
UNIT 13 STORES ACCOUNTING

Objectives

After reading this unit, you would be able to:

- describe the reasons for stores accounting;
- describe flow of costs and their methods like FIFO, LIFO etc;
- describe types and process of stock verification; and
- discuss about inventory records and inventory security.

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13.1 INTRODUCTION

Any inventory item has both physical and financial characteristics. Whereas the physical characteristics (flow of goods) are factual and measurable, financial characteristics (flow of costs) are mainly subjective in nature. The financial characteristics associated with the flow of costs are usually emphasized in stores accounting and valuation.

The financial significance of inventory is attributable to the need to measure and analyze an organization's relative financial position, as well as the need to measure its operating performance over a particular time period (month, quarter, or year).

Inventory, in an accounting sense, represents value assigned to goods either acquired or produced for subsequent sale or consumption. Inventory accounts at a particular point in time are a snapshot view of the total asset value of inventory items either on hand or in process. The valuation of these accounts is used to assess present financial state, and to anticipate future financial condition. The amounts deducted from inventory accounts during any particular time period are the basic data for determining the cost of goods sold during the period, which is a basic determinant of income.

Obviously, consistent policies and methods of inventory valuation are imperative for a true and actual interpretation of a firm's financial position at any given time, and for a meaningful measurement of performance between time periods.

Inventory Policies and Systems Costing is generally done on the basis of its cost. The cost for inventory may be determined under any one of several assumptions. No single prescribed method exists for determining inventory costs for accounting purposes. However, there are a number of standard procedures that may be used for this purpose. The major objective in selecting a method is to clearly reflect periodic performance. To determine the monetary value of inventory at any given point in time, the quantity of inventory items on hand must be known and a value must be assigned to those quantities. The value assigned to individual items is based on one of several accounting methods. The accounting method used is very important, since it can significantly affect the total dollar amount of inventory and the related cost of goods sold.

The inventory methods for accountability can be subdivided into the method of valuation and the inventory flow method. In most cases, the method of valuation is based on the original cost of the item. There may not be any problem in the method of valuation if unit costs remain constant; but during a period of time, items are frequently purchased or manufactured at different unit costs. This poses a problem, since the items sold must be costed for the income statement (cost of goods sold), and unsold items must be valued for the balance sheet (inventory).

13.2 WHY STORES ACCOUNTING

Stores accounting plays a very important role for the estimation of the cost of a product for pricing decisions. Material costing is very important in terms of the valuation of the cost of materials consumed by say, the production department during a given period of time as well as in terms of the estimation of the value of materials held in stock. In this context, two important aspects, viz., costing of the materials receipt and of materials issue, are considered in stores accounting.

13.2.1 Costing of the Receipt of Materials

The factors that are to be included in building up the cost of the materials received are material price, freight charges, insurance, and taxes. Price usually refers to the price quoted and accepted in the purchase orders.

Prices may often be stated in various ways, such as net prices, prices with discount terms, free on board (FOB) and cost insurance and freight (CIF). For costing purposes the actual cost incurred needs to be calculated by taking price quoted by supplier as the basis, subtracting the discounts and adding any other expenses not covered.

The freight costs incurred in transporting the goods are usually collated under a separate head. Goods in transit are mostly covered by insurance. All such insurance expenses must be calculated and added to the base cost and transportation cost.

Under the miscellaneous head, costs incurred are classified under customs duties, taxes, and packages. Such a classification provides a better framework for cost control. Thus, the cost of the materials received is equal to the price quoted less discounts plus freight, insurance, duties, taxes, and package charges. Very often such detailed classification helps in quicker analysis and effective control. In the absence of a detailed classification, it becomes very difficult to make a cost analysis of this nature.

13.2.2 Costing of the Issues of Materials to Production

There are several methods that are in use for costing the issues of materials to the production and other departments of an organization. First in first out (FIFO), last in first out (LIFO), average cost, standard cost, base stock method, market price at the

time of issue, latest purchase price, and replacement or current cost methods are a few of the methods used for this purpose.

13.3 FLOW OF COSTS

The flow method refers to the way inventory items are added to and taken from the stock of inventory. The assumed flow for accounting purposes may not be the same as the actual physical flow of goods. The selection of the assumed inventory flow method by management determines the flow of costs. There are various inventory flow methods in practice today. The most widely used methods among them are as follows:

- i) FIFO (First-In-First-Out) method,
- ii) LIFO (Last-In-First-Out) method,
- iii) Average Cost Method, and
- iv) Specific Cost Method

The flow methods as mentioned are primarily concerned with the flow of costs rather than the flow of physical goods. The selection of a flow method usually depends on a number of factors, such as the type of organisation, the projected economy, industry practices, tax implications and other guidelines and regulations as stipulated. It is important to note that while an organisation may select one method for external reporting, it may choose a different method for internal reporting. Once a particular flow method is adopted, it is not easy to change to another method because of tax requirements and accountant's concerns for consistency in reporting.

Inventory records are usually kept on a perpetual or a periodic basis. With perpetual records, all changes to stock (additions, subtractions, or deletions) are recorded for each transaction as and when it occurs. The physical quantity and value of goods in inventory are available at a real time from the accounting records. With periodic records, the inventory is counted or measured at fixed time intervals (usually at the end of an accounting period) to determine stock status, and records are kept of the cost associated with each inflow of goods. A running count of inventory purchased, sold, or in stock is not maintained with each transaction.

All of the inventory flow methods are simply schemes to carry costs from the balance sheet to the income statement as expenses. The costs allocated do not have to match the actual physical flow of goods. Goods can be sold by physically removing the oldest items first, yet assigning costs according to the last unit produced. The flow of goods does not have to be related in any way to the flow of costs.

The methods are explained briefly in the following sections:

13.3.1 FIFO Method

The most widely used inventory flow method for internal accounting purposes is FIFO. Under FIFO, it is assumed that materials are issued from the oldest supply in stock, and units issued are valued at the oldest cost listed on the stock ledger sheets, with materials on hand, at all times, being the most recent purchases. Under FIFO, the inventory cost is computed on the assumption that goods sold or consumed are those which have been on hand longest and that those remaining in stock represent the latest purchase or production.

FIFO tends to coincide with the actual physical movement of goods through many organizations. It is scrupulously followed for goods that are subject to deterioration and obsolescence. The ending inventory from FIFO closely approximates the actual

Inventory Policies and Systems The costs assigned to the goods on hand are the most recent. While this technique tends to produce inventory assets at current costs during inflationary periods, it underestimates the value of cost of goods sold on the income statement. When the price of materials and other costs are subject to frequent change, FIFO is not likely to result in matching costs against revenues on a current basis. Thus, cost changes can create income statement distortions.

However, the FIFO method is a fairly simple one, and is compatible with the operations of many organizations. It is adaptable to both perpetual and periodic systems. The use of FIFO simplifies record-keeping activities.

Example 1

The periodic inventory record shown in Table 13.1 is available on an item. A physical count of the items on 1 April reveals an ending inventory of 300 units. What is the value of the ending inventory? What is the cost of goods sold for the period?

Table 13.1: Periodic Inventory Record (FIFO)

Date	Type of Transaction	Units	Unit Price (Rs.)	Total Cost (Rs.)
1 Jan.	Beginning inventory	200	1.00	200
31 Jan.	Purchase	300	1.10	330
28 Feb.	Purchase	400	1.16	464
31 Mar.	Purchase	100	1.26	126
Total		1,000		1,120

A periodic count reveals that the ending inventory is 300 units.

Unit Sold	Unit Price (Rs.)	Total Cost (Rs.)
200	1.00	200
300	1.10	330
200	1.16	232
Total :	700	Total : 762

Ending Inventory	Units	Unit Price (Rs.)	Total Cost (Rs.)
Purchase during February	200	1.16	232
Purchase during March	100	1.26	126
Total :	300	Total :	358

The cost of goods sold with FIFO is Rs.762, and the value of ending inventory is Rs.1120 – Rs.762 = Rs.358 for 300 units.

Example 2

Table 13.2 shows the same inventory as in Example 1, but records it in a perpetual inventory record. What are the values of ending inventory and the cost of goods sold?

Table 13.2: Perpetual Inventory Record (FIFO)

Date	Received			Issued			Balance		
	Units	Unit Cost (Rs.)	Total Cost (Rs.)	Unit	Unit Cost (Rs.)	Total Cost (Rs.)	Unit	Unit Cost (Rs.)	Total Cost (Rs.)
1 Jan.							200	1.00	200
31 Jan.	300	1.10	330				200 300	1.00 1.10	200 330
1 Feb.				200 200	1.00 1.10	200 220	100	1.10	110
20 Feb.	400	1.16	464				100 400	1.10 1.16	110 464
1 Mar.				100 200	1.10 1.16	110 232	200	1.16	232
31 Mar.	100	1.26	126				200 100	1.16 1.26	232 126

The cost of goods sold for the quarter under the perpetual system is Rs.762 (Rs.200 + Rs.220 + Rs.110 + Rs.232), and the value of ending inventory is Rs.358 (Rs.232 + Rs.126) for 300 units.

When preparing a perpetual inventory record, it is essential to carry information concerning each individual transaction separately in the balance column. Although the perpetual inventory record is more complex and time consuming than the periodic inventory record, FIFO is readily adaptable to both types of recording.

13.3.2 LIFO Method

In the LIFO method, it is assumed that the most current cost of goods should be charged to the cost of goods sold, and hence, in LIFO, the cost of units remaining in inventory represents the oldest costs available, while the units issued are valued at the latest costs available. The underlying purpose of LIFO is to match current revenues against current costs, so the method charges current revenues with amounts approximating replacement costs.

The LIFO method may be used with both perpetual and periodic inventory systems.

Example 3

The periodic inventory record as shown in Table 13.3 is available on an item. A physical count of the item on 1 April reveals an ending inventory of 300 units. What is the value of the ending inventory? What is the cost of goods sold for the period?

Table 13.3: Periodic Inventory Record (LIFO)

Date	Type of Transaction	Units	Unit Price (Rs.)	Total Cost (Rs.)
1 Jan.	Beginning inventory	200	1.00	200
31 Jan.	Purchase	300	1.10	330
28 Feb.	Purchase	400	1.16	464
31 Mar.	Purchase	100	1.26	126
	Total	1,000		1,120

A periodic inventory system reveals that the ending inventory is 300 units.

Unit Sold	Unit Price (Rs.)	Total Cost (Rs.)
100	1.26	126
400	1.16	464
200	1.10	220
Total : 700		Total : 810

Ending Inventory	Units	Unit Price (Rs.)	Total Cost (Rs.)
Purchase during February	200	1.00	200
Purchase during March	100	1.10	110
Total :	300		Total : 310

The cost of goods sold as computed with LIFO method is Rs.810, and the value of ending inventory is Rs.310 for 300 units.

Example 4

Table 13.4 shows the same inventory as in Example 3, but records it in a perpetual inventory record. What are the values of ending inventory and the cost of goods sold?

Table 13.4: Perpetual Inventory Record (LIFO)

Date	Received			Issued			Balance		
	Units	Unit Cost (Rs.)	Total Cost (Rs.)	Unit	Unit Cost (Rs.)	Total Cost (Rs.)	Unit	Unit Cost (Rs.)	Total Cost (Rs.)
1 Jan.							200	1.00	200
31 Jan.	300	1.10	330				200	1.00	200
							300	1.10	330
1 Feb.				300	1.10	330	100	1.00	100
				100	1.00	100			
20 Feb.	400	1.16	464				100	1.00	110
							400	1.16	464
1 Mar.				300	1.16	348	100	1.00	100
							100	1.16	116
31 Mar.	100	1.26	126				100	1.00	100
							100	1.16	116
							100	1.26	126

The cost of goods sold for the quarter under the perpetual system is Rs.778 (Rs.330 + Rs.100 + Rs.348), and the value of ending inventory is Rs.342 (Rs.100 + Rs.116 + Rs.126) for 300 units. Differences in the cost of goods sold and ending inventory arise between a periodic and a perpetual inventory system under the LIFO method.

The importance of matching costs with revenue for the income statement is generally acknowledged. In periods of rapid price change (inflation), a part of the increase in earnings during the upward cycle is attributable to the rise in prices. During an inflationary period, the goods on hand at the beginning of the period will generally be sold at a higher price than contemplated at the time of purchase. If inventory is maintained at the same quantity levels, the additional revenues received will have been expended to a substantial extent in purchasing the replacement inventory units. Thus, the increase in income is termed as “inventory profits”. The LIFO method protects against “inventory profits,” because its use decreases income during periods of rising prices by assigning a higher cost to goods sold. LIFO provides less benefit to organisations with a high inventory turnover, since their costs are already closely matched to revenues.

LIFO often is preferred during periods of rising prices due to its favourable effect on income taxes and cash on hand. It does not ignore the need of an organization to replenish inventory at higher prices and does not create the “ballooning” effect on apparent income caused by goods costed much lower than actual replacement costs. Despite its desirability with respect to the income statement, the LIFO method is criticized for its unrealistic valuation of inventory for balance sheet purposes. It is felt that the valuation of inventory units at the oldest cost available distorts the current ratio and the other current asset relationships in assessing the near-term financial position. In addition, except for bulk items such as coal and other raw materials, the LIFO method does not represent the actual physical flow of goods.

13.3.3 Average Cost Method

In an attempt to provide a better estimate of the ending inventory and cost of goods sold, the average cost method is proposed. This method does not attempt to indicate which unit goes out first or last. Instead, it determines the average cost for each item during a time period. The following three types of average method are in use:

- i) Simple average,
- ii) Weighted average, and
- iii) Moving average.

While all three types are suitable for with a periodic inventory system, the moving average is best suited to the perpetual inventory system.

The simple average is determined by dividing the sum of production or purchase unit costs by the number of production runs or orders. The simple average does not consider the size of the lot or the number of units and assigns equal weight to the unit production or purchase cost of each lot. The weighted average corrects the distortion of the simple average by considering quantity as well as unit cost. The weighted average divides the cost of goods available during the period. The moving average computes an average unit cost after each purchase or addition to stock, making it better suited for computerized inventory operations. Since the simple average and the weighted average cannot be calculated until the period is over, they are not well suited to perpetual inventory systems. All of the averages are suitable for periodic inventory systems, since costs are not allocated till the end of the period.

With the average cost method, the costs of all like items available during the period are averaged to obtain the ending inventory value. The unit cost cannot be equated to any tangible figure, and it does not reveal price changes as clearly as may be desired.

Example 5

The periodic inventory record shown in Table 5 is available for an item. A physical count of the item on April reveals an ending inventory of 300 units. Calculate the

Inventory Pricing Systems
 The ending inventory and the cost of goods sold using the (a) simple average, (b) weighted average, and (c) moving average methods.

Table 13.5: Periodic Inventory Record

Date	Type of Transaction	Units	Unit Price (Rs.)	Total Cost (Rs.)
1 Jan.	Beginning inventory	200	1.00	200
31 Jan.	Purchase	300	1.10	330
20 Feb.	Purchase	400	1.16	464
31 Mar.	Purchase	100	1.26	126
Total		1,000		1,120

a) Simple Average Method:

Simple Average = $\frac{1,120}{1,000}$ per unit

Ending Inventory Value = (ending inventory) (unit cost) = Rs.300 × 1.13 = Rs.339.00

Cost of Goods Sold = (units issued)(unit cost) = Rs.700 × 1.13 = Rs.791.00

b) Weighted Average Method:

weighted average = $\frac{\sum W_i P_i}{n}$, where
 W_i = units for each transaction
 P_i = unit price for each transaction
 n = number of transaction

From the data, the weighted average =

$$= \text{Rs.1.12 per unit}$$

Ending Inventory Value = (ending inventory) (unit cost) = 300 × 1.12 = Rs.336,

Cost of Goods Sold = (units issued) (unit cost) = 700 × 1.12 = Rs.784

C) The moving average for each addition to stock is obtained by summing the total cost column and dividing by the number of units. The moving average cost for the given data set is computed and shown in Table 6. The last moving average cost of Rs. 1.12 is used for inventory valuation. Thus,

Ending Inventory Value = (ending inventory) (unit cost)
 = 300 × 1.12
 = Rs.336,

Cost of Goods Sold = (units issued) (unit cost)
 = 700 × 1.12
 = Rs.784

As has been shown, the weighted and the moving averages are true averages that result in the same costs. On the other hand, the simple average results in a slight distortion of costs.

Table 13.6

Date	Units	Units Price (Rs.)	Total Cost (Rs.)	Moving Average cost per unit (Rs.)
1 Jan.	200	1.00	200	1.00
31 Jan.	300	1.10	330	1.06
20 Feb.	400	1.16	464	1.10
31 Mar.	100	1.26	126	1.12

Example 6

From the perpetual inventory record in Table 13.7, determine the ending inventory value and the cost of goods sold for the item?

Table 13.7: Perpetual Inventory Record (Moving Average)

Date	Received			Issued			Balance		
	Units	Unit Cost (Rs.)	Total Cost (Rs.)	Unit	Unit Cost (Rs.)	Total Cost (Rs.)	Unit	Unit Cost (Rs.)	Total Cost (Rs.)
1 Jan.							200	1.00	200
31 Jan.	300	1.10	330				200	1.00	200
3 Feb.				400	1.6	424	100	1.06	106
28 Feb.	400	1.16	464				500	1.14	570
1 Mar.				300	1.14	342	200	1.14	228
31 Mar.	100	1.26	126				300	1.18	354

The cost of goods sold is the sum of the total costs for issues, or Rs.766 (Rs.424 + Rs.342). The value of ending inventory is obtained from the final amount in the balance total cost column: Rs.354 for 300 units.

It is to be noted that the average cost method matches the average costs of the period against revenue and assign average costs to ending inventory. The values as computed with the average cost method will falls between the two extremes values as found under FIFO and LIFO methods.

The average cost methods are objective in nature, and simple to use, and they are not subject to income manipulation as found in FIFO and LIFO methods. They also tend to approximate the physical flow of items that are homogeneous.

13.3.4 Specific Cost Method

Of all the inventory flow assumptions, the specific cost method provides the most realistic valuation of ending inventory and cost of goods sold. The procedure consists of tagging or numbering each item as it is placed into inventory so its exact cost is readily discernable. Since an item is both valued and expensed at its specific cost, the cost flow and the physical flow are identical with this method. The cost of maintaining records under this method can mount very quickly, so it is most appropriate for goods of significant value, which is few in number. The specific cost method has the added flexibility of being suitable for either perpetual or periodic inventory items used in custom-made products. If the number of custom orders being processed is large, its implementation can be extremely expensive and difficult. Thus, its use is more commonly confined to small operations.

Inventory Policing and Systems are included in this category. They are as follows:

- i) Market Value,
- ii) Standard Cost,
- iii) Closing Stock

A brief description of each of this method is given below.

- i) **Market Value:** This method is also known as replacement rate costing. Here the materials that are issued are costed at the market rate prevailing at the time of issue. Hence, when prices increase, the stock on hand is continuously underestimated, because receipts are costed at actual rates and issued at higher rates. Conversely, when the prices are falling, the stock on hand is grossly overestimated. This may in turn lead to writing off huge amounts to make it realistic. Besides, this system requires continuous monitoring of market rates for all materials and hence, is very unwieldy and unreliable.
- ii) **Standard Cost:** Here, a standard rate is determined based on detailed analysis of market prices and trends. This standard rate is kept fixed for a definite period of six months or so. During this period costing is done on the basis of this standard rate, irrespective of the actual rates. At the end of the period, a review is done and fresh standards are set for a further period of six months.

Efficient use of materials is truly reflected by adopting this method, as the accounting is divorced from fluctuations in rates. Moreover, it is not necessary to obtain fresh rates at every point of time. This means greater clerical efficiency and quicker estimation of costs. However, in this method also, at the time of rising prices the stock on hand is underestimated, and at the time of falling prices, the stock on hand is overestimated.

- iii) **Closing Stock Costing:** Generally the guideline used here is that either the market price or stock at cost is to be used, whichever is less. The main factors, which determine the cost of closing stock, are price levels, obsolescence, and deterioration.

When the prices fluctuate, the kind of system used for evaluating the cost of issues to production affects the costing of closing stock. As each system of costing tends to undervalue the stocks during periods of decreasing price levels, a provision has to be made to account for such variations from the actual value of the stocks.

While evaluating the closing stock costs, some stock items, such as machinery spares and tools, tend to become obsolete earlier than others. Hence, in evaluating the cost of stock, at the close, a provision must be made to account for such obsolescence. This is based on past experience and is usually worked out as a percentage of the total stock value.

Many stock items deteriorate with time due to limited shelf life or inadequate protection measures while storing. When the majority of the items belong to this category, losses due to deterioration may be very high. Provision must be made for this factor in evaluating the stock at the end of the period. However, in some extreme cases, the stock value may appreciate over time.

13.4 STOCK VERIFICATION

It is the process of physically counting, measuring or weighing the entire range of items in the stores and recording the results in a systematic manner. Stock Verification is usually carried out by the materials audit department, reporting to either the materials manager or the internal audit. One person is usually given the exclusive responsibility with adequate facilities and authority. The main objectives of stock verification are as follows:

- i) To reconcile the stock records and documents for their accuracy and usefulness,
- ii) To identify areas which require more disciplined document control,
- iii) To back up the balance sheet stock figures, and
- iv) To minimize pilferage and fraudulent practices.

The physical verification of stock may be carried out either as a periodic or continuous basis. These two methods are briefly discussed below.

13.4.1 Periodic Verification

Under this system, the entire set of inventory items is verified at the end of one period, which is usually the accounting period. In large organizations, this cannot be done in a day, and usually several days are taken to complete this task. As no transactions can take place during the verification, this could pose some problems. Physical verification requires careful planning and execution. The steps involved in the verification require many activities to be carried in a systematic manner.

A detailed program should be chalked out giving complete breakdown of the process storewise and itemwise. This should be done in consultation with the materials management and finance departments. Necessary stock verification cards and check-sheets must be prepared in adequate numbers. All material audit personnel must have clear-cut instructions on their jobs and schedules for proper accountability. During the verification process all transactions must be stopped. In other words, there should not be any receipts or reference and control. Separate provisions must be made available for items, which are damaged or deteriorated. Selected areas and items must be allocated to each stocktaking person so that orderly completion of the job without duplication or omission is ensured. It will be necessary to separately verify items, which are under inspection, items sent out to suppliers for processing and stocks at various stockyards.

Appropriate forms and documents are designed for each item and values are worked out for different classification. The total of such values gives the value of the stock on hand as verified. The value is compared against the book figures or stock records. Discrepancies, if any, are noted down. Minor discrepancies need further analysis so that the causes can be identified and remedied. Allowances regarding acceptable margins of tolerances for conversion, weighing and measuring, as well as for evaporation must be clearly laid down. Top management's sanction may then be sought writing off deficiencies or valuing surplus.

13.4.2 Continuous Verification

Under this system, verification is done throughout the year as per a predetermined plan of action. For example, important items may be verified thrice a year, moderately important items twice a year and other 'trivial' items once a year. It, therefore, presupposes that a perpetual inventory record for each item is maintained showing all transactions so that reconciliation can be done. The advantages of this system are as follows:

- i) Work verification can be independently carried out by materials audit department staff,
- ii) Investigation with regard to discrepancies are spread over the year and hence detailed analysis is possible,
- iii) Final accounts can be prepared expeditiously if continuous verification is done as per plan,
- iv) There is no need to 'freeze' the entire operations of the stores as verification is done throughout the year based on perpetual inventory records, and
- v) any time stock records are more up-to-date when compared with the periodic verification system.

13.4.3 Process of Verification Systems

Items are verified by counting in the case of bearings, by weight in the case of sheets, by measuring in the case of lubricants and so on. However, when large stocks of items such as sand, scrap and ore fuel need to be verified, it is based only on estimates, as exact measurement is not possible. In the actual process of stock verification, the stores personnel should be involved, as they intimately know the locations of various items, which result in quicker identification of items. For instance, some items may be located in many places. By virtue of their experience, only stores personnel are able to locate them. Hence, the material audit people are required to work in close coordination with them. Discrepancies must be discussed with stores so that any omissions may be rectified and then only they should be reported to top management. Major discrepancies may require a re-verification. Such discrepancies may be due to pilferage on a large scale, wrong posting of records, and inefficiency in documents control. Thus, careful analysis and corrective actions are called for in all such cases.

In consideration of all the discrepancies as noted, appropriately designed stocks adjustment documents need to be prepared by the top authority of the organization.

In the whole process of stock verification, material audit section plays a crucial role. It is specifically responsible for identification of weak areas and taking remedial actions. It assists the stores personnel in accurate records keeping and smooths finalization of annual accounts.

Activity 1

Visit any plant of a company at your location. Make a report on its stock verification procedures and identify the control measures it adopts for better inventory control and materials management.

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13.5 INVENTORY RECORDS

No inventory systems are expected to perform efficiently unless records are accurate. The decisions on when and how much to order for an item is based on its inventory balance. If the inventory balance is overstated, there is a risk of stockouts. If the inventory balance is understated, there is likely to be excess inventory. Inaccurate inventory records may result in a number of problems, such as lost sales, shortages, missed schedules, low productivity, late delivery, excessive expediting, and higher freight costs. To overcome these problems, organizations frequently order more than needed, creating excess inventory, high obsolescence, and non-moving inventory.

Appropriate control of inventory items and record-keeping accuracy require a verification of items and their records. Inventory items should be classified and properly identified so they can be located for verification. This means that proper control over inventory must also include the methods of storage and handling. Control is necessary to ensure against errors in item status, such as inaccurate counts and

items lost to embezzlement, damage, spoilage, and obsolescence. Control usually is accomplished through a series of inventory records and reports that provide information on usage, balances, and receipts. It is desirable for record verifications and physical counts to be conducted by an independent agency with no interest of its own in the operations.

Some of the basic data required keeping meaningful and useful inventory records are as follows:

- i) Item identification and/or classification,
- ii) Item location(s),
- iii) Unit costs and net prices,
- iv) Interchangeable and/or substitute items,
- v) Shelf life,
- vi) End item (what it is used on or with),
- vii) Dates item entered inventory,
- viii) Dates of withdrawal,
- ix) Supply sources, and
- x) Unit balance.

Accurate inventory records are an important aspect of financial accounting inventory control system. The foundation of any inventory control system is the information contained in records upon which decisions are made. Without record accuracy, the best-designed system is destined for major problems in future.

While every inventory system must be concerned with inventory record accuracy, it is not uncommon for more attention to be given to the more interesting technical aspects of a system while overlooking the tedious aspects of inventory record accuracy. Whether the system is manual or computerized, record accuracy is critical to operations. An accurate inventory record results only when the following three requirements are made:

- i) A good system for recording all receipts and disbursements,
- ii) A good system for auditing record accuracy that discovers and corrects the causes of errors,
- iii) Trustworthy, responsible, and honest human resources engaged in the whole function.

The condition of inventory records is influenced by the personnel involved, the physical control, and the verification system. The *personnel involved* are the people who physically receive, issue, and store material as well as their first line supervisors. The stockroom supervisors must accept responsibility for and take pride in maintaining record accuracy. Without their full support, their subordinates cannot be expected to strive fully for record integrity. Operatives must be instructed and trained in stockroom operating procedures so that they recognize the importance of accuracy. It is desirable to set accuracy goals, measure accuracy, and post records of performance in comparison with goals.

An important aspect of *physical control* is to limit and control access to the storeroom. Each time a part is added to the stockroom or withdrawn from it, the transaction should be logged in the appropriate record. Unauthorized and undocumented transactions must be stopped else control is virtually impossible. An enclosed and locked storeroom accessible only to authorized personnel can do much to control undocumented transactions. It is desirable for all parts to be identified by

Inventory Policies and Systems geographical location in the storeroom. A clean and well-ordered storage area will reduce lost and misplaced items.

An efficient way to utilize space in the stockroom is to use a locator system. The stockroom is divided into sections and subsections with an appropriate numbering scheme. Parts are stored in the same location or in an available section, with the location noted on the receipt record along with the part number. As part issues are required, the warehouseperson proceeds to the designated location of the part. A well-devised locator system can contribute much to data integrity.

Fixed locations, random locations, and zoned locations can be used to store inventory items. With *fixed locations*, each item is permanently assigned a specific, single location (space). This minimizes problems in finding items but can lead to inefficient space utilization. With *random locations*, items do not have a specific location but are assigned to the easiest open space, and the same item may be stored in more than one location. While space is utilized more efficiently, the location of an item must be updated with each transaction (receipt or withdrawal). Naturally, this method of location requires exact records and careful reporting of stock location. *Zoned locations* are a hybrid of fixed and random locations. A grouping of similar items is assigned to a designated zone. An item is located anywhere in the space available within the given zone. Space is used more efficiently, and each item has a general but not a specific location.

A physical count of items is necessary to verify the integrity and accuracy of inventory records. Differences between book (record) and physical inventories must be ascertained. Any differences (variances) must be adjusted and the amount of overage or underage properly accounted for. A periodic physical count of inventory can be made for all items, or a cycle count program can be instituted. A physical count of all items usually involves closing the facility for a time while the quantities of all items are substantiated and the records are updated. The cycle or perpetual count method involves the continuous counting of inventory throughout the year.

Inventory accuracy is a fundamental requirement of any inventory system. True record integrity requires a management policy like intolerant of errors. Management must establish a climate of accuracy and the necessary tools for its achievement.

Example 7

A supplier has 5000 items in stock, of which 500 are class A, 1000 are class B, and 3500 are class C. There are 300 operating days per year, and the respective count frequencies for the classes are 5, 2, and 1 times per year. How many items should be cycled counted each day?

The following table determines the total number of annual counts:

Class	Number of Items	Count Frequency	Annual Counts
A	500	5	2500
B	1000	2	2000
C	3500	1	3500
Total :			8000

Hence, items counted/day

The number of A item counted per day is $27(2500/8000) = 8.4375$, or 9 items; the number of B items counted per day is $27(2000/8000) = 6.75$, or 7 items; and the number of C items counted per day is $27(3500/800) = 11.8125$, or 12 items. Thus, because of rounding, $28(9 + 7 + 12 = 28)$ items should be counted each day. The counting of fractions to integers is apt to increase the originally stipulated count frequencies.

13.6 INVENTORY SECURITY

Security requirements vary widely among organisations, and are dependent upon the nature of the material, its value, size, weight, application, utility, and resalability. In general, the more valuable an item, the greater the need for security. However, some expensive items require relatively little protection because of their size, weight, and limited utility (large castings, special molds etc.).

Materials can be safeguarded by establishing and enforcing storeroom regulations. Periodic auditing of storeroom operations can reveal existing or potential security problems. The following security measures should apply to storeroom operations:

- i) Limit access to storage areas to authorized personnel,
- ii) Count, weigh, or measure all materials on receipt,
- iii) Require authorized orders and requisitions for all transactions,
- iv) Store valuable items in locked cabinets or in safes if necessary,
- v) Keep storerooms locked and enclosed except during working hours,
- vi) Periodically spot-check stock on hand against inventory records,
- vii) Investigate unusual consumption for improper use,
- viii) Periodically check the authenticity of signatures and authorizations, and
- ix) Provide security bonds for storeroom personnel to protect against losses through negligence or theft.

The effort, time, and money spent on the security of inventory should be allocated among the items in proportion to their relative importance. At no time should the cost of security exceed the benefits that accrue from it.

13.7 PROBLEMS IN VALUATION FOR FINISHED GOODS AND WORK-IN-PROCESS INVENTORY

Finished goods are valued at cost of market price whichever is lower. The computation of the 'cost' of the finished product is a technical affair and the company's production and costing personnel together are the persons involved in getting this cost figure. The following problems are commonly encountered while making valuation of finished goods and work-in-process inventory:

- i) Which element of cost should be taken and which element left out?
- ii) Should the average cost of manufacture during the year be considered, or the cost incurred in the last month or months only?
- iii) How should joint products be valued?
- iv) Should by-products be valued at all?
- v) How should abnormal costs due to a number of factors, such as idle time, lower capacity utilization, production losses, and scrap generation be treated? Should the product cost include these elements of cost also?

Inventory Policies and Systems cannot be definite answers to most of these questions, and very often the answers depend upon the convention and the practice usually followed and the peculiarities of the product being valued by the organization under consideration. However, the following guidelines may be prescribed:

- i) Normal factory costs are included for ascertaining product cost; viz., raw material, direct labour and factory overheads. Some follow the practice of direct cost valuation, whereby all allocated overheads are left out. On the other extreme, some include depreciation and working capital interest in the cost of the product. But, losses like idle time, scrap, losses, etc. should be loaded on to product cost only to the extent that they are normal and, acceptable.
- ii) The direct labor cost and overheads portion of the product cost are usually built on the basis of a whole year's figures, since allocation of a few months' costs may give a distorted picture. But raw material cost part of the product cost is usually taken on the basis of the last supplies of raw materials fed to production. This ensures that the cost is current.
- iii) Joint products are valued using the market price or cost concept, usually the lower of the two. By-products are not to be valued.

Work-in-process is valued again at cost of production, however, invariably only direct costs are considered, and due consideration is given to the stage at which the inventory is lying. As the cost at the beginning of the process is significantly less than the cost in the penultimate state, many organizations average out the additional input cost and add it to the raw material cost, which has already been issued at the beginning.

Activity 2

List the kinds of materials management-related problems that the stores accounting would help identify. List also the stores accounting procedures for (i) a chemical plant, (ii) a pharmaceutical company, and (iii) a maintenance shop.

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13.8 SUMMARY

Store accounting assumes a key role in relation to the estimation of the cost of a product for pricing decisions. In this context, valuation of inventory of items at any time in an organization becomes imperative, and is thus a statutory obligation on the part of management. There are various methods used for valuation and costing of inventory items. While FIFO, LIFO, and average methods have their own advantages and limitations, the management of an organization must take appropriate decisions regarding the use of periodic or continuous physical verification of the inventory stocks. Stock records accuracy and maintenance of inventory security are two important aspects that also must be kept in mind in operations for store accounting.

13.9 SELF ASSESSMENT QUESTIONS

- 1) What is the financial significance of inventory valuation? Briefly elaborate.
- 2) Upon what factors does the selection of an inventory flow method depend?
- 3) Which valuation method is most suitable for goods that are subject to deterioration and obsolescence? Why?
- 4) Compare and contrast FIFO and LIFO methods of inventory evaluation.
- 5) How does the LIFO inventory flow method protect against “inventory profits”?
- 6) List the major shortcomings of FIFO, LIFO, and Average methods of stores evaluation. Under what conditions are the three inventories flow methods essentially equivalent?
- 7) Name three types of averages that can be used in the average cost inventory flow method. To which types of inventory systems do each apply?
- 8) Describe the most appropriate situation for the application of the specific cost inventory flow method.
- 9) List three requirements for maintaining accurate inventory records.
- 10) Compare and contrast the periodic and continuous verification methods.
- 11) What are the measures you recommend to maintain inventory security in stores? Discuss in brief the problems and their remedies in case of valuation of finished goods and work-in-process inventory.

13.10 REFERENCES AND SUGGESTED FURTHER READINGS

Brown R.G. (1977), *Materials Management System*, John Wiley, New York.

Dobler, D. W. (1990), *Purchasing and Inventory Management*, McGraw-Hill, New York.

Gopalakrishnan, P. and Sunderesan, M. (1977) *Materials Management: An Integrated Approach*, Prentice Hall of India, New Delhi.

Perlman, K. I. (1990), *Handbook of Purchasing and Materials Management*, Probus Publishing Company, Chicago.

Tersine R. J. (1994), *Principles of Inventory and Materials Management*, PTR, Prentice Hall, Englewood Cliffs, New Jersey.

Waters, C. D. J. (1992), *Inventory Control and Management*, John Wiley, New York.

