A COMPARATIVE ANALYSIS OF NORMAL COSTING METHOD WITH FULL COSTING AND VARIABLE COSTING IN INTERNAL REPORTING

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ABSTRACT

Product costs are a significant determinant of both short-term and long-term decisions of businesses in terms of goal achievement. In determining the costs, businesses are expected to consider both the characteristics of the market (demand) and the business itself. Product costs are calculated by cost calculation methods. Cost calculation methods are normal costing method, full costing, variable costing. Full costing treats the costs of all manufacturing components (direct material, direct labor, variable factory overhead and fixed factory overhead) as inventoriable, or product, costs. Variable costing is a cost accumulation method that includes only variable production costs (direct material, direct labor and variable factory overhead) as inventoriable, or product, cost. Normal costing method takes into account all the variable parts of production costs. The method handles fixed operating costs according to the rate of capacity utilization. In this study, the effects of choosing either full costing, variable costing or normal costing on costs in terms of varying amounts of production are analyzed.

Key words: Normal Costing, Full Costing, Variable Costing, Capacity, Costing Methods

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1. INTRODUCTION
A business is an economic unit producing goods and services. The monetary value of all the expenditures incurred by a business in the process of fulfilling those tasks are called a “cost”.

Among the most significant factors of production cost for a business are the technology utilized and the capacity for production. This is due mostly to the combined effect of the amount of investment and production volume on the cost per unit, which in turn affects long-term strategic decisions of a business such as product range, competition, investment policy, and pricing policy. As much as the methods for calculating costs per unit vary according to the characteristics of a business as well as the legal environment of the country in which the business operates, the bottom line is that the costs are calculated in the most correct way possible or at least close to that. This is all the more significant since the way costs are calculated is closely connected with planning and control, and also specifically for a multinational or a global business, it is related to performance appraisal of production units.

From that point of view, methods for calculating cost per unit rise to prominence in terms of internal reporting, among which is normal costing, full costing and variable costing. The basis for both approaches is the differentiation between inputs either as a fixed or a variable cost. When associated with production volume, this differentiation results in the emergence of distinct product costs. The volume-cost relationship is a crucial factor for managers and decision-makers in terms of long-term decision making concerning the future of the business. It is equally crucial to choose which method to utilize in calculating a cost. Both methods have comparative advantages and disadvantages, which makes it essential for the management to make a choice based on the characteristics of the business.

2. FULL COSTING (ABSORPTION COSTING)
The most common approach to product costing is absorption costing, which is also known as full costing. This approach treats the costs of all manufacturing components (direct material, direct labor, variable factory overhead and fixed factory overhead) as inventoriable, or product, costs. Absorption costing considers cost incurred in the non-manufacturing (selling and administrative) areas of the organization matches them with revenues. (Raiborn, Barfield, Kinney; 1996: 371). An organization incurs costs for direct material (DM), direct labor (DL), and variable factory overhead (VOH) only when goods are produced or services are rendered. Since total DM, DL and VOH costs increase with each additional product made or unit of service rendered, these costs are considered product costs are inventoried until the product or service is sold. Fixed factory overhead (FOH) costs, on the other hand, may be incurred even when production or service facilities are idle. Although total FOH cost does not vary with units of production or level of service, this cost provides the basic capacity necessary for production or service to occur. Because production could not take place without the incurrence of fixed factory overhead, absorption costing considers fixed factory overhead costs to be inventoriable. (Raiborn,Barfield, Kinney; 1996: 371). Thus, when absorption costing is used, the financial statements show the Work in Process Inventory, Finished Goods Inventory, and Cost of Goods Sold accounts as including variable per-unit production costs as well as per unit allocation of fixed factory overhead. Absorption costing also presents expenses on an income statement according to their functional classifications. A functional classification is a grouping of costs that were all incurred for the same basic purpose. Functional classifications
include categories such as cost of goods sold, selling expenses and administrative expenses. (Raiborn, Barfield, Kinney; 1996: 371). Absorption costing is the required inventory method for external reporting in most countries. A majority of companies use absorption costing for internal accounting as well. Why! Because it is cost-effective and less confusing to managers to use one common method of inventory costing for both external and internal reporting and performance evaluation. A common method of inventory costing can also help prevent managers from taking actions that make their performance measure look good but hurt the income they report to share-holders. Another advantage of absorption costing is that it measures the cost of all manufacturing resources, whether variable or fixed, necessary to produce inventory. Many companies use inventory costing information for long-run decisions such as pricing and costing a product mix. For these long-run decisions, inventory costs should include both variable and fixed costs. (Horngren; Datar,Foster;2006:302).

One problem with absorption costing is that it enables a manager to increase operating income in a specific period by increasing production— even if there is no customer demand for the additional production. Generally, higher operating income also has a positive effect on stock price, which increases manager’s stock-based compensation. (Horngren; Datar,Foster;2006:302). To reduce the undesirable incentives to build up inventories that absorption costing can create, many companies also use variable costing for internal reporting. Variable costing focuses attention on distinguishing variable manufacturing costs from fixed manufacturing costs. This distinction is important for short-run decision making. (Horngren; Datar, Foster;2006:302). The different advantages of variable costing and absorption costing benefits companies that use both methods for internal reporting—variable costing for short-run decisions and performance evaluation and absorption costing for long decisions. (Horngren; Datar, Foster;2006:302).

### 3. VARIABLE COSTING

Variable costing is a cost accumulation method that includes only variable production costs (direct material, direct labor and variable factory overhead) as inventoriable, or product, cost. Thus, variable costing defines product costs solely as costs of actual production. Since fixed factory overhead will be incurred even if there is no production, variable costing proponents believe this cost does not qualify as a product cost. Fixed factory overhead costs are therefore treated as period expenses by being charged against revenue as incurred. (Raiborn, Barfield, Kinney; 1996: 371). A variable costing income statement or management report separates costs by cost behavior, although it may also present expenses by functional classifications within the behavioral categories. Under variable costing, Cost of Goods is more appropriately called Variable cost of Goods Sold because it is composed only of the variable production costs related to units sold. Revenue minus variable cost of goods sold is called product contribution margin and indicates how much revenue is available to cover all period expenses and to provide net income. (Raiborn, Barfield, Kinney; 1996: 372).

Variable costing is a method of inventory costing in which all variable manufacturing costs are included as inventoriable costs. All fixed manufacturing costs are excluded from inventoriable costs and are instead treated as costs of the period in which they are incurred. (Horngren, Datar,Foster;2006:296). This method, which differentiates between operating costs as either fixed or variable, is effective in terms of planning, designating product prices, specifying break-even point, analyzing the outcomes of business operations and managerial decision making processes (Yereli, Kayali,Demirlioglu;2012:25). Absorption costing is a method of
inventory costing in which all variable manufacturing costs and all fixed manufacturing are included as inventoriable costs. That is, inventory “absorbs” all manufacturing costs. (Horngren; Foster, 2006:296). Under both variable costing and absorption costing, all variable manufacturing costs are inventoriable costs and all nonmanufacturing costs in the value chain (such as research and development and marketing), whether variable or fixed, are period costs and recorded as expenses when incurred. (Horngren; Datar, Foster, 2006:296).

Pricing Decisions: Many managers prefer to use absorption-costing data in cost-based pricing decisions. They argue that fixed manufacturing overhead is necessary cost incurred in the production process. To exclude this fixed cost from the inventoried cost of a product, as is done under variable costing, is to understate the cost of the product. For this reason, most companies that use cost-based pricing base their prices on absorption-costing data. (Hilton, 2005:731-732).

Definition of An Asset: Another controversy about absorption and variable costing hinges on the definition of an asset. An asset is a thing of value owned by the organization with future service potential. By accounting convention, assets are valued at their cost. Since fixed costs comprise part of the cost of production, advocates of absorption costing argue that inventory (an asset) should be valued at its full (absorption) cost of production. Moreover, they argue that these costs have future service potential since the inventory can be sold in the future to generate sales revenue. (Hilton, 2005:731-732). In absorption costing (full costing), all production costs are absorbed into products. The unsold inventory is measured at total cost of production. Fixed production overhead costs are treated as a product cost. In marginal costing (variable costing), only variable costs of production are allocated to products. The unsold inventory is measured at variable cost of production. Fixed production overhead costs are treated as a period cost of the period in which they are incurred. (Weetman, 2010:107). The accounting standards for inventory valuation now apply principles of absorption costing. This means that a portion of the fixed overheads must be allocated to inventory. If there was total freedom of choice in allocating fixed overheads, some managers would seek to allocate a high proportion of fixed overheads to inventory, in order to report the highest possible profit and maintain stock market confidence, while other managers would seek to allocate a low proportion of fixed overheads to inventory, in order to report the lowest possible profit and so reduce the tax bill payable. In order to encourage confidence in the reliability of accounting information, and to reduce opportunities for earnings management, there must be rules on the manner of allocating fixed overhead costs of production. The financial reporting standards are also concerned with prudence—meaning that profits should not be overstated. (Weetman, 2010:118).

**IAS 10:**
The cost of inventories shall comprise all costs of purchase, costs of conversion and other costs incurred in bringing the inventories to their present location and condition.

**IAS 12:**
The costs of conversion of inventories include costs directly related to the units of production, such as direct labour. They also include a systematic allocation of fixed and variable production overheads that are incurred in converting materials into finished goods. Fixed production overheads are those indirect costs of production that remain relatively constant regardless of the volume of production, such as
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depreciation and maintenance of factory buildings and equipment, and the cost of factory management and administration. Variable production overheads are those indirect costs of production that vary directly, or nearly directly, with the volume of production, such as indirect materials and indirect labour. The requirement for absorption costing is indicated by the wording of paragraph 10. The words ‘systematic allocation’ in paragraph 12 are open to interpretation, giving scope for applying management accounting principles. Paragraph 12 also confirms that only production overheads are incorporated in the valuation of inventories, consistent with the condition in paragraph 9 of bringing the inventories to their present condition and location (i.e. produced and ready for sale).(Weetman;2010:118).

The advantages of variable costing (Savcı, 2013: 289):
- Information about income-cost-profit is acquired relatively fast compared to full costing method
- As fixed operating costs are ruled out in this method, the variance in the period income depends on sales
- Variable costing method provides managers with a more comprehensible data about production costs and income statement
- It is an effective short-term decision-making tool

The disadvantages of variable costing (Savcı, 2013: 289):
- It is not always easy to differentiate between costs as either variable or fixed
- It could result in an overstatement of profit numbers with lower levels of production costs due to consideration only of fixed variable costs
- It could lead to drawbacks in terms of tax provisions
- It is not acceptable for external reporting

A Comparison of Variable Costing with Full Costing: The realization either as lower or higher of full costing income in comparison to variable costing income depends on the relationship between production and sales. In either case, the effect of income should be specified, and the deviations from the standard are ignored, and lastly, cost per unit is held constant through time (Kinney, Raiborn, 2011: 86-87).

- Assuming production is equal to sales, so is full costing income equal to variable costing income.

- If production > sales, then full costing income is higher than variable costing income. This is because in a balance sheet prepared according to full costing, some operating costs are deferred as inventory costs whereas in variable costing, all operating costs are integrated into period costs.

- If production < sales, then full costing income is lower than variable costing income. That is why full costing is considered to be more useful than variable costing in external reporting. Variable costing for internal reporting informs managers about cost behavior for different products and periods. Managers need to have an understanding of how costs react to operational level variances for purposes of planning, controlling and decision-making.

Full costing method delivers same profit numbers for situations in which production is equal to sales. However, the profit for both methods differs as much as the amount of “fixed operating cost per unit*net inventory change” when production
is not equal to sales due to either an increase or a decrease in net inventory (Haftacı, 2008: 89). Inventory costs, product costs and profit numbers differ in both full costing and variable costing. The contribution margin and the concept of contribution rate in variable costing emerge from this difference (Erdoğan, Saban, 2006: 440).

4. NORMAL COSTING METHOD
This method takes into account all the variable parts of production costs. The method handles fixed operating costs according to the rate of capacity utilization. The part of the fixed operating cost that is not incorporated into the rate of capacity utilization (unutilized capacity) is recorded as period cost.

Rate of capacity utilization = Actual capacity / Normal capacity

Actual capacity is the capacity achieved as a result of actual production operations of a business. In the 13th paragraph of IAS2 normal capacity is defined as follows;

Normal capacity is the production expected to be achieved on average over a number of periods or seasons under normal circumstances, taking into account the loss of capacity resulting from planned maintenance. The actual level of production may be used if it approximates to normal capacity. The amount of fixed overhead allocated to each unit of production is not increased as a consequence of low production or idle plant. Unallocated overheads are recognized as an expense in the period in which they are incurred. In periods of abnormally high production, the amount of fixed overhead allocated to each unit of production is decreased so that inventories are not measured above cost. Variable production overheads are allocated to each unit of production on the basis of the actual use of the production facilities.

Normal capacity is achieved by ideal capacity minus expected production cuts (Civelek, Özkan, 2008: 269). According to IAS2, normal costing is used for cases in which actual capacity is lower than normal capacity whereas full costing is used for cases in which actual capacity is higher than normal capacity. That is because fixed operating costs are added to products in high quantities. Assuming actual capacity is quite similar to normal capacity, actual capacity is utilized along with full costing (Civelek, Özkan, 2008: 269). In full costing method, per unit production costs vary according to production volume. Yet in normal costing method, they prevent the variances in production volume from changing per unit costs. The inconsistencies in period profits observed in full costing method could also emerge in normal costing method (Büyükmirza, 2000: 474).

5. APPLICATION
Company A products X, Y, Z productions. The normal manufacturing capacity of the company is 35,000 quantities. The actual manufacturing capacity of the company is 35,000 quantities. The company sells all of its products. The informations about January 201X are as follows.

<table>
<thead>
<tr>
<th>Products</th>
<th>Direct Raw Materials Costs ($)</th>
<th>Direct Labour Costs ($)</th>
<th>Quantities Of Production (Unit)</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>250,000</td>
<td>175,000</td>
<td>10,000</td>
</tr>
<tr>
<td>Y</td>
<td>400,000</td>
<td>300,000</td>
<td>20,000</td>
</tr>
<tr>
<td>Z</td>
<td>150,000</td>
<td>125,000</td>
<td>5,000</td>
</tr>
<tr>
<td>Total</td>
<td>800,000</td>
<td>600,000</td>
<td>35,000</td>
</tr>
</tbody>
</table>
A Comparative Analysis of Normal Costing Method with Full Costing and Variable Costing in Internal Reporting

<table>
<thead>
<tr>
<th>Variable Manufacturing Overhead Expenses (VMOE)</th>
<th>Amount ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indirect Material</td>
<td>150.000</td>
</tr>
<tr>
<td>Indirect Labour</td>
<td>150.000</td>
</tr>
<tr>
<td>Energy Cost</td>
<td>100.000</td>
</tr>
<tr>
<td>Repair-Maintenance Cost</td>
<td>50.000</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>450.000</strong></td>
</tr>
</tbody>
</table>

Fixed Manufacturing Overhead Expenses (FMOE)

| Deprecation                                   | 150.000    |

The company allocation manufacturing overhead expenses to products by basising machine hour. The used machine hours in january 201X for products are as follows:

<table>
<thead>
<tr>
<th>Products</th>
<th>Machine Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>1500</td>
</tr>
<tr>
<td>Y</td>
<td>2000</td>
</tr>
<tr>
<td>Z</td>
<td>500</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>4000</strong></td>
</tr>
</tbody>
</table>

**SITUATION 1: ACTUAL PRODUCTION=NORMAL PRODUCTION**

**THE APPLICATION OF FULL COSTING METHOD**

Manufacturing Overhead Expenses = VMOE + FMOE = 450.000 + 150.000 = 600.000

The Rate of The MOE Of Installation = Manufacturing Overhead Expenses / Total Allocation Key

= 600.000 / 4000 = 150 $ / Machine Hour

<table>
<thead>
<tr>
<th>Products</th>
<th>The Rate Of The Manufacturing Overhead Expenses Of Installation (1)</th>
<th>Machine Hours (2)</th>
<th>The share of overall production expenses (3) (1)*(2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>150</td>
<td>1500</td>
<td>225.000</td>
</tr>
<tr>
<td>Y</td>
<td>150</td>
<td>2000</td>
<td>300.000</td>
</tr>
<tr>
<td>Z</td>
<td>150</td>
<td>500</td>
<td>75.000</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td>4000</td>
<td>600.000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Products</th>
<th>DRM (1)</th>
<th>DLC (2)</th>
<th>MOE (3)</th>
<th>Total Production Cost (4) (1+2+3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>250.000</td>
<td>175.000</td>
<td>225.000</td>
<td>650.000</td>
</tr>
<tr>
<td>Y</td>
<td>400.000</td>
<td>300.000</td>
<td>300.000</td>
<td>1,000.000</td>
</tr>
<tr>
<td>Z</td>
<td>150.000</td>
<td>125.000</td>
<td>75.000</td>
<td>350.000</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>800.000</td>
<td>600.000</td>
<td>600.000</td>
<td>2,000.000</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Products</th>
<th>Total Production Cost (1)</th>
<th>Quantities Of Production (Unit) (2)</th>
<th>Unit Production Cost 1 / 2 = 3=</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>650.000</td>
<td>10.000</td>
<td>65</td>
</tr>
<tr>
<td>Y</td>
<td>1.000.000</td>
<td>20.000</td>
<td>50</td>
</tr>
<tr>
<td>Z</td>
<td>350.000</td>
<td>5.000</td>
<td>70</td>
</tr>
<tr>
<td>TOTAL</td>
<td>2.000.000</td>
<td>35.000</td>
<td>185</td>
</tr>
</tbody>
</table>

**INCOME STATEMENT**

<table>
<thead>
<tr>
<th></th>
<th>X</th>
<th>Y</th>
<th>Z</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>GROSS SALES</td>
<td>800.000</td>
<td>1.400.000</td>
<td>400.000</td>
<td>2.600.000</td>
</tr>
<tr>
<td>X 10.000*80 ($)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Y 20.000*70 ($)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Z 5.000*80 ($)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COST OF SALES (-)</td>
<td>650.000</td>
<td>1.000.000</td>
<td>350.000</td>
<td>(2.000.000)</td>
</tr>
<tr>
<td>GROSS PROFIT</td>
<td>150.000</td>
<td>400.000</td>
<td>50.000</td>
<td>600.000</td>
</tr>
</tbody>
</table>

**THE APPLICATION OF NORMAL COSTING METHOD**

Normal costing method and full costing method give the same results.

**THE APPLICATION OF VARIABLE COSTING METHOD**

The Rate Of VMOE Of Installation=450.000 / 4000 = 112,5

<table>
<thead>
<tr>
<th>Products</th>
<th>The Rate Of VMOE Of Installation (1)</th>
<th>Machine Hours(2)</th>
<th>The share of VMOE (3) (1)*(2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>112,5</td>
<td>1500</td>
<td>168.750</td>
</tr>
<tr>
<td>Y</td>
<td>112,5</td>
<td>2000</td>
<td>225.000</td>
</tr>
<tr>
<td>Z</td>
<td>112,5</td>
<td>500</td>
<td>56.250</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>4000</td>
<td>450.000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Products</th>
<th>DRM (1)</th>
<th>DLC (2)</th>
<th>The share of VMOE (3)</th>
<th>Total Production Cost (4) (1+2+3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>250.000</td>
<td>175.000</td>
<td>168.750</td>
<td>593.750</td>
</tr>
<tr>
<td>Y</td>
<td>400.000</td>
<td>300.000</td>
<td>225.000</td>
<td>925.000</td>
</tr>
<tr>
<td>Z</td>
<td>150.000</td>
<td>125.000</td>
<td>56.250</td>
<td>331.250</td>
</tr>
<tr>
<td>TOTAL</td>
<td>800.000</td>
<td>600.000</td>
<td>450.000</td>
<td>1.850.000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Products</th>
<th>Total Production Cost (1)</th>
<th>Quantities Of Production (Unit) (2)</th>
<th>Unit Production Cost(3) (1 / 2 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>593.750</td>
<td>10.000</td>
<td>59.37</td>
</tr>
<tr>
<td>Y</td>
<td>925.000</td>
<td>20.000</td>
<td>46.25</td>
</tr>
<tr>
<td>Z</td>
<td>331.250</td>
<td>5.000</td>
<td>66.25</td>
</tr>
<tr>
<td>TOTAL</td>
<td>1.850.000</td>
<td>35.000</td>
<td>171.87</td>
</tr>
</tbody>
</table>

The Rate Of FMOE Of Installation=150.000 / 4000 = 37,5
A Comparative Analysis of Normal Costing Method with Full Costing and Variable Costing in Internal Reporting

### The Rate Of VMOE Of Installation and Machine Hours

<table>
<thead>
<tr>
<th>Products</th>
<th>The Rate Of VMOE Of Installation (1)</th>
<th>Machine Hours (2)</th>
<th>The share of FMOE (3) (1)*(2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>37.5</td>
<td>1500</td>
<td>56.250</td>
</tr>
<tr>
<td>Y</td>
<td>37.5</td>
<td>2000</td>
<td>75.000</td>
</tr>
<tr>
<td>Z</td>
<td>37.5</td>
<td>500</td>
<td>18.750</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>4000</td>
<td>450.000</td>
</tr>
</tbody>
</table>

### INCOME STATEMENT

<table>
<thead>
<tr>
<th></th>
<th>X</th>
<th>Y</th>
<th>Z</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>GROSS SALES</td>
<td>800.000</td>
<td>1.400.000</td>
<td>400.000</td>
<td>2.600.000</td>
</tr>
<tr>
<td>VARIABLE COSTING (-)</td>
<td>(593.750)</td>
<td>(925.000)</td>
<td>(331.250)</td>
<td>(1.850.000)</td>
</tr>
<tr>
<td>COST OF SALES</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CONTRIBUTION MARGIN</td>
<td>150.000</td>
<td>400.000</td>
<td>50.000</td>
<td>600.000</td>
</tr>
<tr>
<td>FIXED COSTS</td>
<td>(56.250)</td>
<td>(75.000)</td>
<td>(18.750)</td>
<td>(150.000)</td>
</tr>
<tr>
<td>OPERATING PROFIT</td>
<td>150.000</td>
<td>400.000</td>
<td>50.000</td>
<td>600.000</td>
</tr>
</tbody>
</table>

### The Comparison of the Methods

<table>
<thead>
<tr>
<th></th>
<th>Full Costing Method</th>
<th>Normal Costing Method</th>
<th>Variable Costing Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production Cost</td>
<td>X 650.000</td>
<td>Y 1.000.000</td>
<td>Z 350.000</td>
</tr>
<tr>
<td></td>
<td>X 65</td>
<td>Y 50</td>
<td>Z 70</td>
</tr>
<tr>
<td>Unit Production Cost</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost Of Sales</td>
<td>X 650.000</td>
<td>Y 1.000.000</td>
<td>Z 350.000</td>
</tr>
<tr>
<td>Gross Profit</td>
<td>X 150.000</td>
<td>Y 400.000</td>
<td>Z 50.000</td>
</tr>
<tr>
<td></td>
<td>X 593.750</td>
<td>Y 925.000</td>
<td>Z 331.250</td>
</tr>
<tr>
<td></td>
<td>X 59.37</td>
<td>Y 46.25</td>
<td>Z 66.25</td>
</tr>
<tr>
<td>Unit Production Cost</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost Of Sales</td>
<td>X 593.750</td>
<td>Y 925.000</td>
<td>Z 331.250</td>
</tr>
<tr>
<td>Contribution Margin</td>
<td>X 206.250</td>
<td>Y 475.000</td>
<td>Z 68.750</td>
</tr>
<tr>
<td>Operating Profit</td>
<td>X 150.000</td>
<td>Y 400.000</td>
<td>Z 50.000</td>
</tr>
<tr>
<td>FIXED COSTS</td>
<td>X 56.250, Y 75.000, Z 18.750</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FULL COSTING METHOD</td>
<td>X 56.250, Y 75.000, Z 18.750</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NORMAL METHOD COSTING</td>
<td>X 56.250, Y 75.000, Z 18.750</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VARIABLE COSTING METHOD</td>
<td>X 56.250, Y 75.000, Z 18.750</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### SITUATION 2: ACTUAL PRODUCTION < NORMAL PRODUCTION

Company A product X, Y, Z productions. The normal manufacturing capacity of the company is 35,000 quantities. The actual manufacturing capacity of the company is 28,000 quantities. The real production of the company decrease 20% according to situation 1. It is assumed that all of variable expenditures and machine hours decrease 20%. The company sells all of its products.
Aydın Gersil and Cevdet Kayalı

<table>
<thead>
<tr>
<th>Products</th>
<th>Direct Raw Materials Costs ($)</th>
<th>Direct Labour Costs ($)</th>
<th>Quantities Of Production (Unit)</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>200,000</td>
<td>140,000</td>
<td>8,000</td>
</tr>
<tr>
<td>Y</td>
<td>320,000</td>
<td>240,000</td>
<td>16,000</td>
</tr>
<tr>
<td>Z</td>
<td>120,000</td>
<td>100,000</td>
<td>4,000</td>
</tr>
<tr>
<td>TOTAL</td>
<td>640,000</td>
<td>480,000</td>
<td>28,000</td>
</tr>
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</table>

Variable Manufacturing Overhead Expenses (VMOE)  
<table>
<thead>
<tr>
<th>Amount ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indirect Material</td>
</tr>
<tr>
<td>Indirect Labour</td>
</tr>
<tr>
<td>Energy Cost</td>
</tr>
<tr>
<td>Repair-Maintenance Cost</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

Fixed Manufacturing Overhead Expenses (FMOE)  
<table>
<thead>
<tr>
<th>Amount ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depreciation</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Products</th>
<th>Machine Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>1200</td>
</tr>
<tr>
<td>Y</td>
<td>1600</td>
</tr>
<tr>
<td>Z</td>
<td>400</td>
</tr>
<tr>
<td>TOTAL</td>
<td>3200</td>
</tr>
</tbody>
</table>

THE APPLICATION OF FULL COSTING METHOD

Manufacturing Overhead Expenses = 360,000 + 150,000 = 510,000

The Rate of The Manufacturing Overhead Expenses of Installatio = 510,000 / 3200 = 159,375 $ / Machine Hour

The Rate of Fixed Manufacturing Expenses of Installation = 150,000 / 3200 = 46.87

The share of Fixed Manufacturing Overhead Expenses

X 46.87*1200 = 56.250, Y 46.87*1600 74.992, Z 46.87*400 = 18.748

<table>
<thead>
<tr>
<th>Products</th>
<th>The Rate Of The Manufacturing Overhead Expenses Of Installation (1)</th>
<th>Machine Hours (2)</th>
<th>The share of manufacturing overhead expenses (3) (1)*(2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>159,375</td>
<td>1200</td>
<td>191.250</td>
</tr>
<tr>
<td>Y</td>
<td>159,375</td>
<td>1600</td>
<td>255.000</td>
</tr>
<tr>
<td>Z</td>
<td>159,375</td>
<td>400</td>
<td>63.750</td>
</tr>
<tr>
<td>TOTAL</td>
<td>4000</td>
<td></td>
<td>510,000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Products</th>
<th>DRM (1)</th>
<th>DLC (2)</th>
<th>MOE (3)</th>
<th>Total Production Cost (4) (1+2+3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>200,000</td>
<td>140,000</td>
<td>191,250</td>
<td>531,250</td>
</tr>
<tr>
<td>Y</td>
<td>320,000</td>
<td>240,000</td>
<td>255,000</td>
<td>815,000</td>
</tr>
<tr>
<td>Z</td>
<td>120,000</td>
<td>100,000</td>
<td>63,750</td>
<td>283,750</td>
</tr>
<tr>
<td>TOTAL</td>
<td>640,000</td>
<td>480,000</td>
<td>510,000</td>
<td>1,630,000</td>
</tr>
</tbody>
</table>
A Comparative Analysis of Normal Costing Method with Full Costing and Variable Costing in Internal Reporting

<table>
<thead>
<tr>
<th>Products</th>
<th>Total Production Cost (1)</th>
<th>Quantities Of Production (Unit) (2)</th>
<th>Unit Production Cost 1 / 2 = 3=</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>531.250</td>
<td>8.000</td>
<td>66.40</td>
</tr>
<tr>
<td>Y</td>
<td>815.000</td>
<td>16.000</td>
<td>50.93</td>
</tr>
<tr>
<td>Z</td>
<td>283.750</td>
<td>4.000</td>
<td>70.93</td>
</tr>
<tr>
<td>TOTAL</td>
<td>1.630.000</td>
<td>28.000</td>
<td>188.26</td>
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</table>

INCOME STATEMENT

<table>
<thead>
<tr>
<th>GROSS SALES</th>
<th>X</th>
<th>Y</th>
<th>Z</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>X 8.000*80 ($)</td>
<td>640.000</td>
<td>1.120.000</td>
<td>320.000</td>
<td>2.080.000</td>
</tr>
<tr>
<td>Y 16.000*70 ($)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Z 4.000*80 ($)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COST OF SALES (-)</td>
<td>531.200</td>
<td>814.880</td>
<td>283.720</td>
<td>(1.629.800)</td>
</tr>
<tr>
<td>GROSS PROFIT</td>
<td>108.800</td>
<td>305.120</td>
<td>36.280</td>
<td>450.200</td>
</tr>
</tbody>
</table>

THE APPLICATION OF NORMAL COSTING METHOD

The Rate Of VMOE Of Installation= 360.000 / 3200 = 112.5

X ➔ The share of Variable Manufacturing Overhead Expenses = 1125 *1200 = 135.000

Fixed Manufacturing Overhead Expenses = 150.000 * (28.000 / 35.000) = 120.000

The Rate of The Fixed Manufacturing Overhead Expenses Of Installation=120.000/3200= 37,5

X ➔ The share of Fixed Manufacturing Overhead Expenses= 37,5*1200 = 45.000

<table>
<thead>
<tr>
<th>Products</th>
<th>DRM (1)</th>
<th>DLC (2)</th>
<th>The share of VMOE (3)</th>
<th>The share of FMOE(4)</th>
<th>Total Production Cost (5) (1+2+3+4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>200.000</td>
<td>140.000</td>
<td>135.000</td>
<td>45.000</td>
<td>520.000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Products</th>
<th>Total Production Cost (1)</th>
<th>Quantities Of Production (Unit) (2)</th>
<th>Unit Production Cost 1 / 2 = 3=</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>520.000</td>
<td>8.000</td>
<td>65</td>
</tr>
</tbody>
</table>

Y ➔ The share of Variable Manufacturing Overhead Expenses = 112,5 *1600 = 180.000

Y ➔ The share of Fixed Manufacturing Overhead Expenses= 37,5*1600 = 60.000
Aydın Gersil and Cevdet Kayalı

<table>
<thead>
<tr>
<th>Products</th>
<th>Total Production Cost (1)</th>
<th>Quantities Of Production (Unit) (2)</th>
<th>Unit Production Cost 1 / 2 (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>800.000</td>
<td>16.000</td>
<td>50</td>
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</tbody>
</table>

Z ➤ The share of Variable Manufacturing Overhead Expenses
Z ➤ The share of Fixed Manufacturing Overhead Expenses

<table>
<thead>
<tr>
<th>Products</th>
<th>DRM (1)</th>
<th>DLC (2)</th>
<th>The share of VMOE (3)</th>
<th>The share of FMOE (4)</th>
<th>Total Production Cost (5) (1+2+3+4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Z</td>
<td>120.000</td>
<td>100.000</td>
<td>45.000</td>
<td>15.000</td>
<td>280.000</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Products</th>
<th>Total Production Cost (1)</th>
<th>Quantities Of Production (Unit) (2)</th>
<th>Unit Production Cost 1 / 2 (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Z</td>
<td>280.000</td>
<td>4.000</td>
<td>70</td>
</tr>
</tbody>
</table>

**INCOME STATEMENT**

<table>
<thead>
<tr>
<th></th>
<th>X</th>
<th>Y</th>
<th>Z</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>GROSS SALES</td>
<td>640.000</td>
<td>1.120.000</td>
<td>320.000</td>
<td>2.080.000</td>
</tr>
<tr>
<td>COST OF SALES (-)</td>
<td>(520.000)</td>
<td>(800.000)</td>
<td>(280.000)</td>
<td>(1600.000)</td>
</tr>
<tr>
<td>GROSS PROFIT</td>
<td>120.000</td>
<td>320.000</td>
<td>40.000</td>
<td>480.000</td>
</tr>
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</table>

**THE APPLICATION OF VARIABLE COST METHOD**

<table>
<thead>
<tr>
<th>Products</th>
<th>DRM (1)</th>
<th>DLC (2)</th>
<th>The share of VMOE (3)</th>
<th>Total Production Cost (4) (1+2+3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>200.000</td>
<td>140.000</td>
<td>135.000</td>
<td>475.000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Products</th>
<th>Total Production Cost (1)</th>
<th>Quantities Of Production (Unit) (2)</th>
<th>Unit Production Cost 1 / 2 = 3=</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>475.000</td>
<td>8.000</td>
<td>59.37</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Products</th>
<th>DRM (1)</th>
<th>DLC (2)</th>
<th>The share of VMOE (3)</th>
<th>Total Production Cost (4) (1+2+3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>320.000</td>
<td>240.000</td>
<td>180.000</td>
<td>740.000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Products</th>
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<th>Quantities Of Production (Unit) (2)</th>
<th>Unit Production Cost 1 / 2 = 3=</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>740.000</td>
<td>16.000</td>
<td>46.25</td>
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</tbody>
</table>
A Comparative Analysis of Normal Costing Method with Full Costing and Variable Costing in Internal Reporting

<table>
<thead>
<tr>
<th>Products</th>
<th>DRM (1)</th>
<th>DLC (2)</th>
<th>The share of VMOE (3)</th>
<th>Total Production Cost (4) (1+2+3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Z</td>
<td>120.000</td>
<td>100.000</td>
<td>45.000</td>
<td>265.000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Products</th>
<th>Total Production Cost (1)</th>
<th>Quantities Of Production (Unit) (2)</th>
<th>Unit Production Cost 1/2 (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Z</td>
<td>265.000</td>
<td>4.000</td>
<td>66.25</td>
</tr>
</tbody>
</table>

INCOME STATEMENT

<table>
<thead>
<tr>
<th></th>
<th>X</th>
<th>Y</th>
<th>Z</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>GROSS SALES</td>
<td>640.000</td>
<td>1,120.000</td>
<td>320.000</td>
<td>2,080.000</td>
</tr>
<tr>
<td>VARIABLE COSTS (-)</td>
<td>(475.000)</td>
<td>(740.000)</td>
<td>(265.000)</td>
<td>(1,480.000)</td>
</tr>
<tr>
<td>Contribution Margin</td>
<td>165.000</td>
<td>380.000</td>
<td>55.000</td>
<td>600.000</td>
</tr>
<tr>
<td>Fixed Costs</td>
<td>(45.000)</td>
<td>(60.000)</td>
<td>(15.000)</td>
<td>(120.000)</td>
</tr>
<tr>
<td>Operating Profit</td>
<td>120.000</td>
<td>320.000</td>
<td>40.000</td>
<td>480.000</td>
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</table>

THE COMPARISION OF METHODS

<table>
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<th>Unit Production Cost</th>
<th>Cost Of Sales</th>
<th>Gross Profit</th>
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</thead>
<tbody>
<tr>
<td>Full Costing Method</td>
<td>X 531.250</td>
<td>Y 815.000</td>
<td>Z 283.750</td>
<td>X 531.250</td>
</tr>
<tr>
<td></td>
<td>X 66.40</td>
<td>Y 50.93</td>
<td>Z 70.93</td>
<td>Y 283.750</td>
</tr>
<tr>
<td>Normal Costing Method</td>
<td>X 520.000</td>
<td>Y 800.000</td>
<td>Z 280.000</td>
<td>X 520.000</td>
</tr>
<tr>
<td></td>
<td>X 65</td>
<td>Y 50</td>
<td>Z 70</td>
<td>Y 280.000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Production Cost</th>
<th>Unit Production Cost</th>
<th>Cost Of Sales</th>
<th>Contribution Margin</th>
<th>Operating Profit</th>
</tr>
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<td>X 475.000</td>
<td>Y 740.000</td>
<td>Z 265.000</td>
<td>X 475.000</td>
<td>X 165.000</td>
</tr>
<tr>
<td></td>
<td>X 59.37</td>
<td>Y 46.25</td>
<td>Z 66.25</td>
<td>Y 265.000</td>
<td>Y 380.000</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Z 55.000</td>
<td>Z 40.000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>FIXED COSTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>FULL COSTING METHOD</td>
<td>X 56.250, Y 74.992, Z 18.748</td>
</tr>
<tr>
<td>NORMAL METHOD COSTING</td>
<td>X 45.000, Y 60.000, Z 15.000</td>
</tr>
<tr>
<td>VARIABLE COSTING METHOD</td>
<td>X 45.000, Y 60.000, Z 15.000</td>
</tr>
</tbody>
</table>

6. CONCLUSION

When the normal production level of a business is equal to its actual production level, full costing, normal costing and variable costing methods all result in same outcomes in terms of goods. The production costs, per unit costs and the share of the goods within fixed costs are equal to each other. However in Case 2 where actual production of the business is 20% less than normal production, the outcomes of those methods will be different. Compared to full costing method, normal costing method will result in lower production costs and lower per unit production cost. In normal...
Aydin Gersil and Cevdet Kayali

costing method, the share of the goods within fixed costs is lower compared to full costing. That is because in full costing, the cost of the unused capacity is transferred to the production cost of goods. In normal costing however, fixed costs are transferred to production cost of goods, considering the rate of capacity utilization. The cost of goods sold and gross sales margin as an outcome of all those factors, are lower in normal costing method as compared to full costing method. This result is an important determinant especially of the pricing policy for goods. In international markets particularly where prices are given, one of the most significant tools for increasing competitiveness is the production cost. In Case 2 where a business sets its pricing policy by using full costing method, it is going to lose competitiveness in the face of another business using normal costing method. In situations when actual production is less than normal production, IAS 2 Inventories recommend the use of normal costing method. From this perspective, a business contemplating an investment is expected to determine its production capacity with a view to present and future demand. That is because fixed and variable costs are going to be working for or against the business based on the production capacity.

REFERENCES