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**“Calculating cost of goods in the companies and the importance of  
Standart costing method in its analysis”**

# **GRADUATION DIPLOMA WORK**

In order to take bachelor’s degree in the major of 5230900 – “Financial Accounting and Audit”

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## **Introduction**

The importance of diploma thesis. After declaring the independence of our country, government as in other spheres of social life has made great achievements. It can be clearly seen from the statements of our President Islam Karimov who has stated “the own model of reforming and modernization adopted in Uzbekistan, while putting forward the goal to secure our national interests in the long-term perspective has meant from the onset the denial of the methods of shock therapy which were persistently imposed on us, as well as naïve and deceptive conceptions about the self-regulating nature of market economy”.<sup>1</sup>

In accordance with this, we have chosen an evolutionary approach to the process of transition from an bureaucratic and administrative-command to a market system of regulation, the road of regular and phased reforms, acting in line with a famous principle – “until you build a new house, do not destroy old one”.

The transformation of our country’s economy to market economy system requires running businesses with advanced technologies, organizing fashionable methods and experiences of managing business in our companies. In this cases, the role and the significance of accounting, particularly managerial accounting increases considerably.

In today’s world, the development of any company relies on how sufficiently and succesfully its cost and expenses are controlled.

In recent years, awareness of the significance of cost and management accounting have been rising and recognition of its contribution to business efficiency within an increasingly complex economic environment. During this period cost and management accounting has adopted progressively more sophisticated techniques to meet the needs of management for a reliable information service as a basis for decision-making. The demands made on a management accountant call for that flexibility of mind which springs from an understanding of the influences governing business activity. Today’s management

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<sup>1</sup> I.A. Karimov. The global financial-economic crisis, ways and measures to overcome it in the conditions of Uzbekistan. Tashkent. “O’zbekiston” 2009

accountant must know how, but more especially why, there are clear casual relationships between the various factors which determine management performance.

Actually, the development of company relies on many factors which means that not only should management staff make acceptable decisions relating to costs of companies, but government also plays a main role with external influence. For instance, as our President I.A.Karimov said “The government, ministries, other agencies, economic associations and hokimiyats of all levels got tasked with the adoption of necessary measures dedicated to further maintain the high economic growth rates, enhance the structural reforms in the economy, modernize and actively diversify the leading sectors of the manufacturing industry, enhance the production localization, promote transportation and engineering-communication infrastructure. Organizational measures were identified to further reduce the government presence in the economy down to strategically and economically reasonable scopes, to cardinaly transform the principles and approaches in the system of corporate governance, remove all the barriers and restrictions, provide for total freedom on the way of development of private property and entrepreneurship, and create an environment conducive for securing the employment of population as well as growth in living standards.”<sup>2</sup> If we clarify this, it is absolutely necessary to help companies by government to achieve regular increase. Certainly, it is connected the tax policy of the government which influences on the expences of the companies directly.

It is not an easy task for managers of companies to continue a keen understanding of its competitive situation, potential risks or even its fundamental economics: its revenues and costs of goods sold. Furthermore, it is becoming common view that running a business without calculating cost of goods sold leads the companies’ net profit to decline.

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<sup>2</sup> The speech of President I. A. KarimovThe Cabinet of Ministers of the Republic of Uzbekistan convened for an extended meeting on January 16 to discuss the outcomes of socio-economic development in the country in 2014 and the crucial priorities of economic program for the year 2015.

Currently, the role of management accountants has become so significant within the industry that they should filter all financial and management information about the business's economic indicators, about its position in market, its costs, performance, risks and opportunities and the most important one, cost of goods sold. They should also support to implement strategy and risk management throughout the business. These functions of management accountants are vital to ensure not only good governance but also the good management of the company in the long term interests of shareholders and other stakeholders.

Leading organizations have already converted their finance functions to be more efficient and provide better information to enable evidence based decision making. They also have started to hire proper management accountants who can have better influence on performance and risk management in the long term interests of stakeholders. Organizations which are not going in this method could be putting their competitive position at risk.

Different methods such as activity-based costing, job-order costing and process costing have become popular in the business community over the past years. However, traditional management accounting has a big role to play in practice. One example of such traditional management accounting method is standard costing, which has been used widely during the last century. A standard is a stipulated norm, something set up and established by authority as a rule for the measure of quantity, weight, extent, value, or quality. Accordingly, standard costs stand for predetermined costs; they are target costs, which should be incurred under well-organized operating conditions. There may be several reasons for using standards, but the most frequent motive is because they facilitate product costing estimations. From the statements above we can see the importance the topic of diploma thesis.

The purpose and functions of diploma thesis. The main purpose of this study is to reveal the importance of calculating cost of goods sold, the methods to calculate it and the standard costing system in current business community and to provide proposals on how the system can be improved.

The following functions have been established in order to accomplish the purpose of the thesis:

- to study theoretical and conceptual basis of calculation of cost of goods sold and standard costing system in companies;
- to analyze the process of setting cost per unit in various methods;
- to compare the methods of cost of goods sold
- to give advices on how efficiently organize to control manufacturing costs of company;
- to provide recommendation on implementing and improving the methods of COGS, including standard costing system.

The research object of the thesis. “BF Taxtile Produktion” company as well as its accounting and management department have been chosen as the object of this diploma thesis. Financial and operating statements of the company relating to cost calculation have been used in diploma thesis to state plans of the topic.

The structure of the diploma thesis. This diploma thesis consists of an introduction, three chapters, conclusion and proposals, list of references and appendixes.

# **CHAPTER I: THEORETICAL AND METHODOLOGICAL BASIS OF CALCULATING COST OF GOODS IN THE COMPANIES ON THE CONDITION OF GLOBALIZATION.**

## **Chapter 1.1. Role and essence of calculating cost of goods in the companies on the thrifty developing economy.**

In today's world, competition between countries is becoming more and more common. In other words, everywhere it can be found countries, which are trying to be the best. Certainly, being the best depends on several factors such as countries' work force, military force and their GDP (Gross Domestic Product). If we look at the third factor, it is clear that every country try to produce as many as they can and at the same time, they also want to increase their profit and total income. Currently, scientists in most of the countries are researching to find ways concerning how it may be. Also, the countries are allocating some amount of their budget on this sphere to find out how to decrease the cost of goods. If foreign experiences are concerned, in particularly, in Japan, in every two years Special Research Conference is held. In this conference, there are discussion about the quality control of the list of the products, which have two principal questions: "How can the cost of goods be declined while the quality remains unchanged?" and "How can the quality be increased if the cost of goods does not decrease?". The answer usually relies on expenses, product costing and cost of goods sold (COGS), which is based on management accounting.

The process of calculating of the cost of products should have been conducted in accordance with Appendix to the Decree of Cabinet of Ministers from Regulations "On the structure of costs of producing and selling goods(works, services) and procedure of formation of financial results" in Uzbekistan since February 5, 1995.

Now we will clarify what is expenses, product costing and cost of goods sold (COGS).

What is an expense? An expense is a cost that occurs as part of a company's operating activities during a specified accounting period. A retailer will likely incur the following expenses: the cost of goods sold, commissions earned by the sales staff, rent for the retail space, the cost of the electricity used, advertising that took place, wages and salaries that were incurred, etc.

Under the accrual method of accounting, an expense is reported on the income statement for the period when 1) the cost best matches the related revenues, 2) the cost is used up or expires, or 3) there is uncertainty or difficulty in measuring the future benefit.

For instance, according to Number 54 “On the structure of costs of producing and selling goods(works,services) and procedure of formation of financial results”, a retailer's income statement for the month of August should report the cost of the goods that were sold in August (The date that the retailer had paid for the goods is not relevant). The commissions earned by the sales staff for having sold the goods in August is to be reported as an expense on the August income statement (even if the commissions are paid in September). The cost of the electricity used in August must also be included as an expense in the August income statement (even if the bill is received in September and is paid in October). These examples indicate that an expense can occur in an accounting period that is different from the period when the company pays for the item. Hence the word expense has a meaning that is different from payment.

Expenses are often divided into two major classifications: operating and nonoperating. Operating expenses involve a company's main activities. For example, a retailer's operating expenses include the cost of goods sold, and the selling, general and administrative (SG&A) expenses. The company may further sort these expenses by department, product line, and so on. A retailer's nonoperating expenses relate to its incidental activities. A common nonoperating expense for a retailer is interest expense.

What is Product costing? A product costing is any cost that is associated with units of product for a particular purpose. Hence, the identification of product

costs depends on the purpose for which it is done. For instance, the factory manager is interested in manufacturing costs, whereas the merchandising manager might be interested in both manufacturing and nonmanufacturing costs, including research and development, marketing, and advertising costs.

What is Cost of goods sold? Cost of goods sold is the cost of the merchandise that was sold to customers or a retailer, distributor, or manufacturer has sold. This is to say, cost of goods sold refer to the carrying value of goods sold during a particular period and it is reported on the income statement when the sales revenues of the goods sold are reported. By matching the cost of the goods sold with the revenues from the goods sold, the matching principle of accounting is achieved. That make this: The sales revenues minus the cost of goods sold is gross profit.

A retailer's cost of goods sold includes the cost from its supplier plus any additional costs necessary to get the merchandise into inventory and ready for sale. For example, let's assume that The “ BF Textile Produktion” company purchases textile materials. If its cost from the publisher is 80000 sum for the materials plus 5000 sum in shipping costs, Corner Shelf reports 85000 sum in its Inventory account until the textile commodity is sold. When the commodity is sold, the 85000 sum is removed from inventory and is reported as cost of goods sold on the income statement.

Costs are associated with particular goods using one of several formulas, including specific identification, first-in first-out (FIFO), or average cost (AVECO), last-in first-out (LIFO), dollar value LIFO, retail inventory method. Costs include all costs of purchase, costs of conversion and other costs incurred in bringing the inventories to their present location and condition. Costs of goods made by the business include material, labor, and allocated overhead. The costs of those goods not yet sold are deferred as costs of inventory until the inventory is sold or written down in value. Full definitions will be given in the second part of the chapter.

Cost of goods sold in business. Many businesses sell goods that they have bought or produced. When the goods are bought or produced, the costs associated with such goods are capitalized as part of inventory of goods. These costs are treated as an expense in the period the business recognizes income from sale of the goods.

Determining costs requires keeping records of goods or materials purchased and any discounts on such purchase. In addition, if the goods are modified, the business must determine the costs incurred in modifying the goods. Such modification costs include labor, supplies or additional material, supervision, quality control and use of equipment. Principles for determining costs may be easily stated, but application in practice is often difficult due to a variety of considerations in the allocation of costs.

Cost of goods sold may also reflect adjustments. Among the potential adjustments are decline in value of the goods (i.e., lower market value than cost), obsolescence, damage, etc.

When multiple goods are bought or made, it may be necessary to identify which costs relate to which particular goods sold. This may be done using an identification convention, such as specific identification of the goods, first-in-first-out (FIFO), or average cost. Alternative systems may be used in some countries, such as last-in-first-out (LIFO), gross profit method, retail method, or combinations of these.

Cost of goods sold may be the same or different for accounting and tax purposes, depending on the rules of the particular jurisdiction. Certain expenses are included in COGS. Expenses that are included in COGS cannot be deducted again as a business expense. COGS expenses include:

- The cost of products or raw materials, including freight or shipping charges;
- The cost of storing products the business sells;
- Direct labor costs for workers who produce the products; and
- Factory overhead expenses.
- Depreciation

Cost of goods made by the business. The cost of goods produced in the business should include all costs of production. The key components of cost generally include:

- Parts, raw materials and supplies used;
- Labor, including associated costs such as payroll taxes and benefits;
- Overhead of the business allocable to production.

Most businesses make more than one of a particular item. Thus, costs are incurred for multiple items rather than a particular item sold. Determining how much of each of these components to allocate to particular goods requires either tracking the particular costs or making some allocations of costs. Parts and raw materials are often tracked to particular sets (e.g., batches or production runs) of goods, then allocated to each item.

Labor costs include direct labor and indirect labor. Direct labor costs are the wages paid to those employees who spend all their time working directly on the product being manufactured. Indirect labor costs are the wages paid to other factory employees involved in production. Costs of payroll taxes and fringe benefits are generally included in labor costs, but may be treated as overhead costs. Labor costs may be allocated to an item or set of items based on timekeeping records.

Costs of materials include direct raw materials, as well as supplies and indirect materials. Where non-incidental amounts of supplies are maintained, the taxpayer must keep inventories of the supplies for income tax purposes, charging them to expense or cost of goods sold as used rather than as purchased.

Materials and labor may be allocated based on past experience, or standard costs. Where materials or labor costs for a period exceed the expected amount of standard costs, a variance. Such variances are then allocated among cost of goods sold and remaining inventory at the end of the period.

Determining overhead costs often involves making assumptions about what costs should be associated with production activities and what costs should be associated with other activities. Traditional cost accounting methods attempt to

make these assumptions based on past experience and management judgment as to factual relationships. Activity based costing attempts to allocate costs based on those factors that drive the business to incur the costs.

Overhead costs are often allocated to sets of produced goods based on the ratio of labor hours or costs or the ratio of materials used for producing the set of goods. Overhead costs may be referred to as factory overhead or factory burden for those costs incurred at the plant level or overall burden for those costs incurred at the organization level. Where labor hours are used, a burden rate or overhead cost per hour of labor may be added along with labor costs. Other methods may be used to associate overhead costs with particular goods produced. Overhead rates may be standard rates, in which case there may be variances, or may be adjusted for each set of goods produced.

Variable production overheads are allocated to units produced based on actual use of production facilities. Fixed production overheads are often allocated based on normal capacities or expected production. More or fewer goods may be produced than expected when developing cost assumptions (like burden rates). These differences in production levels often result in too much or too little cost being assigned to the goods produced. This also gives rise to variances.

## **Chapter 1.2. Methodological basis of calculating cost of goods, including standart costing method.**

In management accounting, it is clear that there are many steps to calculate cost of goods sold. This is because companies have several expenses. Certainly, if we want to calculate them more clearly, all of the forms the costs should be taken into account. They rely on time, quantity, quality and others.

First, we will look at assumption and dynamic of cost. This consists of variable cost, fixed cost, step-variable cost and mixed cost that will be followed in next paragraphs.

Variable costs change in direct proportion to changes in the level of activity. In particularly, direct materials and direct labor costs are generally classified as variable costs. Variable costs are the same per unit, while the total variable costs change in proportion to the changes in the cost driver .

Regarding the example of rolls of cotton fiber production in “BF Textile Produktion”, each roll requires a component part (i.e., raw material, variable cost). Component parts are purchased from outside suppliers for \$10 per part. Its production capacity is 10,000 to 50,000 rolls per year. The table 1 below shows material (component part) costs for production of rolls in the range of 10,000 - 50,000 units per year:

Table 1

Variable cost of valves at different production levels<sup>3</sup>

| Rolls of Cotton fiber Produced | Cost of one roll | Total Cost of Rolls | Calculation   |
|--------------------------------|------------------|---------------------|---------------|
| 10                             | \$10             | \$100,000           | 10,000 x \$10 |
| 20                             | \$10             | \$200,000           | 20,000 x \$10 |
| 30                             | \$10             | \$300,000           | 30,000 x \$10 |

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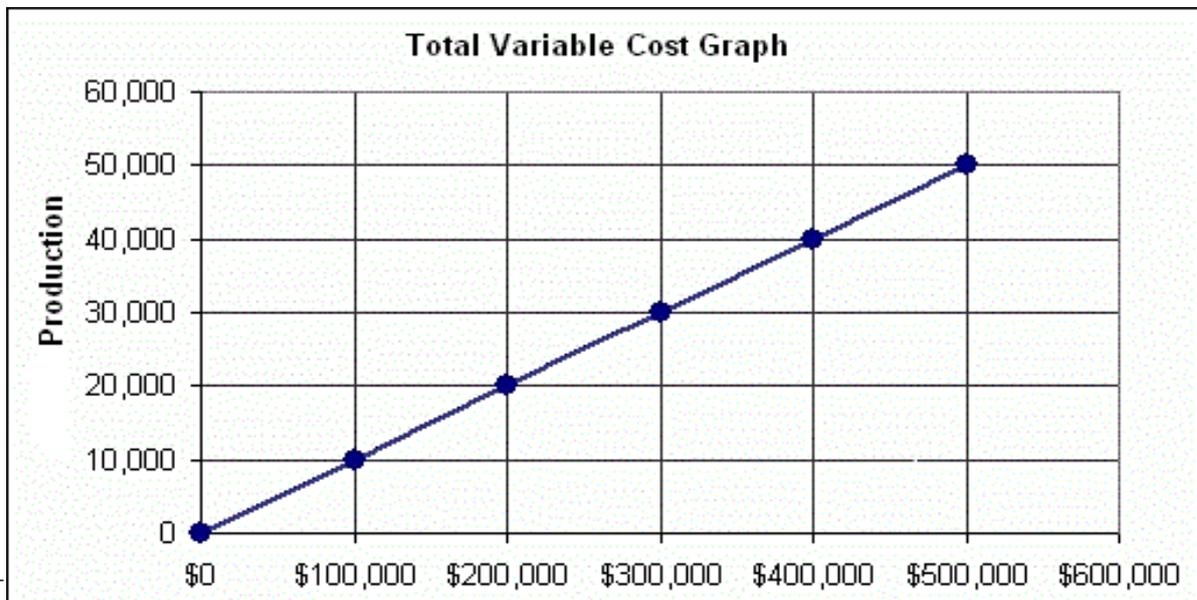
<sup>3</sup> Made by author

|    |      |           |               |
|----|------|-----------|---------------|
| 40 | \$10 | \$400,000 | 40,000 x \$10 |
| 50 | \$10 | \$500,000 | 50,000 x \$10 |

From the preceding table above, clearly, the total cost of rolls changes in direct proportion to the number of units produced. The unit cost, however, remains the same and does not depend on the output volume.

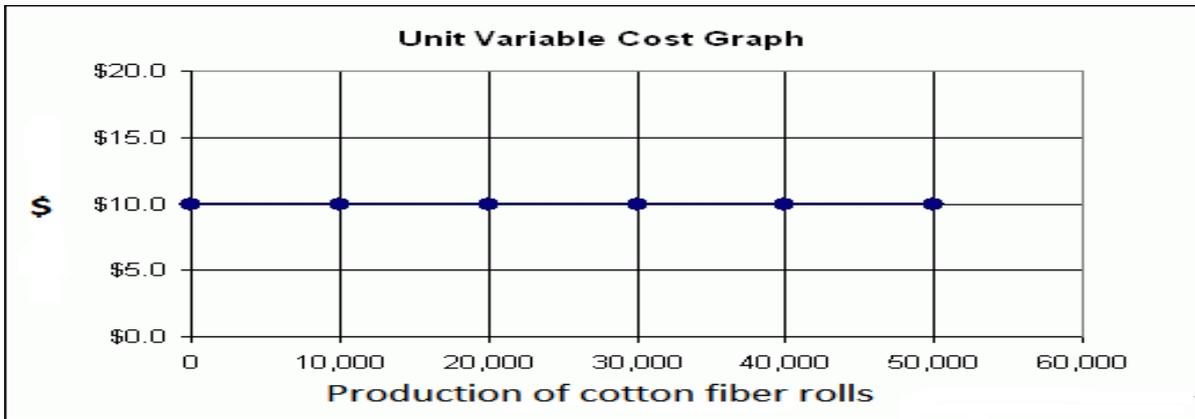
The variable costs from the table above can be easily illustrated in a graph. 1 shows how the variable costs for rolls behave as total production changes. The graph shows the same data, but in a different way. Notably, the variable cost line starts at zero cost for zero production and increases regularly with the rise in the figure for rolls of cotton fiber produced:

In contrast to the total variable cost with the cost per unit when production increases, we created another graph 1. In the graph the variable cost per unit remains the same regardless of production level, while in Graph 2 the total variable cost increases as production increases. The reason is because regardless of how many component parts “BF Textile Produktion” company has to buy, the price is the same: \$10 per unit . At the same time, if “BF Textile Produktion” company produces more rolls, the company will need to buy more component parts and the total cost will rise.



Graph 1: Total variable cost graph<sup>4</sup>

In the graph 2 below note that the unit cost line begins at the \$10 point and remains unchanged with the increase in the number of units bought:



Graph 2: Unit variable cost graph<sup>5</sup>

Fixed costs remain constant within a relevant range of time or activity. However, fixed costs per unit usually change with changes in the activity base. Insurance costs, rent costs, and salaries of accounting personnel are typical fixed costs.

For instance, «BF Textile Produktion» company pays property insurance in the amount of \$50,000 per year. The insurance payment is a fixed cost that does not vary with the number of produced rolls. Regardless of the number of units produced (i.e., 10,000 or 50,000 units), the company will still be assessed \$50,000 in property insurance per year. Although the total fixed cost remains the same as the number of rolls of cotton fiber produced changes, the fixed cost per roll changes. The more rolls of cotton fibre produced, the less fixed cost per unit. Table 2 shows this relationship:

Table 2

Fixed cost of property insurance at different production levels

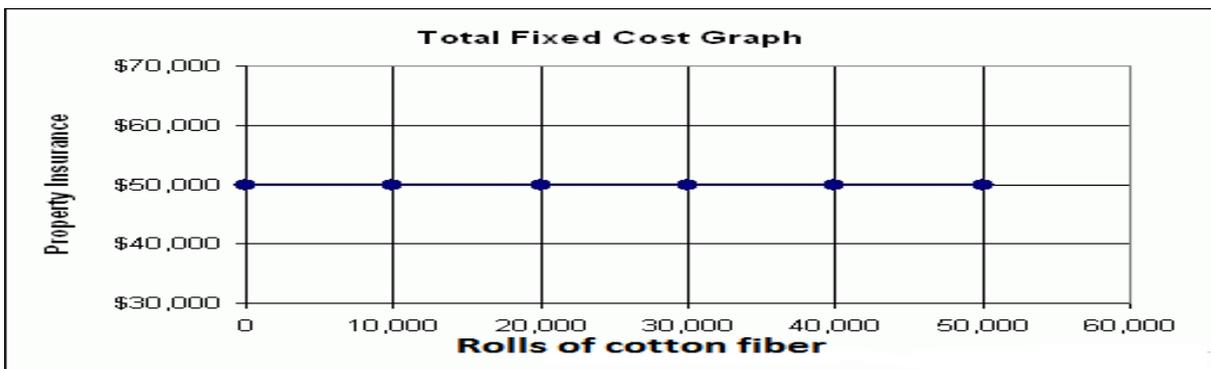
| Rolls produced | Property insurance | Property Insurance per roll | Calculation |
|----------------|--------------------|-----------------------------|-------------|
|                |                    |                             |             |

<sup>4</sup> Made by author

<sup>5</sup> Made by author

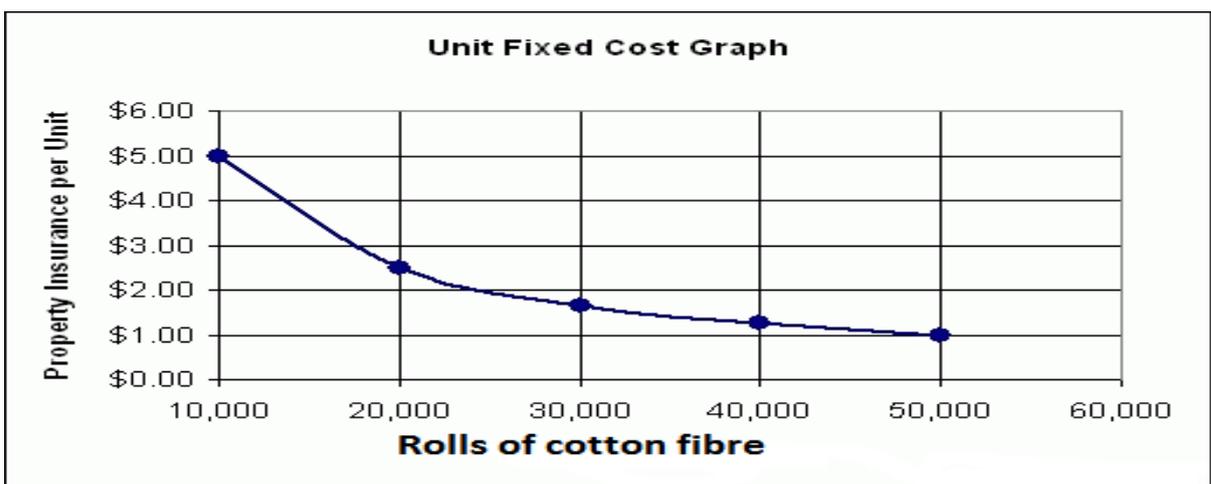
|    |          |        |                        |
|----|----------|--------|------------------------|
| 10 | \$50,000 | \$5.00 | $\$50,000 \div 10,000$ |
| 20 | \$50,000 | \$2.50 | $\$50,000 \div 20,000$ |
| 30 | \$50,000 | \$1.67 | $\$50,000 \div 30,000$ |
| 40 | \$50,000 | \$1.25 | $\$50,000 \div 40,000$ |
| 50 | \$50,000 | \$1.00 | $\$50,000 \div 50,000$ |

The data from the preceding table can also be presented in a graph 3. It shows how the property insurance cost changes when the total production changes.



Graph 3: Total fixed cost graph

Clearly, the line of the property insurance cost begins at \$50,000 and does not change with the increase in the number of units produced. That is because fixed costs remain constant within a relevant range. Graph 4 shows how the fixed cost of property insurance behaves on a per-unit basis as production changes:



Graph 4: Unit fixed cost graph<sup>6</sup>

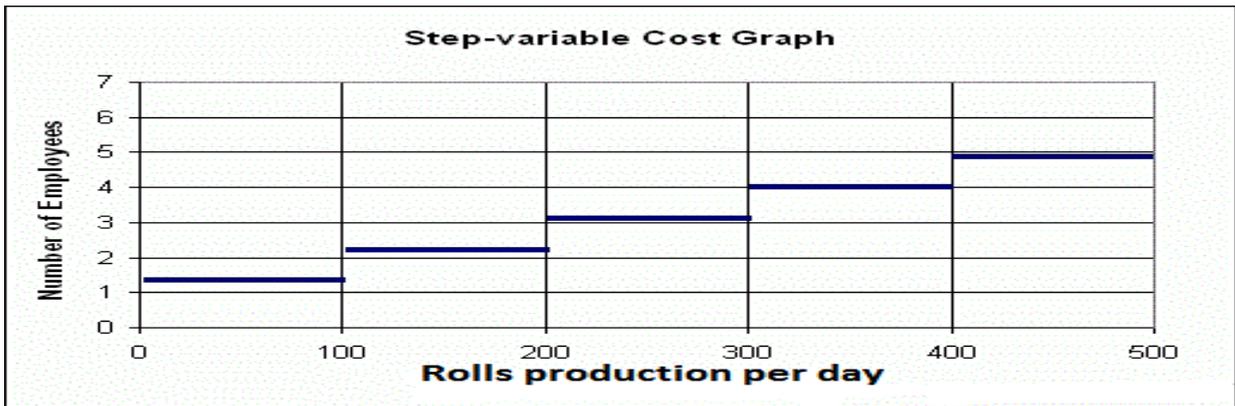
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<sup>6</sup> Made by author

As can be seen from the graph, the per-unit fixed cost decreases as the number of rolls produced increases. This happens because the fixed cost per unit is calculated by dividing the total fixed cost by the number of rolls produced. The total fixed cost remains the same. When the number of units produced increases, the cost per unit decreases. For example, at the 10,000-unit production level, the insurance fixed cost per roll is  $\$5.00 = \$50,000 \div 10,000$  units. At the 50,000-unit production level the insurance cost per roll is  $\$1.00 = \$50,000 \div 50,000$  units. This is shown on the graph by the downward-sloping curve, which indicates decreases in the insurance cost per unit as production increases.

**Step-variable costs.** Another cost type is step-variable cost, which is defined as follows: Step-variable costs are costs that stay fixed over a range of activity and then change after this range is overcome. This means that these costs change in increments. Step-variable costs include features of both variable and fixed costs in a way that (a) step-variable costs do change as production level changes, and (b) step-variable costs change only when a production level (range of activity) is overcome. Within that range of activity step-variable costs remain fixed. The major differences between step-variable costs and fixed costs are that step-variable costs are changed by activity (rather than by a management decision) and step-variable costs are more easily changed compared to fixed costs.

To explain what step-variable costs are, let's glance at example with roll production of cotton fibre. One employee can operate equipment to produce 100 rolls per day. If 320 rolls need to be produced, «BF Textile Produktion» company would hire four employees (three employees won't be enough because three employees can only produce 300 rolls). If the roll production requirement is increased to 400 units, four workers will still be able to cope with the work load. However, for 410 rolls, an additional, fifth employee would be needed. Thus, the company's payroll costs change in steps, from costs for four employees at 320 or 400 units, to payroll costs for five employees at 410 units as in graph 6.



Graph 5: Step-variable cost graph<sup>7</sup>

**Mixed costs** contain components of both variable and fixed cost behavior patterns. Mixed costs are sometimes called semivariable or semifixed costs.

The fixed component of a mixed cost is the minimum cost of supplying a resource, and the variable component is the cost that fluctuates depending on changes of activity levels.

Suppose «BF Textile Produktion» company uses rented machinery. The rental charges are \$1,000 per year, plus \$1 for each machine hour the machinery is in use. If the machinery is used for 1,000 hours, then the total rental charge is \$2,000 = \$1,000 + \$1 x 1,000 hrs). The table 3 below shows the relationship between the variable and fixed costs, the total cost, and machine hours:

Table 3

Mixed cost table<sup>8</sup>

| Number of Machine hours | Variable Cost per hour | Variable cost | Fixed cost | Total cost | Total Cost calculation |
|-------------------------|------------------------|---------------|------------|------------|------------------------|
| 500                     | \$1.00                 | \$500         | \$1,000    | \$1,500    | \$500 + \$1,000        |
| 1000                    | \$1.00                 | \$1,000       | \$1,000    | \$2,000    | \$1,000 + \$1,000      |
| 1500                    | \$1.00                 | \$1,500       | \$1,000    | \$2,500    | \$1,500 + \$1,000      |
| 2000                    | \$1.00                 | \$2,000       | \$1,000    | \$3,000    | \$2,000 + \$1,000      |
| 2500                    | \$1.00                 | \$2,500       | \$1,000    | \$3,500    | \$2,500 + \$1,000      |

<sup>7</sup> Made by author

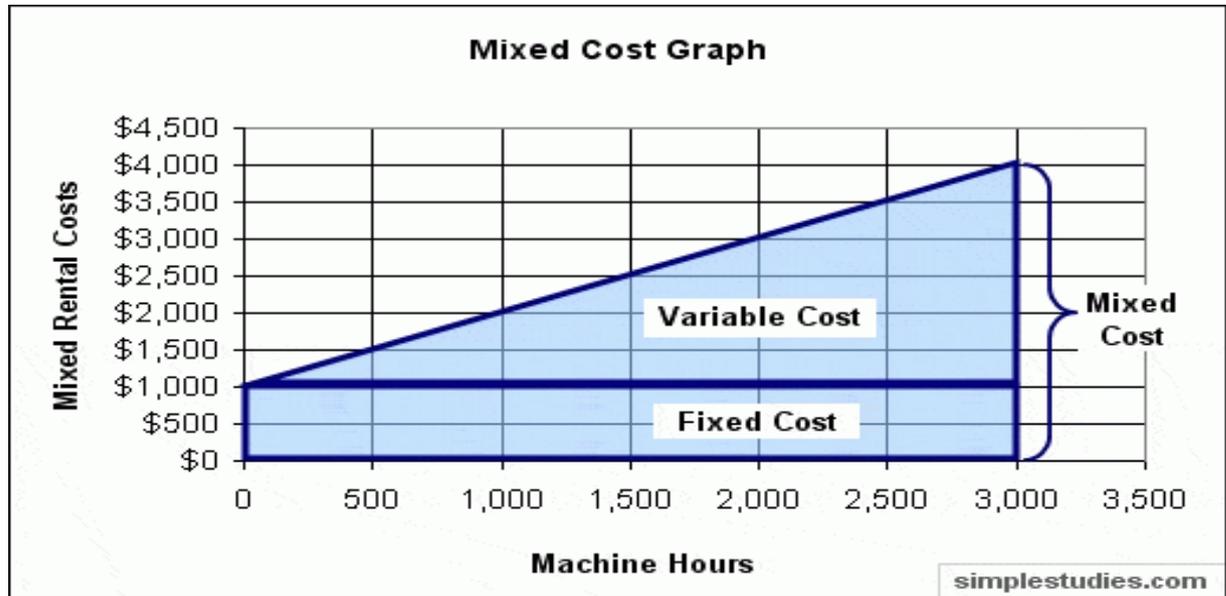
<sup>8</sup> Made by author

|      |        |         |         |         |                   |
|------|--------|---------|---------|---------|-------------------|
| 3000 | \$1.00 | \$3,000 | \$1,000 | \$4,000 | \$3,000 + \$1,000 |
|------|--------|---------|---------|---------|-------------------|

The following formula was used in the table:

$$\text{Mixed Cost} = \text{Fixed Cost} + \text{Variable Cost}$$

And this is illustrated in the graph 6.



Graph 6. Mixed costs graph<sup>9</sup>

Graph 6 graphically shows this relationship. It can be seen that the mixed cost line begins at the fixed-cost point of the vertical axis (\$1,000 in our case) and then increases to the right. The lowest amount of the total mixed cost equals its fixed part and is applicable when machinery is not used at all. In this case only the fixed portion of the cost is incurred and equals \$1,000. When machinery is used, the variable cost (\$1 per hour) is added to the fixed cost to arrive at total mixed cost:

Now, we will connect the fixed and variable cost with relevant range. Relevant range is the volume of activity, over which cost behavior stays valid. «BF Textile Produktion» Company can produce from 10,000 to 50,000 rolls per year. So, the relevant range for «BF Textile Produktion» Company is the range of normal activity from 10,000 to 50,000 units. Within this relevant range all fixed costs, such as rent, equipment depreciation, and administrative salaries remain

<sup>9</sup> Taken from website "simplestudies.com"

constant. If «BF Textile Produktion» Company decides to produce more rolls, they have to hire additional staff and rent more equipment, which will result in an increase of fixed costs. On the contrary, if the production level is reduced, «BF Textile Produktion» Company has to reduce staff and rental expenses, so fixed costs will decrease.

Managers usually need to know what fixed and variable costs are included in mixed costs. This is required for budgeting and planning purposes, among others. Using the total costs and the associated activity level, it is possible to break out the fixed and variable components. There are three methods for separating a mixed cost into its fixed and variable components:

- High-low method
- Scatter-graph method
- Method of least squares

High-low method. When using the high-low method, the highest point and the lowest point are used to create the cost formula. The high point is defined as the point with the highest activity and the low point is defined as the point with the lowest activity. Using the lowest and highest activity levels, it is possible to estimate the variable cost per unit and the fixed cost component of mixed costs.

Let us assume that «BF Textile Produktion» Company incurred the following costs during the past six months (table 4):

Table 4

Total costs of «BF Textile Produktion» Company over the past six months

| Month     | Rolls Production | Total Cost |
|-----------|------------------|------------|
| July      | 10               | \$44,000   |
| August    | 15               | \$60,000   |
| September | 23               | \$85,000   |
| October   | 21               | \$75,000   |
| November  | 19               | \$70,000   |
| December  | 28               | \$98,000   |

The lowest level of production was in July and the highest level of production was in December. The difference between the number of units

produced and the difference between the total cost at the highest and lowest levels of production are shown below (table 5):

Table 5

Levels of production in July

|               | Production   | Total Cost |
|---------------|--------------|------------|
| Highest Level | 28,000 units | \$98,000   |
| Lowest Level  | 10,000 units | \$44,000   |
| Difference    | 18,000 units | \$54,000   |

As the total fixed cost does not change with changes in the production volume, the difference in the total costs represents the change in the total variable costs. So, if we divide the difference in the total costs by the difference in the production levels, we will have an estimate of the variable cost per unit:

$$\text{Variable Cost per Unit} = \$54,000 \div 18,000 \text{ units} = \$3$$

The variable cost per unit is \$3. The fixed cost will be the same at both the highest and lowest levels of production because fixed costs don't change. In order to estimate the fixed costs, we have to subtract the estimated total variable cost from the total cost:

$$\text{Total Cost} = \text{Variable Cost per Unit} \times \text{Units of Production} + \text{Fixed Cost}$$

Highest level:

$$\$98,000 = \$3 \times 28,000 + \text{Fixed Cost}$$

$$\text{Fixed Cost} = \$14,000$$

Lowest level:

$$\$44,000 = \$3 \times 10,000 + \text{Fixed Cost}$$

$$\text{Fixed Cost} = \$14,000$$

The fixed costs equal \$14,000. Knowing the fixed costs and the variable cost per unit we can estimate the total costs for the planned production level by using the formula below:

$$T = F + V \times N$$

Where  $T$  is the total cost,  $F$  is the fixed cost,  $V$  is the variable cost per unit, and  $N$  is the number of units to be produced.

Using the formula presented above and the fixed cost and variable cost per unit, we obtain the following formula for our example:

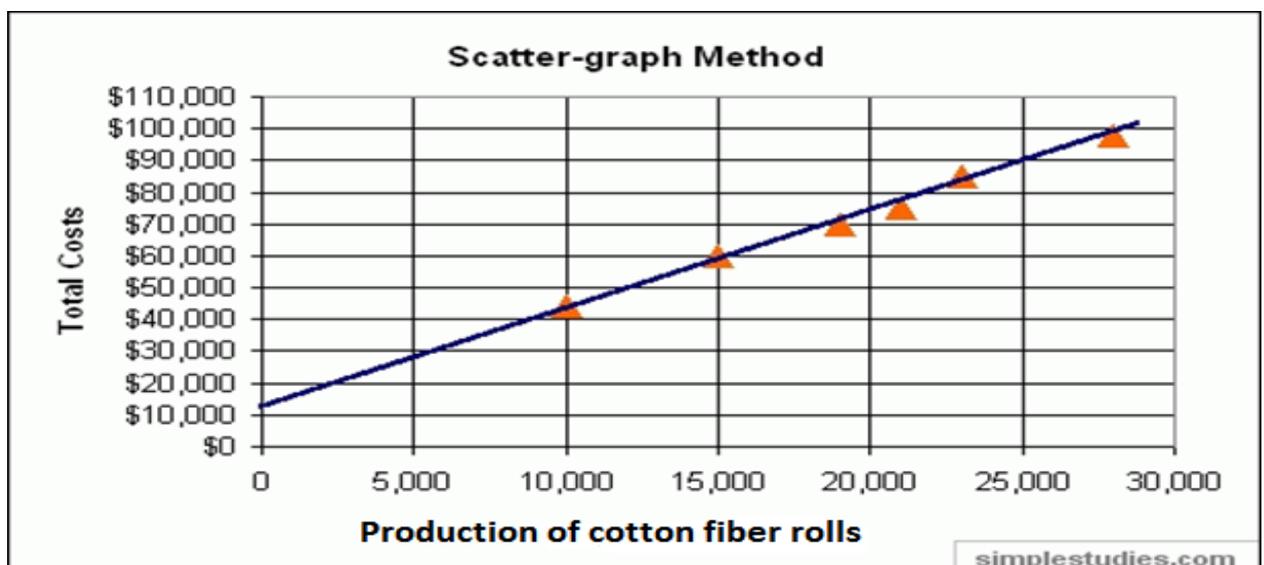
$$T = \$14,000 + \$3 \times N$$

The methodology presented above is the high-low method of separating mixed costs. The advantage of this method is its simplicity. However, this method ignores all data points other than the highest and the lowest activity levels. The highest and the lowest activity points often do not represent the rest of the points, which leads to a possible inaccuracy of the final results. This is the main disadvantage of this method. In order to get more precise results, it is better to use the scatter-graph method or the method of least squares.<sup>2</sup> Scatter-graph method

The scatter graph method (also called *scatter plot* or *scatter chart method*) involves estimating the fixed and variable elements of a mixed cost visually on a graph.

The scatter-graph method requires that all recent, normal data observations be plotted on a cost (Y-axis) versus activity (X-axis) graph. The vertical axis of the graph represents the total costs and the horizontal axis shows the volume of related activity.

Let us again use the example of «BF Textile Produktion» Company and review their activities for the past six months. The first step is to plot the points on a graph. Then draw a line that most closely represents a straight line composed of all the data points. The data points are shown in graph 7.



### Graph 7. Scatter graph<sup>10</sup>

The point where this line intersects the vertical axis is the fixed costs, or \$14,000 in our case. The angle (slope) of the line can be calculated to give a fairly accurate estimate of the variable cost per unit. We can see from the graph that production of 20,000 valves will cost «BF Textile Produktion» Company \$75,000 and production of 25,000 valves will cost \$90,000. Knowing this information we can calculate the variable cost per unit:

$$\frac{Y_2 - Y_1}{X_2 - X_1} = \frac{\$90,000 - \$75,000}{25,000 - 20,000} = \frac{\$15,000}{5,000} = \$3$$

When the two variables become known, we can use them in the cost formula:

$$Y = F + V \times X$$

Where  $F$  is the fixed cost,  $V$  is the variable cost per unit, and  $X$  is the production level.

So, the cost formula looks like this:

$$Y = \$14,000 + \$3 \times X$$

Using this formula we can calculate the total costs of activity in the range of 10,000 to 28,000 valves per month and then separate them into fixed and variable components. For example, assume that production of 24,000 valves is planned for the next period. Using the formula we can determine that the total costs would be:

$$Y = \$14,000 + \$3 \times 24,000 = \$86,000$$

\$14,000 is fixed and \$72,000 is variable, for a total of \$86,000 (\$14,000 + \$72,000).

This method is simple to use and provides clear representation of correlation between costs and the volume of activity. However, the disadvantage of this method is the difficulty in determining the location of the best-fit line.

Here, there are some forms of costs which affect the cost of goods sold. They are avoidable and unavoidable costs as well as direct and indirect costs.

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<sup>10</sup> Taken from website "simplestudies.com"

In a thrifty economic circumstance, managers have to solve the problem which is related with the decision of cutting branches, departments, and even products. In order to save the company money, managers tend to look the departments or products that are losing money or not turning a profit. A lot of times shutting down departments simply because they are losing money is not always a good idea. In fact, shutting down some non-profitable departments might even cost the company more money. Managers need to take a look at two main expenses when making a decision to close a department: avoidable costs and unavoidable costs.

Avoidable costs are costs that can be eliminated if a department is closed. Salaries are a good example of avoidable costs. When the branch closes, the salaries are stopped as well. Therefore, avoidable costs are often variable costs.

In contrast, unavoidable costs are costs that will not be eliminated if a department is closed. Unavoidable expenses are also called inescapable expenses for this very reason. A good example of an unavoidable expense is rent. Think if a business rents a 10,000 square foot building and uses it for three different departments or branches. Each department earns revenue and pays for a third of the rent expense. If one of the branches is closed, the company will still have to pay to rent the entire building. This rental expense isn't eliminated if the department is closed. In this case, the company might be better off keeping the non-profitable department open because it helps contribute one third of the rental expenses.

Manufacturing costs may be classified as direct costs and indirect costs on the basis of whether they can be attributed to the production of specific goods, services, departments or not.

Direct costs can be attributed as costs which can be accurately outlined to a cost object with little effort. Cost object may be a product, a department, a project, etc. Direct costs typically benefit a single cost object therefore the classification of any cost either as direct or indirect is done by taking the cost object into perspective. A particular cost may be direct cost for one cost object but indirect cost for another cost object. Most direct costs are changable but this may not

always be the case. For example, the salary of a supervisor monthly who has only supervised the construction of a single building is a direct fixed cost experienced on the building.

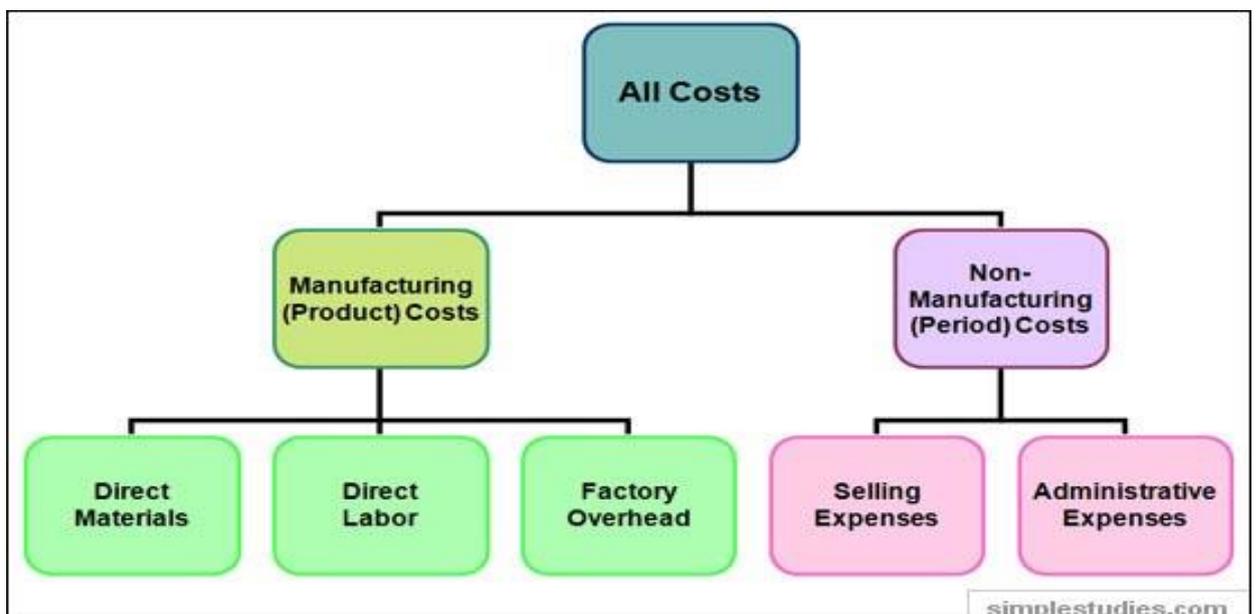
Costs which cannot be accurately defined to specific cost objects are called indirect costs. These typically benefit multiple cost objects and it is impracticable to accurately trace them to individual products, activities or departments.

To calculate cost of goods clearly, it is also essential to divide costs into manufacturing and nonmanufacturing costs. This is because manufacturing cost is almost equal to cost of goods sold while nonmanufacturing cost is mostly related to periodical expenses. A manufacturing company incurs both manufacturing costs (also called product costs) and nonmanufacturing costs or expenses (also called selling and administrative expenses).

In the graph 8 below you can see the difference between manufacturing and nonmanufacturing costs and their classification:

If we review these types of cost in more detail, firstly, manufacturing costs are the costs that a company incurs in producing a product. From the managerial accounting rules, there are three types of manufacturing costs:

- Direct materials
- Direct labor
- Factory (or manufacturing) overhead



## Graph 8. Manufacturing vs. nonmanufacturing costs<sup>11</sup>

Direct materials are raw materials that become an integral part of the finished goods. Direct materials should be distinguished from indirect materials (part of overhead costs), about which will be followed later.

Direct materials always have a changable nature. Recall from other tutorials that variable costs change in proportion to production. For instance, in our example of «BF Textile Produktion» company, the company purchases metal parts (raw material) to produce rolls of cotton fiber. The more rolls are produced, the more parts «BF Textile Produktion» Company has to acquire. Therefore, parts are variable. The amount of raw materials bought and used changes in direct proportion to the amount of rolls created. For «BF Textile Produktion» company, other direct materials would include, for example, painting.

Different manufacturing companies will have various direct material costs depending on the types of commodities they produce. The table below provides a few examples:

The following table clearly says that direct materials are the main part and a significant portion of finished goods.

Table 6

Examples of direct material costs

| <b>Examples</b>         | <b>Direct Materials</b>       |
|-------------------------|-------------------------------|
| Publishing company      | Paper, ink, book covers       |
| Automobile manufacturer | Tires, automobile metal parts |
| Computer manufacturer   | Hard drives, monitors         |

As given above, to calculate COGS clearly it is also important to look at assumption of materials, because of the fact that materials influence on the value of COGS directly. In other words, the cost of goods sold may be identified with the item sold, in some cases. Ordinarily, however, the identity of goods is lost between

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<sup>11</sup> Taken from website “simplestudies.com”

the time of purchase or manufacture and the time of sale. Determining which goods have been sold, and the cost of those goods, requires either identifying the goods or using a convention to assume which goods were sold. This may be referred to as a cost flow assumption or inventory identification assumption or convention. The following methods are available in many jurisdictions for associating costs with goods sold and goods still on hand:

- *Specific identification.* Under this method, particular items are identified, and costs are tracked with respect to each item. This may require considerable recordkeeping. This method cannot be used where the goods or items are indistinguishable or fungible.
- *Average cost.* The average cost method relies on average unit cost to calculate cost of units sold and ending inventory. Several variations on the calculation may be used, including weighted average and moving average.
- *First-in first-out (FIFO)* assumes that the items purchased or produced first are sold first. Costs of inventory per unit or item are determined at the time made or acquired. The oldest cost (*i.e.*, the first in) is then matched against revenue and assigned to cost of goods sold.
- *Last-in first-out (LIFO)* is the reverse of FIFO. Some systems permit determining the costs of goods at the time acquired or made, but assigning costs to goods sold under the assumption that the goods made or acquired last are sold first. Costs of specific goods acquired or made are added to a pool of costs for the type of goods. Under this system, the business may maintain costs under FIFO but track an offset in the form of a LIFO reserve. Such reserve (an asset or contra-asset) represents the difference in cost of inventory under the FIFO and LIFO assumptions. Such amount may be different for financial reporting and tax purposes in the United States.

- *dollar value LIFO*. Under this variation of LIFO, increases or decreases in the LIFO reserve are determined based on dollar values rather than quantities.
- *retail inventory method*. Resellers of goods may use this method to simplify recordkeeping. The calculated cost of goods on hand at the end of a period is the ratio of cost of goods acquired to the retail value of the goods times the retail value of goods on hand. Cost of goods acquired includes beginning inventory as previously valued plus purchases. Cost of goods sold is then beginning inventory plus purchases less the calculated cost of goods on hand at the end of the period.

Almost any production plant or factory requires employees to operate equipment, move raw materials from the warehouse to equipment, and so on. These employees are directly involved in the production process and the cost of their remuneration and benefits represents direct labor which is the cost of wages to be paid to individuals who work on specific products or in other words, the cost of wages of employees who are directly involved in converting raw materials into finished goods.

Generally, direct labor is a variable cost. In most situations the amount of direct labor required is directly correlated with the amount of finished goods produced. For example, wages and related benefits of employees who operate machinery to produce rolls represent direct labor costs for «BF Textile Produktion» company. The more rolls are to be produced, the more employees will be required to operate machinery, paint, assemble, etc.

Direct materials and direct labor, when added together, represent the prime cost. Direct materials and direct labor are called *prime costs* because they are directly (physically, "primarily") associated with the finished goods production.

Factory overhead is any manufacturing cost that is not direct materials or direct labor. Factory overhead can have variable or fixed nature, depending on whether

overhead changes in direct proportion with production volumes. The following are some examples of factory overhead costs:

Table 7

Examples of fixed and variable factory overhead costs

| Variable Factory Overhead Examples | Fixed Factory Overhead Examples       |
|------------------------------------|---------------------------------------|
| Electricity                        | Depreciation                          |
| Heating                            | Property taxes                        |
| Water                              | Property insurance                    |
| Indirect Materials                 | Salaries for non-production employees |
| Indirect Labor                     |                                       |

Most items in the table above are self-explanatory, so they don't require further explanation, while indirect materials and labor may benefit from further explication.

If we look at the methodology of Standard costing system, there is an important distinction between standard costs and a standard costing system. Standard costs are a component in a standard costing system. However, even companies that do not use standard costing systems can utilize standards for budgeting, planning, and variance analysis. In the following paragraph, we will clarify what Standard cost aims.

The main purposes of Standard Costing system

- To facilitate in setting budgets and evaluating managerial performance
- To act as a control device by stressing those activities which do not match to plan and thus alerting decision-makers to those situations that may be out of control and in need of remedial action
- To provide a forecast of future costs that can be used for decision making purposes
- To simplify the task of tracing costs to products for inventory evaluation purposes

- To provide a challenging target which individuals are motivated to achieve.<sup>12</sup>

## **CHAPTER II: FEATURES OF TYPES OF CALCULATING COST OF GOODS IN MANAGEMENT ACCOUNTING.**

### ***2.1. Job-order costing***

The job order cost system is used when products are made based on specific orders given by customer. Each product produced is considered a job separately. Costs are identified according to the job done. Services rendered can also be considered a job. For example, service companies consider the creation of a financial plan by a certified financial planner, or of an estate plan by unique jobs.

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12.Drury C. Standard costing. London: Academic Press.1999

The job order cost system must capture and track by job the costs of producing each job, which includes materials, labor, and overhead in a manufacturing environment. To track data, the following documents are used:

Job cost sheet. This is used to track the job number; customer information; job information (date started, completed, and shipped); individual cost information for materials used, labor, and overhead; and a total job cost summary (Graph 9).

| Direct materials |               |               | Direct labor |             |              | Manufacturing Overhead |                           |               |
|------------------|---------------|---------------|--------------|-------------|--------------|------------------------|---------------------------|---------------|
| Date             | Requisition # | Cost          | Date         | Time Ticket | Cost         | Date                   | Rate                      | Cost          |
| 6/15             | R-1396        | 11,000        | 6/22         | L-1034      | 1,000        | 7/13                   | 150% of direct labor cost | 11,400        |
|                  |               |               | 6/22         | L-1035      | 1,000        |                        |                           |               |
|                  |               |               | 6/29         | L-2955      | 1,000        |                        |                           |               |
|                  |               |               | 6/29         | L-2956      | 1,000        |                        |                           |               |
|                  |               |               | 7/6          | L-3179      | 1,000        |                        |                           |               |
|                  |               |               | 7/6          | L-3180      | 1,000        |                        |                           |               |
|                  |               |               | 7/13         | L-2193      | 1,000        |                        |                           |               |
|                  |               |               | 7/13         | L-2194      | 600          |                        |                           |               |
| <b>Total</b>     |               | <u>11,000</u> | <b>Total</b> |             | <u>7,600</u> | <b>Total</b>           |                           | <u>11,400</u> |

Graph 9. Job cost sheet

**Materials requisition form.** To guarantee that materials costs are properly allocated to jobs in process, a materials requisition form (Graph 10) is usually filled as materials are taken from the raw materials inventory and added to work-in-process.

| Twin Publishers Materials Requisition |                     |                         |                          | R-1396            |
|---------------------------------------|---------------------|-------------------------|--------------------------|-------------------|
| Date: <u>6/15</u>                     | Job No. <u>4401</u> |                         |                          |                   |
| <u>Quantity</u>                       | <u>Item #</u>       | <u>Item Description</u> | <u>Cost per unit</u>     | <u>Total cost</u> |
| 220,000 sheets                        | 15                  | white paper             | .05                      | 11,000            |
| Requested by: <u>LJM</u>              |                     |                         | Received by: <u>KLJM</u> |                   |
| Salesman                              |                     |                         | Printing Department      |                   |
|                                       |                     |                         | Costed by: <u>EAM</u>    |                   |
|                                       |                     |                         | Accounting Department    |                   |

Graph 10: Materials requisition form.

**Time ticket.** Labor costs are allocated to work-in-process inventory based on the completion of time tickets (graph 12) identifying what kind of job a worker spent time on.

**Predetermined overhead rate.** Factory overhead costs are allocated to jobs in process using a predetermined overhead rate. The predetermined overhead rate is determined by estimating (during the budget process) total factory overhead costs and dividing these total costs by direct labor hours or direct labor dollars. For example, assume a company using direct labor dollars for the allocation of overhead estimated its total overhead costs to be \$300,000 and total direct labor dollars to be \$250,000. The company's predetermined overhead rate for allocating overhead to jobs in process is 120% of direct labor dollars, and is calculated as follows:

| Twin Publishers Time Ticket           |       |      |  |             |            |
|---------------------------------------|-------|------|--|-------------|------------|
| Employee: <u>GMC Nic</u>              |       |      | Employee #: <u>2863</u>                        |             |            |
| Job Worked On: <u>4401</u>            |       |      | Pay Date: <u>7/13</u>                          |             |            |
| Date                                  | Start | Stop | Total Hours                                    | Hourly Rate | Total Cost |
| 7/10                                  | 0800  | 1200 | 4  | 25          | 100        |
| 7/10                                  | 1300  | 1700 | 4  | 25          | 100        |
| 7/11                                  | 0800  | 1200 | 4  | 25          | 100        |
| 7/11                                  | 1300  | 1700 | 4  | 25          | 100        |
| 7/12                                  | 0800  | 1200 | 4  | 25          | 100        |
| 7/12                                  | 1300  | 1700 | 4  | 25          | <u>100</u> |
| Total                                 |       |      |  |             | <u>600</u> |
| Approved by: <u>MJM</u><br>Supervisor |       |      | Costed by: <u>MJM</u><br>Accounting Department |             |            |

Graph 11. Time ticket

Predetermined overhead rate. Factory overhead costs are allocated to jobs in process using a predetermined overhead rate. The predetermined overhead rate is determined by estimating (during the budget process) total factory overhead costs and dividing these total costs by direct labor hours or direct labor dollars. For example, assume a company using direct labor dollars for the allocation of overhead estimated its total overhead costs to be \$300,000 and total direct labor dollars to be \$250,000. The company's predetermined overhead rate for allocating overhead to jobs in process is 120% of direct labor dollars, and is calculated as followsi graph 12.

If direct labor costs are \$40,000 for the month, overhead of \$48,000 ( $\$40,000 \times 120\%$ ) would be allocated to work-in-process inventory. Factory overhead would be allocated to individual jobs based on the portion of the \$40,000 direct labor cost that is assigned to each job. If job number 45 had \$9,000 in direct labor cost for the month, factory overhead of \$10,800 ( $\$9,000 \times 120\%$ ) would also be allocated to the job.



| Raw Materials Inventory |            | Wages Payable |            |
|-------------------------|------------|---------------|------------|
| beginning bal. 50,000   | 16,500 (B) | (J) 31,000    | 21,000 (C) |
| (A) 15,000              | 5,700 (D)  |               | 10,000 (E) |
| ending bal. 42,800      |            |               | 0          |

| Factory Overhead  |            | Factory Overhead Subsidiary Ledger |                |
|-------------------|------------|------------------------------------|----------------|
| (D) 5,700         | 16,800 (G) | Indirect Materials                 | Indirect Labor |
| (E) 10,000        |            | (D) 5,700                          | (E) 10,000     |
| (F) 3,700         |            | Factory Utilities                  | Factory Rent   |
| ending bal. 2,600 |            | (F) 1,200                          | (F) 2,500      |

| Work-in-Progress Inventory |            | Work-in-Process Inventory Subsidiary Ledger |            |            |
|----------------------------|------------|---|------------|------------|
| beginning bal. 6,200       | 45,200 (H) | Job 100                                     | Job 101    | Job 102    |
| (B) 16,500                 |            | 6,200                                       | 13,600 (H) | (B) 10,000 |
| (C) 21,000                 |            | (B) 2,000                                   | (C) 12,000 | 31,600 (H) |
| (G) 16,800                 |            | (C) 3,000                                   | (G) 9,600  | (B) 4,500  |
| ending bal. 15,300         |            | (G) 2,400                                   |            | (C) 6,000  |
|                            |            | 0   | 0          | (G) 4,800  |
|                            |            |   |            | 15,300     |

| Finished Goods Inventory |            | Finished Goods Inventory Subsidiary Ledger |            |            |
|--------------------------|------------|--|------------|------------|
| beginning bal. 21,000    | 35,500 (I) | Job 99                                     | Job 100    | Job 101    |
| (H) 45,200               |            | 21,900                                     | 21,900 (I) | (H) 13,600 |
| ending bal. 30,700       |            |  | 13,600 (I) | (H) 31,600 |

| Cost of Goods Sold |  | Cost of Goods Sold Subsidiary Ledger |            |
|--------------------|--|--------------------------------------|------------|
| (I) 35,500         |  | Job 99                               | Job 100    |
|                    |  | (I) 21,900                           | (I) 13,600 |

The letters in the T-accounts are the same as the code letters used in Figure 9-4.

Graph 14. Transactions in job-order costing ( in numbers)

The factory overhead account (Graph 14) has a balance which indicates the amount of overhead applied to work-in-process inventory is different from the actual overhead experienced. When there is a debit balance in the factory overhead account, it is called under-applied overhead meaning not enough overhead was allocated to jobs. If the balance in the factory overhead account was a credit, the overhead would be over-applied, meaning too much overhead was allocated to jobs. Factory overhead must be zero at the end of the year. Most companies transfer the balance in factory overhead to cost of goods sold. An alternative method, although more complex, is to allocate the under- or over-applied balance among the work-in-process inventory, finished goods inventory, and cost of goods sold accounts. The \$2,600 account balance in factory overhead in Graph 14 is relatively small. To zero out the account balance and transfer it to cost of goods sold, the entry would be (in this way transitions are closed):

**General Journal**

| <i>Date</i> | <i>Account Title and Description</i> | <i>Ref.</i> | <i>Debit</i> | <i>Credit</i> |
|-------------|--------------------------------------|-------------|--------------|---------------|
| 20X0        |                                      |             |              |               |
| Dec. 31     | Cost of Goods Sold                   |             | 2,600        |               |
|             | Factory Overhead                     |             |              | 2,600         |
|             | Transfer under-applied overhead      |             |              |               |

Graph 15.General journal

**2.2. Process costing**

Overview. Process costing Is used when there is mass production of similar products, where the costs associated with individual units of output cannot be differentiated from each other. In other words, the cost of each product produced is assumed to be the same as the cost of every other product. Under this concept, costs are accumulated over a fixed period of time, summarized, and then allocated to all of the units produced during that period of time on a consistent basis. When products are instead being manufactured on an individual basis, job costing is used to accumulate costs and assign the costs to products. When a production process contains some mass manufacturing and some customized elements, then a hybrid costing system is used.

Examples of the industries where this type of production occurs include oil filtering, food production, and chemical processing. For example, how would you determine the exact cost required to create one gallon of aviation fuel, when thousands of gallons of the same fuel are pouring out of a filter every hour? The cost accounting methodology used for this scenario is process costing.

Process costing is the only reasonable approach to determining product costs in many industries. It uses most of the same journal entries found in a job costing environment, so there is no need to restructure the chart of accounts to any significant degree. This makes it easy to switch over to a job costing system from a

process costing one if the need arises, or to adopt a hybrid approach that uses portions of both systems.

**Example of Process Cost Accounting.** As a process costing example, ABC International produces purple widgets, which require processing through multiple production departments. The first department in the process is the casting department, where the widgets are initially created. Throughout the month of March, the producing department experiences \$50,000 of direct material costs and \$120,000 of conversion costs (comprised of direct labor and factory overhead). The department processes 10,000 widgets during March, so this means that the per unit cost of the widgets passing through the casting department during that time period is \$5.00 for direct materials and \$12.00 for conversion costs. The widgets then move to the decorating department for further work, and these per-unit costs will be carried along with the widgets into that department, where additional costs will be added.

**Types of Process Costing.** There are three types of process costing, which are:

- *Weighted average costs.* This form of cost indicates that all costs, whether from a initial period or the current one, are lumped together and assigned to produced units. It is the simplest version to calculate, which most of the accountants want to use.
- *Standard costs.* This version is based on standard costs. Its calculation is almost the same as weighted average costing, but they are assigned to production units, rather than real costs; after total costs are accumulated in term of standard costs, these totals are compared to real accumulated costs, and the discrepancy is accounted and charged to a variance account.
- *First-in first-out costing (FIFO).* FIFO is a more complicated calculation method that creates layers of costs, one for any units of production that were began in the previous production period but not finished, and another layer for any production that is begun in the current period.

There is no last in, first out (LIFO) costing method used in process costing, since the fundamental statement of process costing is that the first unit produced is,

in fact, the first unit used, which is the FIFO concept. This means that using LIFO is not accurate and shows the cost of goods false.

Why have three different cost calculation methods for process costing, and why use one version instead of another? The different calculations are required for different cost accounting needs. The weighted average method is used in situations where there is no standard costing system, or also, where the fluctuations in costs from period to period are so slight that the management team has no need for the slight improvement in costing accuracy that can be got with the FIFO costing method. Alternatively, process costing that is based on standard costs is required for costing systems that use standard costs. It is also useful in situations where companies manufacture such a broad mix of products that they have difficulty accurately assigning actual costs to each type of product; under the other process costing methodologies, which both use actual costs, there is a strong chance that costs for different products will become mixed together. Finally, FIFO costing is used when there are ongoing and significant changes in product costs from period to period – to such an extent that the management team needs to know the new costing levels so that it can re-price products appropriately, determine if there are internal costing problems requiring resolution, or perhaps to change manager performance-based compensation. In short, the simplest costing approach is the weighted average method, with FIFO costing being the most difficult.

Cost Flow in Process Costing. The distinctive way in which costs flow in process costing is that direct material costs are added at the beginning of the process, while all other costs (both direct labor and overhead) are gradually added over the course of the production process. For instance, in a food processing operation, the direct material (such as a cow) is added at the beginning of the operation, and then various representing operations gradually convert the direct material into finished products (such as steaks).

Job Costing versus Process Costing. Job Costing mainly refers to the costs that are encountered in the businesses related to manufacturing goods. Job Costing journals form an integral part of the final account statement of the manufacturers,

wherein such costs are recorded. This type of costing is used for specific jobs, not for any process. However, Process Costing refers to the methodology involved in calculating the costs that are experienced while performing a particular task or commencing a specific process. This might indicate the costs that are either experienced directly or indirectly.

Job Costing indicates the costs of every unique unit of production. However, Process Costing shows the costs that are averaged for each production unit. As per the definition, Process Costing is a method that is applied to the manufacture business that is held together by various continuous or repetitive processes. Process Costing works efficiently for the industries that are known to produce a single type of product. Both of these terms indicate the costs related to labor, material and overhead costs.

Process Costing helps to keep a tight control over the monthly expenditures in a manufacturing business. As an example, Job Costing involves the costs that form salaries of labors working in a particular process whereas Process Costing involves the costs of the processed or manufactured goods done by different departments.

One of the main discrepancy between Job Costing and Process Costing is that the Job Costing can be in use while a particular job is going on. However, Process Costing can be achieved only when all the processes are completed. Moreover, when it comes to documentation, in case of Job Costing, the cost sheet of the job is essential whereas in Process Costing a document having deposition and total amount of different costs is essential.

In brief, some main differences between Job Costing and Process Costing methods are listed below:

- Job Costing indicates the costs encountered for each and every job separately whereas Process Costing determines the costs, spent on different departments.

- In case of Job Costing, a final amount of the costs can be calculated in advance whereas in Process Costing, the final amount of the costs is calculated when the process is only complete .
- The important documents which are necessary for Job Costing are much different from those needed for Process Costing.
- Job Costing tends to be used by industries that manufacture customized and heterogenous and varied products whereas Process Costing method is used by the industries that are involved in mass production of homogenous and similar products.

### **2.3. Actual- Based Costing**

Actual costing is a method of tracking and determining product costs. Primarily used for companies with one product, all manufacturing costs direct materials, direct labor, and manufacturing overhead---are added directly to work in process as the costs are incurred. Recall that 'incurred' is used in accrual basis accounting and generally means the point at which costs are used. For manufacturing accounting purposes, incurred means at the time that costs are used in the production process.

Activity-based costing (ABC) is a better, more accurate way of allocating overhead.ABC can become quite complex. For example, it is often beneficial to employ a two-stage allocation process whereby overhead costs are allocated to intermediate cost pools in the first stage, and then allocated from these intermediate cost pools to products in the second stage. Why is this intermediate step useful? Because it allows the introduction of multiple cost drivers for a single overhead cost item. This two-stage allocation process is illustrated in the example of the clothing factory below.

ABC focuses on different activities. A key statement in activity-based costing is that overhead costs are caused by a variety of activities, and that different products utilize these activities in a non-homogeneous fashion. Usually, costing the activity is an intermediate step in the allocation of overhead costs to products, in order to get more accurate product cost information. Sometimes,

however, the activity itself is the cost object of interest. For example, managers at clothing company might want to know how much the company spends to acquire denim fabric, as input in a sourcing decision. The “activity” of acquiring fabric experiences costs associated with negotiating prices with suppliers, issuing purchase orders, receiving fabric, checking fabric, and processing payments and returns.

Clothing Factory Example of Two-Stage ABC Allocations. It is assumed that an clothing factory uses forklifts in only two departments: The first department is Receiving, where big rolls of fabric are unloaded from semi-trailers and moved into storage, and later moved from storage to the cutting room. The second department is Shipping, where cartons of finished pants are staged and then loaded onto semi-trailers for shipment to the storage. In particular, costs associated with operating these forklifts consist of the followings in Table 8:

Table 8

Operating costs in forklifts.

|  |                           |
|--|---------------------------|
| <u>Forklift costs:</u>                       | Sum in \$                 |
| Operator salaries                            | \$80,000                  |
| Maintenance                                  | 8000                      |
| Depreciation expense                         | \$7500                    |
| Other  | \$2500                    |
| <i>Total forklift costs</i>                  | <u>\$98,000</u>           |
| All other overhead                           | \$1,400,000               |
| <b><i>Total overhead for the factory</i></b> | <b><u>\$1,498,000</u></b> |

The factory operates two production lines. One line is for jeans, which are made from denim fabric. The other line is for casual slacks, which are made from a cotton-twill fabric. Operational data for the month is given in Table 9.

Table 9

Production lines in operating of forklifts

|                |              |                      |              |
|----------------|--------------|----------------------|--------------|
|                | <u>Jeans</u> | <u>Casual Slacks</u> | <u>Total</u> |
| Units produced | 420          | 200                  | 620          |

|                    |      |     |      |
|--------------------|------|-----|------|
| Direct labor hours | 70   | 40  | 110  |
| Rolls of fabric    | 1,75 | 640 | 2,39 |
| Cartons shipped    | 52,5 | 20  | 72,5 |

The factory ships product to the company's storage, not directly to customers. Subsequently, to facilitate stocking at the warehouse, each carton is packed with jeans or casual slacks, but not both. Checking of the information in the above table reveals that a carton holds more slacks than jeans, and that fewer pants are cut from a roll of denim fabric than from a roll of cotton-twill. These operational statistics are driven by the fact that denim is a heavier-weight fabric than cotton-twill, and also, it is bulkier. The data also indicate that more direct labor time is required for a pair of slacks than for a pair of jeans, which reflects greater automation on the jeans production line.

Traditional costing. Under a traditional costing system, forklift costs are pooled with all other overhead costs for the factory (electricity, property taxes, front office salaries, etc.), and then allocated to product based on direct labor hours (sewing operator time) for each product.

If the casual slacks product manager asks why her product experiences more forklift costs on a per-unit basis than jeans, even though casual slacks use a lighter-weight fabric, the answer is that her product uses more direct labor per unit, which perhaps is not a very satisfying explanation from her perspective.

Table 10

Overhead rate under traditional costing.

|  |                  |
|--|------------------|
| Total overhead costs                                   | \$1,498,000      |
| Quantity of allocation base (direct labor hours)       | <u>÷ 110,000</u> |
| Overhead rate per direct labor hour                    | <u>\$13.62</u>   |
| of which the following is due to forklift costs:       |                  |
| Forklift overhead                                      | \$98,000         |
| Quantity of allocation base (direct labor hours)       | <u>÷ 110,000</u> |
| Overhead rate for forklift costs per direct labor hour | <u>\$0.8909</u>  |

An ABC system might first allocate forklift costs into two cost pools: one for the Receiving Department and one for the Shipping Department. Then costs from each of these two departments would be allocated to the two product lines.

Table 11

Forklift overhead applied to product using traditional costing

|  | <u>Jeans</u>   | <u>Slacks</u>  |
|--|----------------|----------------|
| Overhead rate                                    | \$0.8909       | \$0.8909       |
| Quantity of allocation base (direct labor hours) | <u>x70,000</u> | <u>x40,000</u> |
| Forklift costs allocated                         | \$62,363       | \$35,636       |
| Units produced                                   | <u>420</u>     | <u>200</u>     |
| Approximate cost per unit                        | <u>\$0.15</u>  | <u>\$0.18</u>  |

Note that all forklift overhead is allocated:  $\$62,363 + \$35,636 = \$97,999$  (the difference due to rounding of the overhead rate).

ABC first-stage allocation. The first-stage allocation might use an estimate of the amount of time the forklifts spend in each department. A one-time study indicates that forklifts spend approximately 70% of their time in the Shipping Department and 30% of their time in the Receiving Department.

Table 12

ABC second-stage allocation

|                             | <u>Receiving</u>        | <u>Shipping</u>           |
|-----------------------------|-------------------------|---------------------------|
| Total costs                 | \$29,400                | \$68,600                  |
| Quantity of allocation base | <u>÷ 2,390 rolls</u>    | <u>÷ 72,500 cartons</u>   |
| Overhead rate               | <u>\$12.30 per roll</u> | <u>\$0.946 per carton</u> |
|                             |                         |                           |
| <u>Allocation to Jeans</u>  |                         |                           |
| Overhead rate               | \$12.30 per roll        | \$0.946 per carton        |
| Quantity of allocation base | <u>x 1,750 rolls</u>    | <u>x 52,500 cartons</u>   |
|                             | <u>\$21,525</u>         | <u>\$49,665</u>           |
| <u>Allocation to Slacks</u> |                         |                           |
| Overhead rate               | \$12.30 per roll        | \$0.946 per carton        |
| Quantity of allocation base | <u>x 640 rolls</u>      | <u>x 20,000 cartons</u>   |

|  |                |                 |
|--|----------------|-----------------|
|  | <u>\$7,870</u> | <u>\$18,922</u> |
|--|----------------|-----------------|

An additional benefit of ABC is that if this information were collected periodically, the managers of these two departments might be more willing to share the forklifts with each other, since the reported costs of each department would then depend on the time the forklifts spend in that department. In any case, the 70/30 allocation results in the following first-stage allocation:

*30% of \$98,000 = \$29,400 is allocated to the Receiving Department*

*70% of \$98,000 = \$68,600 is allocated to the Shipping Department*

Table 13

Total forklift costs allocated to each product:

|                           | <u>Jeans</u>  | <u>Slacks</u> | <u>Total</u>    |
|---------------------------|---------------|---------------|-----------------|
| From Receiving            | \$21,525      | \$ 7,872      | \$29,397        |
| From Shipping             | <u>49,665</u> | <u>18,92</u>  | <u>68,585</u>   |
| Total                     | \$71,190      | \$26,792      | <u>\$97,982</u> |
| Units Produced            | <u>420</u>    | <u>200</u>    |                 |
| Approximate Cost per unit | <u>\$0.17</u> | <u>\$0.13</u> |                 |

between total costs allocated of \$97,982 and the original costs of \$98,000 is due to rounding.

The first-stage allocation permits the second-stage to allocate forklift costs to product using rolls of fabric as the allocation base in Receiving, and cartons of pants as the allocation base in Shipping. Since there are no rolls of fabric in the shipping department, and no cartons in the Receiving Department, without the first stage allocation, there would be no obvious choice of an allocation base that would capture the cause-and-effect relationship between the costs of operating the forklifts, and the utilization of forklift resources by each product in the two departments.

If we make a brief conculation to the traditional costing method, it allocates more forklift costs to slacks than to jeans on a per-unit basis because casual slacks require more sewing effort. ABC allocates more forklift costs to jeans than to casual slacks, on a per-unit basis, which is spontaneous because denim is a heavier-weight fabric than cotton twill.

ABC in the Service Sector. ABC is as essential to companies in the merchandising and service sectors as to manufacturing companies. In reality, although the origination of ABC is generally attributed to manufacturing companies in the 1980s, by after that, hospitals were already allocating overhead costs to departments and then to patient services using methods similar to ABC. Hospitals were required to carry out relatively sophisticated allocation processes in order to fulfill with Medicare repayment rules. After its commencement in the 1960s, Medicare established detailed rules regarding how overhead costs should be grouped into cost pools, and the choice of appropriate allocation bases for allocating overhead costs to departments and then to patients. Within these rules, hospitals were able to maximize revenues by moving costs from areas such as pediatrics, labor and delivery, and maternity (which have low rates of Medicare utilization) to the intensive care unit, the critical care unit, and surgery (which have higher rates of Medicare utilization). Other non-manufacturing industries that have benefited from ABC include financial services firms and retailers.

**NORMAL COSTING.** Many companies calculate and apply this overhead rate using, not actual overhead costs and the actual quantity of the allocation base,

but rather budgeted overhead costs and the budgeted quantity of the allocation base. When a company uses budgeted overhead rates in its costing system, but all other information in the costing system is based on actual costs, the company is using what is called a normal costing system.

It is important to remember that although there are no rules in management accounting, companies always, as a matter of practice, use either budgeted numbers in both the numerator and the denominator of the overhead rate, or actual numbers in both the numerator and the denominator of the overhead rate. Companies never use budgeted overhead divided by the actual quantity of the allocation base, or actual overhead divided by the budgeted quantity of the allocation base.

It is also important to remember that in a normal costing system, the budgeted overhead rate is multiplied by the *actual* quantity of the allocation base incurred. In a normal costing system, the only budgeted number is the overhead rate; direct costs are recorded at their actual cost, and the overhead rate is multiplied by the actual quantity of the allocation base used during the period.

**ATTEMPT to explain what is Normal costing with example of “ BF Textile Produktion” company.** The “ BF Textile Produktion” company in Tashkent city makes jeans and superior trousers. Each product line has its own assembly line on the factory floor. Overhead costs for the factory for 2012 were budgeted for \$3,600,000, but came in below budget at \$3,300,000. Budgeted production for the year was 500,000 jeans and 500,000 trousers. Actual production was 500,000 jeans and 400,000 trousers. The reduction in trousers output relative to plan was due to unexpected slack in the demand for casual slacks. The budgeted direct labor hours per jean is 0.5, and per trouser is 0.7. In fact, 500,000 direct labor hours were used: 200,000 for jeans, and 300,000 for trousers. The average direct labor wage rate was the same on both assembly lines, and was \$14 per hour. Denim fabric is used to make jeans, and trousers are made from a cotton twill fabric. Overhead is allocated using direct labor hours.

The following journal entries and T-accounts illustrate how a normal costing system records the manufacturing activities of the factory in order to get product cost information for jeans and trousers.

The first five entries are identical to the “ BF Textile Produktion” example in the previous chapter. The first entry that differs as the result of using normal costing instead of actual costing is. This entry to debit overhead to work-in-process is based on an overhead rate calculated as:

Table 14

Overhead rate.

|          | <u>Budgeted</u><br><u>Production (A)</u> | <u>Budgeted</u> <u>hours</u><br><u>per unit (B)</u> | <u>Budgeted labor</u><br><u>hours (AxB)</u> |
|----------|--|---|---|
| Jeans    | 500,000 units                            | 0.5 hours per unit                                  | 250 000                                     |
| Trousers | 500,000 units                            | 0.7 hours per unit                                  | <u>350 000</u>                              |
| Total    |  |   | <u>600 000</u>                              |

The budgeted overhead rate =  $\$3,600,000 \div 600,000$  direct labor hours = \$6.00 per direct labor hour.

In practice, the factory would track costs by batch, or perhaps weekly, but to simplify our example, we record only one journal entry for each type of transaction. We also make the unrealistic assumption that there is no work-in-process at the end of the period. To focus the presentation on inventory-related accounts, T-accounts for some non-inventory accounts are omitted. Many companies would use two separate accounts instead of one account to track factory overhead; one account for factory overhead incurred, and the other account for factory overhead allocated.

(1)   Dt   Raw Materials: denim fabric                   \$3,000,000  
       Dt   Raw Materials: cotton twill                         \$2,250,000  
       Ct   Accounts Payable   \$5,250,000

To record the purchase of 600,000 yards of denim fabric at \$5.00 per yard, and 500,000 yards of cotton twill fabric at \$4.50 per yard.

(2)   Dt   Work-in-process: Jeans                                 \$2,500,000

Ct Raw Materials: denim fabric \$2,500,000

To record materials requisitions for 500,000 yards, for the movement of denim from the receiving department to the cutting room.

(3) Dt Work-in-process: Trousers \$2,160,000

Ct Raw Materials: cotton twill \$2,160,000

To record materials requisitions for 480,000 yards, for the movement of cotton twill from the receiving department to the cutting room.

(4) Dt Work-in-process: Jeans \$2,800,000

Dt Work-in-process: Trousers 4,200,000

Ct Accrued Sewing Operator Wages \$7,000,000

To record sewing operator wages for the year: 200,000 hours for jeans, and 300,000 hours for trousers, at \$14 per hour.

(5) Dt Factory Overhead \$3,300,000

Ct Accounts Payable \$1,800,000

Ct Accrued Wages for Indirect Labor 900,000

Ct Accumulated Depreciation 600,000

To record overhead costs incurred during the year.

(6) Dt Work-in-process: Jeans \$1,200,000

Dt Work-in-process: Trousers 1,800,000

Ct Factory Overhead \$3,000,000

To allocate overhead to production, using a budgeted overhead rate of \$6 per direct labor hour, multiplied by actual hours used in production.

(7) Dt Finished Goods: Jeans \$6,500,000

Ct Work-in-process: Jeans \$6,500,000

(To record the completion of all 500,000 jeans, at \$13.00 per pair.)

(8) Dt Finished Goods: Trousers \$8,160,000

Ct Work-in-process: Trousers \$8,160,000

(To record the completion of all 400,000 trousers, at \$20.40 per pair.)

(9) Dt Cost of Goods Sold: Jeans \$5,200,000

Dt Cost of Goods Sold: Trousers \$7,140,000

Ct Finished Goods: Jeans \$5,200,000  
 Ct Finished Goods: Trousers \$7,140,000

(To record the sale of 400,000 jeans and 350,000 trousers.)

(10) Dt Cost of Goods Sold: misapplied overhead \$300,000  
 Ct Factory Overhead \$300,000

The per-unit cost of finished goods inventory is calculated as follows:

Jeans: \$6,500,000 ÷ 500,000 pairs = \$13.00 per pair  
 Trousers: \$8,160,000 ÷ 400,000 pairs = \$20.40 per pair

These amounts can be detailed as follows in table 15:

Overhead is applied using the budgeted overhead rate of \$6.00 per hour. However, this budgeted overhead rate is multiplied by the *actual* direct labor hours used by each product. Therefore, the only reason that more overhead or less overhead is allocated to each unit of product than budgeted is because each product used more of the allocation base or less of the allocation base (in this case, direct labor hours) than planned. Jeans used less overhead per unit than planned (0.4 versus 0.5), so less overhead is allocated to each pair of jeans than planned. Trousers used more overhead than planned (0.75 versus 0.7), so more overhead is allocated to each pair of trousers than planned.

Table 15

Calculating the per-unit cost of finished goods inventory

| <u>Input</u> | <u>Jeans</u>                                  | <u>Trousers</u>                                   |
|--------------|---|---|
| Fabric       | 1 yard per jean x \$5 per yard = \$5.00       | 1.2 yards per trouser x \$4.50 per yard = \$5.40  |
| Direct labor | 0.4 hours per jean x \$14 per hour = \$5.60   | 0.75 hours per trouser x \$14 per hour = \$10.50  |
| Overhead     | 0.4 hours per jean x \$6.00 per hour = \$2.40 | 0.75 hours per trouser x \$6.00 per hour = \$4.50 |

|       |                |                |
|-------|----------------|----------------|
| Total | <u>\$13.00</u> | <u>\$20.40</u> |
|-------|----------------|----------------|

The total misapplied overhead is a function of two factors: (1) the numerator in the budgeted overhead rate differing from actual overhead incurred; and (2), the denominator in the budgeted overhead rate differing from the actual quantity of the allocation base incurred. In the next two paragraphs, we consider each of these two factors.

Less overhead was incurred than planned: \$3,300,000 versus \$3,600,000. It is probable that one reason actual overhead incurred was less than budgeted is that fewer units were produced than planned. Unless all overhead is fixed, a reduction in output should decrease the total overhead incurred.

The denominator in the budgeted overhead rate can differ from the actual quantity of the allocation base incurred for two reasons. First, the amount of the allocation base used per unit of product (in this case, direct labor hours per unit) can differ from plan. Jeans used less direct labor hours per unit than planned, but trousers used more direct labor hours than plan. Second, the level of production can differ from plan (either total production or product mix). Because fewer units were made than planned (900,000 units versus 1,000,000 units), less overhead was allocated than otherwise would have been the case.

## **CHAPTER III: STANDART COSTING METHOD AND ITS DEVELOPMENT IN THE PROSPECTS.**

### **3.1. Standart costing and its development in current condition.**

General overview. If you were to design a cost accounting system with no accounting education other than financial accounting courses, you would probably design an accounting system that collects, summarizes, and reports actual costs. This approach would be consistent with the implicit assumption throughout every financial accounting course that when financial statements report historical cost data, such as would normally be the case for cost-of-goods-sold and ending inventory, that the information reported represents actual costs. Therefore, it comes as a surprise to most students that the initial journal entries to record the production and movement of inventory in the costing systems of most manufacturing firms are not based on actual costs at all, but rather are based on budgeted per-unit costs.

It is clear in most manufacturing firms in today's economy, the initial journal entries to debit work-in-process, finished goods and cost-of-goods-sold are based on the actual quantity of output produced, multiplied by budgeted data about the inputs necessary to produce those outputs, and the budgeted costs of those inputs. Then, at the end of the month (or possibly quarterly), an "adjusting" or "closing" entry is made to record in the inventory accounts the difference between actual costs incurred, and the budgeted information that has formed the basis for the journal entries during the month. The nature of this adjusting entry depends on the materiality of the amounts involved. If the differences between actual costs and budgeted costs are small, this adjusting entry might be made in an expedient manner, involving only cost of goods sold, but if the differences are large, the adjusting entry might also involve work-in-process and finished goods inventory accounts.

The accounting system described above is called a standard costing system, and it is widely-used by companies in the manufacturing sector of the economy. This chapter describes standard costing systems, and explains why companies use them. But first we discuss a related concept, standard costs, which constitutes an important component of standard costing systems which are the important issues to develop

Standard Costs, as the term is usually used in management accounting, is a budgeted amount for a single unit of output. A standard cost for one unit of output is the budgeted production cost for that unit. Standard costs are calculated using engineering estimates of standard quantities of inputs, and budgeted prices of those inputs. For example, for an apparel manufacturer, standard quantities of inputs are required yards of fabric per jean and required hours of sewing operator labor per jean. Budgeted prices for those inputs are the budgeted cost per yard of fabric and the budgeted labor wage rate.

Standard quantities of inputs can be established based on ideal performance, or on expected performance, but are usually based on efficient and attainable performance. Research in psychology has determined that most people will exert

the greatest effort when goals are somewhat difficult to attain, but not extremely difficult. If goals are easily attained, managers and employees might not work as hard as they would if goals are challenging. But also, if goals appear out of reach, managers and employees might resign themselves to falling short of the goal, and might not work as hard as they otherwise would. For this reason, standards are often established based on efficient and attainable performance.

Hence, a standard is a type of budgeted number; one characterized by a certain amount of rigor in its determination, and by its ability to motivate managers and employees to work towards the company's objectives for production efficiency and cost control.

Standard cost accounting is a system used by management for cost planning and cost control purposes. A standard cost system is not a full cost accounting system by itself. Instead, it is used along with an existing job order or process costing system. When a company uses standard costs, all cost affecting the inventory accounts and the Cost of goods sold account are stated in terms of standard or predetermined costs rather than actual costs incurred. Together with cost behavior relationships and the various cost-volume-profit analyses, the incorporation of standard costs into a cost accounting system provides foundation for the budgetary control process. Standard costs are useful for preparing budgets and forecasts, evaluating the performance of workers and management, and helping to decide on appropriate selling prices. Standard costs are realistically predetermined costs for direct materials, direct labor, and factory overhead. They are usually expressed as cost per unit of finished products. Predetermined overhead costs are different from standard cost. Standard costing focuses on total unit cost, which includes all three manufacturing cost elements. And the computation of standard costs is more detailed than that of predetermined overhead cost<sup>13</sup>.

In my view, standard costing is a total cost concept. In a fully integrated standard cost system, all actual manufacturing cost data are replaced by standard

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<sup>13</sup> Needles A.Caldwell. Financial and managerial accounting. Third edition. Massachusetts. Houghton Mifflay Co. 2001

(or predetermined) cost data. Accounts such as Direct Materials Inventory, Work in Process Inventory, Finished Goods Inventory, and Cost of Goods Sold are all stated in terms of standard costs. All debit and credit entries made to these accounts are made in terms of standard costs, not actual costs. All inventory balances are computed using standard unit costs. Separate records are kept of actual costs in order to compare the standard costs (what should have been spent) with the actual costs incurred. The comparison is usually made at the end of the accounting period, whether weekly, monthly, or quarterly. If large differences (variances) exist, the management accountant looks for the causes of the differences. This process, known as variance analysis, is an effective cost control tool.

Standards also provide a foundation for predicting what performance can be expected in the near future. In order to measure performance of any kind it is required to compare actual performance to some baseline measurement. Variance, the name for the difference between a standard and an actual measurement, is a tool for signaling the need for either reward or corrective action.<sup>14</sup>

One of the major purposes of a standard costing system is to act as a control device. It is a device to compare actual and planned results and to identify important deviations for corrective actions. Devices of this kind are known as feedback control systems.<sup>15</sup> Drury makes the comparison with a thermostat. The process (the room's temperature) is continually monitored by an automatic regulator (the thermostat). Divergences from a predetermined level (the desired temperature) are identified by the automatic regulator. Corrective actions are started if the output is not equal to the predetermined level. This can be compared with the action to turn the heater on if the temperature does not correspond with the predetermined level.

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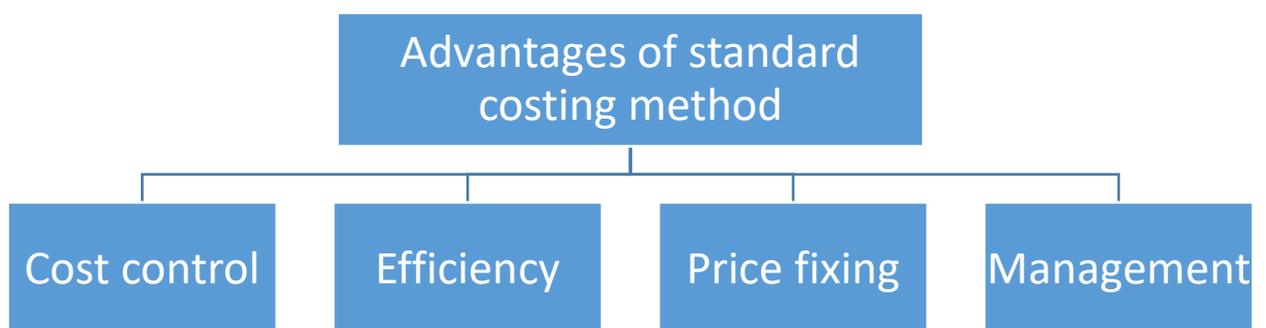
<sup>14</sup> Bonsack, R. A. 'Does activity-based costing replace standard costing?' *Journal of Cost Management*, Winter. 2002

<sup>15</sup> Hussey, J. and Hussey, R. *Cost and management accounting*. Basingstoke: Macmillan Press. 2001

Standard cost for decision-making purposes requires estimates. When it comes to pricing the decisions manager requires estimates of future costs. Drury states, “Standard costs represent future costs and thus provide a valuable source of information for decision-making purposes.” Drury argues that standard costs are frequently used for pricing decisions. He refers to several surveys of pricing procedures that have reported that product costs play an important role in setting prices. One can have a feeling that this is true when it comes to customized products, which do not have readily available market prices. A firm that can predict its product costs can focus on the most profitable product mix and avoid potential loss-making activities.<sup>16</sup>

As said before standard costs stand for predetermined costs; they are target costs, which should be incurred under well-organized operating conditions and thus do not include any avoidable inefficiencies. Since efficient competitors will seek to eliminate avoidable costs, standard costs provide valuable information for pricing decisions. It is actually foolish to take for granted that inefficiencies are recoverable within the selling price.<sup>17</sup>

Advantages of Standard Costing System. As all types of costing methods, there are a number of benefits standard costing . In the following graph 17 and paragraphs, we will look at 4 advantages of standard costing, including cost control, efficiency, price fixing and management.



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<sup>16</sup> Drury, C. Standard costing. London: Academic Press.1999

<sup>17</sup> Drury, C. Standard costing. London: Academic Press.1999

## Graph 17. Advantages of standard costing system.<sup>18</sup>

1. Cost control. One of the direct advantages of standard costing lies in cost control. Comparing standard costs with actual costs pinpoint areas where costs have gone out of control, allowing management to take remedial actions. The variance provides management with a fixed quantifiable target when undertaking such remedial actions. My view is that cost control, which is one of the key points to development of standard cost, should be run by management staff of any companies in current competitive market economy.

The emphasis on variations from standard costs promotes cost consciousness and a culture of thrift and efficiency-orientation across the board, helping organizations control costs.

Standard costing also provides management with a measure of the latest developments such as rising prices, allowing revision of selling prices or making process adjustments.

2. Efficiency. Standard costing indirectly contributes to process efficiency. Fixing standard costs requires a detailed study of different aspects of the business and its processes. For instance, determining manufacturing expenses requires a time and motion study, and determining standard inventory costs mandates a study of material control processes. Very often, such studies bring to light various inefficiencies and defects, providing managers with a ready opportunity to correct such mistakes and promote efficiency.

The standard costing methodology of comparing actual costs with standard costs enables a reliable evaluation of the performance of various cost centers. The alternative method of determining performance by comparing costs in different periods is inherently faulty as it does not consider the varying circumstances during both periods.

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<sup>18</sup> Created by author

3. Price Fixing. A major advantage of standard costing is that it helps determine prices and formulates production policies in advance. It also allows making estimates during product planning or the pre-manufacturing phase.

Standard costing simplifies valuation of stock by transferring the difference between standard costs and actual costs to a separate variance account.

4. Management. Standard costing promotes management by exception, where management provides a fixed target and does not interfere as long as the targets are adhered to or achieved; management intervention comes only in cases of deviations. Standard costing management by exception frees the management from routine chores and places the focus on core issues.

Standard costing identifies the cost of individual processes or products, thereby making possible an informed and scientific approach toward budget planning or profit maximization through various product mixes.

Standard costing provides ready made targets that make goal setting and institution of an incentive system easy.

Finally, standard costing benefits extends to the concerns of profitability and efficiency in a rank-and-file activity rather than exclusive management functions. Standard costing places responsibility for identifying variance with line managers and thereby, integrates product or process efficiency interventions as a routine line activity rather than make it a specialized staff management intervention.

Standard costing is a valuable tool, the benefits of which extends to much more than better accounting. Companies can reap the advantages of standard costing depending on how correctly they approach it, and how well they use it.

Disadvantages of Standard Costing System. The use of standard costs can present a number of potential problems or disadvantages. Most of these problems result from improper use of standard costs and the management by exception principle or from using standard costs in situations in which they are not appropriate.

- Standard cost variance reports are usually prepared on a monthly basis and often are released days or even weeks after the end of the month. As a

consequence, the information in the reports may be so stale that it is almost useless. Timely, frequent reports that are approximately correct are better than infrequent reports that are very precise but out of date by the time they are released. Some companies are now reporting variances and other key operating data daily or even more frequently.

- If managers are insensitive and use variance reports as a club, morale may suffer. Employees should receive positive reinforcement for work well done. Management by exception, by its nature, tends to focus on the negative. If variances are used as a club, subordinates may be tempted to cover up unfavorable variances or take actions that are not in the best interest of the company to make sure the variances are favorable. For example, workers may put on a crash effort to increase output at the end of the month to avoid an unfavorable labor efficiency variance. In the rush to produce output quality may suffer. In short, the standard costing system controls the operating part of an organization only as it ignores the other items like quality, lead-time, service, customer satisfaction and so on.
- Labor quantity standards and efficiency variances make two important assumptions. First, they assume that the production process is labor-paced; if labor works faster, output will go up. However, output in many companies is no longer determined by how fast labor works; rather, it is determined by the processing speed of machines. Second, the computations assume that labor is a variable cost. However, direct labor may be essentially fixed, then an undue emphasis on labor efficiency variances creates pressure to build excess work in process and finished goods inventories.
- In some cases, a "favorable" variance can be as bad or worse than an "unfavorable" variance. For example, McDonald's has a standard for the amount of hamburger meat that should be in a Big Mac. A "favorable" variance would mean that less meat was used than standard specifies. The result is a substandard Big Mac and possibly a dissatisfied customer.

- There may be a tendency with standard cost reporting systems to emphasize meeting the standards to the exclusion of other important objectives such as maintaining and improving quality, on-time delivery, and customer satisfaction. This tendency can be reduced by using supplemental performance measures that focus on these other objectives.
- Just meeting standards may not be sufficient; continual improvement may be necessary to survive in the current competitive environment. For this reason, some companies focus on the trends in the standard cost variances - aiming for continual improvement rather than just meeting the standards. In other companies, engineered standards are being replaced either by a rolling average of actual costs, which is expected to decline, or by very challenging target costs.

In sum, managers should exercise considerable care in their use of a standard cost system. It is particularly important that managers go out of their way to focus on the positive, rather than just on the negative, and to be aware of possible unintended consequences.

Nevertheless standard costs are still found in the vast majority of manufacturing companies and in many service companies, although their use is changing. For evaluating performance, standard cost variances may be supplanted in the future by a particularly interesting development known as the balanced scorecard.

### ***3.2. Analysis of Standart costing and its development***

As we saw above, standart cost is the cost which is carried out in accordance with fixed budget throughout the whole period. While calculating cost of goods, some types of costs may be faced that are not the same as fixed budget. It is not only the fault of companies managers, but the economy may afso influensive for standart cost to change. In this case, we have to identify this variance to know how COGS has changed, eventually. Mostly, this is because it will be useful for

managers to make future decisions, plans and budget precisely. Below we will clarify the types of variances which are the most influential in standard cost.

Main types of variances are as follows:

- Sales Volume Variance
- Sales Mix Variance
- Sales Quantity Variance
- Sales Price Variance
- Direct Material Price Variance
- Direct Material Usage Variance
- Direct Material Mix Variance
- Direct Material Yield Variance
- Direct Labor Rate Variance
- Direct Labor Efficiency Variance
- Direct Labor Idle Time Variance
- Variable Overhead Spending Variance
- Variable Overhead Efficiency Variance
- Fixed Overhead Spending Variance
- Fixed Overhead Volume Capacity & Efficiency Variance
- Fixed Overhead Total Variance

Sales Volume Variance is the measure of change in profit or contribution as a result of the difference between actual and budgeted sales quantity. This is identified by the following formulas.

- *Sales Volume Variance (where absorption costing is used):*  
$$= (\text{Actual Unit Sold} - \text{Budgeted Unit Sales}) \times \text{Standard Profit Per Unit}$$
- *Sales Volume Variance (where marginal costing is used):*  
$$= (\text{Actual Unit Sold} - \text{Budgeted Unit Sales}) \times \text{Standard Contribution Per Unit}$$

It is clear that Sales Volume Variance quantifies the effect of a change in the level of sales on the profit or contribution over the period. It differs from other

volume based variances such as material usage variance and labor efficiency variance in that it calculates not just the variance in sales revenue as a result of the change in activity but it quantifies the overall change in the profit or contribution. The nature of the sales volume variance helps in forming a more meaningful analysis of other variances in the preparation of the operating statement. For example, the material usage variance needs to take into account only the difference between the actual consumption of material and the standard consumption of material for the actual number of units sold since the sales volume variance already takes into account the variation in material cost caused by the difference between budgeted and actual sales volume.

*Analysis.* Favorable sales volume variance suggests a higher standard profit or contribution than the budgeted profit or contribution and adverse sales volume variance indicated a lower standard profit or contribution than the budgeted profit or contribution.

Favorable sales volume variance can be achieved in case of a favorable sales mix variance even if the total number of units of all products sold during the period are lower than the total budgeted units.

It is therefore important to investigate the sales volume variance by analyzing it further into sales quantity and sales mix variances in case where an organization sells more than one product.

Sales Mix Variance measures the change in profit or contribution attributable to the variation in the proportion of the different products from the standard mix. This is identified by the following formulas.

- *Sales Mix Variance (where standard costing is used):*  

$$= (\text{Actual Unit Sold} - \text{Unit Sales at Standard Mix}) \times \text{Standard Profit Per Unit}$$
- *Sales Mix Variance (where marginal costing is used):*  

$$= (\text{Actual Unit Sold} - \text{Unit Sales at Standard Mix}) \times \text{Standard Contribution Per Unit}$$

Sales Mix Variance is one of the two sub-variances of sales volume variance. Sales mix variance quantifies the effect of the variation in the proportion

of different products sold during a period from the standard mix determined in the budget-setting process.

Sales mix variance should be calculated using the standard profit per unit in case of absorption costing and standard contribution per unit in case of marginal costing system.

Analysis. Sales mix variance is only a relative measure of the variation in performance of an organization and should be interpreted with care. For instance, an adverse sales mix variance may be perfectly fine where a company is able to earn extra revenue through sale of lower margin products if such sales are in addition to high sales of the products with higher margins. Favorable sales mix variance suggests that a higher proportion of more profitable products were sold during the period than was anticipated in the budget. The other one, adverse sale mix variance suggests that a higher proportion of the low margin products were sold during the period than expected in the budget.

Sales Quantity Variance measures the change in standard profit or contribution arising from the difference between actual and anticipated number of units sold during a period. This is identified by the following formulas.

- *Sales Quantity Variance:*

$$= (\text{Budgeted sales} - \text{Unit Sales at Standard Mix}) \times \text{Standard Contribution}^*$$

*\*Where marginal costing is used*

- *Sales Quantity Variance:*

$$= (\text{Budgeted sales} - \text{Unit Sales at Standard Mix}) \times \text{Standard Profit}^*$$

*\*Where absorption costing is used*

Clearly, sales quantity variance is an extension of the sales volume variance which demonstrates the impact of a higher or lower sales quantity as compared to budget.

The difference between sales volume variance and sales quantity variance is that the former is calculated using the actual sales volume whereas the latter is calculated using the sales volume of products in the proportion of standard mix since sales quantity variance is calculated using the standard mix, any difference

between the standard and actual mix of products is to be ignored (since the difference is accounted for separately under the sales mix variance).

Analysis. Favorable sales quantity variance suggests that the company was able to sell a higher number of products in aggregate as compared to the total number of units budgeted to be sold during a period and adverse sales quantity variance indicates that the company sold lesser number of goods on aggregate basis as compared to the total number of units budgeted to be sold during a period.

Sales Price Variance is the measure of change in sales revenue as a result of variance between actual and standard selling price. This is identified by the following formulas.

- *Sales Price Variance:*

$$=(\text{Actual Price} - \text{Standard Price}) \times \text{Actual Units Sold}$$

$$=\text{Actual Price} \times \text{Actual Units Sold} - \text{Standard Price} \times \text{Actual Units Sold}$$

$$=\text{Actual Sales Revenue} - \text{Standard Revenue of Actual Units Sold}$$

Clearly, Sales Price Variance can be calculated in a number of ways as illustrated in the formulas given above. The calculation of the variance is in fact very simple if you just remember the objective of finding the variance, i.e. how much change in sales revenue is attributable to the change in selling price from the standard?

Analysis. Favorable sales price variance suggests higher selling price realized during the period than anticipated in the standard and adverse sales price variance indicates that sales were made at a lower average price than the standard.

Direct Material Price Variance is the difference between the actual cost of direct material and the standard cost of quantity purchased or consumed. This is identified by the following formulas.

- *Direct Material Price Variance*

$$=\text{Actual Quantity} \times \text{Actual Price} - \text{Actual Quantity} \times \text{Standard Price}$$

This is used in two cases which:

- Actual Quantity is the quantity purchased during a period if the variance is calculated at the time of material purchase

- Actual Quantity is the quantity consumed during a period if the variance is calculated at the time of material consumption

Analysis. A favorable material price variance suggests cost effective procurement by the company and an adverse material price variance indicates higher purchase costs incurred during the period compared with the standard.

Direct Material Usage Variance is the measure of difference between the actual quantity of material utilized during a period and the standard consumption of material for the level of output achieved. This is identified by the following formulas.

- *Direct Material Usage Variance:*

$$= \text{Actual Quantity} \times \text{Standard Price} - \text{Standard Quantity} \times \text{Standard Price}$$

Since the effect of any variation in material price from the standard is calculated in the material price variance, material usage variance is calculated using the standard price.

Analysis. A favorable material usage variance suggests efficient utilization of materials and an adverse material usage variance indicates higher consumption of material during the period as compared with the standard usage.

Direct Material Mix Variance is the measure of difference between the cost of standard proportion of materials and the actual proportion of materials consumed in the production process during a period. This is identified by the following formulas.

- *Direct Material Mix Variance:*

$$= \text{Actual Quantity} \times \text{Standard Price} - \text{Standard Mix Quantity} \times \text{Standard Price}$$

As material mix variance is an extension of the material usage variance, the variance is based on the standard price rather than actual price since the difference between actual and standard material price is accounted for separately in the material price variance.

Material Mix Variance quantifies the effect of a variation in the proportion of raw materials used in a production process over a period.

Material mix variance is a sub-division of material usage variance. While material usage variance illustrates the overall efficiency of raw material consumption during a period (in terms of the difference between the amount of materials which should have been used and the actual usage), material mix variance focuses on the aspect of proportion of raw materials used in the production process.

Analysis. A favorable material mix variance suggests the use of a cheaper mix of raw materials than the standard. Conversely, an adverse material mix variance suggests that a more costly combination of materials have been used than the standard mix.

Direct Material Yield Variance is a measure of cost differential between output that should have been produced for the given level of input and the level of output actually achieved during a period. This is identified by the following formulas.

- *Direct Material Yield Variance:*  
$$= (\text{Actual Yield} - \text{Standard Yield}) \times \text{Standard Material Cost Per Unit}$$

Material Yield Variance measures the effect on material cost of a change in the production yield from the standard.

Material yield variance is used in conjunction with material mix variance in order to provide additional analysis of the material usage variance.

The difference between material usage and material yield variance is that the former focuses on the utilization of input at the start of production process whereas latter focuses on the efficiency in terms of the output yield during a period.

Analysis. A favorable material yield variance indicates better productivity than the standard yield resulting in lower material cost.

Conversely, an adverse material yield variance suggests lower production achieved during a period for the given level of input resulting in higher material cost.

Direct Labor Rate Variance is the measure of difference between the actual cost of direct labor and the standard cost of direct labor utilized during a period. This is identified by the following formulas.

- Direct Labor Rate Variance:

$$= \text{Actual Quantity} \times \text{Actual Rate} - \text{Actual Quantity} \times \text{Standard Rate}$$

Analysis. A favorable labor rate variance suggests cost efficient employment of direct labor by the organization and an adverse labor rate variance indicates higher labor costs incurred during a period compared with the standard.

Direct Labor Efficiency Variance is the measure of difference between the standard cost of actual number of direct labor hours utilized during a period and the standard hours of direct labor for the level of output achieved. This is identified by the following formulas.

- *Direct Labor Efficiency Variance:*

$$= \text{Actual Hours} \times \text{Standard Rate} - \text{Standard Hours} \times \text{Standard Rate}$$



$$= \text{Standard Cost of Actual Hours} - \text{Standard Cost}$$

Note: As the effect of difference between standard rate and actual rate of direct labor is accounted for separately in the direct labor rate variance, the efficiency variance is calculated using the standard rate.

Analysis. A favorable labor efficiency variance indicates better productivity of direct labor during a period and an adverse labor efficiency variance suggests lower productivity of direct labor during a period compared with the standard.

Direct Labor Idle Time Variance is the cost of the standby time of direct labor which could not be utilized in the production due to reasons including mechanical failure of equipment, industrial disputes and lack of orders. This is identified by the following formula.

- *Idle Time Variance: = Number of idle hours x Standard labor rate*

Idle time variance illustrates the adverse impact on the profitability of an organization as a result of having paid for the labor time which did not result in any production. Idle time variance is therefore always described as an 'adverse' variance.

The separate calculation of idle time variance ensures a more meaningful analysis of the underlying productivity of the workforce demonstrated in the labor efficiency variance as illustrated in the example below.

As with the labor efficiency variance, the calculation of idle time variance is based on the standard rate since the variance between actual and standard labor rate is separately accounted for in the labor rate variance.

Analysis Reasons for idle time may include:

- Disruption of production activities due to mechanical failures
- Lack of purchase orders especially in case of seasonal businesses
- Industrial disputes

Fixed Manufacturing Overhead Expenditure Variance, also known as fixed overhead spending variance, is the difference between budgeted and actual fixed production overheads during a period. This is identified by the following formula.

- *Fixed Overhead Expenditure Variance:*

= *Actual Fixed Overheads - Budgeted Fixed Overheads*

Analysis. Favorable fixed overhead expenditure variance suggests that actual fixed costs incurred during the period have been lower than budgeted cost and adverse fixed overhead expenditure variance indicates that higher fixed costs were incurred during the period than planned in the budget. An adverse variance may be caused by the following:

Variable Manufacturing Overhead Spending Variance is the difference between variable production overhead expense incurred during a period and the standard variable overhead expenditure. The variance is also referred to as variable overhead rate variance and variable overhead expenditure variance. This is identified by the following formulas

- *Variable Overhead Spending Variance:*

= *Actual Manufacturing Variable Overheads Expenditure*

*Less*

*Actual hours x Standard Variable Overhead Rate per hour*

*where:*

*Actual Hours is the number of machine hours or labor hours during a period.*

Analysis. Favorable variable manufacturing overhead spending variance indicates that the company incurred a lower expense than the standard cost and an adverse variable manufacturing overhead spending variance suggests that the company incurred a higher cost than the standard expense.

Limitations. Variable production overheads by their nature include costs that cannot be directly attributed to a specific unit of output unlike direct material and direct labor which vary directly with output. Variable overheads do however vary with a change in another variable. Traditional management accounting often define blanket variables such as machine hours or labor hours which seldom provides a meaningful basis of cost control. The use of activity based costing to calculate overhead variances can significantly enhance the usefulness of such variances.

Variable Manufacturing Overhead Efficiency Variance is the measure of impact on the standard variable overheads due to the difference between standard number of manufacturing hours and the actual hours worked during the period. This is identified by the following formula.

- *Variable Overhead Spending Variance:*  
= *Standard hours x Standard Variable Overhead Rate per hour*  
*Less*  
*Actual hours x Standard Variable Overhead Rate per hour*

where:

Hours refers to the number of machine hours or labor hours incurred in the production of output during a period.

Analysis. Favorable variable overhead efficiency variance indicates that fewer manufacturing hours were expended during the period than the standard hours required for the level of actual output and an adverse variable overhead efficiency variance suggests that more manufacturing hours were expended during the period than the standard hours required for the level of actual production.

Limitations. Variable Overhead Efficiency Variance is traditionally calculated on the assumption that the overheads could be expected to vary in proportion to the

number of manufacturing hours. While there is usually correlation between manufacturing hours and variable overheads when considered on aggregate basis, the number of manufacturing hours may not be the factor that drives the cost of many types of variable overheads (e.g. setup costs vary with the number of setups). Using Activity based costing in the calculation of variable overhead variances might therefore provide more relevant information for management control purposes.

Also, in case where variable overhead rate is based on labor hours, the variable overhead efficiency variance does not offer any additional information than provided by the labor efficiency variance.

Fixed Manufacturing Overhead Total Variance is the difference between actual and absorbed fixed production overheads during a period. This is identified by the following formula.

- *Fixed Overhead Total Variance = Actual Fixed Overheads - Absorbed Fixed Overheads*

Analysis. In case of absorption costing, the fixed overhead total variance comprises the following sub-variances:

- *Fixed Overhead Expenditure Variance:* the difference between actual and budgeted fixed production overheads.
- *Fixed Overhead Volume Variance:* the difference between fixed production overheads absorbed (flexed cost) and the budgeted overheads.

Under marginal costing system, fixed production overheads are not absorbed in the cost of output. Fixed overhead total variance in such instance will therefore equal to the fixed overhead expenditure variance because the budgeted and flexed overhead cost shall be the same.

Fixed Overhead Volume Variance quantifies the difference between budgeted and absorbed fixed production overheads. This is identified by the following formula.

- *Fixed Overhead Expenditure Variance:*  
*=Actual Fixed Overheads - Budgeted Fixed Overheads*

Explanation and analysis. Fixed Overhead Volume Variance is the difference between the fixed production cost budgeted and the fixed production cost absorbed during the period. The variance arises due to a change in the level of output attained in a period compared to the budget.

The variance can be analyzed further into two sub-variances:

- Fixed Overhead Capacity Variance
- Fixed Overhead Efficiency Variance

The sum of the above two variances should equal to the volume variance.

Fixed overhead volume variance helps to 'balance the books' when preparing an operating statement under absorption costing.

Sales Quantity Variance already takes into account the change in budgeted fixed production overheads as a result of increase or decrease in sales quantity along with other expenses.

At the same time, fixed overhead expenditure variance accounts for the difference between actual and budgeted expense rather than the flexed expense unlike other expenditure variances.

This implies that the difference between budgeted and flexed fixed cost is included twice in the operating statement. Sales volume variance removes the effect of such duplication.

As fixed costs are not absorbed under marginal costing system, fixed overhead volume variance (and its sub-variances) are to be calculated only when absorption costing is applied.

Fixed Overhead Capacity Variance calculates the variation in absorbed fixed production overheads attributable to the change in the number of manufacturing hours (i.e. labor hours or machine hours) as compared to the budget. The variance can be calculated as follows:

- *Fixed Overhead Capacity Variance:*

$$= (\text{budgeted production hours} - \text{actual production hours}) \times \text{FOAR}^*$$

\* *Fixed Overhead Absorption Rate / unit of hour*

Fixed Overhead Efficiency Variance calculates the variation in absorbed fixed production overheads attributable to the change in the manufacturing efficiency during a period (i.e. manufacturing hours being higher or lower than standard ). The variance can be calculated as follows:

- *Fixed Overhead Efficiency Variance:*

$$= (\text{standard production hours} - \text{actual production hours}) \times \text{FOAR}^*$$

\* *Fixed Overhead Absorption Rate / unit of hour*

Limitations. Fixed Overhead Volume Variance is necessary in the preparation of operating statement under absorption costing as it removes the arithmetic duplication as discussed earlier. However, besides its role as a balancing agent, the variance offers little information in its own right over and above what can be ascertained from other variances (e.g. sales quantity variance already illustrates the effect of an increase in sales quantity on the overall profitability).

The traditional calculation of sub-variances (i.e. fixed overhead capacity and efficiency variances) does not provide a meaningful analysis of fixed production overheads. For instance, if the workforce utilized fewer manufacturing hours during a period than the standard (the effect of which is more adequately reflected in labor efficiency variance), it is hard to imagine a significant benefit of calculating a favorable fixed overhead efficiency variance.

Limitations of Standard Costing & Variance Analysis. While standard costing and variance analysis are important tools in an organization's budgetary control system, it is important for a management accountant to appreciate their limitations and disadvantages.

For Non Standardized Production, Standard Costing is traditionally suited to businesses involved in the manufacture of standardized products in mass production environments.

Problems arise when standard costing is applied to organizations involved in the production of small batches of customized products because of the lack of historical benchmark standards for the new custom products. While new standards could be developed for every new batch of custom products, the amount of time

that would be required to oversee the entire process for products with such short life cycle may not make it practically feasible.

For Service Organizations, Standard costing and variance analysis is more difficult to apply to service sector organizations because major portion of their cost is comprised of overhead expenses rather than production expenses (e.g. direct labor cost, direct materials cost, etc). While traditional variance analysis of overheads does not provide very useful information for overheads control purposes, application of newer approaches to standard costing (e.g. use of activity based costing) can provide a constructive basis for variance analysis of overheads in service sector organizations although this may require significant time and investment in the implementation of a management information system that is capable of delivering such information.

In accordance with Assigning Responsibilities, responsibility accounting is a major function of standard costing and variance analysis. Variances could arise for a number of reasons ranging from unrealistic standards (e.g. failing to take into account an expected increase in wage rates) to operational causes (e.g. increase in direct material usage due to hiring of lower skilled labor). Planning inefficiencies that may have caused large variances due to the setting of faulty standards could be dealt with by computing planning and operational variances retrospectively. It can however be more difficult to ascertain the precise causes and assigning responsibilities of an operational variance to a specific individual, department or function within an organization. It may however be argued that although the causes and responsibilities for variances can get blurred at times, variance analysis does provide a basis for investigation that could actually promote a better understanding of the operational environment among an organization's management.

In accordance with Reporting Delay, Variance analysis is usually conducted as part of the annual budgeting exercise. The usefulness of variance analysis as a control mechanism declines as the duration of reporting period increases because the delay in the provision of such information reduces its relevancy for the decision making needs of management. Use of continuous budgeting system can

significantly reduce the lead times associated with variance analysis although it might be costly in terms of management time and the resources required to implement an information system with the required functionality.

In terms of Behavioral Issues, Standard costing and variance analysis may encourage short-termism due to their inherent tendency towards short-term, quantified objectives and results.

A negative perception of an organization's standard costing and variance analysis process can also encourage other sub-optimal behavior among employees such as attempts to incorporate budget slacks.

The behavioral issues associated with standard costing and variance analysis could be managed by involving employees during budget setting so that they do not view the process as unfair. It is also important for an organization's performance measurement system to be based on a wide range of quantitative and qualitative measures so as to encourage management to adopt a long term view that is aligned with an organization's strategic direction.

Development of standard cost. Principally, most of the companies prefer to use the types of costs methods with the exception of standard cost. This is because the budget, composed at the beginning of economic year, tend to have several variances in statements. This means that even though all costs are taken into account, they have to recount expenses because of many influenced factors. However, I would suggest to use standard cost method to calculate cost of goods sold. For this, the managers who can see foreseeable future are incredibly necessary. In other words, to make appropriate decisions, not only do we have to look at the background of company, but it is also essential to predict the future changes. In this case, to carry out this, nearly all spheres of economical subjects including statistics, politics, public opinions should be learnt deeply. It is certainly true that the variances of standard cost are the result of inattentive economic circumstances. Shortly, it requires to be aware of what is clearly occurring in the world.

## **CONCLUSION and RECOMMENDATIONS**

In conclusion we can say that calculating cost of goods sold and standard costing takes much attention to its logical conclusion in the development of an effective system of control. While many benefits of using of these methods, including standard cost are planned at the beginning of the period, but their full potential will be realized when set on income statement.if we only take standard

cost as example, Standards are usually much more precise than budgets because they are more carefully determined and also because they relate to more clearly defined activities such as the specific operations to be performed in a particular cost center, distinct from a budget center which may embrace several cost centers performing many different operations. A standard cost is, therefore, a very carefully prepared estimate of the cost of performing a given operation under specified conditions. However, there are considerable differences of opinion amongst accountants regarding the basis for setting standards.

As we saw above, current business requires very attentive decision by using any methods of calculation in the companies. Nevertheless, among types of calculation of cost of goods sold, using standard costing techniques, manufacturing managers can more efficiently measure costs of goods sold, and allow for more effective budgeting and price setting on future jobs.

Moreover, standard costing offers considerable appeal for manufacturers. Without it, specific values are nearly not assigned to each finished product for each component of material, labor, and variable overhead and fixed overhead.

Collectively, those costs comprise the cost of goods sold for each finished product. Using them, the gross profit margin for each finished good is easily determined by subtracting the cost from the product's selling price.

But, mainly, Standard costs need to be periodically compared to actual costs. Such comparisons should be undertaken whenever a company prepares interim financial reports. At a minimum, such comparisons should be made every quarter. Ideally, those comparisons should be made each month.

Those comparisons identify variances, instances where standard costs are higher or lower than actual costs. A favorable variance indicates that standard costs exceed actual costs, while an unfavorable variance means that actual costs are higher than standard costs.

Differing factors may account for variances. Improved levels of production volume may affect standard costs for labor and direct overhead. Wages might increase or decrease during the year, as other expenses.

While standard costing can be an effective management tool, inventory valuation issues must still be considered. Standard costing is utilized as a means determining manufacturing cost and may not represent the actual value of inventory using an acceptable inventory valuation technique such as first in, first out (FIFO) or last in first out (LIFO). Therefore, standard cost must be adjusted to accurately reflect actual costs for financial reporting purposes.

When variances are regularly evaluated, standard costing system functions as an effective management tool. Increased production, for example, should enable a company to benefit from economies of scale. That increased production volume, though, may lead to adverse variances that highlight inefficiencies not previously acknowledged.

Conversely, a favorable variance may indicate that efficiencies attained were greater than anticipated. Given the financial importance of inventory, regular evaluations of standard costing may also illustrate instances where profitability is not possible with current actual inventory costs. Management can then evaluate the appropriateness of raising prices or seeking other ways to lower costs or improve production efficiency.

With regular analysis of variances, standard costing enables managers to compare expectations to actual costs and profit margins. Underlying causes of those variances can then be addressed. By then recalibrating costs and prices, manufacturers can sustain themselves amidst uncertainties.

While customizing variances for better measurement of the different components of production, management should also consider altering their standard costing system to promote continuous improvement. Some suggestions include:

- Using last period's results as standards. The last period's result has to be representative; otherwise it needs to be revised. It is also achievable to use a base period that comparisons are made.
- Using benchmark as something outside companies. To compare with competitors or with the leader of the industry.

- Using predetermined cost reduction by reducing the standard cost for every period by a predetermined amount to achieve constant improvement.
- Finally, the reporting system of the standard costing system may be revised. In the traditional way internal completion often arises. By revising the reporting system, cooperation among workers, managers and departments can be supported.

Despite it is relevant than newer accounting methods, standard costing is far from obsolete. However, redesign and update the standard costing system to adapt the new environment may be necessary. Because of its simplicity, flexibility and affordability, standard costing remains a favorite cost accounting method among accounting and finance professionals.

## APPENDIXES

Producing plan of “BF Textile production” company (01.01.2014-31.12.2014) \*

|   | Indicators                   | sum (in thousands) |
|---|------------------------------|--------------------|
| 1 | Goods sold                   | 3565000            |
|   | -to Uzbekistan markets       | 855600             |
|   | -to export                   | 2709400            |
| 2 | Commodity (at the beginning) | 89628              |
| 3 | Commodity (at the end)       | 152342             |
| 4 | Cost of goods sold           | 3021959            |

|    |                                     |         |
|----|-------------------------------------|---------|
| 5  | Material cost                       |         |
|    | -raw materials                      | 1054000 |
|    | -semi-products                      | 184500  |
|    | -fuel                               | 425000  |
|    | -energy                             | 252000  |
|    | -others                             | 101500  |
|    | Total                               | 2017000 |
| 6  | Procusing commodities               |         |
|    | -in real price                      | 3784205 |
|    | -in comparable price                | 3418713 |
| 7  | Labor cost                          | 425000  |
| 8  | Unique social payment               | 106250  |
| 9  | Overhead cost                       | 93000   |
| 10 | Assets depreciation expense         | 369539  |
| 11 | Other revenue from opeting activity | 171897  |
| 12 | Other producing expences            | 104180  |
| 13 | Releasing of main assets            | 279300  |
| 14 | Releasing of other assets           | 121000  |
| 15 | Periodical expenses                 |         |
|    | -sales expenses                     | 88000   |
|    | -research expenses                  | 12000   |
|    | -advertising expenses               | 35000   |
|    | -administration expenses            | 145000  |
|    | -other periodical expenses          | 110000  |
| 16 | Rent expenses                       | 32000   |
| 17 | Revenue from Financial activity     | 9000    |
| 18 | Expenses from Financial activity    | 6200    |
| 19 | Other profits                       | 22760   |
| 20 | Other expenses                      | 18000   |

\*All numbers are given in sums (by exchanging US dollar)

Real results of“BF Textile production” company (31.12.2014) \*

| No' | Indicators                   |         |
|-----|------------------------------|---------|
| 1   | Goods sold                   | 3607500 |
|     | -to Uzbekistan markets       | 757575  |
|     | -to export                   | 2849925 |
| 2   | Commodity (at the beginning) | 89628   |
| 3   | Commodity (at the end)       | 141891  |
| 4   | Cost of goods sold           | 3032410 |
| 5   | Material cost                |         |
|     | -raw materials               | 1123000 |

|    |                                     |          |
|----|-------------------------------------|----------|
|    | -semi-products                      | 204500   |
|    | -fuel                               | 411000   |
|    | -energy                             | 273300   |
|    | -others                             | 82800    |
|    | Total                               | 209460   |
| 6  | Procusing commodities               |          |
|    | -in real price                      | 3738449  |
|    | -in comparable price                | 3569273  |
| 7  | Labor cost                          | 382000   |
| 8  | Unique social payment               | 95500    |
| 9  | Overhead cost                       | 101000   |
| 10 | Assets depreciation expense         | 157740   |
| 11 | Other revenue from opeting activity | 176335,5 |
| 12 | Other producing expences            | 106870   |
| 13 | Releasing of main assets            | 357200   |
| 14 | Releasing of other assets           | 140000   |
| 15 | Periodical expenses                 |          |
|    | -sales expenses                     | 95000    |
|    | -research expenses                  | 11000    |
|    | -advertising expenses               | 32600    |
|    | -administration expenses            | 158000   |
|    | -other periodical expenses          | 102000   |
| 16 | Rent expenses                       | 29000    |
| 17 | Revenue from Financial activity     | 8300     |
| 18 | Expenses from Financial activity    | 5800     |
| 19 | Other profits                       | 27300    |
| 20 | Other expenses                      | 21600    |

\*All numbers are given in sums (by exchanging US dollar)

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