 300 unsold units is allocated to finished goods inventory: 300 units × CU 20 per unit = CU 6,000.

Under variable costing, the cost of goods sold and the ending inventory do not include fixed overhead because the whole amount of fixed cost is expensed as a period cost and it is not included in the cost of the product A.

Table no. 3. Cost of goods sold using absorption and variable costing methods

	Absorption Costing	Variable Costing
Direct materials (700 units x CU 40 per unit)	28,000	28,000
Direct labour (700 units x CU 80 per unit)	56,000	56,000
Variable Manufacturing overhead (700 units x CU 60 per unit)	42,000	42,000
Fixed Manufacturing Overhead	14,000	0
Cost of Goods Sold	140,000	126,000

Table no. 4. Ending inventory using absorption and variable costing methods

	Absorption Costing	Variable Costing
Direct materials (300 units x CU 40 per unit)	12,000	12,000
Direct labour (300 units x CU 80 per unit)	24,000	24,000
Variable Manufacturing overhead (300 units x CU 60 per unit)	18,000	18,000
Fixed Manufacturing Overhead	6,000	0
Ending Inventory	60,000	54,000

Under the absorption method, when the inventory is not entirely sold, the amount of fixed cost is partially expensed as the cost of goods sold, respectively CU 14,000, which is only the part of fixed cost that is allocated to the goods sold during the reporting period.

Under the variable costing method the whole amount of fixed cost is expensed as a period cost, respectively CU 20,000.

Net operating income is not the same under absorption and variable costing, the difference is the amount of fixed cost included in ending inventory, respectively CU 6,000 (Table no 5). This cost will be expensed when the inventory is sold.

Table no. 5. Net operating income using absorption and variable costing methods in case of partial selling the inventory

	Absorption Costing	Variable Costing
Sales Revenue (700 units x CU 350 per unit)	245,000	245,000
(-) Cost of Goods Sold	140,000	126,000
(=) Gross Profit	105,000	119,000
(-) Fixed Manufacturing Overhead	0	20,000
(=) Net Operating Income	105,000	99,000

Income statements from both methods can be reconciled by starting with the net operating income using variable costing and adding the amount of fixed costs included in ending inventory.

As it can be seen in the tables above, the net operating income and the ending inventory under absorption costing method are higher than the net operating income and the ending inventory under variable costing method (Figure no 2).

Figure no 2. Differences between net operating **income and ending inventory when production exceeds sales**

Production volume compared to sales volume	Net operating income	Ending inventory
Production = Sales	Same amount	Same amount
Production > Sales	Higher under absorption costing	Higher under absorption costing

3. Conclusions

Using absorption costing has some advantages. A major one refers to the necessity of including fixed overhead in inventory cost for compliance with financial accounting regulations. The cost accounting method using absorption costing produces ending inventories which include fixed manufacturing overhead. Based on this argument, income statement prepared using absorption costing presents a true and faithful representation of the actual operating results of the company. Also, we note that analysis of under/over-absorbed overhead is useful to identify inefficient utilisation of production resources.

Using absorption costing method may not be appropriate for short-term decision making. When production exceeds sales, absorption costing reports a higher net income than variable costing. The reason is that some fixed manufacturing costs are not expensed in the current period but are deferred to future periods as part as inventory cost. In order to increase net operating income in short term, management may decide to overproduce in a certain period. Although net income will increase, this decision to overproduce may not be in the company's best interest. Increasing inventories on long term may lead to additional costs to the company. Variable costing avoids this situation because net income under variable costing is unaffected by changes in production levels.

On the other hand, preparing the income statement using variable costing is considered more informative to management. For example, it provides necessary information for Cost-Volume-Profit analysis. Also, the net operating income is usually close to the flow of cash, being useful for companies with problems of cash flows.

The methods based on absorption costing may lose their relevance due to various causes: the rapid evolution of the production environment and techniques, the high cost and the longer duration of collecting and processing accounting information.

Taking into account the criterion of cost variability allows performing more operational and more predictable analysis.

Variable costing method is not opposed to absorption costing method. It responds to different but not contradictory concerns and should be considered as a complementary tool of analysis. The economic calculation that appeals to the notion of partial cost allows implementing a differentiated pricing policy, allowing the integration of those companies that think the problems in terms of marketing.

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