

THE COST OF PRODUCTION UNDER DIRECT COSTING AND ABSORPTION COSTING – A COMPARATIVE APPROACH

Bunea-Bontaș Cristina Aurora

Lecturer Ph.D.

“Constantin Brâncoveanu” University of Pitești

The Faculty of Management Marketing in Economic Affairs Brăila

bontasc@yahoo.com

Abstract

Managerial accounting has an important role in strategic management of a company, being designed especially for managers, in order to optimise their decision regarding operating activities. One of the objectives of managerial accounting is the cost calculation, for measuring inventory costs, and the costs and profitability of products and services. Cost calculation systems can vary in terms of which costs are assigned to cost objects, two significant calculation systems being adopted by the costing theory: full cost accounting, which includes all costs of production as product costs, and partial cost accounting, which includes only those costs that vary with output.

This article provides a comparative approach regarding the differences between the calculation of the cost of production under direct costing and absorption costing. It also examines the implication of using each of these calculation systems on the financial position and financial performance of the companies reported on the statement of financial position and the income statement. Finally, the advantages of using direct costing for internal reporting are discussed, considering that this method is not acceptable for external reporting to stockholders and other external users.

Key words: cost of production, direct costing, absorption costing, financial position, financial performance.

JEL Classification: M41

Introduction

For manufacturing a product, several successive activities are necessary claiming on inputs consumption, some of them being directly and other indirectly related to the product fabrication. All these inputs consumption constitute the cost of production. The cost of production is the basis for reporting both the cost of ending inventory on the statement of financial position and the cost of goods sold on the income statement.

Although principles for the determination of inventory costs may be easily stated, their application is difficult because of the variety of considerations in the allocation of costs and charges.

In order to measure the cost of production, two significant cost calculation systems being adopted: full cost accounting (absorption costing) and partial cost accounting (partial costing). The full cost accounting requires that valuation of a company's total inventory has to include all the manufacturing costs incurred to produce those goods. According to the partial cost accounting, the unit cost of production includes only those costs which are directly related to the product fabrication [1, p. 27]. As regards the selling and administrative expenses, these are not treated as product costs. Thus under either partial or absorption costing, both selling and administrative expenses are period costs, being deducted from revenues as incurred.

Calculation of cost of production using direct costing and absorption costing

The direct costing method (which is representative for the partial costing) is an inventory valuation model that includes only the variable manufacturing overhead in the cost of a unit of product. The entire amount of fixed costs is expensed in the year incurred. Consequently the cost of a unit of product in inventory or cost of goods sold under this method does not contain any fixed overhead cost.

The variable costs are those costs that vary depending on a company's production volume [2, p. 78]. Examples of variable costs are: direct materials (those materials that become an integral part of a finished product and can be conveniently traced into it); direct labour (those factory labour costs that can be easily traced to individual units of product); variable portion of manufacturing overhead. The fixed costs are those whose absolute value remain relatively unchanged or change with increasing or decreasing output but insignificantly. Examples of fixed costs are: depreciation, rent for the equipments, wages for management personnel of production facilities being paid per month and the social security contributions. The fixed costs depends on all

economic and organizational factors that transpose into practice the functions of an enterprise with a certain productive capacity, and on the period of time for which they are calculated (they tend to be time-related) [3, p. 36].

The direct production cost per unit of a product usually consists of the following: direct materials, variable manufacturing overheads, and direct labour.

Table no. 1

The basic model for calculating the cost of production under direct costing

	Variable (direct) costs	Variable manufacturing overhead	Total variable costs
1. Variable (direct) costs:			
- direct materials			
- direct labour			
2. Variable manufacturing overhead			
3. Cost of production (1 + 2)			
4. Quantity of goods produced			
5. Unit product cost (3 ÷ 4)			
6. Variable selling and administrative expenses			
7. Total variable cost (3 + 6)			
8. Variable cost per unit (7 ÷ 4)			
9. Selling price per unit			
10. Contribution margin per unit (9 - 8)			
11. Quantity of goods sold			
12. Sales (9 × 11)			
13. Variable costs of goods sold (8 × 11)			
14. Contribution margin (12 - 13) (or 10 × 11)			
15. Fixed costs:			
- fixed manufacturing overhead			
- fixed selling and administrative expenses			
16. Net operating income (14 - 15)			
17. Ending inventory [5 × (4 - 11)]			

Source: Adapted from Ristea, M., Dumitru, C.G., 2012, Libertate și conformitate în standardele și reglementările contabile, CECCAR Publishing House, București, pp. 767.

Absorption costing is a costing system that takes into consideration all the resources and expenses related to a cost object [4, p. 227], treating all costs of production as product costs, regardless whether they are variable or fixed. The cost of a unit of product under absorption costing method consists of direct materials, direct labour and both variable and fixed overhead. Absorption costing allocates a portion of fixed manufacturing overhead cost to each unit of product, along with the variable manufacturing cost.

Table no. 2

The basic model for calculating the cost of production under absorption costing

	Direct costs	Indirect costs	Total costs
1. Direct costs			
- direct materials			
- direct labour			
2. Indirect costs			
- variable manufacturing overhead			
- fixed manufacturing overhead			
3. Cost of production (1 + 2)			
4. Quantity of goods produced			
5. Unit product cost (3 ÷ 4)			
6. Selling price per unit			
7. Quantity of goods sold			
8. Sales (6 × 7)			
9. Cost of goods sold (5 × 7)			
10. Gross margin (8 - 9)			
11. Production volume variance			
12. Selling and administrative expenses			

13. Net operating income (10 - 11 - 12)	
14. Ending inventory [5 × (4 - 7)]	

Source: Adapted from Ristea, M., Dumitru, C.G., 2012, Libertate și conformitate în standardele și reglementările contabile, CECCAR Publishing House, București, pp. 765.

In order to illustrate the calculation of unit product costs both under direct and absorption costing, the following example is considered: Company XYZ produces a single product, production of 10,000 units, and sells 8,000 units with the selling price of CU (currency units) 480 per unit. The cost structure is as follows: (i) *variable costs per unit*: direct materials - CU 60, direct labour - CU 108, variable manufacturing overhead - CU 24 and variable selling and administrative expenses - CU 60; (ii) *fixed costs per year*: fixed manufacturing overhead CU 720,000 and fixed selling and administrative expenses CU 360,000.

Under direct costing all variable manufacturing costs are included in the production cost. The fixed manufacturing overhead and the selling and administrative expenses will be charged off against income as period expenses.

Table no. 3 (in CU)

The cost of production under direct costing

1. Variable (direct) costs:	1,680,000
- direct materials	600,000
- direct labour	1,080,000
2. Variable manufacturing overhead	240,000
3. Cost of production (1 + 2)	1,920,000
4. Quantity of goods produced	10,000
5. Unit product cost (3 ÷ 4)	192
6. Variable selling and administrative expenses	600,000
7. Total variable cost (3 + 6)	2,520,000
8. Variable cost per unit (7 ÷ 4)	252
9. Selling price per unit	480
10. Contribution margin per unit (9 - 8)	228
11. Quantity of goods sold	8,000
12. Sales (9 × 11)	3,840,000
13. Variable costs of goods sold (8 × 11)	2,016,000
14. Contribution margin (12 - 13) (or 10 × 11)	1,824,000
15. Fixed costs	1,080,000
- fixed manufacturing overhead	720,000
- fixed selling and administrative expenses	360,000
16. Net operating income (14 - 15)	744,000
17. Ending inventory [5 × (4 - 11)]	384,000

Under absorption costing all production costs, variable and fixed, are included in the unit product cost.

Table no. 4 (in CU)

The cost of production under absorption costing

1. Direct costs	1,680,000
- direct materials	600,000
- direct labour	1,080,000
2. Indirect costs	960,000
- variable manufacturing overhead	240,000
- fixed manufacturing overhead	720,000
3. Cost of production (1 + 2)	2,640,000
4. Quantity of goods produced	10,000
5. Unit product cost (3 ÷ 4)	264
6. Selling price per unit	480
7. Quantity of goods sold	8,000
8. Sales (6 × 7)	3,840,000
9. Cost of goods sold (5 × 7)	2,112,000
10. Gross margin (8 - 9)	1,728,000
11. Production volume variance	-
12. Selling and administrative expenses	960,000
- variable selling and administrative expenses	600,000

- fixed selling and administrative expenses	360,000
13. Net operating income (10 - 11 - 12)	768,000
14. Ending inventory [5 × (4 - 7)]	528,000

As it can be seen, there are major differences in the structure of the cost of production between the two calculation systems. Under the direct costing the cost of production includes direct materials, direct labour, and variable manufacturing overhead; the period costs are the fixed manufacturing overhead, variable and fixed selling and administrative expenses. Profit measurement can be based on the analysis of contribution margin. In case of Company XYZ, the unit product cost under direct costing is CU 192 (table no. 3) that is the total amount of variable costs per unit: direct materials CU 60, direct labour CU 108, and variable manufacturing overhead CU 24. If a unit of product is sold, only CU 192 will be deducted as cost of goods sold, and unsold units will be carried in the statement of financial position inventory account at CU 192.

Under the absorption costing the cost of production includes direct materials, direct labour, variable manufacturing overhead and fixed manufacturing overhead; the period costs are variable and fixed selling and administrative expenses [5]. In case of Company XYZ the unit product cost under the absorption costing is CU 264. If the company sells a unit of product, then CU 264 will be deducted on the income statement as the cost of goods sold. Similarly, any unsold units will be carried as inventory on the statement of financial position at CU 264 each. The cost of production is higher under absorption costing than in direct costing by CU 72 per unit, which is exactly the amount of the fixed overhead rate (the total amount of fixed overhead of CU 720,000 divided by the production units of 10,000).

Financial position and financial performance under direct costing and absorption costing

Computing the cost of production under direct costing or under absorption costing will affect the financial position through the cost of ending inventory and the financial performance through the cost of goods sold.

The statements of financial position prepared both under direct costing and under absorption costing produce different figures for the amount of inventories. Based on the above example, the simplified statements of financial position are presented, including the specific figures under both calculation methods [6].

Table no. 5 (in CU)

Statement of financial position under direct costing

Assets	
Fixed assets	600,000
Inventory (2,000 units × 192 per unit)	384,000
Cash	240,000
Liabilities	-----
Net Assets	1,224,000
Owners' Equity	
Common Stock	600,000
Retain Earnings	624,000

The amount of net assets under direct costing is CU 1,224,000, being influenced by the cost of inventory.

Table no. 6 (in CU)

Statement of financial position under absorption costing

Assets	
Fixed assets	600,000
Inventory (2,000 units × 264 per unit)	528,000
Cash	240,000
Liabilities	-----
Net Assets	1,368,000
Owners' Equity	
Common Stock	600,000
Retain Earnings	768,000

The amount of net assets under absorption costing is CU 1,368,000 (higher than under direct costing), also being influenced by the value of inventory, explicitly by the cost of production of CU 264 per unit.

The income statements prepared under the direct costing and the absorption costing produce different net operating income figures. The net operating income under direct costing is CU 624,000 (table no. 7) being influenced by the amount of cost of goods sold, explicitly by the cost of production of CU 192 per unit. Still, the income statement prepared under direct costing allows the calculation of the “contribution margin” based on which a company determines the profitability of individual products. Contribution margin analysis is a useful tool for the company’s management team to evaluate financial performance and to make investment decisions [7, p. 16]. The contribution margin is the difference between sales revenues and the total amount of variable expenses related to a given volume of production [8, p. 914]. As a performance indicator, it is useful in Cost-Volume-Profit (CVP) analysis, and especially in break even analysis. Given the contribution margin, a manager can easily compute breakeven and target income sales, and make better decisions about whether to add or remove a product line, or how to price a product or service.

Table no. 7 (in CU)

Income Statement under direct costing	
Sales (8,000 units × 480 per unit)	3,840,000
Less cost of goods sold (8,000 units × 192 per unit)	1,536,000
Less variable selling and administrative expenses (10,000 units × 60 per unit)	600,000
Contribution Margin	1,704,000
Less fixed expenses	
- Fixed manufacturing overhead	720,000
- Fixed selling and administrative expenses	360,000
Net operating income	624,000

The net operating income under absorption costing is CU 768,000 being influenced by the amount of cost of goods sold, explicitly by the cost of production of CU 264 per unit.

Table no. 8 (in CU)

Income Statement under absorption costing	
Sales (8,000 units × 480 per unit)	3,840,000
Less cost of goods sold (8,000 units × 264 per unit)	2,112,000
Gross Margin	1,728,000
Less selling and administrative expenses	
- Variable selling and administrative expenses (10,000 units × 60 per unit)	600,000
- Fixed selling and administrative expenses	360,000
Net operating income	768,000

The difference between the net operating income under direct costing and absorption costing is entirely due to the amount of fixed manufacturing overhead that is deferred in, or released from inventories during the period under absorption costing. In general, when the units produced exceed units sold and hence inventories increase, net operating income is higher under absorption costing than under direct costing. This occurs because some of the fixed manufacturing overhead of the period will not appear on the income statement as part of cost of goods sold [9] being deferred in inventories under absorption costing. In contrast, when unit sales exceed the units produced and hence inventories decrease, net operating income is lower under absorption costing than under direct costing. This occurs because some of the fixed manufacturing overhead of previous periods is released from inventories under absorption costing.

As it can be seen, changes in inventories affect absorption costing net operating income but they do not affect direct costing net operating income, providing that the cost structure is stable.

Based on the figures from the above example (table no. 7 and 8), during the current period 10,000 units have been produced but only 8,000 units have been sold leaving 2,000 unsold units in the ending inventory. CU 72 was assigned to each unit produced as fixed overhead cost; therefore each unit from the ending inventory has CU 72 in fixed manufactured overhead cost attached to it, which is a total amount of CU 144,000 for 2,000 units (2,000 × CU 72 per unit). When these units will be sold and, therefore, taken out of inventory, the deferred fixed manufacturing overhead cost will be presented in the income statement as the cost of goods sold.

In summary, under direct costing the entire CU 720,000 in fixed manufacturing overhead costs has been treated as an expense of the current period. Under absorption costing, from the total amount of fixed manufacturing overhead costs incurred during the period, that is CU 720,000, only CU 576,000 (8,000 × CU 72

per unit) has been included in the cost of goods sold. The remaining CU 144,000 (2,000 units not sold × CU 72 per unit) has been deferred in inventory to the next period.

Conclusions:

In practice, absorption costing is used far more than direct costing, as it is required for external reporting. Both the International Financial Reporting Standards (IFRS) and the U.S. Generally Accepted Accounting Principles (GAAP) require that a company allocate indirect costs to its inventory asset for external reporting purposes.

International Accounting Standard (IAS) 2 “Inventories” states that the costs of conversion of inventories should include costs directly related to the units of production, such as direct labour, and also a systematic allocation of fixed and variable production overheads that are incurred in converting materials into finished goods [10].

In U.S., according to Accounting Standards Codification (ASC) Topic 330 “Inventory”, the primary basis of accounting for inventories is cost. As applied to inventories, cost means in principle the sum of the applicable expenditures and charges directly or indirectly incurred in bringing an article to its existing condition and location [11].

In Europe, the Fourth Council Directive on the Annual accounts of certain types of companies, states that the production cost has to be calculated by adding to the purchasing price of the raw materials and consumables the costs directly attributable to the product in question. A reasonable proportion of the costs which are only indirectly attributable to the product in question may be added into the production costs to the extent that they relate to the period of production [12].

In Romania, the Order of the Minister of Public Finance no. 1826/2003 for approving the Clarifications of several measures for organizing managerial accounting has approved the use of direct costing as a method for calculation the cost of production [13]. However, with the approval of the accounting regulations compliant with the European Directives, that is the Minister of Public Finance Order no. 3055/2009, it was regulated that the production cost includes the purchasing price of the raw materials and consumables, and the costs directly attributable to the product, and also the reasonable proportion of the costs which are indirectly attributable to the product [14].

The conclusion is that direct costing is not a generally accepted accounting procedure for external reporting purposes, as the exclusion of all overheads from inventory is not compliant with the definition of production cost.

While reporting for external purposes must conform to generally accepted accounting principles or national accounting regulations, financial data prepared for internal uses need not. The unacceptability of direct costing for external reporting does not affect its importance and usefulness.

As an analysis tool, direct costing works very well with the contribution approach to the income statement, since both concepts are based on the idea of classifying costs by behaviour [15]. The direct costing data could be immediately used in CVP calculations. Calculation of a “margin” is preferable in order to know the contributive capacity of each product to the defrayment of fixed manufacturing overhead [16, p. 331]. The readily available data on direct cost and contribution margin permits quick answers to the scores of cost decisions that management must make each day [17].

In terms of the company’s management, the full costing serves to a rather simple pricing policy: the selling price has to exceed the direct costs and reasonably allocated indirect costs to the production cost [18, p. 40]. Still, this system might lose its relevance due to some specific causes: the rapid changes in the production environment and technologies, the increasing importance of indirect costs and the significant efforts of gathering and processing the information [19, p. 331]. The direct costing takes into consideration the criterion of costs variability and allows more operative and more suitable for planning analyses. In this context, the allocation of the fixed manufacturing costs to different products is less pertinent, being based on questionable allocation criteria in order to compute a full cost which is more or less conventional.

In terms of decision making on the future business, direct costing provides a solid basis for cost planning and for studying the effects of planned changes on the volume of production, determined by changes in economic conditions or specific managerial decisions, such as: selling price variation, increasing or decreasing inventories, promotional sales [20, p. 245].

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