



# Institute of Open and Distance Education

Faculty of Management

## Accounting For Managers

Accounting for Managers



1MBA6



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Chhattisgarh, Bilaspur

A STATUTORY UNIVERSITY UNDER SECTION 2(F) OF THE UGC ACT

**1MBA6**

**Accounting for Managers**

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# Unit 1 Basics of Accounting

## Unit Structure

- Introduction
- Meaning
- Process of Accounting
- System of Accounting
- Summary
- Keywords
- Review Questions
- Further Reading

## Learning Objectives

At the conclusion of this unit, you should be able to:

- Define accounting
- Explain the process of accounting
- Describe the cash and accrual system of accounting

## Introduction

We know that Accounting is used as an information system by its users. The users are of two types i.e., internal users and external users. Among the internal users all the managers at lower, middle and top level are included while among the external users, investors, creditors, government and public are included. Accounting is generally termed as the language of business. It records all the transactions which can be expressed in monetary terms which has taken place during a particular period. It also includes, summarizing the transactions to ascertain the performance of the business during a particular period. At a higher stage this information helps in finding out why the business has succeeded or failed. We must be clear that the above relate to monetary transactions only.

## Meaning

Accounting is defined as either recording or recounting the information of the business enterprise, transpired during the specific period in the summarized form.

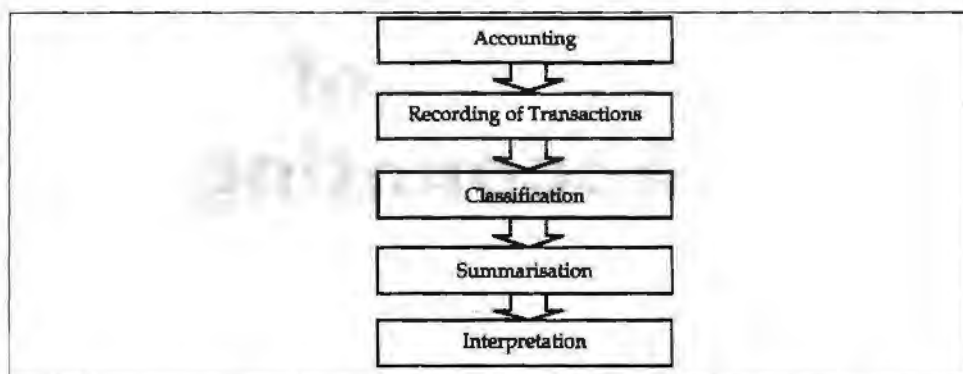
Accounting is broadly classified into three different functions, *viz.*

Recording	} Transactions of Financial Nature
Classifying and	
Summarizing	

## Caution

Accounting is not an equivalent function to book keeping. Accounting is broader in scope than the book keeping, the earlier cannot be equated to the latter.

Accounting is a combination of various functions, *viz.*



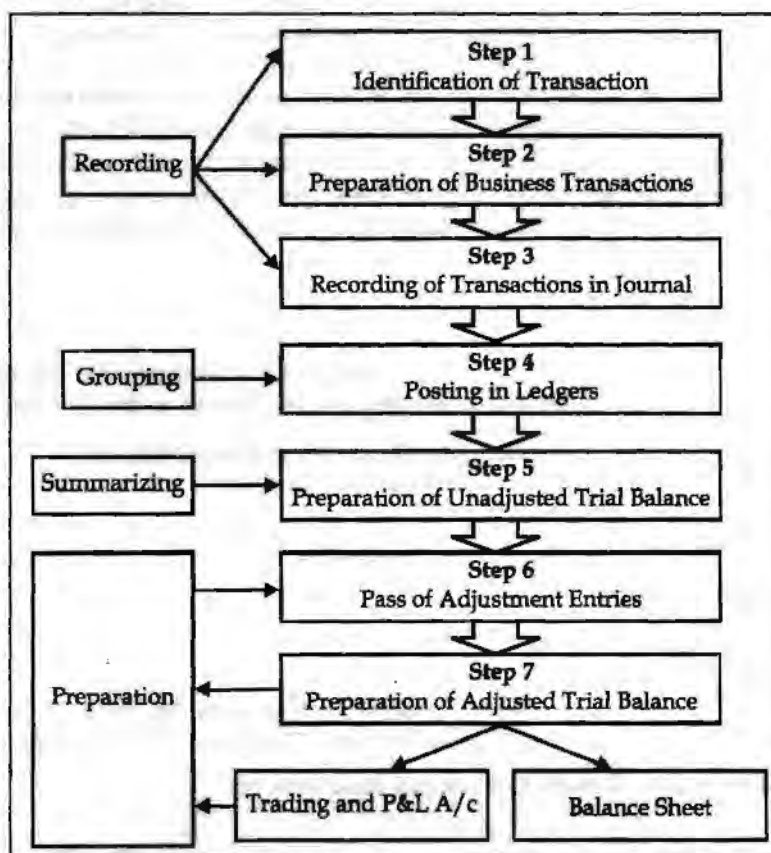
American Institute of Certified Public Accountants Association defines the term accounting as follows "Accounting is the process of recording, classifying, summarizing in a significant manner of transactions which are in financial character and finally results are interpreted."

### Qualities of Accounting

- In accounting, transactions which are non-financial in character cannot be recorded.
- Transactions are recorded either individually or collectively according to their groups.
- Users should be able to make use of information.

### Process of Accounting

Accounting is described as origin for the creation of information and the continuous utility of information. Now the question is – how is this information created? For this, there is a step by step process, as shown below.



After the creation of information, the developed information should be appropriately recorded. Are there any scales/guides available for the recording of information? If yes, what are they?

They are as follows:

- What to record?  
Financial Transaction is only to be recorded.
- When to record?  
Time relevance of the transaction at the moment of recording.
- How to record?  
Methodology of recording – It contains two different systems of accounting viz., cash system and accrual system.

Notes

### Student Activity

Find out the different systems of accounting.

## System of Accounting

The system of accounting includes the following:

### Cash System

The revenues are recognized only at the moment of realization but the expenses are recognized at the moment of payment. For example, sale of goods will be considered under this method that only at the moment of receipt of cash out of sale of goods. The charges which were paid only will be taken into consideration but the outstanding, not yet paid will not be considered. For example, rent paid only will be considered but not the outstanding of rent charges.

### Accrual System

The revenues are recognized only at the time of occurrence and expenses are recognized only at the moment of incurring.

Whether the cash is received or not out of the sales, that will be registered/counted as total value of the sales.

The next most important step is to record the transactions. For recording, the value of the transaction is inevitable, to record values, the classification of values must be essentially done.

### Value

There are four different values in the business practices that should be followed or recorded in the system of accounting.

1. **Original Value:** It is the value of the asset only at the moment of purchase or acquisition.
2. **Book Value:** It is the value of the asset maintained in the books of the account. The book value of the asset could be computed as follows:  
Book Value = Gross (Original) value of the asset – Accumulated depreciation
3. **Realizable Value:** Value at which the assets are realized.
4. **Present Value:** Market value of the asset.

**Classifying:** It is one of the most important processes of the accounting. Under this, grouping of transactions is carried out on the basis of certain segments or divisions.



It can be described as a method of rational segregation of the transactions. The segregation is generally done into two categories, viz.

- Cash transactions and
- Non-cash transactions.

The preparation of the ledger A/cs and Subsidiary books are prepared on the basis of rational segregation of accounting transactions. For example, the preparation of cash book is involved in the unification of cash transactions.

**Summarizing:** The ledger books are appropriately balanced and listed one after another. The list of the name of the various ledger book A/cs and their accounting balances is known as Trial Balance. The trial balance is summary of all unadjusted name of the accounts and their balances.

**Preparation:** After preparing, the summary of various unadjusted A/cs are required to adjust to the tune of adjustment entries which were not taken into consideration at the time of preparing the trial balance. Immediately after the incorporation of adjustments, the final statement is readily available for interpretations.

## Summary

Accounting is the medium of recording the business activities and considered as a language of business. Accounting is the art of recording, classifying and summarizing the business transactions in a significant manner and in terms of money. The accounting process includes the identification of financial transactions, recording, classifying them into different groups, summarizing them into trial balance and preparation of financial statements and analyzing and interpreting them.

## Keywords

**Accounting Process:** It includes the recording of financial transactions, ledger posting, preparation of financial statements and analyzing and interpretation of them.

**Cost Accounting:** Accounting relating to the ascertainment of cost of the product.

**Management Accounting:** Presenting of accounting information in such a way as to assist the management in taking the important decisions and making the policies.

**Accounting Conventions:** Customs and traditions which guide the accountants to record the financial transactions.

## Review Questions

1. Define accounting. What is the need of accounting?
2. What are the basic concepts of accounting?
3. Explain the process of accounting.

## Further Reading

Richard G Schroeder, Myrtle W. Clark, Myrtle W. Clark, Jack M. Cathey, *Financial Accounting Theory and Analysis: Text Readings and Cases*, John Wiley & Sons Inc.

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# Unit 2 Basic Accounting Principles

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## Unit Structure

- Introduction
- Accounting Principles
- Accounting Concepts
- Cost Concept
- Accounting Conventions
- Summary
- Keywords
- Review Questions
- Further Readings

## Learning Objectives

At the conclusion of this unit, you should be able to:

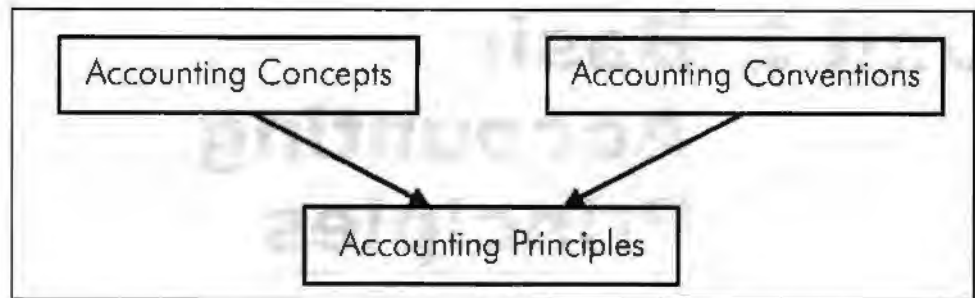
- Describe the accounting principles
- Explain the concepts of accounting
- Define duality or double entry accounting concept

## Introduction

Accounting principles are those rules of actions on the basis of which the transactions of the business are recorded, classified and summarized. If the financial statements are not prepared on the basis of these principles, there will be low acceptability and difficulty to understand them, and the comparison will be impossible and unreliable. Therefore, the accountants recommend that there should be common concepts and conventions of accounting so that the above difficulties and problems may not occur, they are termed as Generally Accepted Accounting Principles (GAAP). There are various bodies, national and international, who from time to time frame guidelines, define terms, formulate principles and standards to be used in the field of Accounting and finance. The industry, firms, business groups have to follow these, both as legal provisions and as convenience.

## Accounting Principles

The transactions of the business enterprise are recorded in the business language, which routed through accounting. The entire accounting system is governed by the practice of accountancy. The accountancy is being practiced through the universal principles which are wholly led by the concepts and conventions.



The entire principles of accounting are on the constructive accounting concepts and conventions.

The purposes of preparing financial statements is:

- Financial accounting provides necessary information for decisions to be taken initially and it facilitates the enterprise to pave way for the implementation of actions.
- It exhibits the financial track path and the position of the organization.
- Being business in the dynamic environment, it is required to face the ever changing environment. In order to meet the needs of the ever changing environment, the policies are to be formulated for the smooth conduct of the business.
- It equips the management to discharge the obligations at every moment.
- Obligations to customers, investors, employees, to renovate/restructure and so on.

## Accounting Concepts

The following are the most important concepts of accounting:

1. Money measurement concept
2. Business entity concept
3. Going concern concept
4. Matching concept
5. Accounting period concept
6. Duality or double entry concept
7. Cost concept

Let us understand them one by one.

### Money Measurement Concept

This is the concept tunes the system of accounting as fruitful in recording the transactions and events of the enterprise only in terms of money. The money is used as well as expressed as a denominator of the business events and transactions. The transactions which are not in the expression of monetary terms cannot be registered in the book of accounts as transactions.

*Example:*

- 5 machines, 1 ton of raw material, 6 fork-lift trucks, 10 lorries and so on. The early mentioned items are not expressed in terms of money instead they are illustrated only in numbers. The worth of the items is getting differed from one to the other. To record the above enlisted items in the book of accounts, all the assets should be converted in to money.

- 5 lathe machines worth Rs 1,00,000; 1 ton of raw materials worth amounting Rs.15,00,000 and so on.

The transactions which are not in financial in character **cannot** be entered in the book of accounts.

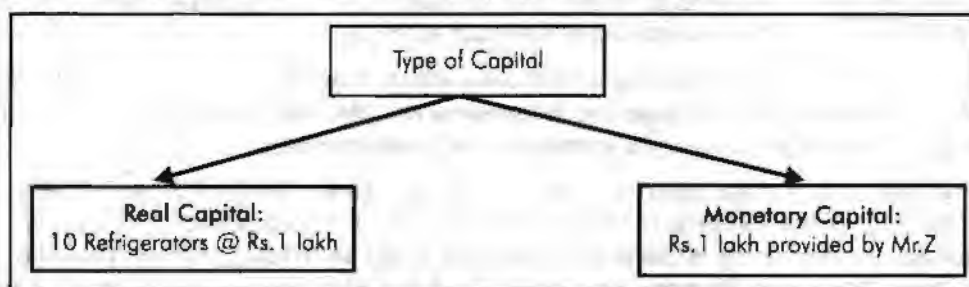
Recording of transactions are only in terms of money in the process of accounting.

Notes

### Business Entity Concept

This concept treats the owner as totally a different entity from the business. To put in to nutshell "Owner is different and Business is different". The capital which is brought inside the firm by the owner, at the commencement of the firm is known as capital. The amount of the capital, which was initially invested, should be returned to the owner considered as due to the owner; who was nothing but the contributory of the capital.

*Example:* Mr Z has brought a capital of Rs. 1 lakh for the commencement of retailing business of refrigerators. The brought capital of Rs. 1 lakh is utilized for the purchase of refrigerators from the Godrej Ltd. He finally bought 10 different sized refrigerators. Out of 10 refrigerators, one was taken away by himself as the owner.



### In the Angle of the Firm

The amount of the capital Rs. 1 lakh has to be returned to the owner Mr. Z, which considered being as due. Among the 10 newly bought refrigerators for trading, one was taken away by the owner for his personal usage. The one refrigerator drawn by the owner for his personal usage led the firm to sell only 9 refrigerators. It means that Rs. 90,000 out of Rs. 1 lakh is the volume of real capital and the Rs. 10,000 worth of the refrigerator considered to be as drawings; which illustrates the capital owed by the firm is only Rs. 90,000 not Rs. 1 lakh.

### In the Angle of the Owner

The refrigerator drawn worth of Rs.10,000 nothing but Rs.10,000 worth of real capital of the firm was taken for personal use as drawings reduced the total volume of the capital of the firm from Rs.1 lakh to Rs.90,000, which expected the firm to return the capital due amounting Rs.90,000.

Owner and business organizations are two separate entities.

### Going Concern Concept

The concept deals with the quality of long lasting status of the business enterprise irrespective of the owners' status, whether he is alive or not. This concept is known as concept of long term assets. The fixed assets are bought in the intention to earn profits during the season of the business. The assets which are idle during the slack season of the business retained for future usage, in spite of that those assets are frequently sold out by the firm immediately after the utility leads to mean that those assets are not fixed assets but tradable assets. The fixed assets are retained by the firm even after the



usage is only due to the principle of long lastingness of the business enterprise. If the business disposes the assets immediately after the current usage by not considering the future utility of the assets in the firm which will not distinguish in between the long term assets and short term assets known as tradable in categories.

Notes

Accounting concept for long lastingness of the business enterprise.

### Matching Concept

This concept only makes the entire accounting system as meaningful to determine the volume of earnings or losses of the firm at every level of transaction; which is an outcome of matching in between the revenues and expenses.

The worth of the transaction is identified through matching of revenues which are mainly generated from the sales volume and the expenses of the firm at every level.

*Example:* The cost of goods sold and selling price of the pen of ABC Ltd. are Rs. 5 and Rs. 10 respectively. The firm produced 100 ball pens during the first shift and out of 100 pens manufactured 20 pens are considered to be damage which cannot be supplied to the customers, rejected by the quality circle department. There was an order from the firm XYZ Ltd. which amounted to 80 pens to be supplied immediately.

The worth of the transaction of the firm at every level of the transaction is being studied only through the matching of revenues with the expenses.

At first instance, the firm produced 100 pens which incurred the total cost of Rs. 500 required to match with the expected revenues of Rs 1,000; illustrated the level of profit how much would it accrue if the entire level of production is sold out?

If the entire production capacity is sold out in the market the profit level would be Rs. 500. Out of the 100 pens manufactured 20 were identified not ideal for supply as damages, the remaining 80 pens were supplied to the individual retailer. The retailer has been dispatched 80 pens amounted Rs. 400 which equated to Rs. 800 of the expected sales. At the moment of dispatching, the firm expected to earn a profit of Rs. 400 at the level of 80 pens supplied. After the dispatch, the retailer found that 50 pens are in accordance with the order placement but the remaining are to the tune of the retailers' specifications. Finally, the retailer has agreed to make the payment of the bill only in accordance with the order placed which amounted Rs. 500 out of the expenses of the manufacturer Rs. 250.

This concept facilitates to identify the worth of the transaction at every moment.

Concept of fusion in between the expenses and revenues.

### Accounting Period Concept

The life period of the business is of a long span which is classified into the operating periods which are smaller in duration. The accounting period may be either calendar year of Jan.-Dec. or fiscal year of April-Mar. The operating periods are not equivalent among the trading firms. This means that the operating period of one firm may be shorter than the other one. The ultimate aim of the concept is to nullify the deviations of the operating periods of various traders in the trading practice.

According to the Companies Act, 1956, the accounting period should not exceed more than 15 months.

Concept of uniform accounting horizon among the firms to evade deviations.

## Duality or Double Entry Accounting Concept

It is the only concept which portrays the two sides of a single transaction. The law of entire business revolves around only on mutual agreement sharing policy among the players. How mutual agreement is taking place?

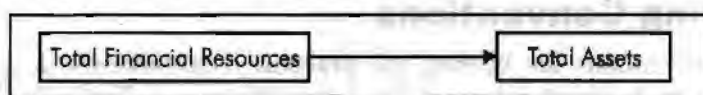
The entire principle of business is mainly conducted on mutual agreement among the parties from one occasion to another. The payment of wages is only made by the firm out of the services of labourers. What kind of mutual agreement in sharing the benefits is taking place? The services of the labourers are availed by the firm through the payment of wages. Likewise, the labourers are regularly getting wages for their services in the firm.

Payment of Wages = Labourers' service

In the angle of accounting aspects of a firm, the labourer services are availed through the payment of wages nothing but the mutual sharing of benefits. This is denominated into two different facets of accounting, viz; Debit and Credit. Every debit transaction is appropriately equated with the transaction of credit.

All the above samples of transactions are being carried out by the firm through the raising of financial resources. The resources raised are finally deployed in terms of assets. It means that the total funds raised by the firm are equated to the total investments.

From the below table illustration 2.1, it is clearly evidenced that the entire raised financial resources are applied in the form of asset applications. It means that the total liabilities are equivalent to the total assets of the firm.



**Table 2.1: Illustration for Duality Concept**

Liabilities	Assets
Share Capital	Plant and Machinery
Preference Share Capital	Land and Buildings
Debentures/Long-term Borrowings	Fixtures and Tools
Retained Earnings	Delivery Vehicles
Commercial Paper	Furniture - Industry and Office
Public Deposits	Office Administrative Devices
Bank Loan	Marketable Securities
Overdraft	Short-term Investments
Pre-received Income	Closing Stock
Outstanding Expenses	Prepaid Expenses
Sundry Creditors	Outstanding Income
Bills Payable	Sundry Debtors
Provision for Taxation	Bill Receivable
	Cash at Bank
	Cash in Hand

Concept of mutual agreement and sharing of benefits.

Notes

## Cost Concept

Notes

It is the concept closely relevant with the going concern concept. Under this concept, the transactions are recorded only in terms of cost rather than in market value. Fixed assets are only entered in terms of the purchase price which is an original cost of the asset at the moment of purchase. The depreciation is deducted from the original value which is the initial purchase price of the asset will highlight the book value of the asset at the end of the accounting period. The marketing value of the asset should not be taken into consideration, why? The main reason is that the market value of the asset is subject to fluctuations due to demand and supply forces. The entry of market value of the asset will require the frequent update of information to the tune of changes in the market. Will it be possible to record the changes taken place in the market then and there? This is not only impossible for regular updating of information but also leads to lot of consequences. Though the firm is ready to register the market value, which market value has to be taken into consideration? The market value can be bifurcated into two categories, *viz.*

1. Realizable value and
2. Replacement value

Realizable value is the value of the asset at the moment of sale or realization. Replacement value is another value which considered at the moment of replacing the old asset with the new one. These two cannot be the same at single point of time and the wear and tear of the asset will play pivotal role in fixing the realization value which has the demarcation over the later.

## Accounting Conventions

Accounting conventions are bearing the practical considerations in recording the transactions of the business enterprise in systematic manner. This can be understand as follows:

1. **Convention of Consistency:** The nature of recording the transactions should not be changed at any cause or moment. It should be maintained throughout the life period of the firm. If a firm follows the straight line method of charging the depreciation since its inception should be followed without any change. The firm should not alter the method of charging the depreciation from one method to another. The change cannot be entertained. If any change has to be incorporated, the valid reason for change should be emphasized.
2. **Convention of Conservatism:** The conservatism wont give any emphasis on the anticipation of the firm, instead it gives paramount importance to all possible uneventualities of the firm without considering the future profits.

The most important of the rule of guidance at the moment of valuing the stock is as follows:

Stock of the goods should be valued either market price or cost whichever is lower to anticipate the future losses due to default in the payments of the customers.

This provision is created for bad and doubtful debts of the firm in order to meet the losses expected out of the defaulters.

According to this convention, the entire status of the firm should be highlighted/presented in detail without hiding anything; which has to furnish the required information to various parties involved in the process of the firm.

3. **Convention of Disclosure:** Convention of disclosure requires that all material and relevant facts concerning financial statements should be fully disclosed. Full disclosure means that there should be full, fair and adequate disclosure of accounting information. Adequate means sufficient set of information to be

disclosed. Fair indicates an equitable treatment of users. Full refers to complete and detailed presentation of information. Thus, the convention of disclosure suggests that every financial statement should fully disclose all relevant information.

**Example:** Let us take the example of business.

The business provides financial information to all interested parties like investors, lenders, creditors, shareholders etc. The shareholder would like to know profitability of the firm while the creditor would like to know the solvency of the business. In the same way, other parties would be interested in the financial information according to their objectives. This is possible if financial statement discloses all relevant information in full, fair and adequate manner.

If the financial information is complete, then only it is possible for different parties to use that information in the required manner.

Similarly, if there is a change in accounting methods of providing depreciation on fixed assets, or in the methods of valuation of stock or in making provision for doubtful debts, these should be clearly shown in the Balance Sheet by way of notes. In short, we can say that all important facts are to be fully disclosed, otherwise financial statements would be incomplete, unreliable and misleading.

4. **Convention of Materiality:** The convention of materiality states that, to make financial statements meaningful, only material fact i.e. important and relevant information should be supplied to the users of accounting information. The question that arises here is what a material fact is. Information is material if its omission or misstatement could influence the economic decision of users taken on the basis of the financial statements. Materiality depends on the size of the item or error judged in the particular circumstances of its omission or misstatement. Thus, materiality provides a threshold or cut-off point rather than being a primary qualitative characteristic which information must have if it is to be useful.

**Example:** A businessman starts a textile mill. Take only two items weaving machine and bulbs for light in the office. He will purchase these items for his business. From the accounting point of view, weaving machine is more important than bulbs. Therefore, distributing the cost of machine over various years is important. But, it is not so important to distribute the cost of bulbs. If an accountant starts keeping the details of each bulb, then his work would be unduly burdened with every small detail. It is also not useful for the businessman to know every small details since it does not affect the financial position in any significant manner.

### Student Activity

State the difference between IFRS and Indian Accounting Standards.

### Summary

Accounting is the process of recording, classifying, summarizing in a significant manner of transactions which are in financial character and finally results are interpreted. The revenues are recognized only at the moment of realization but the expenses are recognized at the moment of payment. The charges which were paid only are taken into consideration but the outstanding, not yet paid is not considered. The revenues are recognized only at the time of occurrence and expenses are recognized only at the moment of incurring. The financial statements are found to be more useful to many people immediately after presentation only in order to study the financial status of the enterprise in the angle of their own objectives. The entire accounting system is governed by the practice of accountancy. The accountancy is being practiced through the universal principles which are wholly led by the concepts and conventions. Money measurement concept tunes the system of accounting as

Notes



fruitful in recording the transactions and events of the enterprise only in terms of money. Business entity concept treats the owner as totally a different entity from the business. Going concern concept deals with the quality of long lasting status of the business, enterprise irrespective of the owners' status, whether he is alive or not. Matching concept only makes the entire accounting system as meaningful to determine the volume of earnings or losses of the firm at every level of transaction. Duality or Double entry accounting concept is the only concept which portrays the two sides of a single transaction.

## Keywords

*Double Entry System:* Accounting which is based on the two aspects of the transactions.

*Personal A/cs:* Accounts which are related to person, firms, companies and representatives.

*Real A/cs:* All the assets accounts are included into it.

## Review Questions

1. What are the basic concepts of accounting?
2. What are the key conventions of accounting?
3. Describe the objectives of accounting.
4. Explain the dual aspect of accounting.

## Further Readings

V.K. Goel, *Financial Accounting*, Excel Books, New Delhi.

R.L. Gupta, M. Radhaswami, *Advanced Accountancy*, Sultan Chand & Sons, New Delhi.

M.C. Shukla, T.S. Grewal, S.P. Gupta, *Advanced Accounts*, S. Chand, New Delhi.

# Unit 3 Classification of Accounts

Notes

## Unit Structure

- Introduction
- Personal Account
- Real Account
- Nominal Accounts
- Summary
- Keywords
- Review Questions
- Further Readings

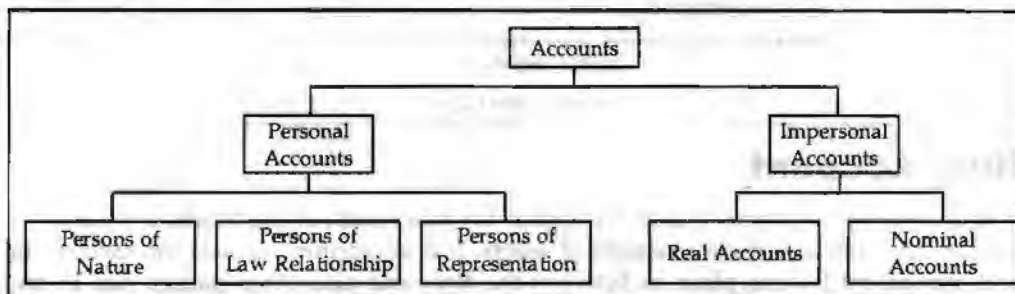
## Learning Objectives

At the conclusion of this unit, you should be able to:

- Classify the accounts
- Record transactions in different accounts

## Introduction

For classification, the entire process of accounting brought under three major segments; which are broadly grouped into two categories, *viz.* Personal accounts and Impersonal Accounts. The Impersonal accounts are further classified into two categories, *viz.* Real accounts and Nominal accounts.



## Personal Account

It is an account which deals with a due balance either to or from these individuals on a particular period. It is an account that normally reveals the outstanding balance of the firm to individuals.

- Examples:**
1. Outstanding balance to suppliers.
  2. Outstanding balance from customers.

This is the only account which emphasizes the future relationship in between the business firm and the individuals. Personal accounts can be classified into three categories on the basis of individuals, *viz.*

1. Persons of nature
2. Persons of artificial relationship
3. Persons of representations

Let us understand each of them one by one.

1. **Persons of Nature:** Persons who are nothing but outcome of nature i.e. almighty
2. **Persons of Artificial Relationship:** Persons who are made out of artificial relationship through legal structure.

*Example:* Organizations, corporate, partnership firm, etc.

The companies and partnership firm are governed by the Companies Act, 1956 and the Partnership Act. The relationship among the owners of the company or partners of the firm is totally structured through respective laws.

*Example:* LIC and SBI

These governed by the artificial relationship among the members through LIC Act, SBI Act and the Companies Act, 1956 and so on respectively.

3. **Persons of Representations:** This classification represents amount outstanding or prepaid in connection with the individual transactions.

The personal account is the account of future relationship; to maintain the relationship of future in two different angles, *viz.*

- (a) Receiver of the benefits from the firm.

*Example:* The credit sale of the goods worth of Rs. 1,500 to Mr X.

In this transaction Mr. X is the receiver of the benefits through the credit sale of the firm. Till the collection of the sale benefits, the firm should maintain the relationship of business with the Mr. X in the books of accounts.

- (b) Giver of the benefits to the firm.

*Example:* The credit purchase of the goods worth of Rs. 3,000 from Mr. Y.

The giver of the goods nothing but the supplier of the goods Mr. Y should be recorded in the books of the firm till the payment of dues of the credit purchase. The future relationship is maintained in the books of the accounts till the payment process is over.

Debit the Receiver
Credit the Giver

## Real Account

It is a major classification which highlights the real worth of the assets. This account deals with especially the movement of assets. It is an account reveals the asset value and movement (taking place in between the firm and also other parties due to any transactions).

The movement of the assets can be classified into two categories, *viz.*

1. assets which are coming into the firm
2. assets which are going out of the firm

Whenever any movement of the assets takes place with reference to any transaction either coming into the firm or going out of the firm, it should be recorded in accordance with the set golden rules of this account.

Debit what comes in
Credit what goes out

## Nominal Accounts

This is an account deals with the amount of expenses incurred or incomes earned. It includes all expenses and losses as well as incomes and gains of the enterprise. This

nominal account records the expenses and incomes which are not carried forwarded to near future.

Debit all the expenses and losses
Credit all incomes and gains

Notes

The process of the accounting in normal practice as follows:

The practice starts with the journalizing of entries. After journalisation, the entries passed in the journal will be passed into the ledger A/c. The immediate next stage is to prepare the trial balance.

**Did you Know?**

What is meant by the journal entry?

It is an entry systematically recorded to the tune of golden rules of accounting in the journal book is known as journal entries.

The journal entries are recorded in the sequential order. The order of recording is conventionally done on the basis of date. The journal entry usually contains two different parts, which are nothing but two different accounts affecting the transactions.

Date	Particulars	Ledger Folio	Debit (Rs.)	Credit (Rs.)
Number of the day in the month, Name of the month and Year in full	To debit the name of the account	Page number in the respective ledger		
	To credit the name of the account			

Journalising the entries is different from one transaction to another. The difference is only due to nature and characteristics of the transactions. To journalise as easy as possible, the systematic approach to be adopted to post the transactions without any ambiguity.

**Notes**

Journalising can be generally categorized into following various categories:

1. Taking place within the same natured accounts.
2. Taking part in between accounts of two different in categories.

First, we will discuss the journalizing of entries of the same natured accounts. This can be classified into various segments:

1. Transactions only in between the personal accounts
2. Transactions only in between the real accounts

Under the category of transactions which affect only the personal accounts are as follows:

1. Between the persons of the nature
2. Between the persons of the artificial relationship
3. Between the persons of representations

**Caution:** The points to be observed at the moment of journalizing:

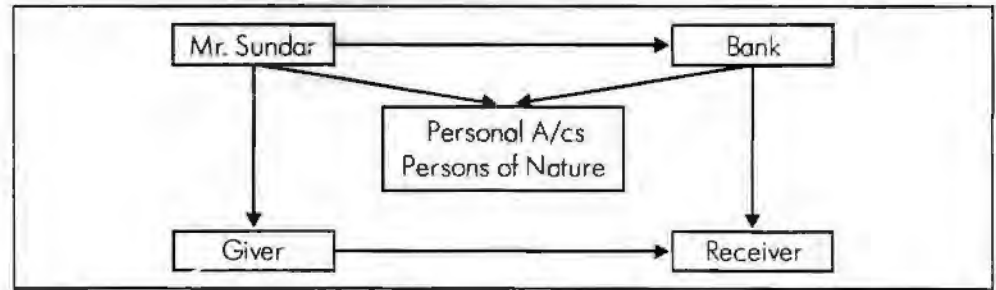
1. The nature of the accounts to be identified.
2. The accounts to be correlated to the golden rules.
3. The entry to be passed through proper debiting and crediting of the accounts respectively.



The meaning of the transaction should be made explicit for easier understanding through brief and catchy narration to follow as well as evade the ambiguity in near future.

**Example:** Mr. Sundar is a debtor who has paid Rs. 1,500 in the bank A/c.

Notes



1. Transaction is identified which is in between two different persons under the personal A/c, they are nothing but persons of nature.
2. The benefits are shared in between two persons, viz. Mr. Sundar and Banker who are nothing but giver and receiver of the benefits respectively.
3. It means that Sundar is the giver of Rs. 1,500 to Banker who is the receiver of the same Rs. 1,500.

Debit the Receiver	Banks	Debit the Melvin A/c
Credit the Giver	Sundar	Credit the Sundar A/c

Final step is to pass the journal entry

Bank A/c	Dr	Rs.1,500	
To Sundar A/c			Rs.1,500

(Being cash is paid by Sundar to Bank A/c)

### Student Activity

Explain the different types of accounts based on English and American approach.

### Summary

The law of entire business revolves around only on mutual agreement sharing policy among the players. A personal account is an account which deals with a due balance either to or from these individuals on a particular period. Real Accounts is the account especially deals with the movement of assets. Nominal Account is an account deals with the amount of expenses incurred or incomes earned. It includes all expenses and losses as well as incomes and gains of the enterprise.

### Keywords

**Personal A/cs:** Accounts which are related to person, firms, companies and representatives.

**Real A/cs:** All the assets accounts are included into it.

**Nominal A/cs:** Accounts of incomes, expenses and gains or losses.

**Debit:** Receiver in Personal Account, Coming Assets in Real Account and Expenses in Nominal Accounts.

**Credit:** Giver in Personal Account, Going assets in Real Accounts and Incomes in Nominal Accounts.

### Review Questions

1. What are the key transactions recorded in Personal Account.
2. What are the different types of accounts?

Notes

### Further Readings

M.P. Pandikumar, *Accounting & Finance for Managers*, Excel Books, New Delhi.  
 R.L. Gupta and Radhaswamy, *Advanced Accountancy*.  
 V.K. Goyal, *Financial Accounting*, Excel Books, New Delhi.  
 Khan and Jain, *Management Accounting*.

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# Unit 4 Accounting Process

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Notes

## Unit Structure

- Introduction
- Transactions in between the Real A/c
- Journal Entries in between the Accounts of two different Categories
- Accounting Equation
- Summary
- Keywords
- Review Questions
- Further Readings

## Learning Objectives

At the conclusion of this unit, you should be able to:

- Record the transactions in real A/c
- Construct journal entries between the accounts of two different categories
- Explain accounting equations

## Introduction

The recording of business transactions or activities is done through a process of accounting. Today the business activities are recorded not only to find out the profit or loss of the business, but are also to judge the financial position of the business. Accounts of the business are prepared from the point of view of owner and also serve the purpose of outsiders. Creditors and investors want to know how safe their investment is—Labour in conducting the negotiations for wages and government to determine the economic policies etc. Thus accounts of a business are the evidence on the basis of which the financial decisions are taken. Under the recording process of accounting journal and subsidiary books are maintained, under classification of transactions the ledger is maintained while in the summarizing process trial balance and final accounts (P & L A/c and Balance Sheet) are prepared.

## Transactions in between the Real A/c

Real A/c is an account to highlight the movement of the assets. There are two different type of assets viz. Cash and Plant & Machinery. Among the two assets, cash is one of the current assets and the Plant & Machinery is one of the fixed assets. In general, these two are brought under the category of assets or applications of the firm.

The movement of the assets can be classified into two segments viz. movement-in and movement-out.

1. **Movement-in:** The movement-in is the movement of the assets to the business enterprise.
2. **Movement-out:** The movement-out is the movement of the assets from the business enterprise.

Next stage is to highlight the movement of the assets during the purchase

Movement-in	Plant & Machinery	Debit what comes in
Movement-out	Cash resources	Credit what goes out

Any simultaneous movement is taking place in between two different assets of the enterprise can be explained with the following example:

Purchase of a Plant & Machinery of Rs.15,000.

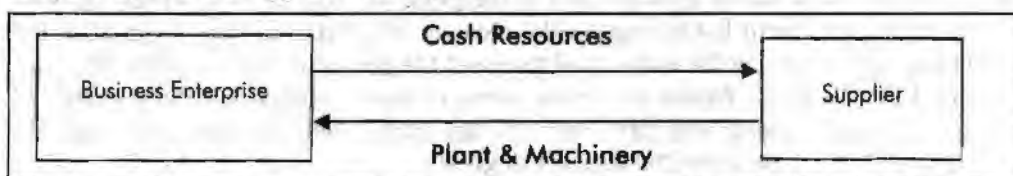
The purchase of a plant and machinery is only through cash payment to the vendor.

If the assets are involved in the transaction, Real account should only be referred.

### How the Movement of Assets is taking place at the Moment of Purchase?

The movement of the assets classified into two segments viz. movement in and movement out. The movement-in is the movement of the assets to the business enterprise. With reference to above cited example which asset is coming into the business enterprise? Plant & Machinery is the asset which comes into the business enterprise only at the moment of purchase

From the above illustrated example, which asset is going out of the firm during the purchase? Cash resources are going out of the firm in order to make the payment of the purchase to the supplier of the assets.



Next stage is to highlight the movement of the assets during the purchase

Movement-in	Plant & Machinery	Debit what comes in
Movement-out	Cash resources	Credit what goes out

What is coming in ?- Plant & Machinery

What is going out ?- Cash Resources

Plant & Machinery A/c Dr	Rs.15,000
To Cash resources A/c Cr	Rs.15,000

(Being Plant & Machinery is purchased)

### What is the basic point to be registered?

During the purchase, the plant & machinery worth of Rs. 15,000 is coming into the firm, in turn Rs.15,000 worth of cash resources are going out of the firm. During the cash purchase, the assets are moving from one entity to another viz. from business enterprise to supplier and *vice versa*.

Notes

## Journal Entries in between the Accounts of two different Categories

## Notes

### Transactions are in between the Real A/c and Personal A/c

This type of the transaction is mainly governed by one important principle that future relationship. It major focuses on the maintenance of future relationship among the parities involved, till the realization of the transaction is over.

For example, Goods sold to Gopal Rs.15,000.

The goods were sold on credit to Gopal amounted Rs.15,000.

In the given transaction, there are two different A/cs, viz. Real A/c and Personal A/c.

During the sales, irrespective of nature, goods are moving out of the firm, which finally will reach the individual Gopal. The goods, which are sold out to Gopal led to movement of goods out of the firm. Any movement of asset should be referred only to the tune of Real A/c. The goods which are going out of the firm could be recorded as transaction under the Real A/c, i.e. "Credit what goes out".

While recording the transaction, it should not be entered as Goods A/c. The reason for goods going out of the firm is only due to sales which have to be registered in the books of accounts at the time of entering the journal entries.

The second account which gets affected is the personal A/c of representations. The goods sold out on credit led to register the receiver of goods who has not paid at the moment of sale. Gopal is the individual received the goods on credit during the sales expected to make the payment as per the terms of credit period. Till the maturity of the credit period agreed, the firm should wait and collect the amount from the individual who is nothing but the receiver of goods.

Movement-out – Real A/c	Goods are moving out of the firm	Credit what goes out Sales A/c
Receiver of benefits – Personal A/c	Receiver of the goods on credit with future relationship	Debit the receiver Gopal A/c

Next step is to record the journal entry

Gopal A/c	Dr	Rs.15,000	
	To Sales A/c		Rs.15,000
(Being goods sold on credit to Gopal)			

### Transaction in between the Real A/c and Nominal A/c

*Example:* Office Rent paid Rs.10,000

The two different accounts involved in the above illustrated transaction are the Rent A/c and Cash A/c. It is because of the cash payment at the moment of making the payment of rent.

The Rent which is paid to the owner is an expense out of the benefits derived out of the asset during the previous month. In accordance with the Nominal A/c all the expenses are to be recorded, i.e. "Debit all the expenses and losses".

The second is in relevance with the cash payment which finally led to the movement of cash resources from the firm to the owner of the Asset. This mobility of the assets leads to movement-out which in connection with the Real A/c is the account for the assets.

Rent paid	Expense – Office Rent paid	Nominal A/c – Debit All expenses and losses
Movement-out	Cash – Moving out of the firm	Real A/c – Credit what goes out



### Student Activity

Identify nature of the transactions:

Ramchander has purchased goods on credit from M/s Royals Aventis for Rs.15,000 . The portions of the goods were found to be damaged which worth of Rs 5,000. Ramchander immediately returned the damaged goods to Royals

1. Identify the various types of accounts involved in the above illustrated transactions.
2. Pass the journal entries with regards to the nature of accounts involved.

Notes

## Accounting Equation

The basic accounting equation is the foundation for the double-entry bookkeeping system. It shows how assets were financed: either by borrowing money from someone (liability) or by paying your own money (shareholders' equity).

$Assets = Liabilities + (Shareholders \text{ or } Owners \text{ equity})$

The accounting equation is also the basis for the most basic of accounting reports, the aptly named Balance Sheet. A balance sheet reports what a business owns (assets), what it owes (liabilities) and what remains for the owners (equity) as of a certain date. This equation should remain in balance at all times because of double-entry accounting or bookkeeping. This can be further understood by the following illustrations.

An owner's investment into the company will increase the company's assets and will also increase owner's equity. When the company borrows money from its bank, the company's assets increase and the company's liabilities increase. When the company repays the loan, the company's assets decrease and the company's liabilities decrease. If the company pays cash for a new delivery van, one asset (cash) will decrease and another asset (vehicles) will increase. If a company provides a service to a client and immediately receives cash, the company's assets increase and the company's owner's equity will increase because it has earned revenue. If the company provides a service and allows the client to pay in 30 days, the company has increased its assets (Accounts Receivable) and has also increased its owner's equity because it has earned service revenue. If the company runs a radio advertisement and agrees to pay later, the company will incur an expense that will reduce owner's equity and has increased its liabilities.

**Example:** If a business has Rs 1,000 of assets at a particular time those assets must be matched by the total of the claims of creditors and owners. Here is one example of an infinite number of acceptable balance sheets:

#### Fazal-ur-Rehman and Sons

##### Balance Sheet

Assets	Rs 1000
Liabilities	Rs 500
Equity	Rs 500
<b>Total Liabilities and Equity</b>	<b>Rs 1000</b>

### Equity as Residual Claims

Equity is simply the difference between assets and liabilities. The owner has positive equity only to the extent that assets exceed liabilities.

**Example:** If a business has Rs 1,000 of assets and Rs 600 of liabilities the Rs 600 of liabilities are, in effect, a claim on the assets. Equity is the difference between the assets and liabilities, or Rs 400.

$$\text{Equity} = \text{Assets} - \text{Liabilities}$$

Notes

Equity is simply the difference between assets and liabilities. The owner has positive equity only to the extent that assets exceed liabilities.

**Example:** If a business has Rs 1,000 of assets and Rs 500 of liabilities the Rs 500 of liabilities are, in effect, a claim on the assets. Equity is the difference between the assets and liabilities, or Rs 500.

If a business ceases operations remaining assets first go to outside creditors. The claims of owners can be realized only after outside creditors' claims are satisfied. So equity represents the owners' residual claim on business assets.

## Summary

Journal is the first book of the original entries in which all the business transactions of the financial nature are recorded, then posted to ledger accounts. Accounts are of three types – Personal, Real and Nominal Account.

Rules of debiting and crediting in journal:

- Personal A/c – Receiver – Debit and Giver – Credit
- Real A/c – What comes in – Debit, What goes out – Credit
- Nominal Account – Expenses and Losses are Debited and Income and Gains are credited

Posting is the process of selecting of transactions from Journal on the basis of accounts and writing them into ledger accounts. To test the arithmetical accuracy of the ledger accounts, the Trial Balance is prepared. Trial Balance is the list of accounts taken from ledger.

## Keywords

**Process of Accounting:** It includes the recording of transactions into Journal, classifying into Ledger and summarizing into Trial Balance and Final Accounts.

**Personal A/c:** Accounts which are related to person, firms, companies and representatives.

**Real A/c:** Accounts which are related to all the assets accounts are included into it.

**Nominal A/c:** Accounts which are relating to the revenues, incomes, expenses and losses of the business are called nominal accounts.

**Journal:** The primary book in which the business transactions are recorded at first time.

**Ledger:** It is the classification of accounts in which various accounts are maintained.

## Review Questions

1. Explain the accounting treatment of real A/c.
2. Define accounting equations.
3. State the difference between real A/c and personal A/c.
4. Pass the following various journal entries.
  - (a) Jan. 1, 2006 Mr. Sundar has started business with a capital of Rs 50,000
  - (b) Jan. 2, 2006 Goods purchased Rs 10,000
  - (c) Jan. 5, 2006 Goods sold Rs 5,000

- (d) Jan. 10, 2006 Goods purchased from Mittal & Co. Rs 10,000
  - (e) Jan. 11, 2006 Goods sold to Ganesh & Co. Rs 10,000
  - (f) Jan. 12, 2006 Goods returned to Mittal & Co. Rs. 1,500
  - (g) Jan. 20, 2006 Goods returned from Ganesh Rs. 2,000
  - (h) Jan. 31, 2006 Office Rent paid Rs. 500
  - (i) Feb. 2, 2006 Interim Dividend paid Rs. 3000
  - (j) Feb. 8, 2006 Cash withdrawn from bank Rs. 2,000
5. There are three main areas in which trained accountants find jobs. These three areas are (1) private accounting, (2) public accounting, and (3) government, not-for-profit accounting, and education. Which area has the most accounting jobs at the present time and what percentage of the job market is represented by this area?
6. Assume that a company's beginning owner's capital was Rs 20,000. During the period, withdrawals were Rs 24,000, and the owner made additional investments during the period of Rs 50,000. The ending capital balance was Rs 90,000. What was the net income or net loss for the period?
7. Your purchases 10 Furniture from other company, your starting own furniture business. Each furniture value is Rs.1000/-, your business purpose use 2 furniture and other furniture are sales purpose. What will be the Purchases Entry?
8. Distinguish between material and immaterial transactions of business.

Notes

### Further Readings

- M.P. Pandikumar, *Accounting & Finance for Managers*, Excel Books, New Delhi.
- R.L. Gupta and Radhaswamy, *Advanced Accountancy*.
- V.K. Goyal, *Financial Accounting*, Excel Books, New Delhi.
- Khan and Jain, *Management Accounting*.
- S.N. Maheswari, *Management Accounting*.

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# Unit 5 Basics of Cost Accounting

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## Unit Structure

- Introduction
- Meaning of Cost Accounting
- Cost Classification
- Costing Concepts
- Summary
- Keywords
- Review Questions
- Further Readings

## Learning Objectives

At the conclusion of this unit, you should be able to:

- Define cost accounting
- Explain the differences between cost accounting and management accounting
- Describe the general classification and technical classification

## Introduction

Cost accounting is that branch of the accounting information system, which records, measures and reports information about costs. The primary purpose of cost accounting is cost ascertainment and its use in decision-making and performance evaluation. It is also useful in planning and controlling.

## Meaning of Cost Accounting

It is the process of classifying, recording and appropriate allocation of expenditure for the determination of costs of products or services through the presentation of data for the purpose to take decisions and guide the business organization.

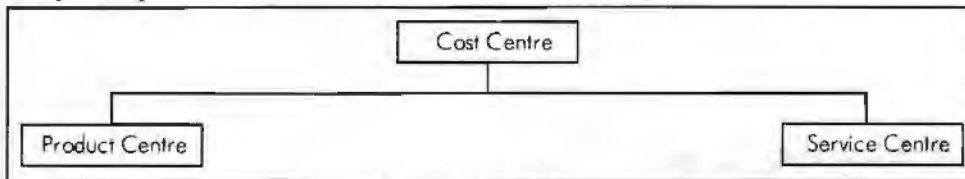
The next one important aspect is the differences between the cost accounting and management accounting.

S. No.	Point of Difference	Cost Accounting	Management Accounting
1.	Objectives	Its main purpose is to ascertain the cost and control	Its major objective is to take decisions through supplement presentation of accounting information
2.	Scope	It deals only with the cost and related aspects	It not only deals with the cost but also revenue. It is wider than the cost accounting
3.	Utilization of Data	It uses only quantitative information pertaining to the transactions	It uses both qualitative and quantitative information for decision making
4.	Utility	It ends only at the presentation of information	But it starts from where the cost accounting ends; means that the cost information are major inputs for decision making
5.	Nature	It deals with the past and present data	But it deals with future policies and course of actions

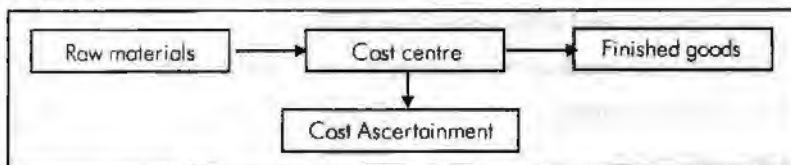
Cost denominates the use of resources only in terms of monetary terms. In brief, cost is nothing but total of all expenses incurred for manufacturing a product or attributable to given thing. In other words, the cost is nothing but ascertained expression of expenses in terms of monetary, incurred during its production and sale.

To ascertain a cost, the firm should maintain at least a small division of activity or responsibility in which costs are accounted, at where the costs are ascertained and controlled. In brief, cost centre is normally a location where a specified activity takes place.

Accumulation of all cost incurred for an activity leads to ascertainment of cost for the specified activity, but the control is being done by the head or in-charge of that activity is responsible for control of costs of his centre.



Product centre is a centre at where the cost is ascertained for the product which passes through the process.



Service centre is the centre or division which normally incurs direct or indirect costs but does not work directly on products.

For example,

Maintenance department

General factory office

Profit centre is a centre not only responsible for both revenue as well as expenses but also for the profit of an activity.

## Cost Classification

Costs can be classified according to

1. General classification
2. Technical classification

### General Classification

Generally, the costs are classified as follows:

#### **Product vs. Period Costs**

##### **Product Cost**

Product costs include all the costs that are involved in acquiring or making product. For a manufacturer, they would be the direct materials, direct labor, and manufacturing overhead used in making its products. Product costs are viewed as "attaching" to units of product as the goods are purchased or manufactured and they remain attached as the goods go into inventory awaiting sale. So initially, product costs are assigned to an inventory account on the balance sheet. When the goods are sold, the costs are released from inventory as expense (typically called Cost of Goods Sold) and matched against sales revenue.

Notes

The product costs of direct materials, direct labor, and manufacturing overhead are also "inventoriable" costs, since these are the necessary costs of manufacturing the products. The purpose is to emphasize that product costs are not necessarily treated as expense in the period in which they are incurred. Rather, as explained above, they are treated as expenses in the period in which the related products are sold. This means that a product cost such as direct materials or direct labor might be incurred during one period but not treated as an expense until a following period when the completed product is sold.

**Notes:** Manufacturing overhead is also referred to as factory overhead, indirect manufacturing costs and burden.

**Period Costs**

Period costs are not included as part of the cost of either purchased or manufactured goods and are usually associated with the selling function of the business or its general administration. As a result, period costs cannot be assigned to the products or to the cost of inventory. These costs are expensed on the income statement in the period in which they are incurred, using the usual rules of accrual accounting that we learn in financial accounting.

- Examples:**
1. Sales commissions and office rent.
  2. Selling and administrative expenses.

The period costs are reported as expenses in the accounting period in which they

1. best match with revenues,
2. when they expire, or
3. in the current accounting period.

In addition to the selling and general administrative expenses, most interest expense is a period expense.

**Direct vs. Indirect Costs**

**Direct Cost**

Direct costs are those costs that can be traced to specific segments of operations.

**Direct cost** of the product can be classified into three major categories.

1. **Direct Material:** Direct material which is especially used as a major ingredient for the production of a product.

*Example:* (a) The wood is a basic raw material for the wooden furniture. The cost of the wood procured for the furniture is known direct material cost.

(b) The cotton is a basic raw material for the production of yarn. The cost of procuring the cotton is known as direct material for the manufacturing of yarn.

2. **Direct Labour:** Direct labour is the cost of the labour which is directly involved in the production of either a product or service.

*Example:* The cost of an employee who is mainly working for the production of a product/service at the centre, known as direct labour cost.

3. **Direct Expenses:** Direct expenses which are incurred by the firm with the production of either a product or service. The excise duty and octroi duty are known as direct expenses in connection with the production of articles and so on.



**Indirect Cost**

Indirect costs are those costs that cannot be identified with particular segments.

1. **Indirect Material:** The material which is spent cannot be measured for a product is known as indirect material.

*Example:* The thread which is used for tailoring the shirt cannot be measured or quantified in specific length as well as ascertained the cost.

2. **Indirect Labour:** Indirect labour is the cost of the labour incurred by the firm other than the direct labour cannot be apportioned.

*Example:* Cost of supervisor, cost of the inspectors and so on.

3. **Indirect Expenses:** Indirect expenses are the expenses other than that of the direct expenses in the production of a product. The expenses which are not directly part of the production process of a product or service known as indirect expenses.

*Example:* Rent of the factory, salesmen salary and so on.

Common costs are shared by multiple segments.

*Example:* Manufacturer of chairs, Segments = Plastic chairs (P) & Wood chairs (W)

**Manufacturing vs. Non-manufacturing Costs**

Manufacturing costs are product costs consisting of Direct Material (DM), Direct Labor (DL) and Manufacturing Overhead (MOH, OH)

$$\text{Manufacturing Costs} = \text{DM} + \text{DL} + \text{MOH}$$

Non-manufacturing costs are period costs incurred in selling and administrative activities.

**Notes:** MOH = All indirect manufacturing costs, including:

1. Indirect materials
2. Indirect labor — supervision, maintenance, janitorial, etc.
3. Other services — utilities, supplies, rent, insurance, depreciation, taxes, etc. used in production
4. Anything that is related to production (cafeteria, fitness room, etc)

**Technical Classification**

Apart from this classification the costs are also classified into various categories according to the purpose and requirements of the firm. Some of the most important classifications are as follows:

1. By nature or element or analytical segmentation
2. By functions
3. Direct and indirect cost
4. By variability
5. By controllability
6. By normality
7. By time
8. According to planning and control
9. For managerial decisions

Let us understand each of them one by one.

**By Nature or Element or Analytical Segmentation**

The costs are classified into three major categories: Materials, Labour and Expenses.

## Notes

**By Functions**

Under this methodology, the costs are classified into various divisions or functions of the enterprise *viz.* Production cost, Administration cost, Selling & Distribution cost and so on.

The detailed classification is that total of production cost sub-classified into cost of manufacture, fabrication or construction.

- Example:**
1. *Costs of manufacture:* The cost of materials for packaging, the cost of electricity and water, the cost of promotion and advertising, etc.
  2. *Costs of construction:* The cost of materials, the cost of equipment, the cost of labour, etc.
    - (a) Cost of transportation
    - (b) Cost of management and co-ordination
    - (c) Depreciation of fixed assets.

And another classification of cost is commercial cost of operations; which is other than the cost of manufacturing and production.

The major components of commercial costs are known as administrative cost of operations and selling and distribution cost of operations.

- Example:**
1. *Administrative cost of operations:* Expense incurred in controlling and directing an organization.
  2. *Selling and distribution cost of operations:* Any cost incurred by a producer or wholesaler or retailer or distributor (as for shipping, etc.)

**Direct and Indirect Cost**

1. **Direct cost:** This classification of costs are incurred for the manufacture of a product or service. They can be conveniently and easily identified.
  - (a) *Material cost for the product manufacture:* It includes the direct material for manufacturing.
 

*Example:* For garments factory-cloth is the direct material for ready made garments.
  - (b) *Labour cost for production:* Labour cost is the cost of the entire labour who is directly involved in the production of a product as well as attributable to single product expenses and so on.
2. **Indirect cost:** The costs which are incurred for and cannot be easily identified for any single cost centre or cost unit known as indirect cost.

Indirect material cost, Indirect labour cost and Indirect expenses are the three different components of the indirect expenses.

- (a) *Indirect material:*

*Example:* Cost of the thread cannot be conveniently measured for single unit of the product.

- (b) *Indirect labour:*

*Example:* Salary paid to the supervisor.

## By Variability

The costs are grouped according to the changes taken place in the level of production or activity.

It may be classified into three categories:

1. **Fixed cost:** It is cost which do not vary irrespective level of an activity or production.

*Example:* Rent of the factory, salary to the manager and so on.

2. **Variable cost:** It is a cost which varies in along with the level of an activity or production like material consumption and so on.

*Example:* The fuel for an airline. The cost for it changes with the number of flights and how long the trips are.

3. **Semi-variable cost:** It is a cost which is fixed up to certain level of an activity. Later it fluctuates or varies in line with the level of production. It is known in other words as step cost.

*Example:* Electricity charges

Labour costs in a factory are semi-variable. The fixed portion is the wage paid to workers for their regular hours. The variable portion is the overtime pay they receive when they exceed their regular hours.

## By Controllability

The costs are classified into two categories in accordance with controllability, as follows:

1. **Controllable costs:** Cost which can be controlled through some measures known as controllable costs. All variable cost are considered to be controllable in segment to some extent.
2. **Uncontrollable costs:** Costs which cannot be controlled are known as uncontrollable costs. All fixed costs are very difficult to control or bring down; they rigid or fixed irrespective to the level of production.

## By Normality

Under this methodology, the costs which are normally incurred at a given level of output in the conditions in which that level of activity normally attained.

1. **Normal cost:** It is the cost which is normally incurred at a given level of output in the conditions in which that level of output is normally achieved.
2. **Abnormal cost:** It is the cost which is not normally incurred at a given level of output in the conditions in which that level of output is normally attained.

Normal cost for a defined-benefit pension plan generally represents the portion of the economic cost of the participant's anticipated pension benefits allocated to the current plan year.

Abnormal cost maybe unexpected costs incurred, as a result of natural calamities or fire or accident or such other losses.

## By Time

According to this classification, the costs are classified into historical costs and predetermined costs:

1. **Historical costs:** The costs are accumulated or ascertained only after the incurrence known as past cost or historical costs.

2. **Predetermined costs:** These costs are determined or estimated in advance to any activity by considering the past events which are normally affecting the costs.

### **For Planning and Control**

Notes

The following are the two major classifications, viz. standard cost and budgetary control:

1. **Standard cost:** Standard cost is a cost scientifically determined by way of assuming a particular level of efficiency in utilization of material, labour and indirect expenses.

The prepared standards are compared with the actual performance of the firm in studying the variances in between them. The variances are studied and analysed through an exclusive analysis.

2. **Budget:** A budget is detailed plan of operation for some specific future period. It is an estimate prepared in advance of the period to which it applies. It acts as a business barometer as it is complete programme of activities of the business for the period covered.

The control is exercised through continuous comparison of actual results with the budgets. The ultimate aim of comparing with each other is to either to secure individuals' action towards the objective or to provide a basis for revision.

### **For Managerial Decisions**

The major classifications are and marginal cost and sunk cost.

**Marginal cost** is the amount at any given volume of output by which aggregate costs are changed if the volume of output is decreased or increased by one unit.

**Sunk costs** are costs that cannot be recovered once they have been incurred.

**Example: Marginal Cost:** Suppose it costs Rs. 1000 to produce 100 units and Rs. 1020 to produce 101 units. The average cost per unit is Rs. 10, but the marginal cost of the 101 unit is Rs. 20.

**Sunk Cost:** Spending on advertising or researching a product idea.

They can be a barrier to entry. If potential entrants would have to incur similar costs, which would not be recoverable if the entry failed, they may be scared off.

### **Costing Concepts**

There are some important cost concepts that we must be aware of:

#### **Unit Costing**

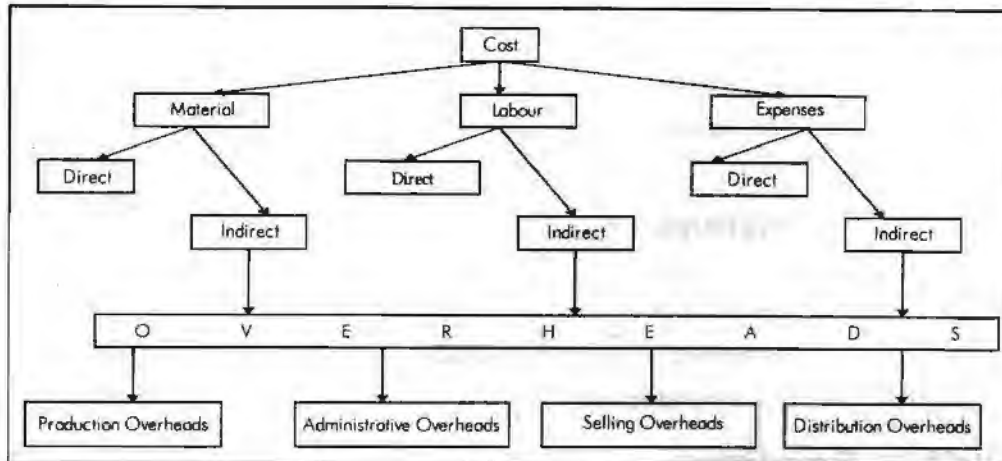
Under costing, the role of unit costing is inevitable tool for the industries not only to identify the volume of costs incurred at every level but also to determine the rational price on the commodities in order to withstand among the competitors. The determination of the selling price is being done through the process of determining the cost of the product. After having been finalized the cost of the product, the profit margin has to be added in order to derive the final selling price of the product.

#### **Cost Sheet**

There are various definitions for cost sheet.

"It is a statement of costs incurred at every level of manufacturing a product or service".

"It is a statement prepared to depict the output of a particular accounting period along with break up of costs".



The cost of the product or service should have to come across many stages. To find the total cost of the product or service, the costs incurred are grouped under various categories.

Advantages of preparing the cost sheet:

1. It is the only statement reveals the cost of the output as well as unit cost of the output.
2. It facilitates the manufacturer to access the control on the costs through breakups in the cost.
3. It extends room for the management to study the variations of the cost with the help of an effective comparison of standard costs.
4. The businessman is able to get an insight on the various components of cost as well as able to exercise the control on the excessive costs incurred.
5. It poses the firm to supply the goods against the orders with reasonable accuracy in submitting the orders.

To find out the unit cost of the product, the statement of cost plays pivotal role in determining the cost of production, cost of goods sold, cost of sales and selling price of the product at every stage.

During the preliminary stage of preparing the cost statement of the product, there are two things to be borne in our mind at the moment of classification.

1. Direct cost classification
2. Indirect cost classification

### Student Activity

What are the key components of cost sheet?

### Summary

Cost denominates the use of resources only in terms of monetary terms. In brief, cost is nothing but total of all expenses incurred for manufacturing a product or attributable to given thing. Service centre is the centre or division which normally incurs direct or indirect costs but does not work directly on products. Normally, maintenance dept. and general factory office are very good examples of the service centre. Costs which cannot be controlled are known as uncontrollable costs.

### Keywords

**Cost:** Expense incurred at the either cost centre or service centre.

**Cost Centre:** The location at where the cost of the activity is ascertained.

**Cost of Production:** It is the combination of cost of manufacturing an article or a product and administrative cost.

**Cost of Sales:** It is the entire cost of a product.

**Cost Sheet:** It is a statement prepared for the computation of cost of a product/service.

### Review Questions

1. Once standard costs are established, what conditions would require the standards to be revised? Give your opinion.
2. What is cost classification? Classify it, in detail.
3. What do you mean by unit costing?

### Further Readings

R.L. Gupta and Radhaswamy, *Advanced Accountancy*.

V.K. Goyal, *Financial Accounting*, Excel Books, New Delhi.

Khan and Jain, *Management Accounting*.

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S. Bhat, *Financial Management*, Excel Books, New Delhi.

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I.M. Pandey, *Financial Management*, Vikas Publishing, New Delhi.

Nitin Balwani, *Accounting & Finance for Managers*, Excel Books, New Dethi.



# Unit 6 Cost Sheet

Notes

## Unit Structure

- Introduction
- Direct Cost Classification
- Indirect Cost Classification
- Stock of Raw Materials
- Stock of Semi-finished Goods
- Stock of Finished Goods
- Summary
- Keywords
- Review Questions
- Further Readings

## Learning Objectives

At the conclusion of this unit, you should be able to:

- Classified Direct and indirect cost classify
- Compute cost of production
- Calculate the stock of raw material and finished goods

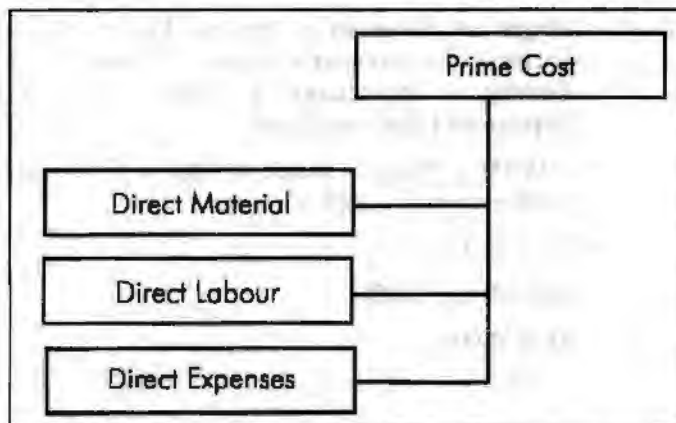
## Introduction

Cost accounting is the classification, recording and appropriate allocation of expenditure for the determination of the products or services, and for the suitable presentation of data for the purpose of control and management. The cost accounting normally includes the cost of job or contract, batch, process and so on. It normally illustrates the following compartments of the cost aspect of the organisation viz. production, administration, selling and distribution. The cost accounting not only reveals the amount of costs, which are relevant with the product or service, but also establishes the ways and means to control through budgets and standard cost in order to maintain the profitability of the firm.

## Direct Cost Classification

Under this classification, the direct costs of the product or service are added together to know the volume of total direct cost. The total volume of direct cost is known as "Prime Cost".

$$\text{Direct Materials} + \text{Direct Labour} + \text{Direct Expenses} = \text{Prime Cost}$$



The next stage in the unit costing to find out the factory cost. The factory cost could be computed by the combination of the indirect cost classification.

*Notes:* Property tax on the plant is to included under the factory overheads. The tax is paid by the firm on the plant which is engaging in the production process.

Notes

### Indirect Cost Classification

Among the classification of the overheads, the first and foremost is factory overheads. The factory overheads and work overheads are synonymously used. The factory overheads are nothing but the indirect costs incurred at the factory site. To find out the total factory cost or works cost incurred in the factory could be derived by adding the both direct cost and indirect cost incurred during the factory process.

$$\text{Factory Cost} = \text{Prime Cost} + \text{Factory Overheads}$$

Prime costs include direct labour, materials, bought-outs and sub-contracts, while factory overheads are nothing but the indirect expenses incurred during the individual process.

*Example:* Calculate the factory cost for the following data:

	Rs.
Cost of Direct Materials	2,00,000
Direct Wages	50,000
Direct Expenses	10,000
Wages of Foreman	5,000
Electric Power	2,000
Lighting of the Factory	4,000
Storekeeper's Wages	2,500
Oil and Water	1,000
Rent of the Factory	10,500
Depreciation in Plant	1,000
Consumable Store	5,000
Repairs and Renewal Plant	7,000

*Solution:*

$$\text{Factory Cost} = \text{Prime Cost} + \text{Factory Overheads}$$

$$\text{Prime Cost} = \text{Cost of Direct Materials} + \text{Direct Wages} + \text{Direct Expenses}$$

$$= \text{Rs. } 2,00,000 + \text{Rs. } 50,000 + \text{Rs. } 10,000$$

$$= \text{Rs. } 2,60,000$$

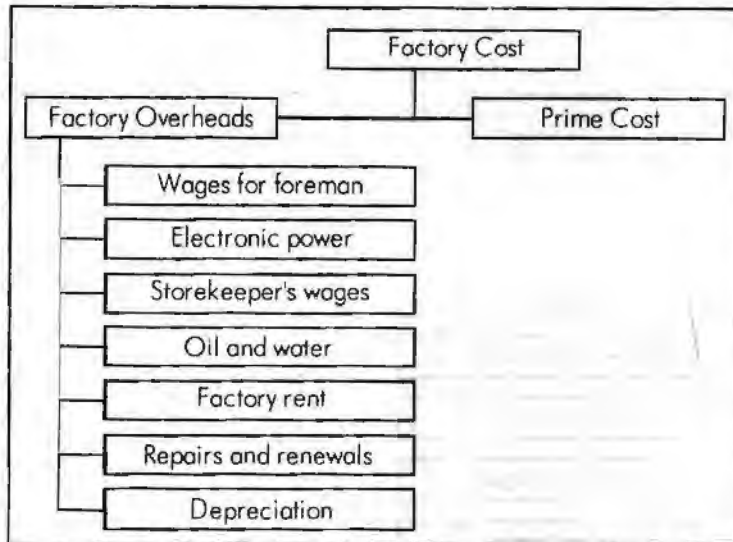
$$\begin{aligned} \text{Factory Overheads} &= \text{Wages of Foreman} + \text{Electric Power} + \text{Lighting of the} \\ &\quad \text{Factory} + \text{Storekeeper's Wages} + \text{Oil and Water} + \text{Rent of the} \\ &\quad \text{Factory} + \text{Depreciation in Plant} + \text{Consumable Store} + \\ &\quad \text{Repairs and Renewal Plant} \end{aligned}$$

$$= 2,00,000 + 50,000 + 10,000 + 5,000 + 2,000 + 4,000 + 2,500 + 1,000 + 10,500 + 1,000 + 5,000 + 7,000$$

$$= \text{Rs. } 2,98,000$$

$$\text{Hence, Factory Cost} = 2,60,000 + 2,98,000$$

$$= \text{Rs. } 5,58,000$$



Notes

The next stage in the process of the unit costing is to find out the cost of the production. The cost of production is the combination of both the factory cost and administrative overheads.

$$\text{Cost Production} = \text{Factory Cost} + \text{Administrative Overheads}$$

Administrative overheads is the indirect expenses incurred during the office administration for the smooth flow production of finished goods.

### Student Activity

In the example discussed to measure factory cost, if the following data is added

	Rs.
Office Rent	6,000
Office Lighting	1,250
Office Depreciation	3,500
Director's Fees	2,500
Manager's Salary	10,000
Office Stationery	1,000
Telephone Charges	500
Postage and Telegrams	250

Calculate Production Cost.

**Solution:**

$$\text{Production Cost} = \text{Factory Cost} + \text{Administrative Cost}$$

$$\text{Factory Cost} = \text{Rs } 5,58,000 \text{ (from the previous example)}$$

$$\text{Administrative Cost} = \text{Office Rent} + \text{Office Lighting} + \text{Office Depreciation} + \text{Director's Fees} + \text{Manager's Salary} + \text{Office Stationery} + \text{Telephone Charges} + \text{Postage and Telegrams}$$

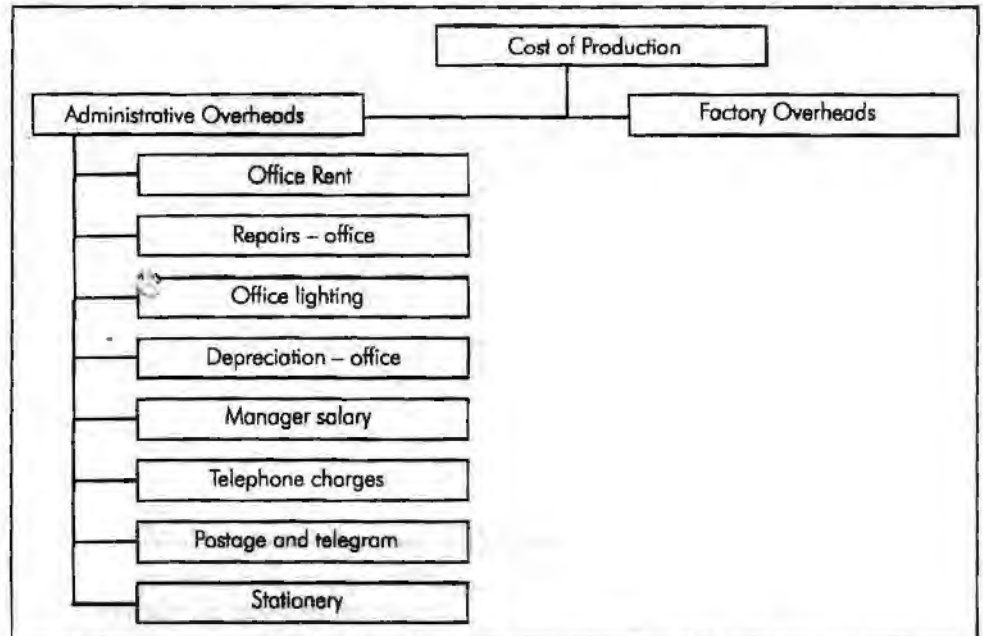
$$= 6,000 + 1,250 + 3,500 + 2,500 + 10,000 + 1,000 + 500 + 250$$

$$= \text{Rs. } 25,000$$

$$\text{Hence, Production Cost} = 5,58,000 + 25,000$$

$$= \text{Rs. } 5,83,000$$

Notes



Immediate next stage to determine in the process of unit costing is the component of cost of sales. The cost of sales is the blend of both, selling overheads and cost of production.

Whatever the cost involved in the production process in the factory as well in the administrative proceedings are clubbed with the selling overheads to determine the cost of sales.

$$\text{Cost of Sales} = \text{Cost of Production} + \text{Selling Overheads}$$

Selling overheads are nothing but the indirect expenses incurred by the firm at the moment of selling products. In brief, whatever the expenses in relevance with the selling and distribution are known as selling overheads.

**Example:** In the example continued, if we add the following data,

	Rs.
Salesman's Salary	10,500
Travelling Expenses	1,000
Carriage Outward	750
Advertising	3,500
Warehouse Charges	1,000

Calculate the cost of sales.

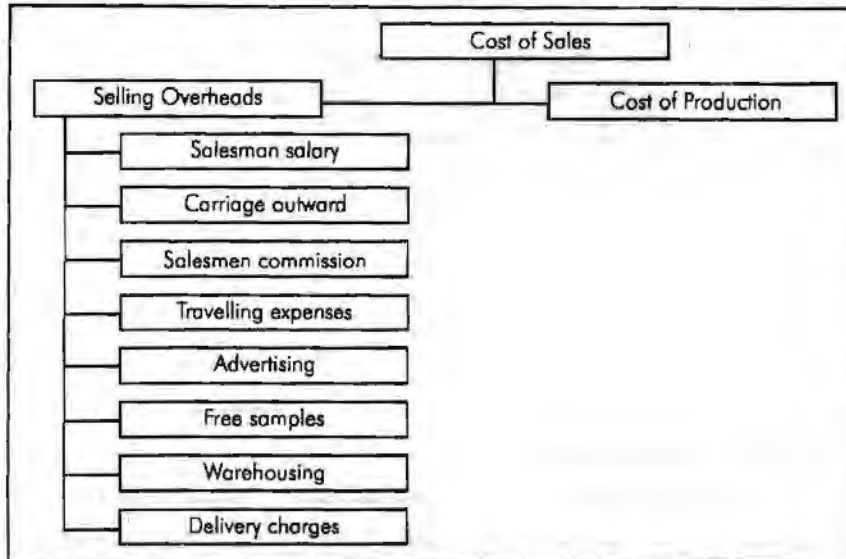
**Solution:**

$$\text{Cost of Sales} = \text{Cost of Production} + \text{Selling Overheads}$$

$$\text{Cost of Production} = \text{Rs. } 5,83,000 \text{ (from the previous example)}$$

$$\begin{aligned} \text{Selling Overheads} &= \text{Salesman's Salary} + \text{Travelling Expenses} + \text{Carriage} \\ &\quad \text{Outward} + \text{Advertising} + \text{Warehouse Charges} \\ &= 10,500 + 1,000 + 750 + 3,500 + 1,000 \\ &= \text{Rs. } 16,750 \end{aligned}$$

$$\begin{aligned} \text{Hence, Cost of Sales} &= 5,83,000 + 16,750 \\ &= \text{Rs. } 5,99,750 \end{aligned}$$



Notes

The last but most important stage in the unit costing is determining the selling price of the commodities. The selling price of the commodities is fixed by way of adding both the cost of sales and profit margin out of the product sales.

$$\text{Sales} = \text{Cost of Sales} + \text{Margin of Profit}$$

**Example:** In the example continued, if we add the profit that can be earned to be Rs. 48,900. Calculate the product sales expected.

**Solution:**

$$\begin{aligned} \text{Sales} &= \text{Cost of Sales} + \text{Margin of Profit} \\ &= 5,99,750 \text{ (from the previous example)} + 48,900 \\ &= \text{Rs. } 6,48,650 \end{aligned}$$

Under the unit costing, the selling price of the product can be determined through the statement form.

**Example:** Calculate the prime cost, factory cost, cost of production cost of sales and profit form the following particulars:

	Rs.		Rs.
Direct materials	2,00,000	Office stationery	1,000
Direct wages	50,000	Telephone charges	250
Direct expenses	10,000	Postage and telegrams	500
Wages of foreman	5,000	Salesmen's salaries	2500
Electric power	1,000	Travelling expenses	1,000
Lighting: Factory	3,000	Repairs and renewal plant	7,000
Office	1,000	Office premises	1,000
Storekeeper's wages	2,000	Carriage outward	750
Oil and water	1,000	Transfer to reserves	1,000
Rent: Factory	10,000	Discount on shares written off	1000
Office	5,000	Advertising	2,500
Depreciation Plant	1,000	Warehouse charges	1000
Office	2,500	Sales	3,79,000
Consumable store	5,000	Income tax	20,000
Managers' salary	10,000	Dividend	4,000
Directors' fees	2,500		



## Cost Statement/Cost Sheet

Notes

Particulars	Rs.	Rs.
Direct Materials	2,00,000	
Direct wages	50,000	
Direct expenses	10,000	
<b>Prime Cost</b>		<b>2,60,000</b>
<b>Factory Overheads:</b>		
Wages of foreman	5,000	
Electric power	1,000	
Lighting : Factory	3,000	
Storekeeper's wages	2,000	
Oil and water	1000	
Rent: Factory	10,000	
Depreciation Plant	1000	
Consumable store	5,000	
Repairs and Renewal Plant	7,000	35,000
<b>Factory Cost</b>		<b>2,95,000</b>
<b>Administration Overheads:</b>		
Rent Office	5,000	
Depreciation office	2,500	
Managers' salary	10,000	
Directors' fees	2,500	
Office stationery	1,000	
Telephone charges	250	
Postage and telegrams	500	
Office premises	1,000	
Lighting: Office	1,000	23,750
<b>Cost of Production</b>		<b>3,18,750</b>
<b>Selling and Distribution Overheads:</b>		
Carriage outward	750	
Salesmen's salaries	2500	
Travelling expenses	1,000	
Advertising	2500	
Warehouse charges	1000	7,750
<b>Cost of Sales</b>		<b>3,26,500</b>
Profit		52,500
<b>Sales</b>		<b>3,79,000</b>

The next stage in the preparation of the cost statement is to induct the stock of raw materials, work in progress and finished goods.

## Stock of Raw Materials

The raw materials stock should be taken into consideration for the preparation of the cost sheet. The cost of the raw materials is nothing but the direct materials cost of the product. The cost of the materials is in other words cost of the materials consumed for the production of a product.

Notes

Particulars	Rs
Opening stock of raw materials	XXXXX
(+) Purchases of raw materials	XXXXX
(-) Closing stock of raw materials	XXXXX
<b>Cost of materials consumed</b>	<b>XXXXX</b>

## Stock of Semi-finished Goods

The treatment of the stock of semi-finished goods is mainly depending upon the two different approaches, *viz.*

1. Prime cost basis, and
2. Factory cost basis.

The factory cost basis is considered to be predominant over the early one due to the consideration of factory overheads at the moment of semi finished goods treatment. The indirect expenses are the expenses converting the raw materials into semi-finished goods which should be relatively considered for the treatment of the stock valuation rather than on the basis of prime cost.

Particulars	Rs
Prime cost	XXXXXX
(+) Factory overheads incurred	XXXXXX
(+) Opening work in progress	XXXXXX
(-) Closing work in progress	XXXXXX
<b>Factory cost</b>	<b>XXXXXX</b>

## Stock of Finished Goods

The treatment of the stock of finished goods should carried over in between the opening stock and closing stock and adjusted among them before the finding the cost of goods sold.

Particulars	Rs
Cost of production	XXXXX
(+) Opening stock of finished goods	XXXXX
(-) Closing stock of finished goods	XXXXX
<b>Cost of goods sold</b>	<b>XXXXX</b>

**Example:** The following data has been from the records of Centre corporation for the period from June 1 to June 30, 2005.

Notes

	1 <sup>st</sup> Jan 2005	31 <sup>st</sup> Jan 2005
Cost of raw materials	60,000	50,000
Cost of work in progress	24,000	30,000
Cost of finished good	1,20,000	1,10,000
<b>Transaction during the month</b>		
Purchase of raw materials		9,00,000
Wages paid		4,60,000
Factory overheads		1,84,000
Administration overheads		60,000
Selling overheads		40,000
Sales		18,00,000

Draft the cost sheet.

**Solution:**

#### Cost Sheet

Particulars	Rs.	Rs.
Opening stock of raw materials 1 <sup>st</sup> Jan	60,000	
(+) Purchase of raw materials	9,00,000	
(-) Closing stock of raw materials 31 <sup>st</sup> Jan	50,000	
Raw materials consumed during the year		9,10,000
(+) Wages paid		4,60,000
<b>Prime Cost</b>		<b>13,70,000</b>
Factory overheads	1,84,000	
(+) Opening stock of semi goods	24,000	
(-) Closing stock of semi goods	30,000	
<b>Factory Overheads</b>		<b>1,78,000</b>
<b>Factory or Works Cost</b>		<b>15,48,000</b>
(+) Administration overheads		60,000
<b>Cost of Production</b>		<b>16,08,000</b>
(+) Opening stock of finished goods	1,20,000	
(-) Closing stock of finished goods	1,10,000	
<b>Cost of Goods Sold</b>		<b>16,18,000</b>
(+) Selling overheads		40,000
<b>Cost of Sales</b>		<b>16,58,000</b>
Net profit		1,42,000
<b>Sales</b>		<b>18,00,000</b>

## Summary

Costs which cannot be controlled are known as uncontrollable costs. All fixed costs are very difficult to control or bring down; they rigid or fixed irrespective to the level of production. A budget is detailed plan of operation for some specific future period. It is an estimate prepared in advance of the period to which it applies. It acts as a business barometer as it is complete programme of activities of the business for the period covered. Under costing, the role of unit costing is inevitable tool for the industries not only to identify the volume of costs incurred at every level but also to determine the rational price on the commodities in order to withstand among the competitors. Direct labour is the cost of the labour which is irectly involved in the production of either a product or service. Indirect expenses are the expenses other than that of the direct expenses in the production of a product. The expenses which are not directly part of the production process of a product or service known as indirect expenses.

Notes

## Keywords

**Direct Cost:** Cost incurred which can be easily ascertained and measured for a product.

**Factory Cost:** It is the total cost incurred both direct and indirect at the work spot during the production of an article.

**Indirect Cost:** Cost incurred cannot be easily ascertained and measured for a product.

**Product Centre:** It is the location at where the cost is ascertained through which the product is passed through.

**Profit Centre:** It is responsibility centre not only for the cost and revenues but also for profits for the activity.

**Prime Cost:** Combination of all direct costs viz. Direct materials, Direct labour and Direct expenses.

**Selling Price or Sales:** The summation of cost of sales and profit margin.

**Service Centre:** The location at where the cost is incurred either directly or indirectly but not directly on the products.

## Review Questions

1. Explain direct and indirect costing.
2. What is cost-sheet definition?
3. Express indirect and direct expenses.
4. Prepare the cost sheet to show the total cost of production and cost per unit of goods manufactured by a company for the month of Jan. 2005. Also find the cost of sale and profit.

Particulars	Rs	Particulars	Rs
Stock of raw materials 1.1.2005	6,000	Factory rent and rates	6,000
Raw materials procured	56,000	Office rent	1,000
Stock of raw material 31.1.2005	9,000	General expenses	4,000
Direct wages	14,000	Discount on sales	600
Plant depreciation	3,000	Advertisement expenses	1,200
Loss on the sale of plant	600	Income tax paid	2000
Sales		Rs. 1,50,000	

5. XYION Co. Ltd. is an export oriented company manufacturing internal – communication equipment of a standard size. The company is to send quotations

to foreign buyers of your product. As the cost accounts chief you are required to help the management in the matter of submission of the quotation of a cost estimate based on the following figures relating to the year 1984. Total output (in units) 20,000.

Notes

	Rs		Rs
Local Raw materials	20,00,000	Excise duty	4,00,000
Imports of raw materials	2,00,000	Administrative office expenses	4,00,000
Direct labour in works	20,00,000	Salary of the managing director	1,20,000
Indirect labour in works	4,00,000	Salary of the joint managing Director	80,000
Storage of raw materials and spares	1,00,000	Fees of directors	40,000
Fuel	3,00,000	Expenses on advertising	3,20,000
Tools consumed	40,000	Selling expenses	3,60,000
Depreciation on plant	2,00,000	Sales depots	2,40,000
Salaries of works personnel	2,00,000	Packaging and distribution	2,40,000

Prepare the cost statement in columnar form.

### Further Readings

R.L. Gupta and Radhaswamy, *Advanced Accountancy*.

V.K. Goyal, *Financial Accounting*, Excel Books, New Delhi.

Khan and Jain, *Management Accounting*.

S.N. Maheswari, *Management Accounting*.

S. Bhat, *Financial Management*, Excel Books, New Delhi.



# Unit 7 Corporate Financial Statements

Notes

## Unit Structure

- Introduction
- Types of Financial Statements
- Nature of Financial Statements
- Attributes of Financial Statements
- Uses of Financial Statements
- Limitations of Financial Statements
- Summary
- Keywords
- Review Questions
- Further Readings

## Learning Objectives

At the conclusion of this unit, you should be able to:

- Identify the corporate financial statements
- Explain the attributes of financial statements
- Define the nature of financial statements
- Describe the uses of financial statements

## Introduction

Financial statements are also known as financial reports. These are formal records of the financial activities of a business, person, or other entity. Since we are referring to the corporate financial statements, the corporate financial reports refer to the records of a corporate house.

Corporate financial statements provide an overview of a business's financial condition in both short-term and long-term. All the relevant financial information of a business enterprise, presented in a structured manner and in a form easy to understand, is thus called the financial statement.

## Types of Financial Statements

There are five different types of financial statements. The different types of financial statements indicate the different activities occurring in a particular business house.

1. Income Statement
2. Retained Earnings Statement
3. Balance Sheet
4. Cash Flow Statement
5. Fund Flow Statement

Let us understand each of them one by one.

1. **Income Statement:** Income statement, also called profit and loss statement (P&L) and Statement of Operations, is a company's financial statement that indicates how the revenue (money received from the sale of products and services before expenses are taken out, also known as the "top line") is transformed into the net income (the result after all revenues and expenses have been accounted for, also known as the "bottom line"). The purpose of the income statement is to show managers and investors whether the company made or lost money during the period being reported. The important thing to remember about an income statement is that it represents a period of time.

*Example:* The following example shows some of the common elements of the Income Statement

**Sample Company Income Statement**  
January 1, 2009 to December 31, 2009

Particulars	Amount	Amount
<b>Income</b>		
Gross Sales	346,400	
Less: Returns and allowances	1,000	
<b>Net Sales</b>		<b>345,400</b>
Cost of Goods		
Merchandise Inventory, January 1	160,000	
Purchases	90,000	
Freight Charges	2,000	
Total Merchandise Handled	252,000	
Less: Inventory, December 31	100,000	
Cost of Goods Sold		152,000
<b>Gross Profit</b>		<b>193,400</b>
Interest Income		500
<b>Total Income</b>		<b>193,900</b>
<b>Expenses</b>		
Salaries	68,250	
Utilities	5,800	
Rent	23,000	
Office Supplies	2,250	
Insurance	3,900	
Advertising	8,650	
Telephone	2,700	
Travel and Entertainment	2,550	
Dues & Subscriptions	1,100	
Interest Paid	2,140	
Repairs & Maintenance	1,250	
Taxes & Licenses	11,700	
Total Expenses		133,290
<b>Net Income</b>		<b>Rs 60,110</b>

2. **Retained Earnings Statement:** As the name suggests, a retained earnings statement explains the changes in a company's retained earnings over the reporting period. It breaks down changes affecting the account, such as profits or losses from operations, dividends paid, and any other items charged or credited

to retained earnings. A retained earnings statement is required by Generally Accepted Accounting Principles (GAAP) whenever comparative balance sheets and income statements are presented. It may appear in the balance sheet, in a combined income statement and changes in retained earnings statement, or as a separate schedule.

Notes

*Example:* Written below is a sample of a retained earnings statement.

**Quartz Corporation**  
**Statements of Retained Earnings**  
**For the year ending December 31, 2009**

Retained earning - January 1, 2009	\$400,000
Add: Net income	<u>115,000</u>
	\$515,000
Less: Dividends	<u>35,000</u>
Retained earnings - December 31, 2009	<u>\$480,000</u>

3. **Balance Sheet:** The balance sheet provides an insight into the financial status of a company at a particular time. The balance sheet is different in comparison to the other types of financial statements. Other financial statements are prepared by taking into account the financial health of the company over a considerable span of time.

*Example:* Sample Balance Sheet

**Sample Balance Sheet**  
**For the Month Ended \_\_\_\_\_**

Asset	Rs.	Liabilities	Rs.
Cash	15,300	Accounts Payable	—
Accounts Receivable	1,000	Equity	600
Supplies	500	Sample Business Plan, Capital	51,200
Land	10,000	Other	—
Building	25,000	Total Liabilities	—
Total Assets	<u>51,800</u>	Owner's Equity	<u>51,800</u>

4. **Cash Flow Statement:** Cash Flow Statement reports on a company's cash flow over a period of time. The cash flow may be from many activities of a firm involving particularly its operations, investment and finance.

*Example:* Sample Cash Flow Statement

**Sample Business Plan**  
**Sample Cash Flow Statement**  
**Statement For the Month Ended \_\_\_\_\_;**

Cash Flow from Operating Activities		
Net Income		1,800
Non-cash Expenses and Revenues Include income		
Increase in Accounts Receivable	1,000	
Increase in Supplies	500	
Increase in Accounts Payable	600	(900)

*Contd...*

## Notes

Net Cash Flow from Operating Activities		900
Cash Flows from Investing Activities		
Purchase of land	(10,000)	
Purchase of Building	(25,000)	
Net Cash Flow used by Investing Activities		
Cash Flow Financing Activities		
Invested	50,000	
Withdrawals	(600)	
Net Cash Flow Provided by Financing Activities		49,400
Net Increase (Decrease) in Cash		15,000

For large corporations, these statements are often complex and may include an extensive set of notes to the financial statements and management discussion and analysis. The notes typically describe each item on the balance sheet, income statement and cash flow statement in further detail. Notes to financial statements are considered an integral part of the financial statements.

5. **Fund Flows Statement:** Fund Flows Statement can be understood as the summary of a firm's changes in financial position from one period to another; it is also called a "sources and uses of funds statement" or a "statement of changes in financial position". Simply put, it tells investors where funds have come from and where funds have gone. The statements are often used to determine whether companies efficiently source and utilize funds available to them.

*Example: How to Prepare a Fund Flows Statement*

Fund Flows Statement are prepared by taking the balance sheets for two dates representing the coverage period. The increases and decreases must then be calculated for each item. Finally, the changes are classified under four categories: (1) Long-term sources, (2) Long-term uses, (3) Short-term sources, (4) Short-term uses.

It is also important to zero out the non-fund based adjustments in order to capture only the changes that are accompanied by flow of funds. However, income accrued but received and expenses incurred but not received reckoned in the profit and loss statement should not be excluded from the profit figure for the Fund Flows Statement.

Fund Flows Statement can be used to identify a variety of problems in the way a company operates. For example, companies that are using short-term money to finance long-term investments may run into liquidity problems in the future. Meanwhile, a company that is using long-term money to finance short-term investments may not be efficiently utilizing its capital.

*Example: Determination of Sources and Uses*

Assets	2007	2006	+/-	S/U
Cash and C.E.	\$90	\$100	-	S
Acct. Rec.	394	410	-	S
Inventories	696	616	+	U
Prepaid Exp	5	5		-
Accum Tax Prepay	10	9	+	U
Current Assets	\$1,195	\$1,140		N/A

Contd....

Fixed Assets (@Cost)	1030	930		N/A
Less: Acc. Depr.	(329)	(299)		N/A
Net Fix. Assets	\$701	\$631	+	U
Investment, LT	50	50		-
Other Assets, LT	<u>223</u>	<u>223</u>		-
Total Assets	\$2,169	\$2,044		

Notes

Assets	2007	2006	+/-	S/U
Cash and C.E.	\$90	\$100	10	S
Acct. Rec.	394	410	16	S
Inventories	696	616	80	U
Prepaid Exp	5	5		-
Accum Tax Prepay	<u>10</u>	<u>9</u>	1	U
Current Assets	\$1,195	\$1,140		N/A
Fixed Assets (@Cost)	1030	930		N/A
Less: Acc. Depr.	(329)	(299)		N/A
Net Fix. Assets	\$701	\$631	70	U
Investment, LT	50	50		-
Other Assets, LT	<u>223</u>	<u>223</u>		-
Total Assets	\$2,169	\$2,044		

Liabilities and Equity	2007	2006	+/-	S/U
Notes Payable	\$290	\$295	-	U
Acct. Payable	94	94		-
Accrued Taxes	16	16		-
Other Accrued Liab.	<u>100</u>	<u>100</u>		-
Current Liab.	\$500	\$505		N/A
Long-Term Debt	530	453	+	S
<b>Shareholders' Equity</b>				
Com. Stock (\$1 par)	200	200		-
Add Pd in Capital	729	729		-
Retained Earnings	210	157	+	S
Total Equity	\$1,139	\$1086		N/A
Total Liab/Equity	\$2,169	\$2,044		

Liabilities and Equity	2007	2006	+/-	S/U
Notes Payable	\$290	\$295	\$5	U
Acct. Payable	94	94		-
Accrued Taxes	16	16		-
Other Accrued Liab.	<u>100</u>	<u>100</u>		-
Current Liab.	\$500	\$505		N/A
Long-Term Debt	530	453	77	S
<b>Shareholders' Equity</b>				
Com. Stock (\$1 par)	200	200		-
Add Pd in Capital	729	729		-
Retained Earnings	210	157	53	S
Total Equity	\$1,139	\$1086		N/A
Total Liab/Equity	\$2,169	\$2,044		

## Fund Flows Statement

Notes

Particular	Amount	Amount
<b>Sources</b>		
Increase, Retained Earnings	\$ 53	
Decrease, Accounts Receivable	16	
Increase, Long-Term Debt	77	
Decrease, Cash + Cash Equivalents	10	\$156
<b>Uses</b>		
Increase, Inventories	\$80	
Increase, Accum Tax Prepay	1	
Decrease, Notes Payable	5	
Increase, Net Fixed Assets	70	\$156

### Nature of Financial Statements

The nature of financial statements depends on the type of financial statement. Thus we can say that:

1. Balance Sheet shows the financial condition of the company. The nature of the balance sheet is that it is similar to a financial picture of the organization at a certain point of time (as opposed to an income statement which is over a period of time).

*Example:* The balance sheet can be as of December 31, 2006, or whatever is the close of the fiscal year.

Balance sheets can be determined monthly or at other intervals as well. Balance sheets contain "permanent" information, as opposed to "temporary" information on an income statement.

*Examples:* (a) Cash is a permanent account, that is, an ongoing part of the business.

(b) Revenues (sales) and expenses are temporary accounts, determined for specific fiscal years and then those accounts are closed out to the balance sheet.

2. Statement of income shows the profit or loss. "P&L" statements depict the status of an organisation's overall profits. These statements include how much money a corporation has earned (revenue) and subtract how much it has spent (expenses), resulting in how much money has the corporate made (profits) or lost (deficits). Basically, the statement includes total sales minus total expenses. It presents the nature of the overall profit and loss over a period of time. Therefore, the Income Statement gives you a sense for how well the business is operating.
3. Statement of retained earnings explains the changes in a company's retained earnings over the reporting period. It breaks down changes affecting the account, such as profits or losses from operations, dividends paid, and any other items charged or credited to retained earnings. It may appear in the balance sheet, in a combined income statement and changes in retained earnings statement, or as a separate schedule. The retained earnings account on the balance sheet is said to represent an "accumulation of earnings" since net profits and losses are added/subtracted from the account from period to period. The general equation can be expressed as following:

Ending Retained Earnings = Beginning Retained Earnings – Dividends Paid + Net Income

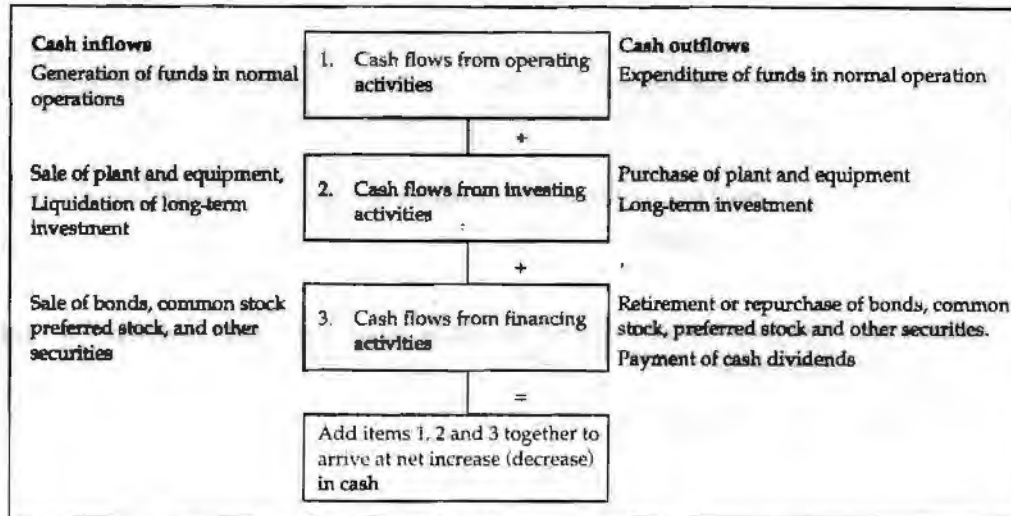


4. Statement of Cash Flow shows where the money came from and for what the company spent it. It emphasizes the critical nature of cash flow to the operation of the firm. The primary sections of the statement of cash flows are:

- (a) Cash flows from operating activities
- (b) Cash flows from investing activities
- (c) Cash flow from financing activities

Notes

Figure shows a summarized cash flow statement.



## Attributes of Financial Statements

There is always a grave misconception that accounting involves financial figures only. Financial figures offer little information and may sometimes be misleading to the users of financial statements.

But financial reports have many other attributes else than being figurative. Let us understand some basic attributes of financial statements.

### Relevance

This simply means the information is able to directly influence the decision making process of the user. To be relevant, financial information should contain the past as well as present records and should be able to provide a yard stick for the future.

Relevance is also measured in relation to materiality. If an item or event is material, it is probably relevant to the user of financial statements. In other words, an item is material if the user would have done something differently if he or she had not known about the item.

In assessing materiality of financial information it should not only be based on the financial value but also depends on the nature of the transaction. There are other items in financial statements which require strict accuracy as may have a large influence on the operations of the enterprise or may lead to misconception by users of financial information.

**Example:** A financial statement includes the directors' remuneration, because the directors' act as agents of the shareholders any slight under statement in their remuneration may attract an outcry from the shareholders.

### Understandability

In addition to relevance, the users of financial statements are able to make informed and better decision if they can interpret the contents of financial statements.

Understandability is about communicating an intended meaning. This depends on both the accountant and the decision maker. Accountants should produce financial information and present it in a form which can be easily understood and interpreted by their intended users.

*Example:* The information which is produced for the loan application at the bank needs to be more elaborate on the financial position of the enterprise and should emphasize on profitability.

### **Reliability**

To be reliable, the information must be neutral which means that it is free from bias. Financial statements are not neutral if, by the selection or presentation of information, they influence the making of a decision or judgment in order to achieve a pre determined result or income.

In order to be relied upon, the financial information requires the following attributes:

1. Faithful presentation of information.
2. Neutrality.
3. Substance over form i.e. accounting should be based on financial reality and not merely on legal form.
4. Prudence.
5. Completeness.

### **Comparability**

Another important character of accounting information is Comparability. Financial statements of the organization must be capable of be linked with other non financial information within the enterprise. User should also be able to compare financial statements of an enterprise through time in order to assess the trend in performance and financial position.

In assessing the compatibility of financial information, the enterprise must also disclose on the accounting policies they have been adopting over the years. If possible the entity should apply accounting policies consistently to ensure meaningful comparison of the results over time.

The financial information should be presented together with the corresponding information of the preceding periods for easy comparison.

## **Uses of Financial Statements**

The uses of financial statements vary from entity to entity. For different people, they have different uses. Though no complete list can be provided for their uses, presented under is a brief list of benefits they give to their users.

1. *For equity investors and lenders:* The existing equity investors and lenders to a company need to monitor their investments and to evaluate the performance of management. For this purpose, they have no aid else than the financial statements of a firm.

The prospective equity investors and lenders use financial statements to decide whether or not to invest in an organisation.

2. *For finance specialists:* Investment analysts, money managers, and stockbrokers, use financial statements to make buy/sell/hold recommendations to their clients.
3. *For credit rating agencies:* Rating Agencies such as Moody's and Standard & Poor's assign credit ratings on the basis of the financial statements of a company.

4. **For customers and suppliers:** Major customers of and suppliers to an organization evaluate the financial strength and staying power of the company as a dependable resource for their business. For this purpose, the best possible aids are those of the financial statements of the organization.
5. **For labor unions:** Labor unions use financial statements of a company to gauge how much of a pay increase a company is able to afford in upcoming labor negotiations.
6. **For the Board of directors:** Board of directors of an organization uses its financial statements to review the performance of management in general and company in particular.
7. **For managers:** Managers, too, are interested in measuring the operating performance in terms of profitability and return on invested capital. If they are not owners, managers must still satisfy the owners' expectations in this regard. As managers, they are interested in measures of operating efficiency, asset turnover, and liquidity or solvency. These will help them manage day-to-day activities and evaluate potential credit customers and key suppliers.
8. **For competitors:** Existing Competitors of an organization use its financial statements to benchmark their own financial results.  
  
Potential competitors of an organization use its financial statements to assess how profitable it may be to enter the industry.
9. **For government agencies:** The financial statements of a company are very useful for the government agencies responsible for taxing, regulating, or investigating the company.
10. **For associated personnel:** The financial statements of a company are also useful for politicians, lobbyists, issue groups, consumer advocates, environmentalists, think tanks, foundations, media reporters, and others who are supporting or opposing any particular public issue the company's actions affect.
11. **For partners:** The financial statements of a company are used by actual or potential joint venture partners, franchisors or franchisees, and other business interests who need to know about the company and its financial situation.

### Student Activity

Check out the financial statements of RIL for the financial year 2009-10.

## Limitations of Financial Statements

Some of the limitations of the financial statements are as follows:

1. As the historical costs and money measurement concepts govern the preparation of the balance sheet and income statements, hence these financial statements are essentially statements reflecting historical facts. It ignore inflationary trend and does not reflect the true current worth of the enterprise.
2. Certain important qualitative elements are omitted from the financial statements because they are incapable of being measured in monetary terms like the quality and reputation of the management team, employee and other.
3. There are items in the assets side of the balance sheet which has no real value and are merely deferred charges to future incomes like preliminary/pre-incorporation expenses and other.
4. There are still the following issues or challenges in preparing the financial statements which may amount to overstatement of the accounting profit of an entity:
  - (a) When to and how much to recognize revenue in the Income statement.

Notes

(b) The constant challenge of when to expense or to capitalize the expenses. It is important to determine definitely what is revenue expenditure and capital expenditure otherwise the accounting profit will be overstated or understated.

*Example:* Capitalization of borrowing costs, etc.

(c) Method of depreciations and the rates to depreciate into the income statement are selected by management to suit their business needs. Are the rates intentionally been made lower or the depreciation rates are higher to accelerate the depreciation of the fixed assets.

(d) Adequacy of provisions and method of providing for doubtful debts. Are the trade debtors recoverable and to what extent the accounting method for provision for doubtful debts shows the realistic picture.

(e) Basis of valuation of assets-when can costs change to reflect current values? Using replacement or current costs?

(f) Consolidation challenges-what to eliminates to reflects the overall group performance. Some items might be omitted to show a higher accounting profits.

## Summary

Financial statements are the most prominent and useful source of information to the investors.

The objective of general purpose financial statements is to provide information about the financial position, financial performance and cash flows of an entity that is useful to a wide range of users in making economic decisions.

Financial statements also show the results of management's stewardship of the resources entrusted to it.

To meet this objective, financial statements provide information about an entity's: (a) assets; (b) liabilities; (c) equity; (d) income and expenses, including gains and losses; (e) other changes in equity; and (f) cash flows.

The companies have four types of financial statements, viz. Balance sheet, Income statement, Statement of retained earnings and Statement of cash flows.

## Keywords

**Gross Profit:** It is calculated by comparing the sales and cost of sales. It is the excess of sales over cost of sales.

**Gross Loss:** It is the excess of cost of sales over sales.

**Net Profit:** It is the excess of revenues over expenses. It is depicted by P&L A/c.

**Net Loss:** Excess of expenditures over revenues is called net loss.

## Review Questions

1. What are the key elements of financial statements?
2. Explain the nature of financial statements.
3. What are the key attributes of financial statements?
4. Explain the uses of financial statements.

## Further Readings

Benjamin Graham, Spencer B. Meredith, *The Interpretation of Financial Statements*, Harper Business.

Martin Fridson, Fernando Alvarez, *Financial Statement Analysis: A Practitioner's Guide*, Wiley.

Notes

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# Unit 8 Classification of Expenditure/ Receipts

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## Unit Structure

- Introduction
- Capital and Revenue Expenditures
- Capital and Revenue Receipts
- Cost of Goods Sold
- Summary
- Keywords
- Review Questions
- Further Readings

## Learning Objectives

At the conclusion of this unit, you should be able to:

- Explain capital and revenue expenditure
- Identify the capital and revenue receipts

## Introduction

Financial statements of companies mean: (i) Profit and Loss Account, and (ii) Balance Sheet. According to Section 209 of the Indian Companies Act, 1956, it is compulsory for each and every company to prepare its profit and loss account as well as Balance Sheet. It is also essential to maintain both the accounts in a proper form which is given in the Schedule VI, Part I and II of the Companies Act.

The first Profit and Loss Account can be prepared from the date of incorporation upto a period (closing date) which initially cannot be more than 9 months after closing the accounts. Afterwards, the difference between annual general meeting and date of preparing of final accounts cannot be more than 6 months. Generally, the ledger accounts are of one year but it may be a lesser period in the beginning but not more than 15 months. This period can also be extended upto 18 months only with the prior permission of the Registrar of Companies.

## Capital and Revenue Expenditures

A businessman is interested to know the net result of his business operations after a certain period. But neither the trial balance nor the books of accounts reveal the net results of the business. For this, the financial statements are prepared. But before you learn how to prepare these statements, it is all the more necessary to know about the nature of expenditure and receipts i.e. capital and revenue. This will help in recording correctly the items in these statements.

In business, there are thousands of items of expenditure. The following are some of these expenditures which are generally incurred in all types of business:

1. Purchase of goods
2. Purchase of fixed assets such as building, furniture, machine, etc.
3. 'Carriage inwards'



4. Octroi
5. Purchase of raw material
6. Import duty
7. Coal, gas, water, oil, grease, fuel, heating and lighting
8. Wages paid to workers for installation of machinery
9. Salaries
10. Rent, rates and taxes
11. Stationery and printing
12. Postage and telegrams
13. Entertainment
14. Repairs and renewals
15. Depreciation on fixed assets
16. Office expenses
17. Bank charges
18. General expenses
19. Travelling expenses
20. Overhauling of second hand machinery purchased
21. Major repairs affected for reconditioning a machinery/the old assets
22. Increasing the seating capacity of a cinema hall
23. Constructing an additional room
24. Carriage for bringing a fixed asset to place of business
25. Shifting business to convenient premises
26. Advertisement on introducing a new product in market
27. Replacement of hand driven machine by automatic machine
28. Research and development

Notes

On the basis of items of expenditure, the expenditure can be classified into three categories:

### **Capital Expenditure**

The expenditure incurred for acquiring a fixed asset or which results in increasing the earning capacity of the business is known as Capital Expenditure.

The benefits of capital expenditures are generally availed in several accounting years. Following are some of the examples of Capital Expenditure.

1. Expenditure incurred for the acquisition of a fixed asset.  
*Example:* Building, furniture, machinery etc.
2. Expenditure incurred for the inward carriage or erection of a fixed asset.  
*Example:* (a) Carriage paid in connection with the purchase of fixed asset;  
(b) Wages paid to labourers in connection with the installation of machinery.

These expenses form part of the cost of the fixed asset.

3. Expenditure incurred for extension or improvement of an existing fixed asset.  
*Example:* Money spent in connection with increasing the seating capacity of a cinema hall or constructing an additional room.

4. Expenditure incurred for the major repairs of an old asset.  
*Example:* Repairs for reconditioning a machinery.
5. Expenditure incurred for the replacement of an old asset with a new asset.  
*Example:* Replacing a hand-driven machine by automatic machine.

### **Revenue Expenditure**

An expenditure incurred in the course of regular business transactions of a concern is availed during the same accounting year is known as Revenue Expenditure. Following are some of the examples, of Revenue Expenditure.

1. Expenditure incurred on the purchase of raw materials.
2. Expenditure incurred in the day-do-day running of business.  
*Example:* Wages, salaries, rent, rates and taxes, office expenses, interest, discount, etc.
3. Expenditure incurred for the upkeep of an asset.  
*Example:* Repairs, maintenance charges, etc.
4. Expenditure incurred for the purchase of goods meant for sale.  
*Example:* Purchases, carriage inwards, import duty, octroi, etc.
5. Depreciation of fixed assets.

The above examples are not exhaustive and are not universally accepted. Whether an expenditure is capital expenditure or revenue expenditure depends upon its purpose and nature of the business.

- Examples:*
1. Amount spent on the purchase of furniture is a capital expenditure but it is revenue expenditure for a business dealing in furniture.
  2. Amount spent on Plant and Machinery is a capital expenditure but it is revenue expenditure for a business dealing in engineering goods.
  3. Amount spent on wages or carriage are revenue expenditure, but when wages are paid for the installation of a new machinery or carriage paid to bring the machine to the place of business, they are capital expenditure as they increase the value of fixed asset i.e. machinery here.

### **Deferred Revenue Expenditure**

There are certain revenue expenditures that are incurred during one accounting year but are applicable wholly or in part in future periods such as heavy expenditure on advertisement for introducing a new product in the market or for exploring new markets for the product. These expenditures appear to be revenue expenditure. But it is not so because the benefit from this is likely to be enjoyed over a number of years. Such expenditure whose benefit is enjoyed not in one year but over a number of years is known as deferred revenue expenditure.

- Examples:*
1. Heavy initial expenditure incurred on Advertisement for introducing a product in the market.
  2. Expenditure incurred in shifting business to more convenient premises.
  3. Expenditure incurred on research and development.

### Student Activity

Choose the right kind of expenditure by putting a Tick Mark in correct column:

Expenditure	Capital Revenue	Deferred Revenue
1. Salaries		
2. Legal charges		
3. Wages for installing a machinery		
4. Depreciation		
5. Repairs of furniture purchased second hand		
6. Advertisement for introducing a new product		
7. Carriage paid on goods purchased		
8. Research & development expenditure		
9. Expenditure on dismantling and reinstallation of plant		
10. Office expenses		
11. Expenditure on the construction of an additional room		
12. Maintenance charges of building		

Notes

### Distinction between Capital and Revenue Expenditure

Following are the main points of difference between capital and revenue expenditures.

Basis of Difference	Capital Expenditure	Revenue Expenditure
Purpose	It is incurred for the purchase of fixed assets.	It is incurred for the maintenance of fixed assets.
Earning capacity	It increases the earning capacity of the business.	It does not increase the earning capacity of the business.
Periodicity of benefit	Its benefits are spread over a number of years.	Its benefit is only for one accounting year.
Placement in financial statements	It is an item of Balance Sheet and is shown as an asset.	It is an item of Trading and Profit and Loss Account and is shown on the debit side of either of the two.
Occurrence	It is non-recurring expenditure in nature.	It is usually a recurring expenditure.

### Capital and Revenue Receipts

Just as expenditures are classified into Capital or Revenue Expenditure, in the same way receipts are classified into: (1) Capital Receipts, and (2) Revenue Receipts.

#### Capital Receipts

The receipts which do not arise out of normal course of business are known as Capital Receipts.

*Examples:* (1) Receipts from sale of fixed assets, (2) Additional capital introduced by the Proprietor and (3) Loans raised.

#### Revenue Receipts

The receipts which arise out of normal course of a business are known as Revenue Receipts.

*Examples:* (1) Income from sale of goods, (2) Rent received from letting out the business property, (3) Dividend received from shares and (4) Interest received from investment.

## Cost of Goods Sold

### Notes

In a trading concern, the main activity of business is purchasing the goods and selling them. In order to fix the selling price of the goods, the businessman should know the cost of that goods. Cost of goods sold equals the price of goods purchased plus the expenses incurred in bringing the goods to the place of sale.

*Example:* If goods are purchased at a price of Rs. 1,000 and additional expenses, say Rs. 100 are incurred for bringing the goods to the place of sale, then the total cost of goods sold is Rs.1,100 if the entire goods are sold.

If some of the goods are available in the beginning of the year and some of goods remain unsold at the close of year, the cost of goods sold is calculated as under:

Cost of goods sold = Opening Stock Net + Purchases + All expenses inclined on Purchases – Closing Stock

*Example:* Rajesh Tansukia deals in Readymade Garments. Calculate the cost of goods sold from the information given below:

	Amount (Rs.)
Opening stock of garments	10,000
Closing stock of garments	8,000
Purchases made	1,10,000
Carriage on purchase	2,000
Wages paid to workers to keep the garments in store	4,000
Rent of the shop	1,000
Office clerk's salaries	3,000
Office printing and stationery	400
Salesman's salaries	4000

### *Solution:*

Cost of goods sold = Opening stock + Net purchases + Expenses incurred on purchases – Closing stock

	Amount (Rs.)
Opening Stock	10,000
(+) Purchases	1,00,000
	<u>1,10,000</u>
(-) Closing Stock	8,000
	<u>1,02,000</u>
(+) All expenses incurred to bring the purchase upto store carriage on purchases	2,000
Wages paid to workers to keep the garments in store	4,000
<b>Cost of Goods Sold</b>	<u><b>1,08,000</b></u>

## Summary

Financial statements are the most prominent and useful source of information to the investors.

Financial statements also provide useful information to the shareholders of a company concerning the company's financial position on a particular day, its performance and growth, its progress or regress, its future, etc.

Financial statements record only those facts, which are possible to be expressed in financial terms.

Non-monetary events, howsoever important they may be, are not recorded. Therefore, financial statements do not provide all the information about the firm.

## Keywords

**Capital Expenditure:** It is incurred in acquiring, extending or improving fixed assets.

**Capital Receipt:** It is a receipt that does not arise in the normal course of business.

**Deferred Revenue Expenditure:** It is a heavy expenditure of revenue nature and the benefits of which last for a long time.

**Expenditure:** It refers to cash payments or deferred payments.

**Expense:** It refers to expenditure whose benefit is enjoyed in the same accounting year in which it is incurred.

**Revenue Expenditure:** It includes all expenditure incurred in the course of regular business transactions.

Notes

## Review Questions

- Analyse why U.S. airline companies use a "by nature" income statement format.
- State whether the following receipts are of Capital or Revenue nature and why:
  - Sale of goods
  - Money received as loan from a bank
  - Interest received from deposits
  - Dividend received from securities
  - Sale of machinery
  - Rent received from a tenant
  - Money received from proprietor as additional capital
  - Amount received from public as deposit
  - Amount received from the issue of shares
  - Money received from the sale of furniture
- Calculate the cost of goods sold from the information given below:

	Amount (Rs.)
Opening stock	20,000
Closing stock	18,000
Purchases	85,000
Carriage on purchases	2,300
Carriage on sales	3,000
Office rent	5,800
Sales	1,40,000
Wages paid to keep the goods in the godown	3,000
Purchases Returns	5,000

- How would a change in depreciation expense flow through the financial statements?
- What could a company do with excess cash on the balance sheet?

6. If you want to assess the health of a company and you could choose between looking at 3 years of income statements or 3 years of balance sheets, which would you choose and why?
7. Which of the three financial reporting statements (balance sheet, income statement, statement of cash flows) is most important and why do you believe this is so?

### **Further Readings**

Benjamin Graham, Spencer B. Meredith, *The Interpretation of Financial Statements*, Harper Business.

Martin Fridson, Fernando Alvarez, *Financial Statement Analysis: A Practitioner's Guide*, Wiley.



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# Unit 9 Tools of Financial Statement Analysis

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## Unit Structure

- Introduction
- Concepts
- Objectives
- Tools for Analysis and Interpretation of Financial Statement Analysis
- Common-size Financial Statements
- Comparative Statements
- Summary
- Keywords
- Review Questions
- Further Readings

## Learning Objectives

At the conclusion of this unit, you should be able to:

- Explain the concept of financial statement analysis
- Describe the objectives of financial statement analysis
- Identify the tools for analysis of financial statements
- Define common-size financial statements

## Introduction

Financial statement analysis is the process of examining relationships among financial statement elements and making comparisons with relevant information. It is a valuable tool used by investors and creditors, financial analysts, and others in their decision-making processes related to stocks, bonds, and other financial instruments. The goal in analyzing financial statements is to assess past performance and current financial position and to make predictions about the future performance of a company. Investors who buy stock are primarily interested in a company's profitability and their prospects for earning a return on their investment by receiving dividends and/or increasing the market value of their stock holdings. Creditors and investors who buy debt securities, such as bonds, are more interested in liquidity and solvency: the company's short-and long-run ability to pay its debts. Financial analysts, who frequently specialize in following certain industries, routinely assess the profitability, liquidity, and solvency of companies in order to make recommendations about the purchase or sale of securities, such as stocks and bonds.

## Concepts

Analysts can obtain useful information by comparing a company's most recent financial statements with its results in previous years and with the results of other

companies in the same industry. Three primary types of financial statement analysis are commonly known as horizontal analysis, vertical analysis and ratio analysis.

Notes

### **Horizontal Analysis**

When an analyst compares financial information for two or more years for a single company, the process is referred to as horizontal analysis, since the analyst is reading across the page to compare any single line item, such as sales revenues.

### **Vertical Analysis**

When using vertical analysis, the analyst calculates each item on a single financial statement as a percentage of a total. The term vertical analysis applies because each year's figures are listed vertically on a financial statement. The total used by the analyst on the income statement is net sales revenue, while on the balance sheet it is total assets.

### **Ratio Analysis**

Ratio analysis enables the analyst to compare items on a single financial statement or to examine the relationships between items on two financial statements. After calculating ratios for each year's financial data, the analyst can then examine trends for the company across years. Since ratios adjust for size, using this analytical tool facilitates inter-company as well as intra-company comparisons.

## **Objectives**

Businesses can be seen as having three main activities:

1. Producing and or distributing a good or service.
2. Raising capital to fund operations – through common stock, bonds, preferred stock or bank financing.
3. Investing the capital in Property, Plant & Equipment (PPE).

Financial Statement Analysis is used to see how well a firm is doing these three activities. Thus the main objectives of Financial Statement Analysis can be understood as under:

1. **Equity Investment:** Here look at risk vs. return, take into account inflation, recessions, etc.
2. **Credit Extension:** Look at financial statements to determine the short term cash generating ability
3. **Corporate Bond Investment:** Here look at the long-run viability of the firm – based on financial statements and the economic factors.
4. **Supplier/Customer Health:** Use financial statements to assess the health of key suppliers or customers to whom you extend credit.
5. **Competitor Analyses:** Analyze financial statements to determine market share, pricing, product mix, etc.

## **Tools for Analysis and Interpretation of Financial Statement Analysis**

In assessing the significance of various financial data, experts engage in ratio analyses, the process of determining and evaluating financial ratios. A financial ratio is a relationship that indicates something about a company's activities, such as the ratio between the company's current assets, current liabilities or between its accounts receivable and its annual sales. The basic source for these ratios are the company's financial statements that contain figures on assets, liabilities, profits, or losses.

Financial ratios are only meaningful when compared with other information. Since they are most often compared with industry data, ratios help an individual understand a company's performance relative to that of competitors; they are often used to trace performance over time.

Ratio analysis can reveal much about a company and its operations. However, there are several points to keep in mind about ratios. First, financial statement ratios are "flags" indicating areas of strength or weakness. One or even several ratios might be misleading, but when combined with other knowledge of a company's management and economic circumstances, ratio analysis can tell much about a corporation. Second, there is no single correct value for a ratio. The observation that the value of a particular ratio is too high, too low, or just right depends on the perspective of the analyst and on the company's competitive strategy. Third, a ratio is meaningful only when it is compared with some standard, such as an industry trend, ratio trend, a ratio trend for the specific company being analyzed, or a stated management objective.

In trend analysis, financial ratios are compared over time, typically years. Year-to-year comparisons can highlight trends, pointing to the need for action. Trend analysis works best with five years of data.

The second type of ratio analysis, cross-sectional analysis, compares the ratios of two or more companies in similar lines of business. One of the most popular forms of cross-sectional analysis compares a company's financial ratios to industry ratio averages.

Your report containing the analysis of the financial statements is broken down into the various ratio categories:

1. *Predictor Ratios* indicate the potential for growth or failure.
2. *Profitability Ratios* which use margin analysis and show the return on sales and capital employed.
3. *Asset Management Ratios* which use turnover measures to show how efficient a company is in its operations and use of assets.
4. *Liquidity Ratios* which give a picture of a company's short-term financial situation or solvency.
5. *Debt Management Ratios* which show the extent that debt is used in a company's capital structure.

*Notes:*

1. Tools employed in the horizontal analysis are Comparative statements and Trend percentages.
2. Tools employed in the vertical analysis are Common-size Financial statements and Financial ratios.

## **Common-size Financial Statements**

A company financial statement that displays all items as percentages of a common base figure is known as common-size financial statement. This type of financial statement allows for easy analysis between companies or between time periods of a company.

The values on the common size statement are expressed as percentages of a statement component such as revenue. While most firms don't report their statements in common-size, it is beneficial to compute if you want to analyze two or more companies of differing size against each other.

Notes

Formatting financial statements in this way reduces the bias that can occur when analyzing companies of differing sizes. It also allows for the analysis of a company over various time periods, revealing.

## Notes

**Example:** What percentage of sales is cost of goods sold and how that value has changed over time.

Common-size financial statements put all numbers in context, since the act of producing them involves calculating a ratio for each number on the statements. Without common sizing the statements, it is difficult to attach meaning to the numbers or to pick up trends. That is why common size financial statements are used for financial analysis instead of the actual statements themselves.

**Example:** The following example shows both the dollar amounts and the common-size ratios:

## Common-size Income Statement

	Income Statement	Common size Income Statement
Revenue	70,134	100%
Cost of Goods Sold	44,221	63.1%
<b>Gross Profit</b>	<b>25,913</b>	<b>36.9%</b>
SG&A Expense	13,531	19.3%
<b>Operating Income</b>	<b>12,382</b>	<b>17.7%</b>
Interest Expense	2,862	4.1%
Provision for Taxes	3,766	5.4%
<b>Net Income</b>	<b>5,754</b>	<b>8.2%</b>

## Common-size Balance Sheet

	Balance Sheet	Common-size Balance Sheet
<b>Assets</b>		
Cash & Marketable Securities	6,029	15.1%
Accounts Receivable	14,378	36.0%
Inventory	17,136	42.9%
<b>Total Current Assets</b>	<b>37,543</b>	<b>93.9%</b>
Property, Plant, & Equipment	2,442	6.1%
<b>Total Assets</b>	<b>39,985</b>	<b>100%</b>
<b>Liabilities and Shareholders' Equity</b>		
Current Liabilities	14,251	35.6%
Long-term Debt	12,624	31.6%
<b>Total Liabilities</b>	<b>26,875</b>	<b>67.2%</b>
Shareholders' Equity	13,110	32.8%
<b>Total Liabilities &amp; Equity</b>	<b>39,985</b>	<b>100%</b>

## Comparative Statements

Comparative statements are the financial statements which follow a consistent format but which cover different periods of time. Comparative statements are very useful for spotting trends.

**Objectives of Comparative Financial Statements**

1. Changes taken place in the financial performance are taken into consideration for further analysis.
2. To reveal qualitative information about the firm in terms of solvency, liquidity profitability and so on are extracted from the analysis of financial statements.
3. With reference to yester financial data of the enterprise, the firm is facilitated to undergo for the preparation of forecasting and planning.

Notes

The major part of financial statement analysis is mainly focused on the comparative analysis.

The comparative analysis classified into four different analyses, viz.

1. Comparative Balance Sheet
2. Comparative Profit & Loss Account
3. Common size Statement
4. Trend Percentage

**Comparative Balance Sheet**

The first and foremost important step is to have the following information and should take preparatory steps:

1. While preparing the comparative statement of balance sheet, the particulars for the financial factors are required.
2. The second most important for the preparation of the comparative balance sheet is yester financial data extracted from the balance sheet or balance sheets.
3. The next most important requirement to have an effective comparison with the yester financial data is current year information extracted from the balance sheet or balance sheet of the firms.
4. After having been procured the financial data pertaining to various time periods are ready for comparison; to determine or identify the level of increase or decrease taken place in the financial position of the firms
5. To determine the level of increase or decrease in financial position, the percentage analysis to carried out in between them.

*Example:* From the following information, prepare comparative Balance Sheet of X Ltd.

Particulars	31st Mar., 2004	31st Mar., 2005
Equit share capital	50,00,000	50,00,000
Fixed assets	60,00,000	72,00,000
Reserves and surpluses	10,00,000	12,00,000
Investments	10,00,000	10,00,000
Long-term loans	30,00,000	30,00,000
Current assets	30,00,000	21,00,000
Current liabilities	10,00,000	11,00,000

**Solution:**

As the first step, we have to segregate the available information into two different categories, viz. Assets and Liabilities.

Notes

Particulars	2004 (Rs.)	2005 (Rs.)	Absolute Change (Rs.)	% Increase	% Decrease
Fixed Assets	60,00,000	72,00,000	12,00,000	20	-
Investments	10,00,000	10,00,000	N.C	-	-
Current assets	30,00,000	21,00,000	(9,00,000)		30
<b>Total Assets</b>	<b>1,00,00,000</b>	<b>1,03,00,000</b>	<b>3,00,000</b>	<b>3</b>	<b>-</b>
Equity share capital	50,00,000	50,00,000	N.C	-	-
Reserves and surpluses	10,00,000	12,00,000	2,00,000	20	-
Long-term loans	30,00,000	30,00,000	N.C	-	-
Current liabilities	10,00,000	11,00,000	1,00,000	10	-
<b>Total Liabilities</b>	<b>1,00,00,000</b>	<b>1,03,00,000</b>	<b>3,00,000</b>	<b>3</b>	<b>-</b>

N.C = No change in the position during the two years.

From the above table, the following are basic inferences:

1. The fixed assets volume got increased 20% from the year 2004 to 2005, amounted Rs. 12,00,000.
2. Rs. 9,00,000 worth of current assets decrease from the year 2004 to 2005 recorded 30%.
3. The total volume of assets recorded 3% increase from the year 2004 to 2005.
4. It obviously understood that 20% increase taken place on the reserves and surpluses.
5. It clearly evidenced that the current liabilities of the firm increased 10% from the year 2004 to 2005.
6. The firm has not recorded any changes in the investments, equity share capital and long-term loans.

### Student Activity

Compare the financial statements of SBI for the last two financial years.

## Summary

Financial statement analysis can be explained as a method used by interested parties such as investors, creditors, and management to evaluate the past, current, and projected conditions and performance of the firm.

Under the financial statement analysis, the information available are grouped together in order to cull out the meaningful relationship which is already available among them; for interpretation and analysis.

To reveal qualitative information about the firm in terms of solvency, liquidity, profitability, etc., are extracted from the analysis of financial statements.

## Keywords

**Assets:** Assets are economic resources owned by business or company.

**Balance Sheet:** A balance sheet or statement of financial position is a summary of a person's or organization's balances.



**Financial Statement:** A written report which quantitatively describes the financial health of a company.

**Firm:** A business organization or the members of a business organization that owns or operates one or more establishments.

Notes

## **Review Questions**

1. Explain the concepts of financial statements analysis.
2. What are the different tools for analysis and interpretation of financial statements?
3. Describe common-size financial statements.

## **Further Readings**

R. L. Gupta and Radhaswamy, *Advanced Accountancy*.

V. K. Goyal, *Financial Accounting*, Excel Books, New Delhi.

Khan and Jain, *Management Accounting*.

S. N. Maheswari, *Management Accounting*.

S. Bhat, *Financial Management*, Excel Books, New Delhi.

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# Unit 10 Comparative Financial Statements

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## Unit Structure

- Introduction
- Comparative (Income) Financial Statement Analysis
- Comparative Common-size Statement
- Trend Analysis
- Summary
- Keywords
- Review Questions
- Further Readings

## Learning Objectives

At the conclusion of this unit, you should be able to:

- Prepare comparative financial statements
- Construct common-size statements
- Make trend analysis

## Introduction

Comparative statements are the financial statements which follow a consistent format but which cover different periods of time. Comparative statements are very useful for spotting trends.

The major part of financial statement analysis is mainly focused on the comparative analysis.

The comparative analysis classified into four different analyses, *viz.*

1. Comparative Balance Sheet
2. Comparative Profit and Loss Account
3. Common-size Statement
4. Trend Percentage

## Comparative (Income) Financial Statement Analysis

This analysis is being carried out in between the income statements of the various accounting durations of the firm, with other firms in the industry and with the industrial average.

This will facilitate the firm to know about the stature of itself regarding the financial performance. It facilitates to understand about the changes pertaining to various financial data which closely relevantly connected with the financial performance:

1. Change in the gross sales
2. Change in the net sales

3. Change in gross profit and net profit
4. Change in operating profit
5. Change in operating expenses
6. Change in the volume of non-operating income
7. Change in the non operating expenses

Notes

The ultimate purpose of the comparative (income) financial statement analysis is as follows:

1. To study the income earning and expenditure spending pattern of the firm for two or more years.
2. To identify the changing pattern of the income and expenditure of the firms.
3. The preparatory steps for the preparation of the comparative financial statement (income) analysis.

The first and foremost important step is to have the following information and should take preparatory steps:

1. While preparing the comparative statement of Profit & Loss Account, the particulars for the financial factors are required.
2. The second most important for the preparation of the comparative Profit & Loss account is yester financial data extracted from the Profit and Loss A/c or Profit and Loss Accounts.
3. The next most important requirement to have an effective comparison with the yester financial data is current year information extracted from the balance sheet of the firm or of the other firms
4. After having been procured the financial data pertaining to various time periods are ready for comparison; to determine or identify the level of increase or decrease taken place in the operating financial performance of the firms
5. To determine the level of increase or decrease in financial performance, the percentage analysis to be carried out in between them.

**Example:** Prepare the comparative income statement from the following:

Particulars	2004 (Rs)	2005 (Rs)
Sales	2,00,000	2,50,000
(-) Cost of goods sold	1,00,000	1,30,000
	<b>1,00,000</b>	<b>1,20,000</b>
(-) Operating expenses	10,000	10,000
<b>Net profit</b>	<b>90,000</b>	<b>1,10,000</b>

**Solution:**

Particulars	2004 (Rs)	2005 (Rs)	Absolute Change (Rs)	% Increase	% Decrease
Sales	2,00,000	2,50,000	50,000	25	-
(-) Cost of goods sold	1,00,000	1,30,000	30,000	30	-
	<b>1,00,000</b>	<b>1,20,000</b>	<b>20,000</b>	<b>20</b>	<b>-</b>
(-) Operating expenses	10,000	10,000	N.C	-	-
<b>Net profit</b>	<b>90,000</b>	<b>1,10,000</b>	<b>20,000</b>	<b>22.22</b>	

From the above table, the following inferences can be had:

1. The firm has registered 25% increase in sales from the year 2004 to 2005.
2. Cost of goods sold raised 30% from the year 2004 to 2005.
3. There is no change in the level of operating expenses.
4. The firm has got 22.22% increase in the level of net profits from the year 2004 to 2005.

## Comparative Common-size Statement

The next important tool of financial statement analysis is a common-size statement analysis which known as predominant tool in intra firm analysis in studying the share of each component.

The components are translated into percentage for analysis and interpretations. For profit and loss account, net sales is considered as a base for the computation of a share of each financial factor available.

For Balance sheet, total volume of assets and liabilities are taken into consideration for the computation of a share of each financial factor available under the heading of assets and liabilities.

**Example:** Prepare the common-size statement analysis for the firm ABC Ltd.

Liabilities	1990 (Rs)	1991 (Rs)	Assets	1990 (Rs)	1991 (Rs)
Share capital	2,00,000	3,00,000	Fixed assets	2,25,000	4,00,000
Reserves and surpluses	1,00,000	2,00,000	Stock	1,29,000	2,00,000
Bank overdraft	60,000	2,00,000	Quick assets	46,000	2,00,000
Quick liabilities	40,000	1,00,000			
	<b>4,00,000</b>	<b>8,00,000</b>		<b>4,00,000</b>	<b>8,00,000</b>

**Solution:**

Common-size statement analysis of the Balance sheet of the firm ABC Ltd.

Particulars	Amount		% of Balance sheet total	
	1990 (Rs)	1991 (Rs)	1990	1991
<b>Assets</b>				
Fixed assets	2,25,000	4,00,000	56.25	50
Stock	1,29,000	2,00,000	32.25	25
Quick assets	46,000	2,00,000	11.5	25
	<b>4,00,000</b>	<b>8,00,000</b>	<b>100</b>	<b>100</b>
<b>Liabilities</b>				
Share capital	2,00,000	3,00,000	50	37.5
Reserves and surpluses	1,00,000	2,00,000	25	25
Bank overdraft	60,000	2,00,000	15	25
Quick liabilities	40,000	1,00,000	10	12.5
	<b>4,00,000</b>	<b>8,00,000</b>	<b>100</b>	<b>100</b>

The above illustration highlights the share of every component in the balance sheet out of the total volume of assets and liabilities.

This will certainly facilitate the firm to easily understand not only the share of every component but also facilitates to have a meaningful and relevant comparison with various time horizons.

## Trend Analysis

The next important tools of analysis is trend percentage which plays significant role in analyzing the financial stature of the enterprise through base years' performance ratio computation. This not only reveals the trend movement of the financial performance of the enterprise but also highlights the strengths and weaknesses of the enterprise.

The following ratio is being used to compute the trend percentage:

$$= \frac{\text{Current year}}{\text{Base year}} \times 100$$

This trend ratio is being computed for every component for many numbers of years which not only facilitates comparison but also guides the firm to understand the trend path of the firm.

In the analysis of financial information, trend analysis is the presentation of amounts as a percentage of a base year.

**Example:** If I want to see the trend of a company's revenues, net income, and number of clients during the years 2001 through 2007, trend analysis will present 2001 as the base year and the 2001 amounts will be restated to be 100. The amounts for the years 2002 through 2007 will be presented as the percentages of the 2001 amounts.

In other words, each year's amounts will be divided by the 2001 amounts and the resulting percentage will be presented. If revenues for the years 2001 through 2007 might have been Rs. 31,691,000; Rs. 40,930,000; Rs. 50,704,000; Rs. 63,891,000; Rs. 79,341,000; Rs. 101,154,000; Rs. 120,200,000. These revenue amounts will be restated to be 100, 129, 160, 202, 250, 319 and 379.

From this trend analysis we can see that revenues in 2007 were 379% of the 2001 revenues, net income in 2007 was 467% of the 2001 net income, and the number of clients in 2007 was 317% of the number in 2001.

Let's assume that the net income amounts divided by the 2001 amount ended up as 100, 147, 206, 253, 343, 467 and 423. The number of clients when divided by the base year amount are 100, 122, 149, 184, 229, 277 and 317.

**Example:** In the following example, 2005 has been taken as a base year for the calculation of the sales trend. According to the trend shown below, determine whether the company has made an overall growth or not.

Trend Percentages

	2009	2008	2007	2006	2005
<b>Historical Data</b>					
Inventory	\$ 12,309	\$12,202	\$12,102	\$11,973	\$11,743
Property & equipment	74,422	78,938	64,203	65,239	68,450
Current liabilities	27,945	30,347	27,670	28,259	26,737
Sales	129,000	97,000	95,000	87,000	81,000
Cost of goods sold	70,950	59,740	48,100	47,200	45,500
Operating expenses	42,600	38,055	32,990	29,690	27,050
Net income (loss)	8,130	(1,400)	7,869	5,093	3,812

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## Notes

Trend Percentages					
Inventory	104.8	103.9	103.1	102.0	100.0
Property & equipment	108.7	115.3	93.8	95.3	100.0
Current liabilities	104.5	113.5	103.5	105.7	100.0
Sales	159.3	119.8	117.3	107.4	100.0
Cost of goods sold	155.9	131.3	105.7	103.7	100.0
Operating expenses	157.5	140.7	122.0	109.8	100.0
Net income (loss)	213.3	(36.7)	206.4	133.6	100.0

**Solution:**

We have to remember that the base year trend percentage is always 100.0%. A trend percentage of less than 100.0% means the balance has decreased below the base year level in that particular year. A trend percentage greater than 100.0% means the balance in that year has increased over the base year. A negative trend percentage represents a negative number.

Also, if the base year is zero or negative, the trend percentage calculated will not be meaningful.

In this example, the sales have increased 59.3% over the five-year period while the cost of goods sold has increased only 55.9% and the operating expenses have increased only 57.5%. The trends look different if evaluated after four years. At the end of 2008, the sales had increased almost 20%, but the cost of goods sold had increased 31%, and the operating expenses had increased almost 41%. These 2008 trend percentages reflect an unfavorable impact on net income because costs increased at a faster rate than sales. On an overall basis, the trend percentages for net income appear to be higher because the base year amount is much smaller than the other balances.

Using the restated amounts from trend analysis makes it much easier to see how effective and efficient the company has been during the recent years. Trends may be categorized as:

1. Short-term trends capture rapidly emerging trends.
2. Mid-term trends capture trends developing in between.
3. Long-term trends capture trends developing over long periods.

Trend analysis is also advantageous for (short-term) sales forecasting, growth rates, growth percentages, trend significance, trending types, and so on. Use of trend analysis includes:

1. Sales trend analysis – revenue and volume analysis.
2. Product sales trend analysis.
3. Market trend analysis.
4. Equity (share) price trend analysis.
5. Accounting trend analysis.
6. Work force recruit forecasting.
7. Healthcare fraud detection and so on.

Timely identification of newly emerging trends is very important to businesses. Trend analysis can also include the monitoring of a company's financial ratios over a period of many years.



**Student Activity**

In financial statement analysis, what is the basic objective of observing trends in data and ratios? Suggest some other standards of comparison.

Notes

**Case: Evaluation of Ford on the basis of Accounting Trends**

The success of Ford Motor Company, as well as other corporations, can be measured by analyzing the two most important goals of management, maintaining adequate liquidity and achieving satisfactory profitability. Liquidity can be defined as having enough money on hand to pay bills when they are due and to take care of unexpected needs for cash, while profitability refers to the ability of business to earn a satisfactory income. To enable investors and creditors to analyze these goals, Ford Motor Company distributes annual financial statements. With these financial statements, liquidity of Ford Motor Company is measured by analyzing factors such as working capital, current ratio, quick ratio, receivable turnover, average days' sales uncollected, inventory turnover and average days' inventory on hand; whereas profitability analyzes the profit margin, asset turnover, return on assets, debt to equity, and return on equity factors.

**Liquidity*****Working Capital***

Ford Motor Company's working capital fluctuated significantly in the years 1991-1995. This phenomenon is directly attributable to the fact that Financial Services current assets and current liabilities are not included in the total company current asset and current liability accounts. For example, the fluctuation from 1994 (\$1.4 billion) to 1995 (-\$1.5 billion) of \$2.5 billion would suggest that Ford would be unable to pay liabilities during the current period. However, examination of the Financial Services side of the business reveals that surpluses of \$13.6 billion existed in both 1994 and 1995, convincingly mitigating the figures indicating negative working capital.

***Current Ratio & Quick Ratio***

The current ratio in the years 1991-1995 has remained stable, fluctuating between 0.9 and 1.1. The quick ratio has also remained stable, fluctuating between 0.5 and 0.6. The larger fluctuation in the current ratio versus the quick ratio is caused by inventories being included in the asset side of the equation. Although inventories were significantly higher in both 1994 and 1995, current liabilities were also higher. In addition, marketable securities decreased substantially in 1994 and 1995. These factors resulted in the stability of both the current ratio and quick ratio.

***Receivable Turnover & Average Days' Sales Uncollected***

An examination of trends in Ford Motor Company's receivable turnover and average days' sales uncollected ratios reveal positive indicators of Ford's liquidity position. The receivable turnover, a function of net sales and average accounts receivable, has nearly doubled in the years 1993-1995 versus 1991-1992. This trend indicates an extensive increase of net sales in relation to accounts receivable. Receivables were relatively higher in 1994 than in any other of the five years, affecting the ratio for both 1994 and 1995. However, net sales increased 30% in 1994 and 34% in 1995 over the average net sales of 1991-1993. The average days' sales uncollected ratio has decreased

Contd....

## Notes

significantly over the same period, from 16.9 days in 1991 to 9.7 days in 1995. The substantial decrease in average days' sales uncollected ratio coupled with the near doubling of the receivable turnover ratio is a reflection of Ford's strong sales and effective credit policies in years 1993-1995.

#### *Inventory Turnover & Average Days' Inventory on Hand*

An examination of trends in the inventory turnover and average days' inventory on hand ratios also reveal positive indicators of Ford's liquidity position. Inventory turnover, a function of cost of goods sold and inventories, has remained stable between 14.0 and 16.0 times from 1992-1995. The average ratio over these four years (15.1 times) is 40% higher than that of 1991. The average days' inventory on hand, a derivative of the inventory turnover, has conversely decreased to stable level fluctuating between 23.5 and 26.0 days in the years 1992-1995. The operating cycle of Ford Motor Company has decreased significantly as the table below indicates.

Years	1991	1992	1993	1994	1995
Days	50.8	29.0	33.8	31.1	34.3

#### **Profitability**

##### *Profit Margin*

Profit margin, which is net income divided by net sales, is a measure of how many dollars of net income is produced by each dollar of sales. Ford Motor Company had a substantial 4 year rise in profit margin. Using horizontal analysis, the profit margin increased 98% from 1991 to 1992, 566% from 1992 to 1993 and then 79% from 1993 to 1994. Although the profit margin from 1994 to 1995 decreased 26%, that is more than acceptable when you look at the substantial increases in the past few years. In the first year, Ford had a profit margin of -3.1%. That means for every dollar of sales, Ford lost \$3.10. This is obviously not a good position to be in. During 1991 and then carried over into 1992, it cost Ford more money to make sales than it did when it recorded the income for those sales. They realized at this time it was important for them to keep things such as selling and administrative expenses lower, as well as the cost of sales, which included their production, manufacturing, and warehousing costs. By following a plan more complex than I can describe here, Ford steadily increased it's sales while it lowered it's expenses and it's cost of sales. This directly increased Ford's profit margin at a substantial rate within the next three years.

##### *Asset Turnover*

Asset turnover involves Ford's net sales divided by their average total assets. This ratio demonstrates the efficiency of assets used in producing sales. A company like Ford Motor Company has an enormous amount of assets. Computers to heavy equipment to buildings. All of those assets, plus many more, are all taken into consideration when figuring asset turnover. For example, Ford would like to know that if it decides to purchase 20 new computer-aided engineering stations for a cost of about \$2,400,000, they would like to see a higher asset turnover to give them the proof that the investment is being used at maximum efficiency. Ford's asset turnover steadily increased in incremental amounts between the years of 1991-1995, but on average it was about .43 for the entire 5 year period. Using trend analysis to understand this ratio would give you a pretty good idea that the asset turnover of Ford Motor Company is stable. Trend analysis would give you an index number for 1992 of 100, while the index number for 1995 would be 112. These index numbers would result in a slightly positive but relatively straight line across the page. As a prospective investor this would probably cause you

to investigate more deeply as to why Ford can't more efficiently use their assets to produce sales. As a current stockholder, this trend over the past five years may give you some comfort because of the incremental increases (at least it isn't going down).

#### **Return on Assets**

Return on assets is a very good profitability ratio. It is comprehensive when compared to profit margin and asset turnover. Return on assets overcomes the deficiency of profit margin by relating the assets necessary to produce income and it overcomes the deficiency of asset turnover by taking into account the amount of income produced. Mathematically, return on assets is equal to net income divided by average total assets, or more simply put, profit margin times asset turnover. Ford can improve its overall profitability by increasing its profit margin, the asset turnover, or both. Looking at the numbers, it was actually Ford's increase in profit margin that really gave it the boost it needed to raise the return on assets from the black to the red. A steady increase in return on assets from -1.3% in 1991 to an acceptable 2.2% in 1994 is a good sign to investors. This steady climb of 169% resulted in an overall increase in the earning power of Ford Motor Company. Ford's increase in profitability shows satisfactory earning power which results in investors continuing to provide capital to it.

#### **Debt to Equity**

The debt to equity ratio shows the portion of the company financed by creditors in comparison to that financed by the stockholders. It is total liabilities divided by stockholder's equity. Ford's debt to equity ratio is relatively high. When measuring profitability, a high debt to equity ratio means the company has high debt and must earn more profit to protect the payment of interest to its creditors. This high debt to equity ratio would also interest stockholders because it shows what part of the business is financed through borrowing or in other words, is debt financed. Of the five years we analyzed, the lowest debt to equity ratio was during 1991 (6.65) and the highest was in 1993 (11.71). In comparison to return on assets, a higher creditor financed year such as 1991 did not have a positive effect on profitability. It seemed that through increased borrowing in 1993, a higher debt to equity ratio was produced, but overall profitability also went up. Debt to equity is only one part in a full profitability analysis. The only real information that the debt to equity ratio can produce is it can show how much expansion is possible through the borrowing of long-term funds; basically it shows a company's long-term solvency. A higher debt to equity ratio essentially means that the company will be able to borrow less money. The company must rely more on stockholder investment. Ford was able to lower its borrowing of funds from 1993 through 1994 and into 1995, while still effectively increasing its profit margin and return on assets. This means Ford was able to use stockholder's investments to increase its profitability rather than borrow the funds to do it.

#### **Return on Equity**

Return on equity is the ratio of net income divided by the average stockholder's equity. This ratio is of great interest to stockholders because it shows how much they have earned on their investment in the business. In the years of 1991 and 1992, stockholders lost money on their investment in Ford Motor Company. No one likes to lose money, even if it is a couple of cents on the dollar. A major stockholder could incur quite a loss because of this. In the next three years, return on equity was on the positive side, the peak being in

Notes

## Notes

good return considering some investors are happy with a steady 8% return. Considering the previous years, the return on equity for Ford seems to be positive. Common knowledge dictates that most companies experience a downturn every now and then. Ford's investors are able to remain invested in the company because its overall 5 year return on equity is high enough to give investors the high returns they seek. A return on equity consistently above 16% with a few negative years mixed in is certainly lucrative enough to maintain a strong profitability measurement and project a positive image to the investors of Ford Motor Company.

### Conclusion

Although Ford Motor Company is one of the largest companies in the world, we can still attribute accounting trends to some of the key events in Ford's history. In 1990, Ford acquired Jaguar Cars, Ltd. Jaguar was a company suffering terrible losses due to poor quality, and lack of sales. Jaguar has been in the black since Ford purchased them until 1994. It is important to note that Ford's net income trend from 1991 to 1995 illustrates this. In 1992, the Ford Taurus became the number one selling car in the United States, which helped increase 1992 net earnings, and in 1994 the Ford Falcon was the top selling car in Australia, helping maintain the trend of increasing net income. It is important to note that Ford's net income has increased from 1991 to 1994, and then decreased in 1995. There are several possible causes for this change in the trend. In 1995, Ford acquired 20% equity in a major Chinese truck manufacturer, and launched several new vehicles; including the Ford Contour, Ford Mondeo, Mercury Mystique, Ford F-150, and Ford Taurus. These additional investments and expenses help explain the decrease in net income in 1995. Overall, the company has done well, and with reorganization in 1996 to decrease spending and increase efficiency, Ford is striving for future periods of growth.

### Questions

1. What do you see as the main cause behind the result of trend analysis at Ford?
2. "Ford was able to use stockholder's investments to increase its profitability rather than borrow the funds to do it". Justify the statement on the basis of the case.

Source: [www.ghostpapers.com](http://www.ghostpapers.com)

## Summary

Comparative (Income) financial statement analysis is being carried out in between the income statements of the various accounting durations of the firm, with other firms in the industry and with the industrial average.

After having been procured the financial data pertaining to various time periods are ready for comparison; to determine or identify the level of increase or decrease taken place in the operating financial performance of the firms.

Trend analysis involves calculating each year's financial statement balances as percentages of the first year, also known as the base year. When expressed as percentages, the base year figures are always 100 percent, and percentage changes from the base year can be determined.

## Keywords

**Financial Statements:** Profit and Loss Account, Profit and Loss Appropriation Account and Balance Sheet are included in the term financial statements.

**Analysis of Financial Statement:** Classifying, re-arranging and re-grouping of financial statements to find the weakness and strength of the business is analysis of financial statements.

**Ratio:** It is the relationship of two or more financial items.

**Fund:** Fund means the working capital.

Notes

## Review Questions

1. From the following information, prepare a comparative income statement:

Particulars	2001 (Rs)	2002 (Rs)
Sales	10,00,000	8,00,000
Cost of goods sold	6,00,000	4,00,000
Administration Expenses	2,00,000	1,40,000
Other Income	40,000	20,000
Income tax	1,20,000	1,40,000

2. From the following table, prepare the common size statement analysis:

	2000 (Rs)	2001 (Rs)
Sales	20,00,000	24,00,000
Miscellaneous Income	20,000	16,000
	<b>20,20,000</b>	<b>24,16,000</b>
Materials consumed	11,00,000	12,96,000
Wages	3,00,000	4,08,000
Factory expenses	2,00,000	2,16,000
Office expenses	90,000	1,00,000
Interest	1,00,000	1,20,000
Depreciation	1,40,000	1,50,000
Profit	90,000	1,26,000
	<b>20,20,000</b>	<b>24,16,000</b>

3. A company has owner's equity of Rs. 1,00,000. It has supplied the following accounting ratios:

Current Debt to Total Debt = 0.40

Total Debt to Owner's Equity = 0.60

Fixed Assets to Owner's Equity = 0.60

Total Assets Turnover = 2 times

Inventory Turnover = 8 times

With the information given above, you are required to prepare a summarised Balance Sheet of the company.

4. How is an available-for-sale investment recorded on the financial statements?
5. Comment on the following statements:
- An increase in money sales should always be viewed favorably.
  - The influence of price-level changes cannot be detected by using a comparative statement.

Notes

- (c) An expansion of plant, property, and equipment should be financed by sales of capital stock.
  - (d) Intangible assets should be eliminated when the balance sheet is reconstructed for analytical purposes.
  - (e) An increase in liabilities should be viewed with alarm
6. Is the trend of total liabilities of significance in analyzing the financial condition of a business? If so, what other trends should be used in connection therewith?
  7. Write a report in which you list and discuss favorable and unfavorable financial and operating tendencies.

### **Further Readings**

R. L. Gupta and Radhaswamy, *Advanced Accountancy*.

V. K. Goyal, *Financial Accounting*, Excel Books, New Delhi.

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# Unit 11 Ratio Analysis

Notes

## Unit Structure

- Introduction
- Definition
- Purposes of Ratio Analysis
- Utility of the Ratio Analysis
- Limitations of the Ratio Analysis
- Classification of Ratios
- Summary
- Keywords
- Review Questions
- Further Readings

## Learning Objectives

At the conclusion of this unit, you should be able to:

- Define ratio analysis
- Explain the utility of ratio analysis
- Describe the limitations of ratio analysis
- Classify the ratios

## Introduction

The ratio analysis is an one of the important tool of financial statement analysis to study the financial stature of the business fleeces, corporate houses and so on.

How the ratios are able to facilitate to study the financial status of the enterprise?

**What is meant by ratio?**

The ratio illustrates the relationship in between the two related variables.

**What is meant by the accounting ratio?**

The accounting ratios are computed on the basis available accounting information extracted from the financial statements which are not in a position to reveal the status of the enterprise.

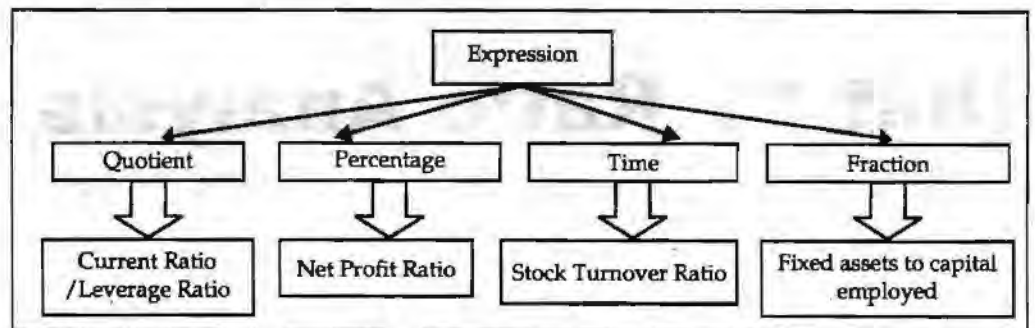
The accounting ratios are applied to study the relationship in between the quantitative information available and to take decision on the financial performance of the firm.

## Definition

According to J. Betty, "The term accounting is used to describe relationships significantly which exist in between figures shown in a balance sheet, Profit & Loss A/c, Trading A/c, Budgetary control system or in any part of the accounting organization."

According to Myers "Study of relationship among the various financial factors of the enterprise".

To understand the methodology of expressing the ratios, various expressions of ratios are highlighted in the figure.



## Purposes of the Ratio Analysis

1. To study the short-term solvency of the firm — liquidity of the firm.
2. To study the long-term solvency of the firm — leverage position of the firm.
3. To interpret the profitability of the firm — Profit earning capacity of the firm.
4. To identify the operating efficiency of the firm — turnover of the ratios.

## Utility of the Ratio Analysis

Ratio analysis has a lot of utility which may be understood by the following discussion:

1. **Easy to understand the financial position of the firm:** The ratio analysis facilitates the parties to read the changes taken place in the financial performance of the firm from one time period to another.
2. **Measure of expressing the financial performance and position:** It acts as a measure of financial position through Liquidity ratios and Leverage ratios and also a measure of financial performance through Profitability ratios and Turnover Ratios.
3. **Intra-firm analysis on the financial information over many number of years:** The financial performance and position of the firm can be analysed and interpreted with in the firm in between the available financial information of many number of years; which portrays either increase or decrease in the financial performance.
4. **Inter-firm analysis on the financial information within the industry:** The financial performance of the firm is studied and interpreted along with the similar firms in the industry to identify the presence and status of the respective firm among others.
5. **Possibility for financial planning and control:** It not only guides the firm to earn in accordance with the financial forecasting but also facilitates the firm to identify the major source of expense which drastically has greater influence on the earnings.

## Limitations of the Ratio Analysis

The following are the limitations of ratio analysis:

1. **It is dependant tool of analysis:** The perfection and effectiveness of the analysis mainly depends upon the preparataion of accurate and effectiveness of the financial statements. It is subject to the availability of fair presentation of data in the financial statements.
2. **Ambiguity in the handling of terms:** If the tool of analysis taken for the study of inter firm analysis on the profitability of the firms lead to various complications. To study the profitability among the firms, most required financial information are profits of the enterprise. The profit of one enterprise is taken for analysis is Profit After Taxes (PAT) and another is considering Profit Before Interest and

- Taxes (PBIT) and third one is taking Net profit for study consideration. The term profit among the firms for the inter-firm analysis is getting complicated due to ambiguity or poor clarity on the terminology.
3. **Qualitative factors are not considered:** Under the ratio analysis, the quantitative factors only taken into consideration rather than qualitative factors of the enterprise. The qualitative aspects of the customers and consumers are not considered at the moment of preparing the financial statements but while granting credit on sales is normally considered.
  4. **Not ideal for the future forecasts:** Ratio analysis is an outcome of analysis of historical transactions known as Postmortem Analysis. The analysis is mainly based on the yester performance which influences directly on the future planning and forecasting; it means that the analysis is mainly constructed on the past information which will also resemble the same during the future analysis.
  5. **Time value of money is not considered:** It does not give any room for time value of money for future planning or forecasting of financial performance; the main reason is that the fundamental base for forecasting is taken from the yester periods which never denominate the timing of the benefits.

## Classification of Ratios

The accounting ratios are classified into various categories, viz.

1. On the basis of financial statements
2. On the basis of functions

### On the basis of Financial Statements

1. **Income statement ratios:** These ratios are computed from the statements of Trading, Profit & Loss account of the enterprise. Some of the major ratios are GP ratio, NP ratio, Expenses Ratio and so on.
2. **Balance sheet or positional statement ratios:** These types of ratios are calculated from the balance sheet of the enterprise which normally reveals the financial status of the position i.e. short-term, long-term financial position, share of the owners on the total assets of the enterprise and so on.
3. **Inter statement or composite mixture of ratios:** These ratios are calculated by extracting the accounting information from the both financial statements, in order to identify stock turnover ratio, debtor turnover ratio, return on capital employed and so on.

### On the basis of Functions

1. **On the basis of solvency position of the firms:** Short-term and long-term solvency position of the firms.
2. **On the basis of profitability of the firms:** The profitability of the firms are studied on the basis of the total capital employed, total asset employed and so on.
3. **On the basis of effectiveness of the firms:** The effectiveness is studied through the turnover ratios — Stock turnover ratio, Debtor turnover ratio and so on.
4. **Capital structure ratios:** The capital structure position are analysed through leverage ratios as well as coverage ratios.

### Student Activity

What are key ratios used to calculate the short-term liquidity of a firm?

## Summary

Notes

Ratio analysis is one of the important tools of financial statement analysis to study the financial structure of the business fleeces.

Financial ratio analysis is the calculation and comparison of ratios which are derived from the information in a company's financial statements.

The level and historical trends of these ratios can be used to make inferences about a company's financial condition, its operations and attractiveness as an investment.

## Keywords

**Balance Sheet or Positional Statement Ratios:** These type of ratios are calculated from the balance sheet of the enterprise which normally reveals the financial status of the position i.e. short-term, long-term financial position, share of the owners on the total assets of the enterprise and so on.

**Capital Structure Ratios:** The capital structure position are analysed through leverage ratios as well as coverage ratios.

## Review Questions

1. Define ratio analysis.
2. Explain the utility of ratio analysis.
3. What are the key limitations of ratio analysis?
4. Classify the ratios on the basis of financial statements and functions.

## Further Readings

M. P. Pandikumar, *Management Accounting*, Excel Books.

M. N. Arora, *Cost and Management Accounting*, 8<sup>th</sup> Edition, Vikas Publishing House (P) Ltd.

Hilton, Maher and Selto, *Cost Management*, 2<sup>nd</sup> Edition, Tata McGraw-Hill Publishing Company Ltd.

B.M. Lall Nigam and I.C. Jain, *Cost Accounting*, Prentice-Hall of India (P) Ltd.

# Unit 12 Classification of Ratios I

Notes

## Unit Structure

- Introduction
- Short-term Solvency Ratios
- Capital Structure Ratios
- Profitability Ratios
- Summary
- Keywords
- Review Questions
- Further Readings

## Learning Objectives

At the conclusion of this unit, you should be able to:

- Classify the ratios based on short-term solvency
- Compute capital structure ratios
- Calculate profitability ratios

## Introduction

Financial statements are very useful to provide the information to its users. But the absolute figures have no value in itself if they are not correlated with each other. For instance, profit of Rs. 20 lakhs of XYZ Company, sales of Rs. 50 lakhs of ABC Company. The independent figures have no value, until these figures are not associated with each other. If we associate the profit to sales and sales to capital, these figures will give a significant meaning. Under the ratio analysis such type of relationships between different items are calculated to analyse and interpret the financial statement.

## Short-term Solvency Ratios

To study the short-term solvency or liquidity of the firm, the following are various ratios:

1. Current Assets Ratio
2. Acid Test Ratio or Quick Assets Ratio
3. Super Quick Assets Ratio
4. Defensive Interval Ratio

### Current Assets Ratio

It is one of the important accounting ratios to find out the ability of the business fleeces to meet out the short financial commitment. This is the ratio establishes the relationship in between the current assets and current liabilities.

#### What is meant by current assets?

Current assets are nothing but available in the form of cash, equivalent to cash or easily convertible in to cash.

**What is meant by the current liabilities?**

Current liabilities are nothing but short-term financial resources or payable in short span of time within a year.

Notes

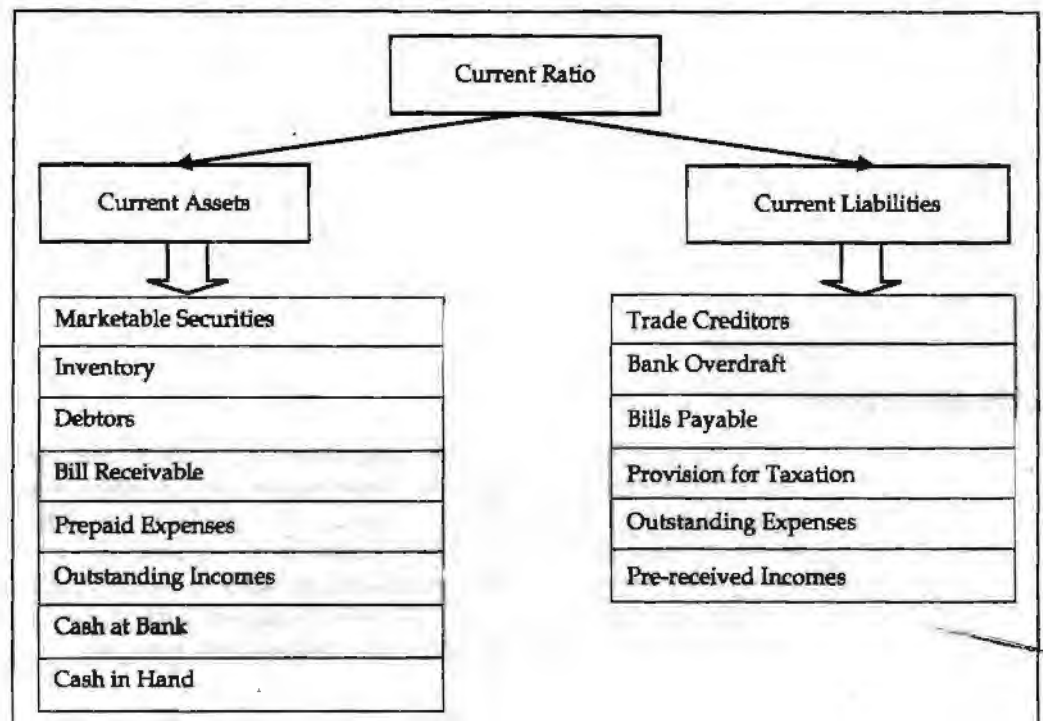
$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

*Example:* Company XYZ has current assets worth of Rs. 5 lakhs, while the liabilities amount to Rs. 3 lakhs. What is the current ratio of the firm?

*Solution:*

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

$$\text{Current Ratio} = 5/3 = 1.666 \text{ (approx)}$$



**Standard norm of the current ratio:** The ideal norm is 2:1; which means that every one rupee of current liability is appropriately covered by two rupees of current assets.

High ratio leads to greater the volume of current assets more than the specified norm denotes that the firm possesses excessive current assets than the requirement portrays idle funds invested in the current assets.

A big limitation of current ratio is that under this ratio, the current assets are equally weighed against each other to match the current liabilities. One rupee of cash is equally weighed at par with the one rupee of closing stock, but the closing stock and prepaid expenses cannot be immediately realized like cash and marketable securities.

**Acid Test Ratio**

It is a ratio expresses the relationship in between the quick assets and current liabilities. This ratio is to replace the bottleneck associated with the current ratio. It considers only the liquid assets which can be easily translated into cash to meet out the financial commitments.



$$\text{Acid Test Ratio (Quick Assets Ratio)} = \frac{\text{Liquid Assets}}{\text{Current Liabilities}}$$

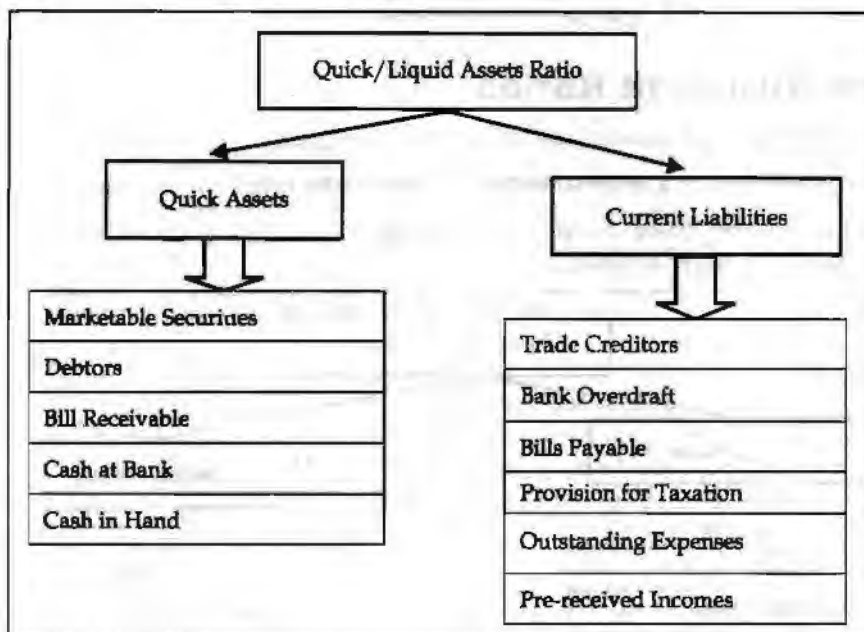
Liquid Asset = Current Assets – (Closing Stock + Prepaid Expenses)

**Example:** A company has a closing stock of Rs 30,000 while its prepaid expenses are Rs 5000. What will be its quick assets ratio if the current assets are worth Rs 50000 while current liabilities are worth Rs 15000?

**Solution:**

$$\begin{aligned} \text{Liquid Asset} &= \text{Current Assets} - (\text{Closing Stock} + \text{Prepaid Expenses}) \\ &= 50000 - (30000 + 5000) \\ &= 15000 \end{aligned}$$

$$\begin{aligned} \text{Quick Assets Ratio} &= \frac{\text{Liquid Assets}}{\text{Current Liabilities}} \\ &= 15000/15000 = 1:1 \end{aligned}$$



**Standard norm of the ratio:** The ideal norm is 1:1 which means that one rupee of current liabilities is matched with one rupee of quick assets.

### Super Quick Assets Ratio

It is the ratio which establishes the relationship in between the super quick assets and quick liabilities of the firm.

The super quick assets are nothing but the current assets which can be more easily converted into cash to meet out the quick liabilities.

The super quick liabilities are the current liabilities should have to be met out at faster pace within shorter span in duration.

$$\text{Super Quick Assets} = \text{Cash} + \text{Marketable Securities}$$

$$\text{Super Quick Liabilities} = \text{Current Liabilities} - \text{Bank Overdraft}$$

$$\text{Super Quick Assets Ratio} = \frac{\text{Super Quick Assets}}{\text{Super Quick Liabilities}}$$

**Standard norm of the ratio:** Higher the ratio, better is the position of the firm.

Notes

**Example:**

From the following calculate current ratio:

	(Rs)
<b>Current Assets:</b>	
Cash in Hand	4,00,000
Sundry Debtors	1,60,000
Stock	2,40,000
<b>Current Liabilities:</b>	
Sundry Creditors	3,00,000
Bills Payable	1,00,000

Notes

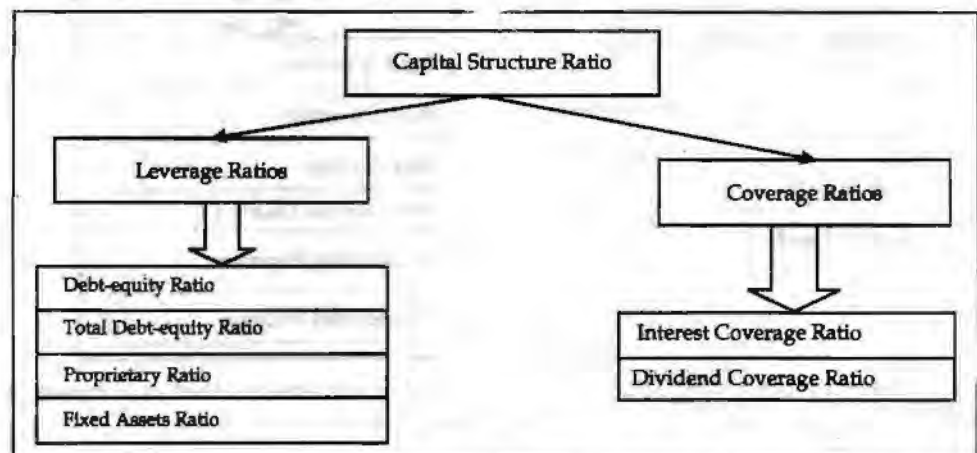
**Solution:**

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}} = \frac{\text{Rs. 8,00,000}}{\text{Rs. 4,00,000}} = 2$$

## Capital Structure Ratios

The capital structure ratios are classified into two categories:

1. **Leverage Ratios:** Long-term solvency position of the firm — Principal repayment.
2. **Coverage Ratios:** Fixed commitment charge solvency of the firm — Dividend coverage and Interest coverage.



Under the capital structure ratios, the composition of the capital structure is analysed only in the angle of long term solvency of the firm.

### Leverage Ratios

#### Debt-equity Ratio

It is the ratio expresses the relationship between the ownership funds and the outsiders' funds. It is more specifically highlighted that an expression of relationship in between the debt and shareholders' funds. The debt-equity ratio can be obviously understood into two different forms:

1. Long-term debt-equity ratio
2. Total debt-equity ratio

Let us understand each of them one by one.

**Long-term Debt-equity Ratio**

It is a ratio expressing the relationship in between the outsiders' contribution through debt financial resource and shareholders' contribution through equity share capital, preference share capital and past accumulated profits. It reveals the cover or cushion enjoyed by the firm due to the owners' contribution over the outsiders' contribution.

Notes

$$\text{Debt-equity Ratio} = \frac{\text{Debt (Long-term Debt + Debentures/Term Loans)}}{\text{Net Worth/Equity (Shareholders' Fund)}}$$

**Example:** The long-term debt of company ABC is Rs. 3 crores and the networth of the company is Rs. 5 crores. What is the long-term debt-equity ratio of ABC?

**Solution:**

$$\text{Long-term Debt-equity Ratio} = \frac{\text{Debt}}{\text{Net Worth}} = 3/5 = .6$$

Higher ratio indicates the riskier financial status of the firm which means that the firm has been financed by the greater outsiders' fund rather than that of the owners' fund contribution and vice versa.

**Standard norm of the Debt-equity Ratio:** The ideal norm is 1:2 which means that every one rupee of debt finance is covered by two rupees of shareholders' fund.

The firm should have a minimum of 50% margin of safety in meeting the long-term financial commitments. If the ratio exceeds the specification, the interest of the firm will be ruined by the outsiders' during the moment at when they are unable to make the payment of interest in time as per the terms of agreement reached earlier. During the moment of liquidation, the greater ratio may facilitate the creditors to recover the amount due lesser holding held by the owners.

**Total Debt-equity Ratio**

The ultimate purpose of the ratio is to express the relationship total volume of debt irrespective of nature and shareholders' funds. If the owners' contribution is lesser in volume in general irrespective of its nature leads to worse situation in recovering the amount of outsiders' contribution during the moment of liquidation.

$$\text{Total Debt-equity Ratio} = \frac{\text{Short-term Debt + Long-term Debt}}{\text{Equity (Shareholders' Fund)}}$$

**Example:** The long-term debt of company ABC is Rs. 3 crores and the networth of the company is Rs. 5 crores. If the company has a short term debt of Rs 1 crore, what is the total debt-equity ratio of ABC?

**Solution:**

$$\text{Total Debt-equity Ratio} = \frac{\text{Short-term Debt + Long-term Debt}}{\text{Equity (Shareholders' Fund)}} = \frac{1+3}{5} = 4:5$$

**Proprietary Ratio**

The ratio illustrates the relationship in between the owners' contribution and the total volume of assets. In simple words, how much funds are contributed by the owners in financing the assets of the firm. Greater the ratio means that greater contribution made by the owners' in financing the assets.

$$\text{Proprietary Ratio} = \frac{\text{Owners' Funds or Equity or Shareholders' Funds}}{\text{Total Assets}}$$

**Standard norm of the ratio:** Higher the ratio, better is the position.

Higher ratio is better position for the firm as well as safety to the creditors.

**Example:** The networth of company ABC is Rs. 30 crores and the total assets are worth Rs. 10 crores. What is the proprietary ratio of the firm?

**Solution:**

Notes

$$\text{Proprietary Ratio} = \frac{\text{Owners' Funds or Equity or Shareholders' Funds}}{\text{Total assets}} = \frac{30}{10} = 3 : 1$$

The ratio shows that the firm is in quite a good financial position.

### **Fixed Assets Ratio**

The ratio establishes the relationship in between the fixed assets and long-term source of funds. Whatever the source of long-term funds raised should be used for the acquisition of long-term assets; it means that the total volume of fixed assets should be equivalent to the volume of long term funds i.e. the ratio should be equal to 1.

$$\text{Fixed Assets Ratio} = \frac{\text{Shareholders' Funds} + \text{Outsiders' Funds}}{\text{Net Fixed Assets}}$$

If the ratio is lesser than one means that the firm made use of the short-term fund for the acquisition of long-term assets. If the ratio is greater than one means that the acquired fixed assets are lesser in quantum than that of the long-term funds raised for the purpose. In other words, the firm makes use of the excessive funds for the built of current assets.

**Standard norm of the ratio:** The ideal norm of the ratio is 1:1, which means that the long-term funds raised are utilised for the acquisition of long-term assets of the enterprise.

It facilitates to understand obviously about the over capitalization or under capitalization of the assets of the enterprise.

**Example:** The networth of company ABC is Rs. 30 crores and the net fixed assets are worth Rs. 100 crores. If the outsider's funds are worth Rs. 70 crores, what is the fixed assets ratio of the firm?

**Solution:**

$$\text{Fixed Assets Ratio} = \frac{\text{Shareholders' Funds} + \text{Outsiders' Funds}}{\text{Net Fixed Assets}} = \frac{30 + 70}{100} = \frac{100}{100} = 1 : 1$$

Since the ratio is 1:1, it shows that the firm raises the long-term funds utilises them only for the acquisition of long term assets of the enterprise.

### **Coverage Ratios**

These ratios are computed to know the solvency of the firm in making the periodical payment of interest and preference dividends. The interest and preference dividends are to be paid irrespective of the earnings available in the hands of the firm. In other words, these are known as fixed commitment charge of the firm.

### **Interest Coverage Ratio**

The firms are expected to make the payment of interest on the amount of borrowings without fail. This ratio facilitates the prospective lender to study the strength of the enterprise in making the payment of interest regularly out of the total income. To study the capacity in making the payment of interest is known as interest coverage ratio or debt service coverage ratio.

The ability or capacity is analysed only on the basis of Earnings Before Interest and Taxes (EBIT) available in the hands of the firms.

Greater the ratio means that better the capacity of the firm in making the payment of interest as well as greater the safety and *vice versa*

$$\text{Interest Coverage Ratio} = \frac{\text{Earnings before Interest and Taxes}}{\text{Interest}}$$

Lesser the times the ratio means that meager the cushion of the firm which may lead to affect the solvency position of the firm in making payment of interest regularly.

*Example:* Mr Ashmit Ahuja had an earning of Rs. 3,00,000 before he paid the interests and taxes. What will be the interest coverage ratio if he pays Rs. 30,000 as an interest? What will it mean?

*Solution:*

$$\text{Interest Coverage Ratio} = \frac{\text{Earnings before Interest and Taxes}}{\text{Interest}} = \frac{3,00,000}{30,000} = 10:1$$

Since the interest coverage ratio is substantially high, it means that Mr. Ahuja has quite a good capacity in making the payment of interest and has a high safety.

### **Dividend Coverage Ratio**

It illustrates the firms' ability in making the payment of preference dividend out of the earnings available in the hands of the firm after the payment of taxation. Greater the size of the profits after taxation, greater is the cushion for the payment of preference dividend and vice versa.

The preference dividends are to be paid without fail irrespective of the profits available in the hands of the firm after the taxation.

$$\text{Dividend Coverage Ratio} = \frac{\text{Earnings after Taxation}}{\text{Preference Dividend}}$$

*Example:* Hindustan Manufacturers have to make a preference dividend of Rs. 60,000. The earnings after taxation is Rs. 3,00,000. What will be the Dividend coverage ratio? What does it mean?

*Solution:*

$$\text{Dividend Coverage Ratio} = \frac{\text{Earnings after Taxation}}{\text{Preference Dividend}} = \frac{3,00,000}{60,000} = 5:1$$

Since the value of the dividend coverage ratio is quite high, the company has a strong cushion for the payment of preference dividend.

### **Profitability Ratios**

These ratios are measurement of the profitability of the firms in various angles, viz.

1. On sales
2. On investments
3. On capital employed and so on

While discussing the measure of profitability of the firm, the profits are normally classified into various categories:

1. Gross Profit
2. Net Profit
3. Operating Profit Ratio
4. Return on Assets Ratio
5. Return on Capital Employed

Notes



All profitability ratios are normally expressed only in terms of (%). The return is normally expressed only in terms of percentage which warrants the expression of this ratio to be also in percentage.

## Notes

### Gross Profit Ratio

The ratio elucidates the relationship in between the gross profit and sales volume.

It facilitates to study the profit earning capacity of the firm out of the manufacturing or trading operations.

$$\text{Gross Profit Ratio} = \frac{\text{Gross Profit}}{\text{Sales}} \times 100$$

*Example:* Om enterprises has earned a gross profit of Rs. 6,00,000 in the first quarter. Calculate the gross profit ratio if the corresponding sales amounted to a value of Rs. 30,00,000. What does it imply?

*Solution:*

$$\text{Gross Profit Ratio} = \frac{\text{Gross Profit}}{\text{Sales}} \times 100 = \frac{6,00,000}{30,00,000} \times 100 = 20\%$$

The ratio implies that the firm has earned good profits out of sales in the first quarter.

*Standard norm of the ratio:* Higher the ratio means that the firm has greater cushion in meeting the needs of preference dividend payment against Earnings after Taxation (EAT) and vice versa.

### Net Profit Ratio

The ratio expresses the relationship in between the net profit and sales volume. It facilitates to portray the overall operating efficiency of the firm. The net profit ratio is an indicator of over all earning capacity of the firm in terms of return out of sales volume.

$$\text{Net Profit Ratio} = \frac{\text{Net Profit}}{\text{Sales}} \times 100$$

*Example:* Om enterprises has earned a net profit of Rs. 3,00,000 in the first quarter. Calculate the net profit ratio if the corresponding sales amounted to a value of Rs. 30,00,000. What does it imply?

*Solution:*

$$\text{Net Profit Ratio} = \frac{\text{Net Profit}}{\text{Sales}} \times 100 = \frac{30,000}{30,00,000} \times 100 = 1\%$$

The ratio shows that the company is running on a no profit - no loss state.

*Standard Norm of the Ratio:* Higher the ratio, the better the position of the firm is, which means that the firm earns greater profits out of the sales and *vice versa*.

### Operating Profit Ratio

The operating ratio is establishing the relationship in between the cost of goods sold and operating expenses with the total sales volume.

$$\text{Operating Ratio} = \frac{\text{Cost of Goods Sold} + \text{Operating Expenses}}{\text{Net Sales}} \times 100$$

*Example:* The cost of goods sold by Mangamal operators is Rs. 2,000. What will be the operating ratio of the firm if the operating expenses are Rs. 50,000 and net sales is that of Rs 5,00,000? What does it mean?



**Solution:**

$$\begin{aligned}\text{Operating Ratio} &= \frac{\text{Cost of goods sold} + \text{Operating expenses}}{\text{Net sales}} \times 100 \\ &= \frac{2,000 + 50,000}{5,00,000} \times 100 = 10.4\%\end{aligned}$$

Notes

Since the ratio is quite low, this means that the firm is in quite favourable position and thus has a high margin of operating profit.

**Standard norm of the ratio:** Lower the ratio, the more favourable and better the firm's position is, which highlights the percentage of absorption, cost of goods sold and operating expenses out of sales and vice versa. The lower ratio leads to a higher margin of operating profit.

### Student Activity

Find out the financial statement of HDFC bank for the financial year 2009-10 and calculate the key ratios of the bank.

## Summary

Ratio is a numerical relationship between two items or groups of the same nature of the financial statements. It can be expressed in the proportion, percentage or turnover. Ratio analysis makes the financial statement simple or re-arranged so that those may be understood easily, comparison between two firms, two periods. It also helps in calculating the efficiency, profitability and solvency (Long-term as well as short-term). In spite of being so many advantages of ratio analysis, it is not free from limitations. These are in ratio analysis the qualitative aspect has been ignored, price level changes affects the ratio, standard ratio cannot be determined easily, financial statements are window dressed, ratio are based on past performance and so many. Different authors have classified the ratio in their own ways. Some classify the ratios on the basis of financial statements, some on the relative importance of the ratios, some on specific purpose, and some on the basis of users. But in this book for the purpose of the study, the functional classification is taken.

## Keywords

**Current Assets:** Current assets are in the form of cash, equivalent to cash or easily convertible into cash.

**Current Liabilities:** Current liabilities are short-term financial resources or payable in short span of time within a year.

**Income Statement Ratios:** These ratios are computed from the statements of Trading, Profit & Loss account of the enterprise.

## Review Questions

- Liquid Assets Rs. 65,000; Stock Rs. 20,000; Pre-paid expenses Rs. 5,000; Working capital Rs. 60,000. Calculate current assets ratio and liquid assets ratio.
- The current ratio of Bicon Ltd is 4.5:1 and liquidity ratio is 3:1 stock is Rs.6,00,000. Find out the current liabilities.

3. From the following information, prepare a balance sheet show the workings

	Rs.
(a) Working capital	75,000
(b) Reserves and surplus	1,00,000
(c) Bank overdraft	60,000
(d) Current ratio	1.75
(e) Liquid ratio	1.15
(f) Fixed assets to proprietors' fund	.75
(g) Long-term liabilities	Nil

Notes

4. The firm satisfies the standard norm of the current asset ratio and Liquid assets ratio

M/s Shanmuga & Co.

**Balance Sheet**  
as on dated 31st Mar, 2005

Particulars	Rs	Particulars	Rs
Share capital	42,000	Fixed Assets Net	34,000
Reserve	3,000	Stock	12,400
Annual Profit	5,000	Debtors	6,400
Bank overdraft	4,000	Cash	13,200
Sundry creditors	12,000		
	<b>66,000</b>		<b>66,000</b>

5. Debtors velocity 3 months  
 Creditors velocity 2 months  
 Stock velocity 8 times  
 Capital turnover ratio 2.5 times  
 Fixed assets turnover ratio 8 times  
 Gross profit turnover ratio 25%

Gross profit in a year amounts to Rs. 1,60,000. There is no long term loan or overdraft. Reserves and surplus amount to Rs. 56,000. Liquid assets are Rs. 1,94,666. Closing stock of the year is Rs 4,000 more than the opening stock Bill receivable amount to Rs 10,000 and bills payable to Rs. 4,000.

- (a) Find out
- (i) Sales
  - (ii) Closing stock
  - (iii) Sundry debtors
  - (iv) Fixed assets
  - (v) Sundry creditors
  - (vi) Proprietors' fund
- (b) Draft the balance sheet with as many as details as possible.

## Further Readings

M. P. Pandikumar, *Management Accounting*, Excel Books.

M. N. Arora, *Cost and Management Accounting*, 8th Edition, Vikas Publishing House (P) Ltd.

Hilton, Maher and Selto, *Cost Management*, 2nd Edition, Tata McGraw-Hill Publishing Company Ltd.

B.M. Lall Nigam and I.C. Jain, *Cost Accounting*, Prentice-Hall of India (P) Ltd.

Notes

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# Unit 13 Classification of Ratios II

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Notes

## Unit Structure

- Introduction
- Return on Assets Ratio
- Return on Capital Employed
- Turnover Ratios
- DuPont Analysis
- Summary
- Keywords
- Review Questions
- Further Readings

## Learning Objectives

At the conclusion of this unit, you should be able to:

- Calculate return on assets ratios
- Compute different turnover ratios
- Make Dupont analysis

## Introduction

Ratio is a mathematical relationship between two items and group of items of the financial statements. Under ratio analysis several ratios are calculated and then studied to draw inference. Ratio is defined experts as follows:

According to R.N. Anthony, "A ratio is simply one number expressed in terms of another". According to the Accountants' Hand Book by Wixon, Kell and Bedford, "A ratio is an expression of the quantitative relationship between two numbers".

From these definitions it is clear that ratio is a numerical relationship between two numbers, in which one number being the numerator and the latter the denominator. This numerical relationship (ratio) may be expressed in the following forms, such as:

1. **Pure Ratio (Proportion):** When the amount of two figures are arrived by the simple division of one amount by another, it is said pure ratio or proportion. For example, if current assets of a company are Rs.20,000 and current liabilities Rs.10,000, ratio between current assets and current liabilities will be 2:1.
2. **Percentage Ratio:** In this form, the relationship of one item with other item may be expressed in percentage. To get percentage relationship the one item is divided by other item and the quotient is multiplied by 100. For example, the relationship of profit and sales may be expressed as 25%.
3. **Rate Ratio or Times or Turnover:** In this method, rate is determined by dividing the one item by other item. The obtained quotient is expressed in unit. For example, if sales is Rs.1,00,000 and stock is Rs.20,000, 5 times will be the ratio between sales and stock.

## Return on Assets Ratio

This ratio portrays the relationship in between the earnings and total assets employed in the business enterprise. It highlights the effective utilization of the assets of the firm through the determination of return on total assets employed.

$$\text{Return on Assets} = \frac{\text{Net Profit after Taxes}}{\text{Average Total Assets}} \times 100$$

**Example:** If one company has an income of Rs. 1 crore and total assets of Rs. 10,00,000, what will be the return on assets if net profit after taxes is Rs. 5,00,000?

**Solution:**

$$\text{Return on Assets} = \frac{\text{Net Profit after Taxes}}{\text{Average Total Assets}} \times 100 = \frac{5,00,000}{10,00,000} \times 100 = 50\%$$

**Standard norm of the ratio:** Higher the ratio illustrates that the firm has greater effectiveness in the utilization of assets, means greater profits reaped by the total assets and *vice versa*.

## Return on Capital Employed

The ratio illustrates that how much return is earned in the form of Net profit after taxes out of the total capital employed. The capital employed is nothing but the combination of both non current liabilities and owners' equity. The ratio expresses the relationship in between the total earnings after taxation and the total volume of capital employed.

$$\text{Return on Total Capital Employed} = \frac{\text{Net Profit after Taxes}}{\text{Total Capital Employed}} \times 100$$

**Standard norm of the ratio:** Higher the ratio is better the utilization of the long term funds raised under the capital structure means that greater profits are earned out of the total capital employed.

**Example:** In the previous example, if the total capital employed is worth Rs. 25,00,000, what is the return on total capital employed?

**Solution:**

$$\begin{aligned} \text{Return on Total Capital Employed} &= \frac{\text{Net Profit after Taxes}}{\text{Total Capital Employed}} \times 100 \\ &= \frac{5,00,000}{25,00,000} \times 100 = 20\% \end{aligned}$$

## Turnover Ratios

Turnover ratios can be of following types:

### Activity Turnover Ratio

It highlights the relationship in between the sales and various assets. The ratio indicates that the rate of speed which is taken by the firm for converting the assets into sales.

Notes

## Stock Turnover Ratio

The ratio expresses the speed of converting the stock into sales. In other words, how fast the stock is being converted into sales in a year. The greater the ratio of conversion leads to lesser the number of days/weeks/months required to convert the stock into sales.

$$\text{Stock Turnover Ratio} = \frac{\text{Cost of Goods Sold}}{\text{Average Stock}} \text{ or } \frac{\text{Sales}}{\text{Closing Stock}}$$

**Standard norm of the ratio:** Higher the ratio is better the firm in converting the stock into sales and vice versa.

The next step is to find out the number of days or weeks or months taken or consumed by the firm to convert the stock into sales volume.

$$\text{Stock Velocity} = \frac{365 \text{ days} / 52 \text{ weeks} / 12 \text{ months}}{\text{Stock Turnover Ratio}}$$

**Standard norm of the ratio:** Lower the duration is better the position of the firm in converting the stock into sales and vice versa.

**Example:** The cost of goods sold is Rs. 500,000. The opening stock is Rs. 40,000 and the closing stock is Rs. 60,000 (at cost). Calculate inventory turnover ratio.

**Solution:**

$$\text{Average Stock} = \frac{\text{Opening Stock} + \text{Closing Stock}}{2} = \frac{40,000 + 60,000}{2} = 50,000$$

$$\text{Stock Turnover Ratio} = \frac{\text{Cost of Goods Sold}}{\text{Average Stock}} = \frac{5,00,000}{50,000} = 10 : 1$$

## Debtors Turnover Ratio

This ratio exhibits the speed of the collection process of the firm in collecting the overdue amount from the debtors and against Bills receivables. The speediness is being computed through debtors velocity from the ratio of Debtors Turnover Ratio.

$$\text{Debtors Turnover Ratio} = \frac{\text{Net Credit Sales}}{\text{Average Debtors}} \text{ or } \frac{\text{Net Credit Sales}}{\text{Debtor} + \text{Bills Receivable}}$$

**Standard norm of the ratio:** Higher the ratio is better the position of the firm in collecting the overdue means the effectiveness of the collection department and vice versa.

## Debtors Velocity

This is an extension of the earlier ratio to denote the effectiveness of the collection department in terms of duration.

$$\text{Debtors Velocity} = \frac{365 \text{ days} / 52 \text{ weeks} / 12 \text{ months}}{\text{Debtor Turnover Ratio}}$$

**Standard norm of the ratio:** Lesser the duration shows greater the effectiveness in collecting the dues which means that the collection department takes only minimum period for collection and vice versa.



**Example:** Sundaram & Co. Sells goods on cash as well as credit basis. The following particulars are extracted from the books of accounts for the calendar 2005:

Particulars	Rs.
Total Gross sales	2,00,000
Cash Sales (included in above)	40,000
Sales Returns	14,000
Total Debtors	18,000
Bills Receivable	4,000
Provision for Doubtful Debts	2,000
Total Creditors	20,000

Notes

Calculate average collection period.

**Solution:** To find out the average collection period, first debtors turnover ratio has to be computed

$$\text{Debtors Turnover Ratio} = \frac{\text{Net Credit Sales}}{\text{Bills Receivable} + \text{Debtors}}$$

$$\begin{aligned} \text{Net Credit Sales} &= \text{Gross Sales} - \text{Cash Sales} - \text{Sales Return} \\ &= 2,00,000 - 40,000 - 14,000 = 1,46,000 \end{aligned}$$

$$\text{Debtor Turnover Ratio} = \frac{1,46,000}{4,000 + 18,000} = 6.64 \text{ times}$$

$$\text{Debtors Velocity} = \frac{365 \text{ days}}{\text{Debtors Turnover Ratio}} = \frac{365 \text{ days}}{6.64 \text{ times}} = 55 \text{ days}$$

### Creditors Turnover Ratio

It shows effectiveness of the firm in making use of credit period allowed by the creditors during the moment of credit purchase.

$$\text{Creditors Turnover Ratio} = \frac{\text{Credit Purchase}}{\text{Average Creditors}} \text{ or } \frac{\text{Credit Purchase}}{\text{Bills Payable} + \text{Sundry Creditors}}$$

**Standard norm of the ratio:** Lesser the ratio is better the position of the firm in liquidity management means enjoying the more credit period from the creditors and vice versa.

$$\text{Creditors Velocity} = \frac{365 \text{ days} / 52 \text{ weeks} / 12 \text{ months}}{\text{Creditors Turnover Ratio}}$$

**Standard norm of the ratio:** Greater the duration is better the liquidity management of the firm in availing the credit period of the creditors and vice versa.

**Example:** Find out the value of creditors from the following:

Sales Rs.1,00,000	Opening stock Rs.10,000
Gross profit on sales 10%	Closing stock Rs.20,000
Creditors velocity 73 days	Bills payable Rs.16,000

**Note:** All purchases are credit purchases

**Solution:** To find out the volume of purchases, the formula of cost of goods sold should be taken into consideration.

Notes

$$\begin{aligned}\text{Cost of goods sold} &= \text{Opening Stock} + \text{Purchases} - \text{Closing Stock} \\ &= 10,000 + \text{Purchases} - 20,000\end{aligned}$$

$$\begin{aligned}\text{Cost of goods sold} &= \text{Sales} - \text{Gross Profit} \\ &= 1,00,000 - 10\% \text{ on } 1,00,000 = 90,000\end{aligned}$$

The next step is to apply the found value in the early equation

$$\text{Purchases} = 90,000 - 10,000 + 20,000 = 1,00,000$$

To find out the value creditors, the creditor velocity and creditors turnover ratio

$$\text{Creditors Velocity} = \frac{365 \text{ days}}{\text{Creditors Turnover Ratio}}$$

$$\begin{aligned}\text{Creditors Turnover Ratio} &= \frac{\text{Credit Purchases}}{\text{Bills Payable} + \text{Sundry Creditors}} \\ &= \frac{1,00,000}{16,000 + \text{Sundry Creditors}}\end{aligned}$$

The next step is to find out the sundry creditors, the reversal process to be adopted

$$73 \text{ days} = \frac{365 \text{ days}}{\text{Creditors Turnover Ratio}}$$

$$\text{Creditors Turnover Ratio} = \frac{365 \text{ days}}{73 \text{ days}} = 5 \text{ times}$$

The next step is to substitute the found value in the equation of creditors turnover

$$\text{ratio } 16,000 + \text{Sundry creditors} = \frac{\text{Rs. } 1,00,000}{5}$$

$$\text{Sundry Creditors} = 20,000 - 16,000 = 4,000$$

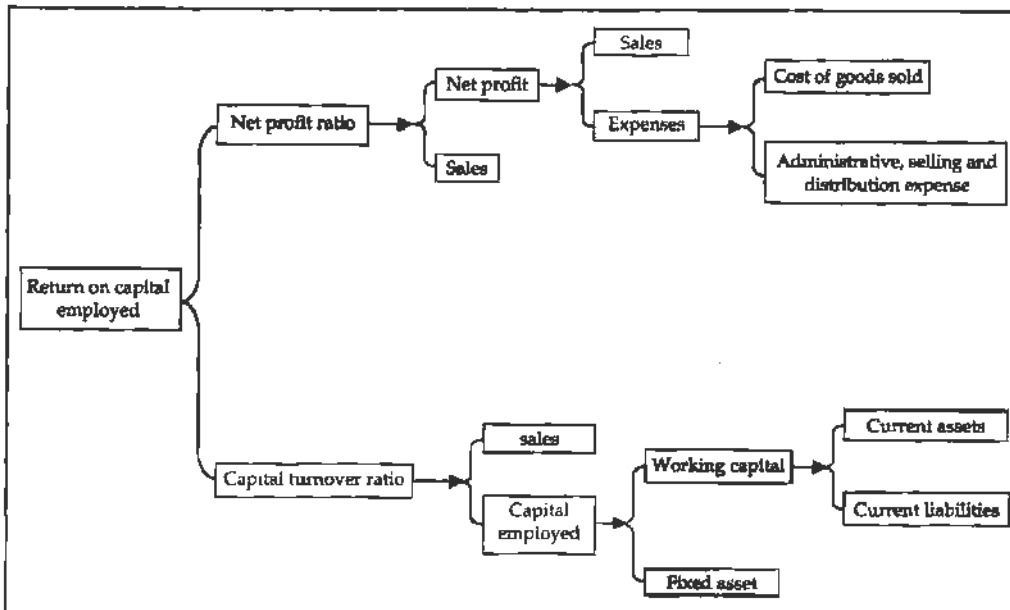
### Student Activity

From the following particulars, prepare trading, profit and loss account and a balance sheet.

Current ratio	3
Liquid ratio	1.8
Bank overdraft	Rs. 20,000
Working capital	Rs. 2,40,000
Debtors velocity	1 month
Gross profit ratio	20%
Proprietary ratio (Fixed assets/share holders' fund)	.9
Reserves and surpluses	.25 of share capital
Opening stock	Rs. 1,20,000; 8% Debentures -
	Rs. 3,60,000
Long-term investments	Rs. 2,00,000
Stock turnover ratio	10 times
Creditors velocity	1/2 month
Net profit to share capital	20%

## DuPont Analysis

This was an analysis established by the DU PONT INC., USA to study the return on investment. It was the first company developed the chart which depicted the influences of Return on Investment. The company underwent for the consideration two important ratios, Net profit ratio and Capital turnover ratio, for the return on investment. A change in any one of the two ratios reflects immediately on the Return on investment. The various associated factors are considered to study the impact of the profitability of the firm. This type of analysis to correct the problems not only to identify with the specific cause which drastically affects the profitability but also to find the possible ways and means to improve the profitability. Having developed the chart for analysis was called as DU PONT Chart.



## Summary

Ratio analysis is one of the important tools of financial statement analysis to study the financial structure of the business fleeces.

Financial ratio analysis is the calculation and comparison of ratios which are derived from the information in a company's financial statements.

The level and historical trends of these ratios can be used to make inferences about a company's financial condition, its operations and attractiveness as an investment.

Financial ratios are calculated from one or more pieces of information from a company's financial statements.

A ratio gains utility by comparison to other data and standards. Ratios are classified as liquidity, leverage, profitability, activity, integrated and growth ratio.

Although financial ratio analysis is well-developed and the actual ratios are well-known, practicing financial analysts often develop their own measures for particular industries and even individual companies. Analysts often differ drastically in their conclusions from the same ratio analysis.

## Keywords

**Profitability:** The profit earning capacity of a business is called profitability.

**Liquidity:** The short-term debts paying position of a company from its short-term resources is called liquidity.

**Solvency:** Company's ability to meet its long-term liability or obligations.

**Leverage:** It is a tool to accelerate the rate of return by using the fixed interest bearing debt finance.

## **Review Questions**

Notes

1. What do you mean by ratio analysis? Explain its merits and demerits.
2. "Ratios analysis plays an important role in the process of decision making in business". Explain this statement.
3. How is the liquidity of a firm tested? Explain its different ratios with examples.
4. Explain the various ratios used for the liquidity and solvency position of the firm.
5. How would you analyse and interpret the financial position of a firm from the point of view of: (a) an investor, (b) a shareholder, (c) a creditor of the firm.

## **Further Readings**

Stice & Stice, *Financial Accounting-Reporting and Analysis*, Thomas 2007.

Gupta, R.L. and Radhaswami, M. *Advanced Accountancy*, Sultan Chand & Sons, New Delhi.

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# Unit 14 Fund Flow Statement

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Notes

## Unit Structure

- Introduction
- Meaning of Fund Flow Statement
- Objectives of Fund Flow Statement Analysis
- Steps in the Preparation of Fund Flow Statement
- Schedule of Changes in Working Capital
- Summary
- Keywords
- Review Questions
- Further Readings

## Learning Objectives

At the conclusion of this unit, you should be able to:

- Prepare fund flow statement
- Explain the objectives of preparing fund flow statement
- Describe the steps in preparation of fund flow statement
- Prepare the schedule of changes in working capital

## Introduction

Every business establishment usually prepares the balance sheet at the end of the fiscal year which highlights the financial position of the yester years. It is subject to change in the volume of the business not only illustrates the financial structure but also expresses the value of the applications in the liabilities side and assets side respectively. Normally, Balance sheet reveals the status of the firm only at the end of the year, not at the beginning of the year. It never discloses the changes in between the value position of the firm at two different time periods/dates.

The method of portraying the changes on the volume of financial position is the analysis of fund flow statement.

## Meaning of Fund Flow Statement

In a narrow sense, the term fund means cash, and the fund flow statement depicts the cash receipts and cash disbursements/payments. It highlights the changes in the cash receipts and payments as a cash flow statement in addition to the cash balances i.e. opening cash balance and closing cash balance. Contrary to the earlier, the fund means working capital i.e. the differences between the current assets and current liabilities.

The term flow denotes the change. Flow of funds means the change in funds or in working capital. The change on the working capital leads to the net changes taken place on the working capital i.e. especially due to either increase or decrease in the working capital. Some of the transactions may lead to increase or decrease the volume of working capital. Some other transactions register neither an increase nor decrease in the volume of working capital.

Notes

According to Foulke, "A statement of source and application of funds is a technical device designed to analyse the changes to the financial condition of a business enterprise in between two dates."

Various facets of fund flow statement are as follows:

1. Statement of sources and application of funds
2. Statement changes in financial position
3. Analysis of working capital changes
4. Movement of funds statement
5. Depreciation charged on assets
6. Appropriation of profits to reserves
7. Payment of interim dividends
8. Payment and appropriations in relation to provisions for taxation/dividends where they are treated as non-current liabilities
9. Purchases of assets for cash, in exchange for current assets
10. Sale of assets at a profit/loss.

### Objectives of Fund Flow Statement Analysis

Fund flow statement has following objectives:

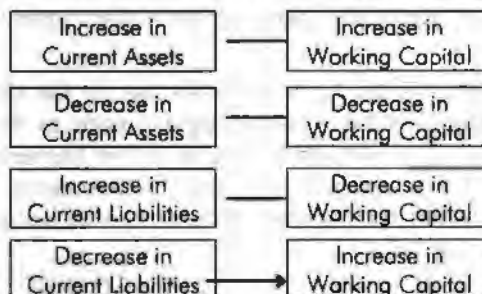
1. It pinpoints the mobilization of resources and the further utilization of resources.
2. It highlights the financing of the general expansion of the business firms.
3. It exemplifies the utilization of debt finance in the structure of financing.
4. It portrays the relationship between the financing, investments, liquidity and dividend decision of the firm during the given point of time.

### Steps in the Preparation of Fund Flow Statement

1. First and foremost step is to prepare the statement of changes in working capital i.e. to identify the flow of fund/movement of fund through the detection of changes in the volume of working capital.
2. Second step is the preparation of Non-current A/c items-Changes in the volume of Non-current A/cs have to be prepared only in order to quantify the flow fund i.e. either sources or application of fund.
3. Third step is the preparation Adjusted Profit & Loss A/c, which already elaborately discussed in the early part of the unit.
4. Last step is the preparation of fund flow statement.

### Schedule of Changes in Working Capital

The ultimate purpose of preparing the schedule of changes in the working capital illustrates the changes in the volume of net working capital which envisages either sources or application of fund. The schedule of changes are focused as follows:





Particulars	Previous Year	Current Year	Increase in Working Capital (+)	Decrease in Working Capital (-)
(A) Current Assets:				
Cash in Hand				
Cash at Bank				
Marketable Securities				
Bills Receivable				
Sundry Debtors				
Closing Stock				
Prepaid Expenses				
(B) Current Liabilities:				
Creditors				
Bills Payable				
Outstanding Expenses				
Pre-received Income				
Provision for Doubtful and Bad Debts				
Net Working Capital(A-B)				
Increase/Decrease Working Capital				

Notes

### Student Activity

From the following balance sheets of A Ltd. on 31st Dec, 1982 and 1983, you are required to calculate the schedule of changes in working capital. The following are additional information has also been given

1. Depreciation charged on plant was Rs. 4,000 and on building Rs. 4,000.
2. Provision for taxation of Rs. 19,000 was made during the year 1983.
3. Interim Dividend of Rs. 8,000 was paid during the year 1983.

#### Balance Sheet

Liabilities	1982 (Rs)	1983 (Rs)	Assets	1982 (Rs)	1983 (Rs)
Share capital	1,00,000	1,00,000	Goodwill	12,000	12,000
General Reserve	14,000	18,000	Building	40,000	36,000
Profit & Loss A/c	16,000	13,000	Plant	37,000	36,000
Sundry creditors	8,000	5,400	Investments	10,000	11,000
Bills payable	1,200	800	Stock	30,000	23,400
Provision for taxation	16,000	18,000	Bill receivable	2,000	3,200
Provision for doubtful debts	400	600	Debtors	18,000	19,000
			Cash	6,600	15,200
	1,55,600	1,55,800		1,55,600	1,55,800

## Summary

Fund Flow Statements summarize a firm's inflow and outflow of funds. Simply put, it tells investors where funds have come from and where funds have gone.

The statements are often used to determine whether companies efficiently source and utilize funds available to them. Fund flow statements are prepared by taking the balance sheets for two dates representing the coverage period. The increases and decreases must then be calculated for each item. Finally, the changes are classified under four categories: (1) Long-term sources, (2) Long-term uses, (3) Short-term sources and (4) Short-term uses.

## Keywords

**Current Assets:** Assets which are in the form of cash, equivalent to cash or easily convertible into cash.

**Current Liabilities:** Short term financial resources of the firm

**Decrease in Working Capital:** Decrease in Net working capital i.e. Excess of current liabilities over the current assets – Resources side of the fund flow

**Flow:** Flow means changes occurred in between two different time periods.

**Fund:** Fund means working capital.

**Statement of Changes in Working Capital:** Enlisting the changes taken place in between the Current assets and current liabilities of two different time horizons.

## Review Questions

1. Explain the meaning of fund flow statement.
2. What are the objectives of fund flow statement?
3. What are the key steps in preparation of fund flow statement?
4. Explain the schedule of changes in working capital.

## Further Readings

M. P. Pandikumar, *Management Accounting*, Excel Books.

M. N. Arora, *Cost and Management Accounting*, 8th Edition, Vikas Publishing House (P) Ltd.

Hilton, Maher and Selto, *Cost Management*, 2nd Edition, Tata McGraw-Hill Publishing Company Ltd.

B.M. Lall Nigam and I.C. Jain, *Cost Accounting*, Prentice-Hall of India (P) Ltd.

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# Unit 15 Methods of Fund Flow Statement

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## Unit Structure

- Introduction
- Methods of Preparing Fund from Operations
- Advantages of Preparing Fund Flow Statement
- Limitations of Fund Flow Statement
- Summary
- Keywords
- Review Questions
- Further Readings

## Learning Objectives

At the conclusion of this unit, you should be able to:

- Explain the methods of preparing fund from operations
- Describe net profit method and sales method of fund flow statement
- State the advantages of preparing fund flow statement
- Identify the limitations of fund flow statement

## Introduction

"A statement of sources and application of funds is a technical device designed to analyze the changes in the financial condition of a business enterprise between two dates" - Foulke.

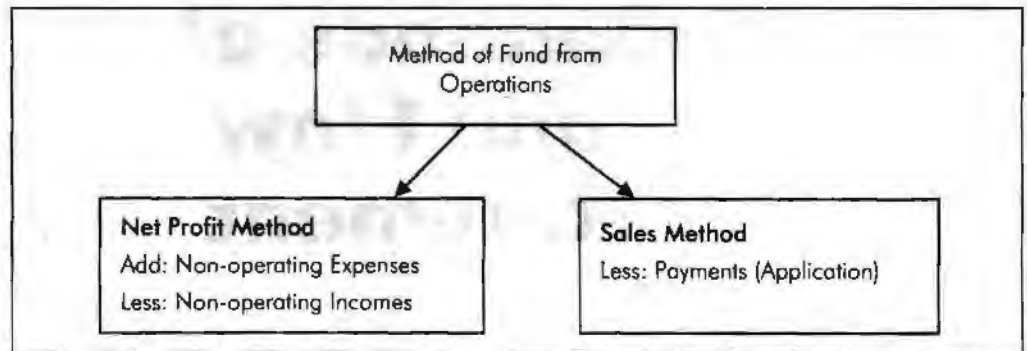
**Meaning of Funds:** The term 'funds' has been defined in a number of ways. In a narrow sense, it means cash only. A fund flow statement prepared on cash basis is called a cash flow statement. In a broader sense, the term 'funds' refers to all financial resources. However, the concept of funds as working capital is the most popular and widely accepted. Working capital is the excess of current assets over current liabilities.

**Concept of Flow of Funds:** The term 'flow' means change and therefore the term 'flow of funds' means 'change of funds' or 'change in working capital'. In other words, 'flow of funds' means any increase or decrease in working capital. If the transaction results in the increase of funds it is called a source of funds; if it results in the decrease of funds it is known as an application of funds. If the transaction does not affect the working capital, there is no flow of funds. The flow of fund occurs only when a transaction involves one current account and another non-current accounts. When a transaction involves non-current accounts only, no flow of funds occurs since working capital is not altered.

## Methods of Preparing Fund from Operation

The first method is widely used method by all in determining the volume of Fund from Operations (FFO).

Notes



### Net Profit Method

Under the Net Profit Method, fund flow from operations can be computed. Under this method, fund from operations can be determined in two different ways. The first method is through the statement format

Net Profit from the Profit & Loss A/c xxxxx

*Add:*

(A) *Non-funding Expenses:*

Loss on Sale of Fixed Assets xxxx

Loss on Sale of Long-term Investments xxxx

Loss on Redemption Debentures/Preference Shares xxxx

Discount on Debentures/Share xxxx

(B) *Non-operating Expenses:*

Depreciation of Fixed Assets xxxx

(C) *Intangible Assets:*

Amortization of Goodwill xxxx

Amortization of Patent xxxx

Amortization of Trade Mark xxxx

(D) *Fictitious Assets:*

Writing off Preliminary Expense xxxx

Writing off Discount on Shares/Debentures xxxx

(E) *Profit Appropriation*

Transfer to General Reserve xxxx

*Less:*

(F) *Non-funding Profits:*

Profit on Sale of Fixed Assets xxxx

Profit on Sale of Long-term Investments xxxx

Profit on Redemption Debentures/Preference Shares xxxx

(G) *Non-operating Incomes:*

Dividend Received xxxx

Interest Received xxxx

Rent Received xxxx

Fund from Operations/Fund Lost in Operations xxxxx

The second method of determining the fund from operations under the first classification is the Accounting Statement Format

**Adjusted Profit & Loss A/c**

Dr		Cr	Notes
To Depreciation	xxxx	By Opening Balance Profit	xxxxx
To Goodwill Written off	xxxx	By Profit on Sale of Fixed Assets	xxxxx
To Patent Written off	xxxx	By Profit on Sale of Investments	xxxxx
To Loss on Sale of Fixed Asset	xxxx	By Profit on Redemption of Liability	xxxxx
To Loss on Sale of Investment	xxxx	By Transfer from General Reserve	xxxxx
To Loss on Redemption of Liability	xxxx	By Balancing Figure fund from Operations (FFO)	xxxxx
To Preliminary Expenses off	xxxx		
To Proposed Dividend	xxxx		
To Transfer to General Reserve	xxxx		
To Current Year Provision for Taxation	xxxx		
To Current Year Provision for Depreciation	xxxx		
To Balancing Figure (Fund Lost in Operations)	xxxx		

**Sales Method**

Under this method, the following is the statement format is used to arrive fund flow from operations.

**Sources:**

Sales	xxxxxx
Stock at the end	xxxxxx

**Less:**

**Application:**

Stock at Opening	xxxx
Net Purchases (Purchase>Returns)	xxxx
Wages	xxxx
Salaries	xxxx
Telephone expenses	xxxx
Electricity charges	xxxx
Office stationery expenses	xxxx
Other operating cash expenses	xxxx
<b>Fund from Operations</b>	<b>xxxx</b>

**Example:** From the following details calculate funds from operations:

	Rs
Salaries	10,000
Rent	6,000
Refund of Tax	6,000
Profit on Sale of Building	10,000

<i>Accounting for Managers</i>	Depreciation on Plant	10,000
	Provision for Taxation	8,000
	Loss on Sale of Plant	4,000
Notes	Closing Balance of Profit & Loss A/c	1,20,000
	Opening Balance on Profit & Loss A/c	50,000
	Discount on Issue of Debentures	4,000
	Provision for Bad Debts	2,000
	Transfer to General Reserve	2,000
	Preliminary Expenses written off	6,000
	Goodwill written off	4,000
	Dividend Received	10,000
	Proposed Dividend	12,000

**Solution:**

**Calculation of Fund from Operation**

**First Method**

Closing Balance of Profit & Loss A/c	1,20,000
<i>Less:</i> Opening Balance	<u>50,000</u>
<b>Balance Forward</b>	<b>70,000</b>
<i>Add:</i> Non-fund/Non-operating Charges	
Depreciation on Plant	10,000
Provision for Taxation	8,000
Loss on Sale of Plant	4,000
Discount on Issue of Debentures	4,000
Provision for Bad Debts	2,000
Transfer to General Reserve	2,000
Preliminary Expenses off	6,000
Goodwill Written off	4,000
Proposed Dividend	<u>12,000</u>
	<b>1,22,000</b>
<i>Less:</i> Refund of Tax	6,000
Profit on Sale of Building	10,000
Dividend Received	<u>10,000</u>
<b>Fund from Operations</b>	<b><u>96,000</u></b>



**Second Method:**

**Adjusted Profit & Loss A/c**

To Depreciation on Plant	10,000	By Opening Balance b/d	50,000
To Provision for Taxation	8,000	By Profit on Sale of Building	10,000
To Loss on Sale of Plant	4,000	By Dividend Received	10,000
To Discount on issue of debentures	4,000	By Refund of Tax	6,000
To Provision for bad debts	2,000	By Balancing Figure	96,000
To Transfer to general reserve	2,000	Fund from Operations	
To Transfer to preliminary expenses	6,000		
To Goodwill written off	4,000		
To Proposed Dividend	12,000		
To Closing Profit c/d	1,20,000		
	<b>1,72,000</b>		<b>1,72,000</b>

Notes

The next step is to prepare the fund flow statement. The proforma of the fund flow statement:

Sources of Funds	Uses of Funds
<ul style="list-style-type: none"> <li>Funds from Business Operation</li> <li>Non-trading Incomes</li> <li>Sale of Non-current Assets</li> <li>Sale of Long-term Investments</li> <li>Issue of Shares</li> <li>Acceptance of Deposits</li> <li>Long-term Borrowings</li> <li>Decrease in Working Capital</li> </ul>	<ul style="list-style-type: none"> <li>Funds Lost in Operations</li> <li>Redemption of Preference Share Capital</li> <li>Repayment of Loans</li> <li>Purchase of Long-term Investments</li> <li>Purchase of Fixed Assets</li> <li>Payment of Taxes</li> <li>Payment of Dividends</li> <li>Drawings</li> <li>Loss of Cash</li> <li>Increase in Working Capital</li> </ul>

**Example:** From the following details prepare a statement showing changes in working capital during 1985.

**Balance Sheet of Pioneer Ltd.  
as on 31st December**

Liabilities	1984 (Rs)	1985 (Rs)	Assets	1984 (Rs)	1985 (Rs)
Share capital	5,00,000	6,00,000	Fixed assets	10,00,000	11,20,000
Reserves	1,50,000	1,80,000	Less: Depreciation	3,70,000	4,60,000
Profit and Loss A/c	40,000	65,000		6,30,000	6,60,000
Debentures	3,00,000	2,50,000	Stock	2,40,000	3,70,000
Creditors for goods	1,70,000	1,60,000	Bank Debts	2,50,000	2,30,000
Provision for tax	60,000	80,000	Cash in hand	80,000	60,000
			Preliminary expenses	20,000	15,000
	<b>12,20,000</b>	<b>13,35,000</b>		<b>12,20,000</b>	<b>13,35,000</b>

Notes

## Schedule of Changes in Working Capital

	1984	1985	Increase in Working Capital	Decrease in Working Capital
<b>Current Asset:</b>				
Stock	2,40,000	3,70,000	1,30,000	—
Book debts	2,50,000	2,30,000	—	20,000
Cash in hand	80,000	60,000	—	20,000
	<b>5,70,000</b>	<b>6,60,000</b>	<b>1,30,000</b>	<b>40,000</b>
<b>Current liabilities:</b>				
Creditors for goods	1,70,000	1,60,000	10,000	—
<b>Working capital</b>	<b>4,00,000</b>	<b>5,00,000</b>	<b>1,40,000</b>	<b>40,000</b>
Increase in working capital	1,00,000	—	—	1,00,000
	<b>5,00,000</b>	<b>5,00,000</b>	<b>1,40,000</b>	<b>1,40,000</b>

*Example:* From the following relating to Panasonic Ltd., prepare funds flow statement.

**Balance Sheet of Panasonic Ltd.**  
as on 31st December

Liabilities	1994 (Rs)	1995 (Rs)	Assets	1994 (Rs)	1995 (Rs)
Share capital	6,00,000	8,00,000	Fixed assets	3,80,000	4,20,000
Reserves	2,00,000	1,00,000	Accounts receivable	2,10,000	3,00,000
Retained earnings	60,000	1,20,000	Stock	3,00,000	3,90,000
Accounts payable	90,000	2,70,000	Cash	60,000	1,80,000
	<b>9,50,000</b>	<b>12,90,000</b>		<b>9,50,000</b>	<b>12,90,000</b>

**Additional Information:**

- The company issued bonus shares for Rs. 1,00,000 and for cash Rs. 1,00,000.
- Depreciation written off during the year Rs. 30,000.

**Solution:**

The first step is prepare the statement of changes in working capital

## Schedule of Changes in Working Capital

	1994	1995	Increase in Working Capital	Decrease in Working Capital
<b>Current Asset:</b>				
Cash	60,000	1,80,000	1,20,000	—
Stock in trade	3,00,000	3,90,000	90,000	—
Accounts receivable	2,10,000	3,00,000	90,000	—
	<b>5,70,000</b>	<b>8,70,000</b>	<b>3,00,000</b>	<b>—</b>
<b>Current Liabilities:</b>				
Accounts payable	90,000	2,70,000	—	1,80,000
<b>Working capital</b>	<b>4,80,000</b>	<b>6,00,000</b>	<b>3,00,000</b>	<b>1,80,000</b>
Increase in working capital	1,20,000	—	—	1,20,000
	<b>6,00,000</b>	<b>6,00,000</b>	<b>3,00,000</b>	<b>3,00,000</b>

The next step is to prepare the non-current account.

First non-current asset account should have to be prepared.

Dr Fixed Assets A/c Cr

Particulars	Rs	Particulars	Rs
To Balance b/d	3,80,000	By Depreciation (Adjusted Profit & Loss A/c)	30,000
To Cash (Purchase) Balancing fig.	70,000	By Balance c/d	4,20,000
	4,50,000		4,50,000

Notes

The next non-current account is that non-current liability which is nothing but Share capital.

Dr Share Capital A/c Cr

Particulars	Rs	Particulars	Rs
To Balance c/d	8,00,000	By Cash (Issue of shares)	1,00,000
		By General reserve	1,00,000
		By Balance b/d	6,00,000
	8,00,000		8,00,000

And another non-current account is to be prepared that general reserve account.

Dr General Reserve A/c Cr

Particulars	Rs	Particulars	Rs
To Share capital	1,00,000	By Balance b/d	2,00,000
To Balance c/d	1,00,000		
	2,00,000		2,00,000

The next step is to prepare the Adjusted Profit & Loss A/c.

Dr Adjusted Profit & Loss A/c Cr

Particulars	Rs	Particulars	Rs
To (Fixed Assets) depreciation	30,000	By Balance b/d (Retained Earnings)	60,000
To Balance c/d	1,20,000	By Fund from operation Balancing fig.	90,000
	1,50,000		1,50,000

The next step is to prepare the fund flow statement of the enterprise.

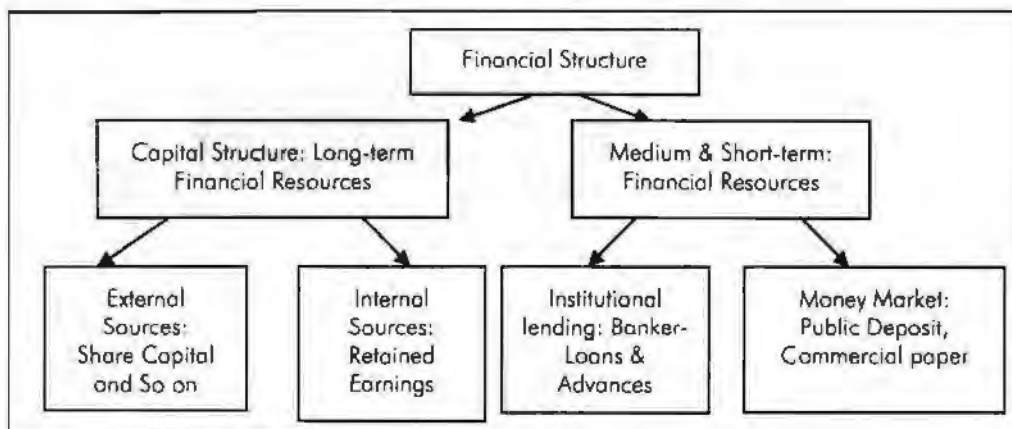
#### Fund Flow Statement

Sources	Rs	Applications	Rs
Issue of Shares	1,00,000	Purchase of Land	70,000
Funds from operation	90,000	Increase in working capital	1,20,000
	1,90,000		1,90,000

### Advantages of Preparing Fund Flow Statement

The fund flow statement has the following advantages:

1. **Illustrative statement of financing:** It is a statement which highlights the role of various kinds of financing not only in the dimension of project development and expansion but also growth rate of the organization.



2. **Structured analysis on the working capital of a firm:** It is the only statement to study the changes in the working capital in between two different periods from the balance sheet of a firm through structured analysis on the basis of working capital position.
3. **Fulfills the primary objective of the financial management:** It not only elucidates the mode of financing but also the application of resources after rising. It answers to the following queries, viz.
  - (a) How the outsider's liabilities are redeemed?
  - (b) What is the role of the fund from operation generated?
  - (c) How the raised funds applied into business?
  - (d) How the decrease in working capital was applied?
  - (e) What is the mode of raising the financial resources for an increase in the working capital?
4. **Facilitation through financial planning:** The projected fund flow statement from the past performance facilitates the firm to anticipate the future requirement of financial resources. It guides the management to prioritize the application in the future to the tune of scarce resources.
5. **Guide to working capital management:** It acts as a guide to the management to maintain the working capital at optimum level through either purchase or sale of marketable securities during the periods of adequate and inadequate working capital respectively.
6. **Indicator of past track of the firm:** The insight on the financial performance of the firm can be had by the lending institutions through fund flow statement at the time of extending financial assistance to the firm.

## Limitations of Fund Flow Statement

Fund flow statement analysis has following limitations:

1. It is an extension of financial statements but it cannot be leveled with the emphasis of them.
2. It is not a resultant of the transaction instead it is an arrangement of among the available information
3. Projected fund flow statement ever only to the tune of financial statements which are historic in feature.

### Student Activity

Discuss any non-current account transactions affecting the fund position of a firm of your choice.

## Summary

It is also important to zero out the non-fund based adjustments in order to capture only the changes that are accompanied by flow of funds.

However, income accrued but not received and expenses incurred but not received reckoned in the profit and loss statement should not be excluded from the profit figure for the fund flow statement.

Fund flow statements can be used to identify a variety of problems in the way a company operates.

Meanwhile, a company that is using long-term money to finance short-term investments may not be efficiently utilizing its capital.

## Keywords

**Fund from Operations:** Income generated from only operations.

**Fund Lost in Operations:** Loss incurred in the operations.

**Increase in Working Capital:** Increase in Net working capital i.e. Excess of current assets over the current liabilities – Applications side of the fund flow.

**Non-current Assets:** Long term assets.

**Non-current Liabilities:** Long term financial resources.

## Review Questions

1. From the following two balance sheet as at December 31, 2004 and 2005. Prepare the statement of sources and uses of funds.

	2004 (Rs)	2005 (Rs)	2004 (Rs)	2005 (Rs)
<b>Liabilities</b>				
Shore capital	80,000	90,000		
Trade creditors	20,000	46,000		
Profit & Loss a/c	4,60,000	5,00,000		
<b>Assets</b>				
Cash			60,000	94,000
Debtors			2,40,000	2,30,000
Stock in trade			1,60,000	1,80,000
Land			1,00,000	1,32,000
	5,60,000	6,36,000	5,60,000	6,36,000

2. Balance sheets of M/s Black and White as on 1-1-1986 and 31-12-1986 were as follows:

### Balance Sheet

Liabilities	1-1-86 (Rs)	31-12-1986 (Rs)	Assets	1-1-1986 (Rs)	31-12-1986 (Rs)
Creditors	40,000	44,000	Cash	10,000	7,000
Mrs. Whites' Loan	25,000	–	Debtors	30,000	50,000
Loan from P.N. Bank	40,000	50,000	Stock	35,000	25,000



Notes

Capital	1,25,000	1,53,000	Machinery	80,000	55,000
			Land	40,000	50,000
			Building	35,000	60,000
	2,30,000	2,47,000		2,30,000	2,47,000

**Additional information**

- (a) During the year machine costing Rs. 10,000 (accumulated depreciation Rs. 3,000) was sold for Rs. 5,000.
- (b) The provision for depreciation against machinery as on 1-1-1986 was Rs. 25,000 and on 31-12-1986 Rs. 40,000.
- (c) Net profit for the year 1986 amounted to Rs. 45,000.

You are required to prepare funds flow statement.

3. Discuss the various methods of determining the fund from/lost (in) operations
4. Explain the process of preparing the statement of changes in working capital
5. Draft the pro forma of the Fund flow statement.
6. From the following balance sheets of A Ltd., on 31st Dec, 1982 and 1983, you are required to prepare Fund flow statement. The following are additional information has also been given
  - (a) Depreciation charged on plant was Rs. 4,000 and on building Rs. 4,000.
  - (b) Provision for taxation of Rs. 19,000 was made during the year 1983.
  - (c) Interim Dividend of Rs. 8,000 was paid during the year 1983.

**Balance Sheet**

Liabilities	1982 (Rs)	1983 (Rs)	Assets	1982 (Rs)	1983 (Rs)
Share capital	1,00,000	1,00,000	Good will	12,000	12,000
General Reserve	14,000	18,000	Building	40,000	36,000
Profit & Loss A/c	16,000	13,000	Plant	37,000	36,000
Sundry creditors	8,000	5,400	Investments	10,000	11,000
Bills payable	1,200	800	Stock	30,000	23,400
Provision for taxation	16,000	18,000	Bill receivable	2,000	3,200
Provision for doubtful debts	400	600	Debtors	18,000	19,000
			Cash	6,600	15,200
	1,55,600	1,55,800		1,55,600	1,55,800

**Further Readings**

M. P. Pandikumar, *Management Accounting*, Excel Books.

M. N. Arora, *Cost and Management Accounting*, 8th Edition, Vikas Publishing House (P) Ltd.

Hilton, Maher and Selto, *Cost Management*, 2nd Edition, Tata McGraw-Hill Publishing Company Ltd.

B.M. Lall Nigam and I.C. Jain, *Cost Accounting*, Prentice-Hall of India (P) Ltd.



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# Unit 16 Cash Flow Statement

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Notes

## Unit Structure

- Introduction
- Meaning of Cash Flow Statement
- Utility of Cash Flow Statement
- Steps in the Preparation of Cash Flow Statement
- Preparation of Cash Flow Statement
- AS-3 Revised Cash Flow Statement
- Summary
- Keywords
- Review Questions
- Further Readings

## Learning Objectives

At the conclusion of this unit, you should be able to:

- Explain the utility of cash flow statement
- Identify steps in the preparation of cash flow statement
- Prepare cash flow statement
- Prepare AS-3 Revised cash flow statement

## Introduction

Cash is considered one of the vital sources of the firm to meet day to day financial commitments. The cash is considered to be as most important source of life blood of the business. The day to day financial commitments are met out only out of the available resources. The cash resources are availed through two different types of receipts *viz.* sales, dividends, interests known as regular receipts and sale of assets, investments known as irregular receipts of the business enterprise. To have smooth flow of business enterprise, it should have ample cash resources for its operations. The availability of cash resources is mainly depending on the cash inflows of the enterprises. The smoothness in operations of the enterprise is obtained through an appropriate matching of cash inflows and cash outflows.

To have smoothness in the operations of the enterprise, the firm should have an appropriate volume of cash resources at speedier rate as well as more than the financial commitments of the firm. This smoothness could be attained by way of an appropriate planning analysis on the cash resources of the firm. The meaningful analysis is only possible through cash flow statement analysis which facilitates the firm to identify the possible sources of cash as well as the expenses and expenditures of the firm.

## Meaning of Cash Flow Statement

The cash flow statement is being prepared on the basis of an extracted information of historical records of the enterprise. Cash flow statements can be prepared for a year, for six months, for quarterly and even for monthly. The cash includes not only means that cash in hand but also cash at bank.

The following are the main motives of preparing the cash flow statement:

1. To identify the causes for the cash balance changes in between two different time periods, with the help of corresponding two different balance sheets.
2. To enlist the factors of influence on the reduction of cash balance as well as to indicate the reasons though the profit is earned during the year and vice versa.

## Utility of Cash Flow Statement

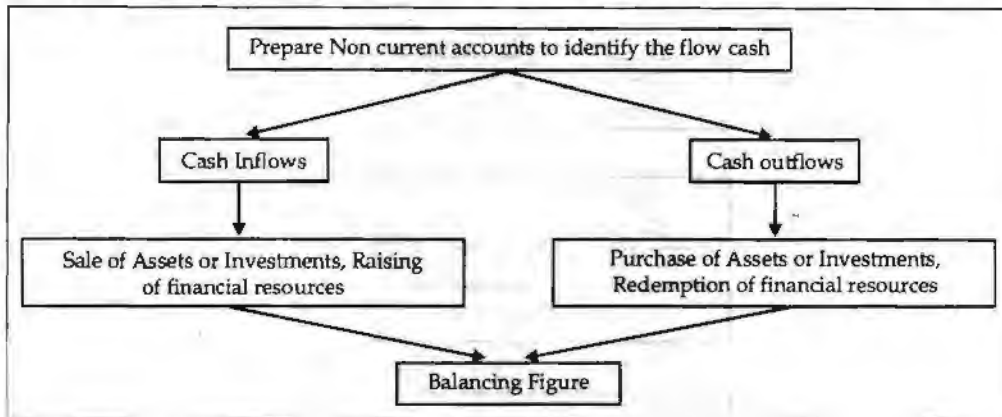
1. To identify the reasons for the reduction or increase in the cash balances irrespective level of the profits earned by the firm.
2. It facilitates the management to maintain an appropriate level of cash resources.
3. It guides the management to take futuristic decisions on the prospective demands and supply of cash resources through projected cash flows.
  - (a) How much cash resources are required?
  - (b) How much cash requirements could be internally settled?
  - (c) How much cash resources are to be raised through external sources?
  - (d) Which types of instruments are going to be floated for raising the required resources?
4. It helps the management to understand its capacity at the moment of borrowing for any further capital budgeting decisions.
5. It paves way for scientific cash management for the firm through maintenance of an appropriate cash levels i.e. optimum level cash of resources.
6. It avoids in holding excessive or inadequate cash resources through proper planning of cash resources.
7. It moots control through identification of variations occurred in the cash expenses and expenditures.

### Cash Flow Statement vs. Fund Flow Statement

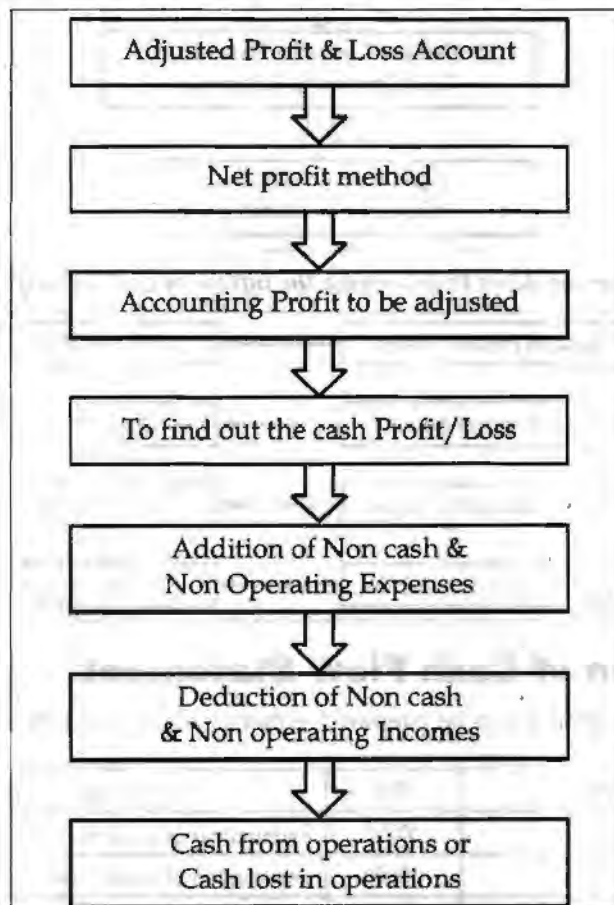
Cash Flow Statement	Fund Flow Statement
Cash inflow and outflow are only considered	Increase or decrease in the working capital is registered
Causes & changes of cash position	Causes & changes of working capital position
Considers only most liquid assets pertaining to cash resource; which fosters only for very short span of planning	Considers in general i.e. current assets; the duration of the liquidity of the current assets are longer in gestation than the liquid assets; which paves way for long span of planning
Opening and closing balances of cash resources are considered for the preparation	Increase or decrease of working capital is considered but not the opening and closing balance for preparation
The flow in the statement means real cash flow	The flow in the statement need not be real cash flow

## Steps in the Preparation of Cash Flow Statement

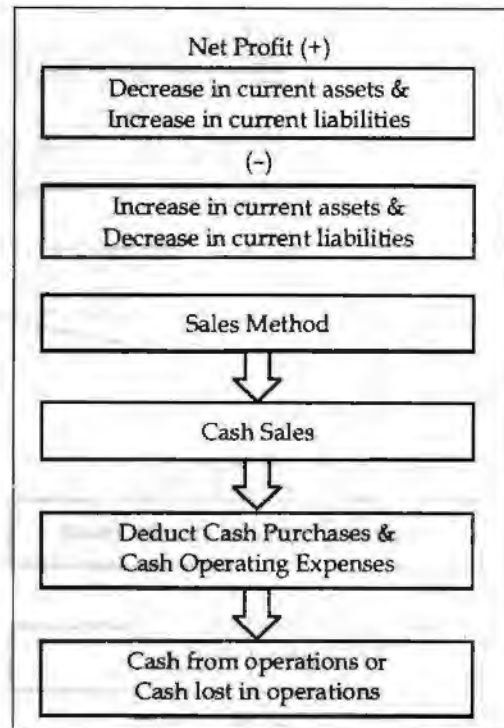
Notes



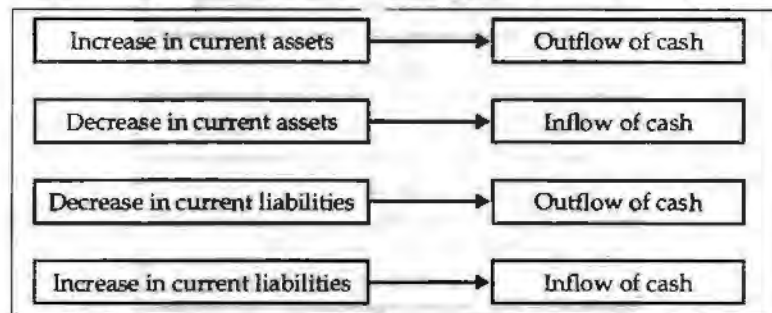
### Preparation of Adjusted Profit & Loss Account:



Notes



Comparison of Current items to determine the inflow of cash or outflow of cash



### Preparation of Cash Flow Statement

The cash flow statement can be prepared either in statement form or in accounting format.

Inflow cash	(Rs)	Outflow cash	(Rs)
Opening cash balance	XXXX	Redemption of preference shares	XXXX
Cash from in operations	XXXX	Redemption of debentures	XXXX
Sale of assets	XXXX	Repayment of loans	XXXX
Issue of shores	XXXX	Payment of dividends	XXXX
Issue of debentures	XXXX	Payment of tax	XXXX
Raising of loans	XXXX	Cash lost in operations	XXXX
Collection from debentures	XXXX		
Refund of tax	XXXX		
	XXXX		XXXX

**Example:** From the following balances you are required to calculate cash from operations.

Notes

Particulars	December 31	
	1992 (Rs)	1993 (Rs)
Debtors	1,00,000	94,000
Bills receivable	20,000	25,000
Creditors	40,000	50,000
Bills payable	16,000	12,000
Outstanding expenses	2,000	2,400
Prepaid expenses	1,600	1,400
Accrued Income	1,200	1,500
Income received in advance	600	500
Profit made during the year	-	2,60,000

According to net profit method, the cash from operation has to be found out.

Cash from operations

$$= \text{Net profit (+)} \quad \boxed{\begin{array}{l} \text{Decrease in current assets \&} \\ \text{Increase in current liabilities} \end{array}} \quad (-) \quad \boxed{\begin{array}{l} \text{Increase in current assets \&} \\ \text{Decrease in current liabilities} \end{array}}$$

The next step is to quantify the decrease in current assets and increase in current liabilities, in order to add with the closing net profit of the given statements and then the added volume should be deducted from the increase in current assets and decrease in current liabilities

	(Rs)	(Rs)
Profit made during the year		2,60,000
<b>Add:</b>		
Decrease in debtors	6,000	
Increase in creditors	10,000	
Outstanding expenses	400	
Prepaid expenses	200	16,000
<b>Less:</b>		
Increase in Bills receivable	5,000	
Decrease in Bills payable	4,000	
Increase in accrued income	300	
Income received in advance	100	9,4000
Cash from operations		2,67,200

**Example:** From the following profit & loss account, you are required to compute cash from operations.

**Profit and Loss Account  
for the year ending 31st Dec, 1983**

	(Rs)		(Rs)
To salaries	10,000	By Gross profit	50,000
To Rent	2,000	By profit on sale of land	10,000
To Depreciation	4,000	By income tax refund	6,000
To loss on sale of plant	2,000		
To Goodwill written off	8,000		
To proposed dividend	10,000		
To provision for taxation	10,000		
To Net profit	20,000		
	<b>66,000</b>		<b>66,000</b>

Notes

	(Rs)	(Rs)
Net profit made during the year		20,000
<b>Add:</b>		
<b>Non-cash expenses</b>		
Depreciation	4,000	
Loss on sale of plant	2,000	
Goodwill return off	8,000	
<b>Non-operating expenses</b>		
Proposed dividend	10,000	
Provision for taxation	10,000	34,000
<b>Less:</b>		
Non cash income		
Profit on sale of land	10,000	
Non operating income		
Income tax refund	6,000	16,000
		<b>38,000</b>

### Student Activity

Illustrate the impact of the changes taken place on the current assets and current liabilities to the tune of cash flows determination of the firm.

## AS-3 Revised Cash Flow Statement

Cash flow statement provides information about the cash receipts and payments of an enterprises for a given period. It provides important information that supplements the profit and loss account and balance sheet.

The statement of cash flows is required to be reported by Accounting Standard-3 (Revised) issued by the Institute of Chartered Accountants of India in March 1997 Which replaces the 'Changes in Financial Position' as per AS-3.

There are certain changes in the preparation of cashflow statement from the previous methods as a result of the introduction of AS-3 (Revised).

AS-3 (Revised) is mandatory in nature in respect of accounting periods commencing on or after 1-4-2001 for the following:

1. Enterprises whose equity or debt securities are listed on a recognised stock exchange in India, and enterprises that are in the process of issuing equity or debt securities that will be listed on a recognised stock exchange in India as evidenced by the board of directors' resolution in this regard.
2. All other commercial, industrial and business reporting enterprises, whose turnover for the accounting period exceeds Rs. 50 crores.

Cash flow Statement (Indirect Method) (Accounting Standard-3 (Revised))	(Rs.)
Cash flow from Operating activities	
Net profit before tax and extraordinary items	xxx
<b>Adjustments for:</b>	
-Depreciation	xxx
-Foreign exchange	xxx
-Investments	xxx
-Gain or loss on sale of fixed assets	(xxx)
-Interest/dividend	xxx

Contd.....



Operating Profit Before Working Capital Changes		xxx
<b>Adjustment for:</b>		
-Trade and other receivables		xxx
-Inventories		(xxx)
-Trade payables		xxx
Cash Generated from Operations		xxx
-Interest paid		(xxx)
-Direct taxes		(xxx)
Cash before Extraordinary Items		xxx
Deferred revenue		xxx
Net cashflow from operating activities	(a)	xxx
Cashflow from Investing activities		
Purchase of fixed assets		(xxx)
Sale of fixed assets		xxx
Sale of investments		xxx
Purchase of investments		(xxx)
Interest received		xxx
Dividend received		xxx
Loans to subsidiaries		xxx
Net cashflow from investing activities	(b)	xxx
<b>Cashflow from Financing Activities</b>		
Proceeds from issue of share capital		xxx
Proceeds from long term borrowings		xxx
Repayment to finance/lease liabilities		(xxx)
Dividend paid		(xxx)
Net cashflow from financing activities	(c)	xxx
Net Increase (decrease) in cash and cash equivalents during the period	(a+b+c)	xxx
Cash and cash equivalents at the beginning of the year		xxx
<b>Cash and cash equivalents at the end of the year</b>		xxx

## Summary

Cash flow statement indicates sources of cash inflows and transactions of cash outflows prepared for a period.

It is an important tool of financial analysis and is mandatory for all the listed companies.

The cash flow statement indicates inflow and outflow in terms of three components: (1) Operating, (2) Financing, and (3) Investment activities.

Cash inflows include sale of assets or investments, and raising of financial resources. Cash outflows include purchase of assets or investments and redemption of financial resources.

## Keywords

**Adjusted Profit & Loss A/c:** Statement devised to determine the cash from operations.

**Cash from Operations:** Cash resources accrued in the business operations.

## Review Questions

1. The comparative balance sheets of M/s Ram Brothers for the two years were as follows:

Notes

Liabilities	Mar, 31		Assets	Mar, 31	
	1984	1985		1984	1985
Capital	3,00,000	3,50,000	Land & Building	2,20,000	3,00,000
Loan from Bank	3,20,000	2,00,000	Machinery	4,00,000	2,80,000
Creditors	1,80,000	2,00,000	Stock	1,00,000	90,000
Bills payable	1,00,000	80,000	Debtors	1,40,000	1,60,000
Loan from SBI		50,000	Cash	40,000	50,000
	<b>9,00,000</b>	<b>8,80,000</b>		<b>9,00,000</b>	<b>8,80,000</b>

### Additional Information:

- (a) Net profit for the year 1985 amounted to Rs. 1,20,000.  
 (b) During the year a machine costing Rs. 50,000 (accumulated depreciation Rs. 20,000) was sold for Rs. 26,000. The provision for depreciation against machinery as on 31 Mar., 1984 was Rs. 1,00,000 and 31st Mar., 1985 Rs. 1,70,000.
- You are required to prepare a cash flow statement.
2. Draw the proforma of the Adjusted profit and loss account.
3. Data Ltd., supplies you the following balance on 31st Mar 1995 and 1996

Liabilities	1995	1996	Assets	1995	1996
Share capital	1,40,000	1,48,000	Bank balance	18,000	15,600
Bonds	24,000	12,000	Accounts Receivable	29,800	35,400
Accounts payable	20,720	23,680	Inventories	98,400	85,400
Provision for debts	1,400	1,600	Land	40,000	60,000
Reserves and Surpluses	20,080	21,120	Good will	20,000	10,000
	<b>2,06,200</b>	<b>2,06,400</b>		<b>2,06,200</b>	<b>2,06,400</b>

### Additional Information:

- (a) Dividends amounting to Rs. 7,000 were paid during the year 1996.  
 (b) Land was purchased for Rs. 20,000.  
 (c) Rs. 10,000 were written off on good will during the year.  
 (d) Bonds of Rs. 12,000 were paid during the course of the year.
- You are required to prepare a cash flow statement.
4. Since everything has some utility, analyse the cash flow statement analysis and explain its various utilities.
5. Discuss the procedure of determining cash provided by operating activities. Give suitable example to illustrate your answer.

### Further Readings

M. P. Pandikumar, *Management Accounting*, Excel Books.

M. N. Arora, *Cost and Management Accounting*, 8th Edition, Vikas Publishing House (P) Ltd.

Hilton, Maher and Selto, *Cost Management*, 2nd Edition, Tata McGraw-Hill Publishing Company Ltd.

B.M. Lall Nigam and I.C. Jain, *Cost Accounting*, Prentice-Hall of India (P) Ltd.

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# Unit 17 Cost Control Techniques

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## Unit Structure

- Introduction
- Budgetary Control
- Types of Budgets
- Classification of the Budget in Accordance with the Flexibility
- Zero-base Budgeting (ZBB)
- Summary
- Keywords
- Review Questions
- Further Readings

## Learning Objectives

**At the conclusion of this unit, you should be able to:**

- Explain the meaning of budgets and budgetary control
- Identify the various types of budgets
- Describe the preparation and control of various types of budgets
- Define zero based budgeting

## Introduction

Budget is an estimate prepared for definite future period either in terms of financial or non-financial terms. Budget is prepared for any course of action or business or state or Nation, as a whole. The budget is usually expressed in terms of total volume.

According to ICMA, England, a budget is as follows "a financial and or quantitative statement prepared and approved prior to a defined period of time, of the policy to be pursued during the period for the purpose of attaining a given objective."

It is in other words as "detailed plan of action of the business for a definite period of time." It is a statement of financial affairs/quantitative terms of an activity for a defined period, to achieve the enlisted objectives.

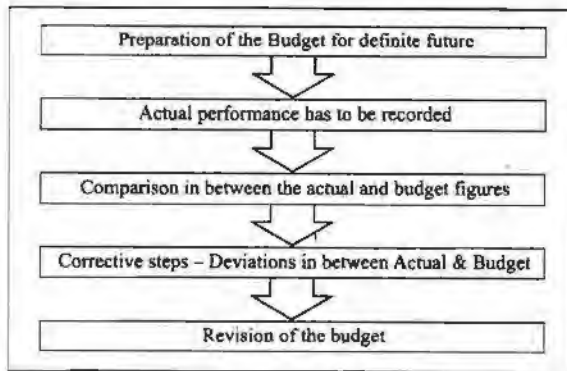
Budgeting is the course involved in the preparation of budget of an activity.

## Budgetary Control

Budgetary control contains two different processes, one is the preparation of the budget and another one is the control of the prepared budget.

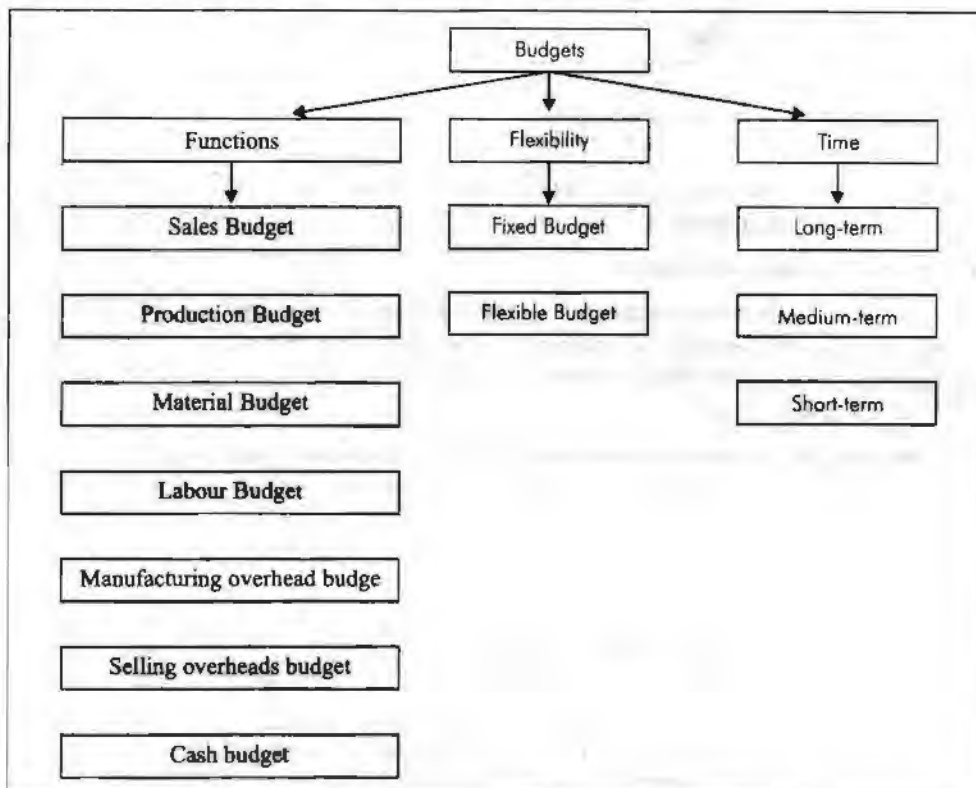
According to J. Batty, "Budgetary control is a system which uses budgets as a means of planning and controlling all aspects of producing and/ or selling commodities and services."

According to ICMA, England, a budgetary control is, "the establishment of budgets relating to the responsibilities of executives to the requirements of a policy and the continuous comparison of actual with budgeted results, either to secure by individual action the objectives of that policy or to provide a basis for its revision".



## Types of Budgets

On functional basis, the budgets can be classified into three categories.



## Production Budget

The preparation of the production budget is mainly dependent on the sales budget. The production budget is a statement of goods, how much should be produced. It may be in terms of quantities, Kilograms in monetary terms and so on.

The methodology of production budget includes three different components, viz. sales, closing stock and opening stock. Sales has to be added with the stock of the year at the end and to be deducted the opening stock.

Why sales has to be given paramount importance in the preparation of production budget?

The major sales of the business' enterprise is being regularly made out of only through the current year production.

Why the closing stock has to be added?

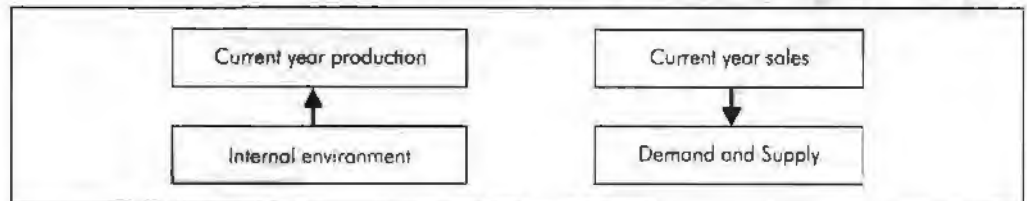
The purpose of the closing stock to be added is that it is a stock at end of the year-end out of the current year production.

Why the opening stock has to be deducted?

The aim of deducting the opening stock is that the stock at the beginning is the stock out of the yester or previous year production.

If sales is normally equivalent to the entire year of production, the firm need not to concentrate on the volume of opening stock and closing stock. It means that, what ever produced during the year is equivalent to current' year sales. If the entire production is sold out, there won't be closing stock at the end of the year and opening stock i.e. subsequent years.

**If Current year production is equivalent to current year sales**

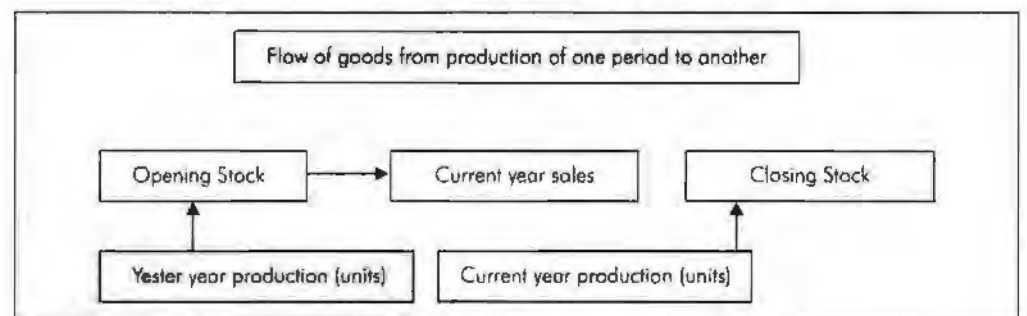


**Resultant:** No closing stock and opening stock for the subsequent years. This situation may not be possible at always

**Why it is not possible at always?**

The production volume is connected to the internal environment of the firm, which can be maintained through a systematic approach, but the sales cannot be easily administered by the firm which is being highly influenced by the demand and supply factors of the goods.

**If the current year production is not equivalent to the current year sales**



**Why the closing stock arises in the business?**

The closing stock is stock due to the excessive production over the sales volume. The reasons for excessive production are as follows:

1. Ineffective study of market potential through market research leads to the expression of excessive demand from the market, which signals the production department to produce to the tune of MR conducted.
2. Due to price fluctuations in the market may affect the volume of sales.
3. Due to meet the future demand.
4. The excessive production due to the cheaper availability of raw materials, which leads to greater amount of closing stock. If the storage cost is more than the hike takes place on the cost of raw materials lead~ to abnormal storage of the stock.

The diagram clearly illustrates that the emergence of the opening stock and closing stock during the year out of sales and production volume of the enterprise.



**Example:** Prepare a production budget for three months ending March 31, 1996 for a factory manufacturing four different articles on the basis of the following information:

Type of the Product	Estimated Stock on Jan 1, 1996 Units	Estimated sales during Jan-Mar, 1996 Units	Desired Closing Stock on Mar 31, 1996 Units
M	2000	10,000	5,000
BB	3000	15,000	4,000
CC	4000	13,000	3,000
DD	5000	12,000	2,000

**Solution:**

**Production Budget for three months ending March 31, 1996**

Particulars	AA Units	BB Units	CC Units	DD Units
Estimated Sales	10,000	15,000	13,000	12,000
Add: Desired closing stock	5,000	4,000	3,000	2,000
	15,000	19,000	16,000	14,000
Less: Opening Stock	2,000	3,000	4,000	5,000
Estimated Production	13,000	16,000	12,000	9,000

**Student Activity**

Mr. X Co. Ltd. manufactures two different products X and Y. X forecast of the number of units to be sold in first seven months of the year is given below:

Months	Product x	Product y
Jan.	1,000	2,800
Feb.	1,200	2,800
Mar.	1,600	2,400
Apr	2,000	2,000
May	2,400	1,600
June	2,400	1,600
July	2,000	1,800

It is expected that (a) there will be no work in progress at the end of every month, (b) finished units equal to half the sales for the next month will be in stock at the end of each month (including the previous December).

Budgeted production and production costs for the whole year are as follows:

Production in Units		Product X	Product Y
		22,000	24,000
Per unit (Rs.)	Direct Material	10.00	15.00
	Direct Labour	5.00	10.00
Total factory overhead apportioned		88,900	72,000

**Materials/Purchase Budget**

This budget takes place only after identifying the number of finished products expected to produce to the tune of production budget, in meeting the needs and demands of the customers and consumers during the season.

In order to produce to the tune of production budget to meet the market demands, the raw materials for the production should be maintained sufficient to supply them without any interruption. To have uninterrupted flow of production, the firm should go for the immediate procurement of raw materials through the multiplication of raw material required to produce for a single product with number of units expected to produce.

Why the stock of raw materials is deducted from the expected volume of materials procured for production to the tune of production budget?

If there is any existing stock of raw materials i.e. opening stock of raw materials available from the yester seasons or years should be deducted from the volume of materials required for production to be ordered and placed. The remaining volume should be the volume to be ordered for production.

**Example:** The sales manager of the MR Ltd. reports that next year he anticipates to sell 50,000 units of a particular product.

The production manager consults the storekeeper and casts his figures as follows:

Two kinds of raw materials A and B are required for manufacturing the product. Each unit of the product requires 2 units of A and 3 units of B. The estimated opening balances at the commencement of the next year are:

Finished product : 10,000 units

Raw Materials A : 12,000 units      Raw Materials B : 15,000 units

The desirable closing balances at the end of the next year are

Finished products: 14,000 units

Raw materials A: 13,000 units      Raw materials B: 1,000 units

Prepare production budget and materials purchase budget for the next year.

**Solution:**

The first step is to prepare the production budget. To identify the volume of materials required for production by considering the production budget and the dosing stock of materials of A and B respectively.

Why the closing stock of raw materials has to be added with estimated consumption? The purpose of adding the closing stock of raw materials is to anticipate the future demand of them, due to market influence; which warrants the firm to go for placement of order not only taking into consideration of expected consumption of raw materials but also the closing stock of raw materials to be maintained at the end of the season, in order to facilitate to have uninterrupted flow of production.

Why the opening stock of raw materials has to be deducted?

The opening stock of raw materials, which is available in the firm, should be considered for the placement of order of raw materials. The materials to be ordered should be other than that of the materials available in the firm.

#### Production Budget (Units)

Estimated sales	50000
<b>Add:</b> Desired Closing stock	14000
	<b>64000</b>
<b>Less:</b> Opening Stock	10000
Estimated Production	54000

## Materials Procurement or Purchase Budget (Units)

	Material A	Material B
Estimated Consumption		
For A 2 units x 54,000	1,08,000	
For B 3 units x 54,000		1,62,000
<b>Add:</b> Closing Stock	13,000	16,000
	1,21,000	1,78,000
<b>Less:</b> Opening Stock	12,000	15,000
<b>Estimated Purchases</b>	<b>1,09,000</b>	<b>1,63,000</b>

Notes

## Sales Budget

Sales Budget is an estimate of anticipation of sales in the near future prepared by the responsible person for the sale of a product by considering the various factors of influence. Sales budget is usually prepared in terms of quantity and value. The following factors are normally considered for the preparation of sales budget of a firm:

1. Last sales figures
2. Estimates of the salesmen who is frequently operating in the market, known much greater than any body in the market
3. Capacity of the plant and machinery to produce
4. Funds availability
5. Availability of raw materials to the tune of demand in the respective time period
6. Changes in the taste and preferences of the customer or consumer
7. Changers in the competition structure - Monopoly to Perfect competition - Previously BSNL was known as DOT as a monopoly in the market in affording the services till early 2000. Then later, the changes taken place in the market environment i.e. competition due to invasion of new entrants like Reliance, Hutch, Bharti tele ventures and so on; warrants careful preparation of sales budget of number of telephone connection expected to sell.

**Example:** Reynolds Pvt. Ltd. manufactures two brands of pen Light & Elite. The sales department of the company has three departments in different regions of the country.

The sales budgets for the year ending 31<sup>st</sup> Dec, 1996 Light department I-3,00,000; department-II 5,62,500; department III-1,80,000; Elite - department I-4,00,000; department II-6,00,000; department-III 20,000.

Sales prices are Rs. 3 and Rs. 1.20 in all departments. It is estimated that by forced sales promotion the sales of Elite in department I will increase by 1,75,000. It is also expected that by increasing production and arranging extensive advertisement, department III will be enabled to increase the sale of Elite by 50,000.

It is recognized that the estimated sales by department II represent and unsatisfactory target. It is agreed to increase both estimates by 20%.

Prepare a sales budget for the year 1996.

**Solution:**

Sales budget should be prepared to the tune of various influences of forthcoming seasons' sales. The expected increase or decrease in the sales volume should be incorporated at the time of preparing the sales budget from the yester periods sale figures.

## Notes

1. There is no change in the volume of existing sales of the department of I Light; the existing sales of the department I of the Light should be retained as it is for the computation of the budgeted figures, but there is a change expected to occur in the existing volume of sales of the department I of the Elite. The change expected amounted to increase 1,75,000 units in addition to the volume of existing sales i.e. the total volume of sales is equivalent to 4,00,000 units of existing volume of sales + 1,75,000 units expectation of increase= 5,75,000 units for Elite Department I.
2. In the- II department of both Light & Elite expected to have an increase on the volume of existing sales amounted is 20% i.e. 20% increase on the Department II of Light 5,62,500 units amounted 6,75,000 units and similarly in the case of Department II of Elite 6,00,000 units amounted 7,20,000 units.
3. In the III department of Light does not have any change in the volume of existing sales, it means that 1,80,000 units has to be retained as it is in the computation of the budgeted figure but in the case of Elite, department III expected to have an increase in the volume of sales which amounted 20,000 units i.e. 70,000 units.

## Sales Budget for the Year 1996

Selling Price	Light Rs.3		Elite Rs.1.20		Total
	Quantity	Rs	Quantity	Rs	Rs
Department I	3,00,000	9,00,000	5,75,000	6,90,000	15,90,000
Department II	6,75,000	20,25,000	7,20,000	8,64,000	28,89,000
Department III	1,80,000	5,40,000	70,000	84,000	6,24,000
	11,55,000	34,65,000	13,65,000	16,38,000	51,03,000

**Sales Overhead Budget**

It is one of the important sub functional budgets, prepared by the sales manager who is responsible for the sales volume of the enterprise to increase through various devices/tools of sales promotion.

The sales overhead can be classified into two categories *viz.* fixed sales overhead and variable sales overhead.

What is meant by the Fixed Sales Overhead?

Fixed sales overhead is the expenses incurred for promoting the sales, which remains the same or fixed irrespective of the volume of the sales.

- Example:**
1. Salaries to Sales Department
  2. Salaries to the Administrative Staff
  3. Salary to Salesmen

Variable sales overhead is the expenses incurred for the promotion of the sales, which is varying along with the volume of sales of the firm.

- Example:**
1. Sales commission
  2. Agents commission
  3. Carriage outward expenses.

The sales overhead budget is the statement of estimates of the various sales promotional expenses not only based on the early/yester period sales promotional expenses but also on the sales of previous years.

**Example:** The following expenses were extracted from the books of M/ s Sudhir & Sons, to prepare the sales overhead budget for the year 1996:

Notes

	Rs.
Advertisement on	
Radio	2,000
Television	12,000
Salary to	
Sales Administrative Staff	20,000
Sales force	15,000
Expenses of the sales department	
Rent of the building	5,000
Carriage outward	5% on sales
Commission at sales	2%
Agents' commission	6.5%

The sales during the period were estimated as follows:

Rs. 80,000 including Agents Sales Rs. 8,000

Rs. 1,00,000 including Agents Sales Rs. 10,500

**Solution:**

The most important step is to find out the variable portion of the sales overhead of M/ s Sudhir & Sons.

1. The calculation of salesmen's commission is on the basis of the sales volume generated by the salesmen force. The total sales volume consists of two different parts viz. Sales contributed by the sales force and another one is contribution of the agents. To find out the sales volume of the sales man, the portion of the agents' sales volume should be deducted from the total sales volume.

Sales Force's/Men's Volume = Total Sales Volume - Agent's Sales Volume

Similarly, the agents' sales volume can be computed.

2. From the early step, the amount -of commission is to be computed from the volume of sales.
3. Carriage outward should be computed on the volume of sales.

**Sales Overhead Budget for the Year 1996**

Estimated Sales	Rs. 80,000 level	Rs. 1,00,000 level
<b>Fixed Overhead</b>		
Advertisement on Radio	2,000	2,000
Advertisement on TV	12,000	12,000
Salary to Sales Admin. Staff	20,000	20,000
Salary to Sales force	15,000	15,000
Expenses of the sales dept - Rent	5,000	5,000
<b>Total Sales Fixed Overhead (A)</b>	<b>54,000</b>	<b>54,000</b>

Contd...

<b>Variable Overhead</b>		
Salesmen's Commission 2%	1,440	10,290
Agents' Commission 6.5%	520	682.5
Carriage outward 5%	4,000	5,000
<b>Total Variable Overhead (B)</b>	<b>5,960</b>	<b>5682.5</b>
<b>Total Sales overhead(A+B)</b>	<b>59,960</b>	<b>59682.5</b>

## Cash Budget

Cash budget is nothing but an estimation of cash receipts and cash payments for specified period. It is prepared by the head of the accounts department i.e. chief accounts officer.

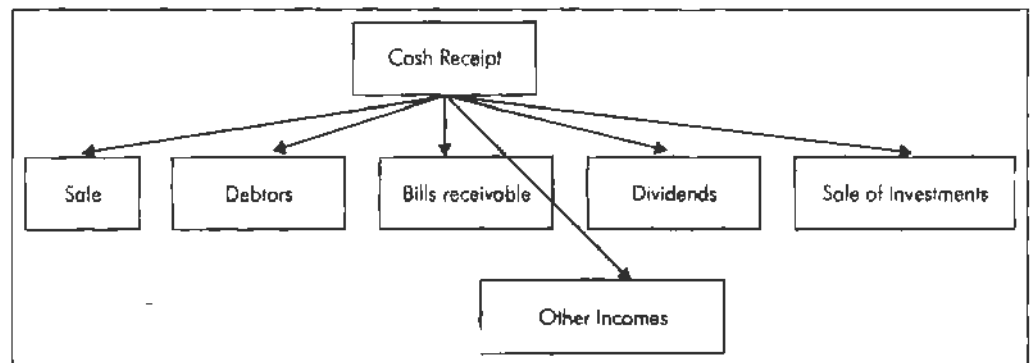
The utility of the cash budget is as follows:

1. To meet the revenue and capital expenditures with adequate funds.
2. It should highlight the additional requirement cash whenever the need arises.
3. Keeping of excessive funds available in the business firm would not fetch any return to the enterprise but this estimate of future cash needs and resources will guide the firm to plan for an effective investment out of the surplus funds estimated; enhances the wealth of the investors through proper investment planning out of the future funds available

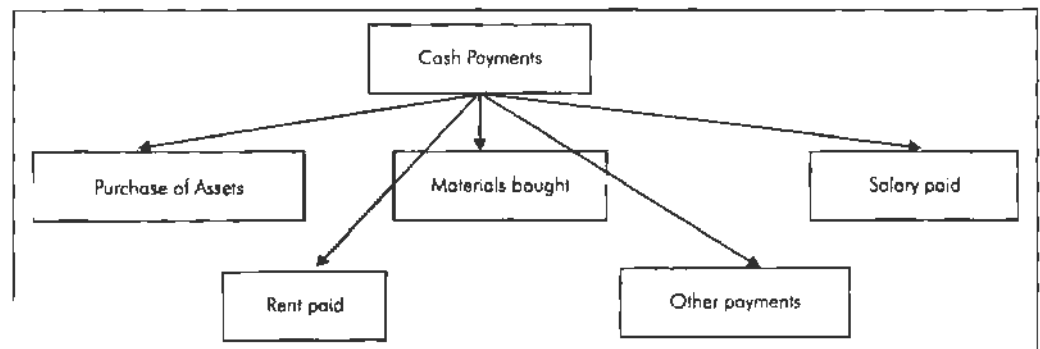
Cash budget can be prepared in three different ways:

1. Receipts and payments method
2. Adjusted profit and loss account
3. Balance Sheet Method

Cash receipts can be classified into various categories:



Cash payment are as follows:





**Example:** From the estimates of income and expenditure, prepare cash budget for the months from April to June.

Month	Sales (Rs)	Purchases (Rs)	Wages (Rs)	Office Exp. (Rs)	Selling Exp. (Rs)
Feb.	1,20,000	80,000	8,000	5,000	3,600
Mar.	1,24,000	76,000	8,400	5,600	4,000
Apr.	1,30,000	78,000	8,800	5,400	4,400
May	1,22,000	72,000	9,000	5,600	4,200
June	1,20,000	76,000	9,000	5,200	3,800

Notes

- Plant worth Rs. 20,000 purchase in June 25% payable immediately and the remaining in two equal instalments in the subsequent months
- Advance payment of tax payable in Jan. and April Rs. 6,000/-
- Period of credit allowed:
  - By suppliers 2 months
  - To customers 1 month
- Dividend payable Rs. 10,000 in the month of June.
- Delay in payment of wages and office expenses 1 month and selling expenses 1 month. Expected cash balance on 1st April is Rs. 40,000.

**Solution:**

- Plant worth Rs. 20,000/- purchased, payable immediately is 25% i.e. Rs. 5,000/- should be paid in the month of June. The remaining cost of the machine has to be paid in the subsequent months, after June. The payments whatever are expected to make after June is not relevant as far as the budget preparation concerned.
- Delay in the payment of wages and office expenses is only one month. It means wages and office expenses of Feb. month are paid in the next month, March.

Selling expenses from the above coloured boxes, it is obviously understood that during the months of April, May and June; the following will be stream of payment of selling expenses.

April = Rs. 2,000 of Mar. (Previous Month) and Rs. 2,200 of April (Current month)  
= Rs. 4,200

May = Rs. 2,200 of April (Previous Month) and Rs. 2,100 of May (Current month)  
= Rs. 4,300

June = Rs. 2,100 of May (Previous Month) and Rs. 1,900 of June (Current month) =  
Rs.4,000

- Selling expenses is having the delay of 1h month, which means 50% of the selling expenses is paid only in the current month and the remaining 50% is paid in the next

Particulars	Feb.	Mar.	April	May	June
Selling Expenses	3,600	4,000	4,400	4,200	3,800
Payment 50% in the current month	1,800	2,000	2,200	2,100	1,900
Delay 50% will be paid in the subsequent month	1,800	2,000	2,200	2,100	1,900

Every month 50% of the selling expenses of the current month and 50% of the previous month selling expenses are paid together; the above coloured boxes depict

the payment of 50% of the current selling expenses along with 50% expenses of previous month.

#### Cash Budget for the Periods (April and June)

Notes

Particulars	April (Rs.)	May (Rs.)	June (Rs.)
Opening Cash Balance	40,000	59,800	95,300
<b>Cash Receipts</b>			
Sales	1,24,000	1,30,000	1,22,000
Total Receipts (A)	1,64,000	1,89,800	2,17,300
<b>Payments</b>			
Plant Purchased	-----	-----	5,000
Tax payable	6,000	-----	-----
Purchases	80,000	76,000	78,000
Dividend payable	-----	-----	10,000
Wages	8,400	8,800	9,000
Office expenses	5,600	5,400	5,600
Selling expenses	4,200	4,300	4,000
Total Payments(B)	1,04,200	94,500	1,11,600
Balance (A-B)	59,800	95,300	1,05,700

### Classification of the Budget in Accordance with the Flexibility

#### Fixed Budget

It is a budget known as constant budget, never registers the changes in the preparation of a budget, being prepared for irrespective level of output or production. This budget is mainly meant for the fixed overheads of the firm which are constant in volume irrespective level of production. The ultimate utility of the budget is to control the cost as a cost controlling measure, but the fixed budget is meaningless in having comparison with the actual performance.

#### Flexible Budget

Flexible budget is prepared for any level of production as an estimate of statement of all expenses i.e. the expenses are classified into three categories viz. variable, semi-variable and fixed expenses. The structure of the budget for any output is only to the tune of the actual performance achieved. This is the budget facilitates not only to have comparison in between various levels of production but also to identify the level of lowest production cost.

Utilities of the flexible budget:

1. This budget is most useful tool of analysis in studying the sales at when the circumstances are not warranting to predict.
2. It is mostly suited to the seasonal business, where the sales volume is getting differed from one period to another due to changes taken place in the taste and preferences of the buyers.
3. The production is being done on the basis of demand of the products in the market. The demand of the products is studied only through demand forecasting. The flexible budget is more applicable in the case of products, which are greatly, finding difficult to forecast the demand.
4. The budget is prepared only during the time of acute shortage of resources of production viz. Men, Material and so on.

**Example:** Draft a flexible budget for overhead expenses on the basis of following information and determine the overhead rates at 70%, 80% and 90% plant capacity.

Particulars	70% capacity	80% capacity (Rs)	90% capacity
Variable Overheads	-----	24,000	-----
Indirect Labour	-----	8,000	-----
Stores including spares	-----	40,000	-----
Semi-variable overheads	-----	4,000	-----
Power 30% fixed ,70% variable	-----	22,000	-----
Repairs and maintenance	-----	6,000	-----
80% fixed and 20% variable	-----	20,000	-----
Fixed Overheads	-----		-----
Depreciation	-----		-----
Insurance	-----		-----
Salaries	-----		-----
Total overheads	-----	1,24,000	-----

Notes

#### Flexible Budget for the Period

Particulars	70% capacity	80% capacity	90% capacity
<b>Variable overheads</b>			
Indirect labour	21,000	24,000	27,000
Stores including spares	7,000	8,000	9,000
Semi-variable Expenses - Power*			
Fixed 30%	8,000	8,000	8,000
*Variable 70%	28,000	32,000	36,000
Repairs and maintenance			
"Fixed 80%	3,200	3,200	3,200
"Variable 20%	700	800	900
Fixed Overheads			
Depreciation	22,000	22,000	22,000
Insurance	6,000	6,000	6,000
Salaries	20,000	20,000	20,000
Total Overheads	1,15,900	1,24,000	1,32,100

### Master Budget

Immediately after the completion of functional or departmental level budgets, the major responsibility of the budget officer is to consolidate the various budgets together, which is detailed report of all operations of the firm for a definite period.

### Zero-base Budgeting (ZBB)

Zero-base budgeting is one of the renowned managerial tool, developed in the year 1962 in America by the Former President Jimmy Carter. The name suggests, it is commencing from the scratch, which never incorporates the methodology of the other types of budgeting in determining the estimates. The Zero base budgeting considers the current year as a new year for the preparation of the budget but the yester period is not considered for consideration. The future activities are forecasted through the zero base budgeting in accordance with the future activities.

Peter A Pyher "A planning and budgeting process which requires each manager to justify his entire budget request in detail from scratch (Hence zero base) and shifts the burden of proof to each manger to justify why he should spend money at all.

The approach requires that all activities be analysed in "decision packages" which are evaluated by systematic analysis and ranked in order of importance."

This type of budgeting requires the manager to reason out the aim of spending, but in the case of traditional budgeting is unlike, which are never emphasize the reasons of spending in terms of expenses.

#### Traditional Budgeting vs Zero Base Budgeting

Basis of Difference	Traditional Budgeting	Zero Base Budgeting
Emphasis	It is accounting oriented; emphasis on "How Much"	It is more decision oriented; emphasis on "Why"
Approach	It is monitoring towards the expenditures	It is towards the achievement of objectives
Focus	To study the changes in the expenditures	To study the cost benefit analysis
Communication	It operates only Vertical communication	It operates in both directions horizontally and vertically
Method	It is based on the extrapolation i.e from the yester figures future projections are carried out	Its decision package is totally based on the cost benefit analysis.

#### Steps involved Zero-base Budgeting

1. The very first step is to prepare the Zero-base Budgeting is to enlist the objectives.
2. The extent of application should be decided in the next phase of the ZBB.
3. The next important stage is to prioritize the activities.
4. The Most important step involved in the process of ABB is cost benefit analysis.
5. The final step is to select, approve the decision packages and finalise the budget.

#### Benefits of Zero-base Budgeting

1. It acts as guide for the management to allocate the resources more accurately depends upon the priority for an effective implementation.
2. It enhances capability of the managers who prepares the budget for future action.
3. It paves way for optimum utilization of resources available.
4. It is a technique of utilitarian of the resources with reference to the activity involved.
5. It is dome shaped only towards the achievement of organizational goals.

#### Criticism of Zerp-based Budgeting

1. Non-financial matters cannot be considered for the cost and benefit analysis.
2. Difficulties involved in the process of ranking of the decision packages.
3. It needs more time span for preparation and cost of operations is more and more.

#### Summary

Budget is an estimate prepared for definite future period either in terms of financial or non-financial terms.

Cost control contains two different processes one is the preparation of the budget and another one is the control of the prepared budget.

The production budget is a statement of goods, how much should be produced.

The ultimate aim of the production budget is to find out the volume of production to be made during the year based on the sale volume.

Sales Budget is an estimate of anticipation of sales in the near future prepared by the responsible person for the sale of a product by considering the various factors of influence.

The expected increase or decrease in the sales volume should be incorporated at the time of preparing the sales budget from the yester periods sale figures.

Cash budget is nothing, but an estimation of cash receipts and cash payments for specified period. It is prepared by the head of the accounts department i.e. Chief Accounts Officer.

Constant budget is mainly meant for the fixed overheads of the firm, which are constant in volume irrespective level of production.

Zero-base budgeting is one of the renowned managerial tools, developed in the year 1962 in America by the Former President Jimmy Carter.

The Zero-base budgeting considers the current year as a new year for the preparation of the budget but the yester period is not considered for consideration.

The future activities are forecasted through the zero base budgeting in accordance with the future activities.

## Keywords

**Budget:** A financial statement prepared for specified activity for future periods.

**Budgeting:** Activity of preparing the budget is known as budgeting.

**Budget Control:** Quantitative controlling technique to assess the performance of the organization.

**Cash Budget:** It is a statement prepared by the organization to identify the future needs and receipts of cash from the yester activities.

**Flexible Budget:** It is a financial statement prepared on the basis of principle of flexibility to identify the cost of the unknown level of production from the existing level of operational capacity.

## Review Questions

- From the following figures extracted from the books of KPZ Ltd., Prepare raw materials procurement budget on cost:

Particulars	A	B	C	D	E	F
Estimated stock on Jan. 1	16,000	6,000	24,000	2,000	14,000	28,000
Estimated stock on Jan. 31	20,000	8,000	28,000	4,000	16,000	32,000
Estimated consumption	1,20,000	44,000	1,32,000	36,000	88,000	1,72,000
Standard price per unit	25 p	.10p	.sOp	.30p	.40p	.sOp

- Sankaran Bros sell two products A and B, which are manufactured in one plant. During the year 1986, the firm plans to sell the following quantities of each product.

Product	April-June	July-September	October- December	January-March
Product A	90,000	2,50,000	3,00,000	80,000
Product B	80,000	75,000	60,000	90,000



Each of these two products is sold on a seasonal basis Sankaran Bros, plan to sell product A through out the year at price of Rs. 10 a unit and product B at a price of Rs 20 per unit.

A study of the past experiences reveals that Sankaran bros has lost about 3% of its billed revenue each year because of returns (constituting 2% of loss if revenue allowances and bad debts 1% loss).

Prepare a sales budget incorporating the above information.

3. Gopi & Co. Ltd. produces two products, Alpha and Beta. There are two sales divisions viz. North and South. Budgeted sales of the year ended 31st December 1980 were as follows.

Division	Products	Units	Price per unit (Rs.)
North	Alpha	25,000	10
	Beta	15,000	5
South	Alpha	24,000	10
	Beta	30,000	5

Actual sales for the period were

Product	North	South
Alpha	28,000 units @Rs.10 each	25,000 units @ Rs. 10 each
Beta	18,000 units @ Rs.5 each	33,000 units @ Rs. 5 each

On the basis of assessments of the salesmen the following are the observations of sales division for the year ending 31st December 1981:

North Alpha budgeted increase of 40% on 1980 budget Beta budgeted increase of 10% on 1980 budget

South Alpha budgeted increase of 12% on 1980 budget  
Beta budgeted increase of 15% on 1980 budget

It was further decided that because of the increased sales campaign in North an additional sales of 5,000 units of product will result.

Prepare the sales budget for 1981 (a) zonewise (b) productwise.

4. From the following information prepare a cash budget for the months of June and July.

Month	Credit sales (Rs.)	Credit purchase (Rs.)	Manufacturing overheads (Rs.)	Selling overheads (Rs.)
April	80,000	60,000	2,000	3,000
May	84,000	64,000	2,400	2,800
June	90,000	66,000	2,600	2,800
July	84,000	64,000	2,000	2,600

**Additional Information:**

(a) Advance tax of Rs. 4,000 payable in June and in December 1994.

(b) Credit period allowed to debtors is two months.

(c) Credit period allowed by the vendors or suppliers.

(d) Delay in the payment of other expenses one month.

(e) Opening balance of cash on 1st June is estimated as Rs. 20,000.



5. The expenses for budgeted production of 10,000 units in a factory are furnished below:

Particulars	Per unit
Material	70
Labour	25
Variable overheads	20
Fixed overheads (1,00,000)	10
Variable expenses (Direct)	5
Selling expenses (10% fixed)	13
Distribution expenses (20% fixed)	7
Administration expenses (Rs. 50,000)	5
Total cost per unit	155

Notes

Prepare a budget for production of:

- (a) 8,000 units
- (b) 6,000 units
- (c) Calculate the cost per unit at both levels.

Assume that administration expenses are fixed for all level of production.

6. From the following information relating to 1963 and conditions expected to prevail in 1964, prepare a budget for 1964:

State the assumption you have made, 1963 actuals

Sales	1,00,000 (40,000 units)
Raw materials	53,000
Wages	11,000
Variable overheads	16,000
Fixed overheads	10,000
1964-prospects	
Sales	1,50,000 (60,000 units)
Raw Materials	5 per cent price increase
Wages	10 per cent increase in wage rates
	5 per cent increase in productivity
Additional plant	One lathe Rs.25,000
	One drill Rs,12,000

- 7. "Budgetary control is a system which uses budgets as a means of planning and controlling all aspects of producing and/or selling commodities and services." Comment.
- 8. If the current year production is not equivalent to the current year sales, why does the closing stock arise in the business?
- 9. What do you think are the causes behind an unfavorable fixed overhead budget variance?

## **Further Readings**

M.P. Pandikumar, *Management Accounting*, Excel Books.

M.N. Arora, *Cost and Management Accounting*, 8th Edition, Vikas Publishing House (P) Ltd.

Hilton, Maher and Selto, *Cost Management*, 2nd Edition, Tata McGraw-Hill Publishing Company Ltd.

B.M. Lall Nigam and I.c. Jain, *Cost Accounting*, Prentice-Hall of India (P) Ltd.

[www.authorstream.com](http://www.authorstream.com)

[www.allinterview.com](http://www.allinterview.com)

Notes

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# Unit 18 Standard Costing and Variance Analysis

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## Unit Structure

- Introduction
- Definition and Meaning of Standard Costing
- Standard Costing System
- Concept of Variance Analysis
- Classification of Variances
- Summary
- Keywords
- Review Questions
- Further Readings

## Learning Objectives

**At the conclusion of this unit, you should be able to:**

- Explain the meaning of standard costing
- Describe standard costing system
- Know the concept of variance analysis
- Make the classification of variances

## Introduction

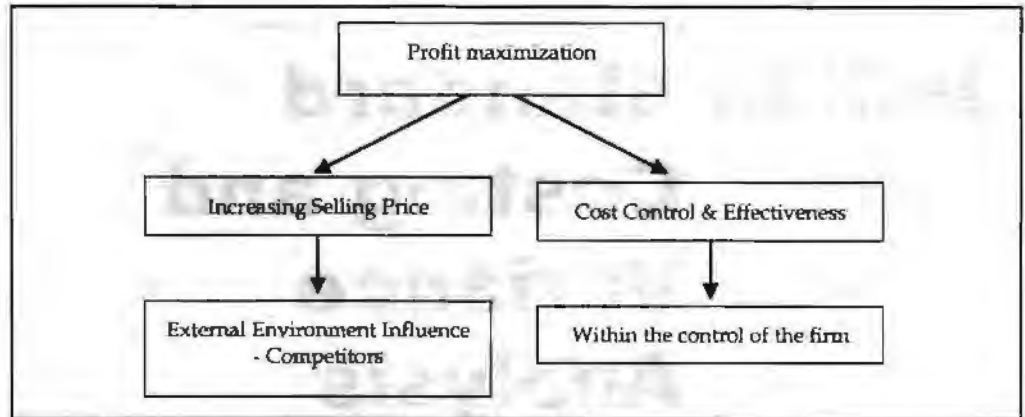
Standard costing is a tool, which replaces the bottleneck of the historical costing. Historical costing is one of the tools, which fulfills the one of the objectives of costing i.e. ascertainment of costs. The cost of a product can be ascertained only after the production of a product; which is meant as "Historical costing".

***Why standard costing is considered to be more important than the Historical Costing?***

Historical costing facilitates to ascertain the cost of a product which is connected with yester operations or with past. The ultimate aim of studying this unit is to control the cost of a product as one among the objectives of cost effectiveness strategy of the business enterprise.

The profit maximization can be had by way of implementing the following two different strategies:

## Notes



From the following equation, the profit can be maximized

$$\text{Selling Price} - \text{Cost} = \text{Profit}$$

There are two possible ways to maximize the profit:

1. Increasing the selling price and keeping the cost remains the same
2. Reducing the cost and retaining the selling price as it is.

Why the later is more feasible than the earlier?

It is explained through two different strategies. They are as follows:

### **Strategy No. 1**

**Increasing selling price:** Higher price/Increased price is inversely correlated with the demand of the product. This will affect the volume of sales due to the competitors stand on the lowest price. It is obviously understood that the maximization of profit through an increase in the price of a product will lead to loose the buyers. Earning/maximizing profits through increased selling price is not under the clutches of the business enterprises. It means that increasing the selling price to maximize profit is influenced by too many uncontrollable factors. This leads to sources of too much reluctance of business fleeces to raise the selling price.

### **Strategy No. 2**

**Reducing/cutting down the cost:** To maximize the benefits, the second best alternative is to cut/reduce the cost of operations in producing a product or service. Minimizing the cost is a cumbersome task which involves a lot of careful analysis and practices. Historical costing is not an effective tool of analysis in providing the required information for management to take rational decisions.

To replace the bottleneck associated with the historical costing as well to control the cost, the planned standards are usually developed under the head of standard costing technique to compare the actuals to identify the deviations. The standard plans should be developed on the following basis *viz.*:

1. Cost of materials
2. Cost of labour
3. Other cost of manufacturing
4. Overall cost of a product

## Definition and Meaning of Standard Costing

Standard is nothing but an expected or anticipated performance in normal situations. The standards are quantitative in phenomenon which are in connection with one activity and differs from the another.

Notes

Examples:

1. Kg of raw materials expected to produce one unit of product.
2. Hours are expected/anticipated to consume for production of a single unit of product.

Standards are classified into two categories, viz. Revenue standards and Cost standards.

Standard cost is a predetermined cost, which is estimated from management's standard of efficient operation and the relevant necessary expenditure, according to ICWA (London).

The standard cost is related to variable portion of the cost of a product. The variable portion of cost of product depends on the following:

1. Material consumption
2. Hours taken/consumed
3. Incurring of miscellaneous expenditures - Overheads

Standard costing is a system, which involves the various steps:

The first step in implementing the standard costing system is to develop the pre-determined standards i.e. standard costs.

The second step is to record the actual costs through the ascertainment.

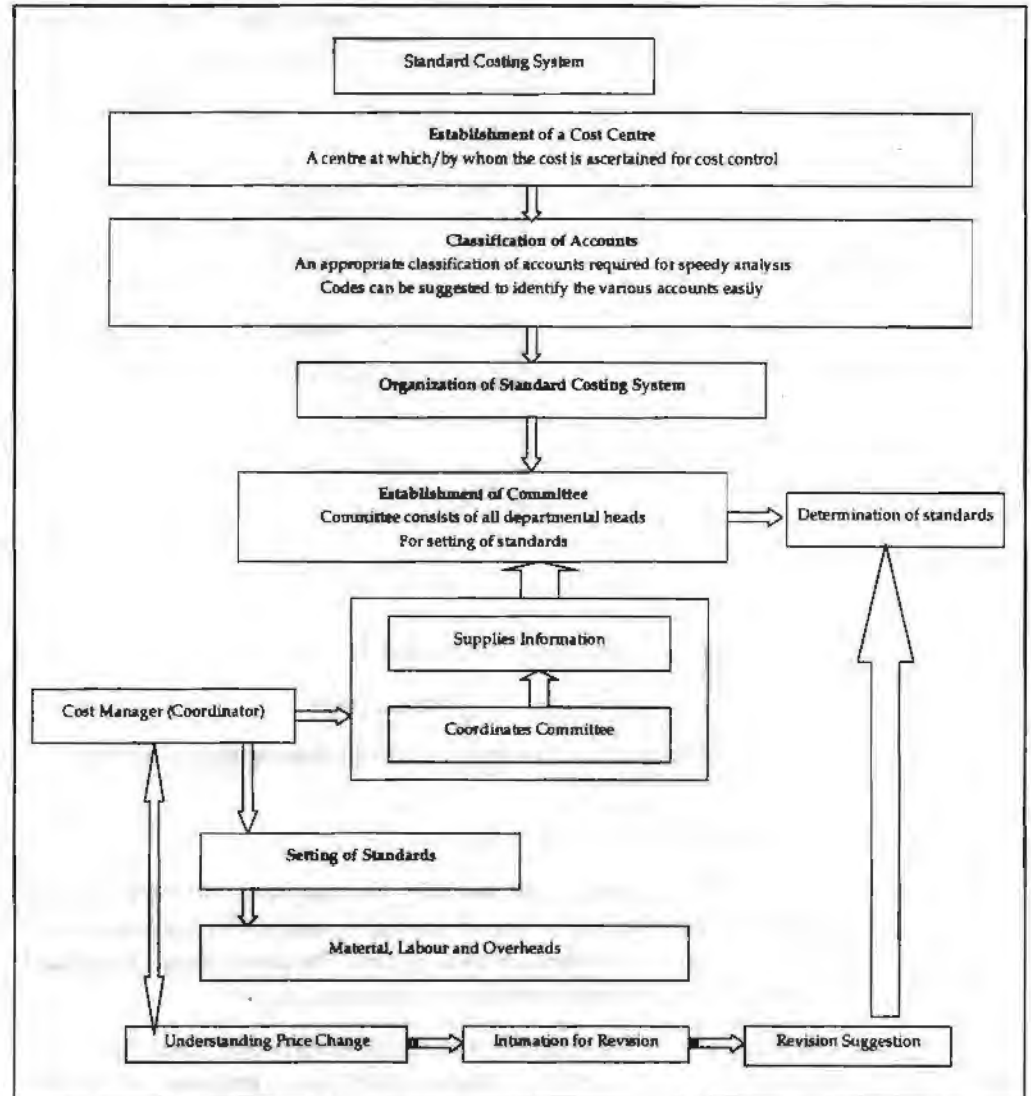
The third step involves with the comparison between the standards and actual costs; which is the origin of the variance analysis. Standard costing starts with the preparation of standards and ends with the comparison in between them. The preparation of standard costs is meaningful only through the completion of variance analysis.

The fourth step is the stage at which the reasons for variances are probed and analysed to incorporate the cost effectiveness not only to reduce cost but also to enhance the levels of profit.

The final step is the most important in the organization to take managerial decisions through an appropriate reporting.

## Standard Costing System

Notes

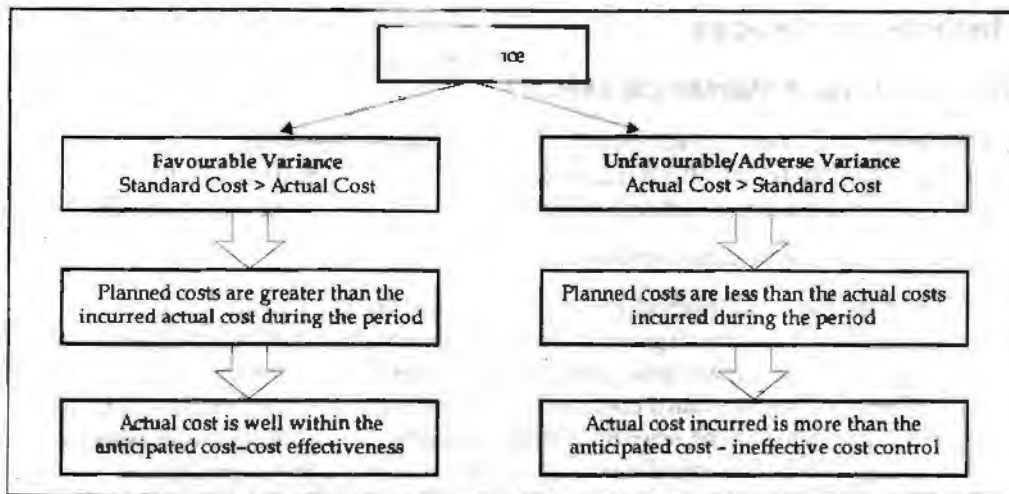


## Concept of Variance Analysis

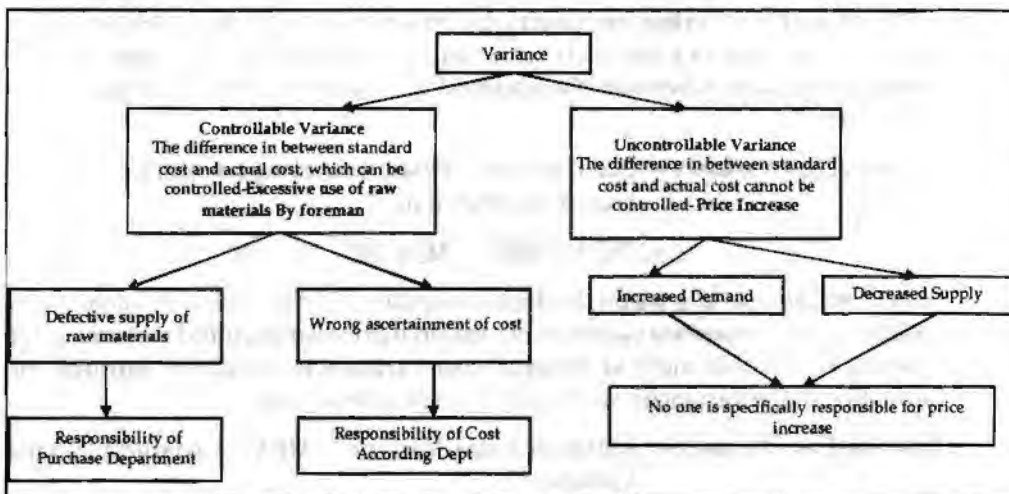
The term "Variance" means deviation, difference and so on. The variance in accordance with standard costing is meant as the difference/deviation in between two different costs viz. standard cost and actual cost. According to ICWA, London defines the variance as "deviation in between the standard cost and comparable actual cost incurred during the period."

The variance of the specific element of cost should be periodically checked. The variance is classified into two categories.





The variance can be classified into two categories, based on controllability *viz.* controllable and uncontrollable variance.



The purpose of standard costing is to correct the variance, which is in between standard cost and actual cost.

## Classification of Variances

There are two types of variances *viz.* cost variance and revenue variance.

**Cost Variance:** Cost variance can be further classified into three categories:

1. Material Cost Variance
2. Labour Cost Variance
3. Overhead Variance

**Revenue Variance**

**Sales Variance**

Apart from the above classified types, there is a general way of studying variances. Let us discuss every variance in detail in the remaining unit .

## Material Variances

### Material Cost Variance (MCV)

#### Notes

The name of the variance is self-explanatory, means that the difference in between the standard cost of materials and Actual cost of materials. The material cost variance is in between the standard material cost for actual production in units and actual cost.

Material cost variance can be computed into two different ways:

1. **Direct Method:** It is a method simply studies the deviation in between the two different cost of materials without giving any emphasis for other factors of influence *viz.* the quantity of materials and price of a material. Under the direct method, the comparison is in between the standard cost of materials which is the planned cost of materials before commencement, scientifically developed by considering the all other factors of influence and the actual cost of materials, which is actually incurred during the production.

*Why standard cost is to be tuned to the level of actual cost?*

The main aim of computing the standard cost for actual output is that the standard cost developed is not to the tune of actual production in units, instead it is available in terms of per unit of a product/for overall production e.g. for a year. To have leveled comparison in between the standard cost has to be designed to the tune of Actual cost.

Material cost variance = Standard cost of materials for actual output — Actual cost of raw materials

$$= (SQAQ \times SP) - (AQ \times AP)$$

2. **Indirect method:** It is a method which computes the material cost variance by considering two important variances *viz.* material price variance and material usage variance. Under this method material cost variance is calculated through the summation of the variances *viz.* price and usage of materials.

Material Cost Variance = Material Price Variance (MPV) + Material Usage Variance

**Example:** To manufacture one unit of product, the requirement is 2 Kgs of material @Rs.2 per Kg. Actual output is 400 units Actual quantity of materials used is 850 kgs Rs. 1.80 find out the material cost variance.

**Solution:**

First step is to find out the standard quantity for actual output

Standard quantity of raw materials = 2Kg

Actual Production = 400 units

To have leveled comparison, the Standard quantity of materials for actual output to computed; then only the variance intend to encircle will be meaningful or vice versa.

The computation of SQAQ should be computed at first:

For the production of one unit of product 2 Kg of raw material was planned and finalized prior to the commencement of production process. The actual production of the firm during the cycle is 400 units. What would be the requirement of the firm in manufacturing 400 units to the tune of planned quantity of materials per unit 2 Kg? This is the standard quantity of materials for actual output computed for an effective comparison with the actual quantity of materials consumed by the firm in manufacturing the 400 units.

$$SQAQ = 400 \times 2\text{Kg} = 800 \text{ Kg}$$

$$\begin{aligned}
 \text{SP} &= \text{Standard Price} = \text{Rs.2 per Kg} \\
 \text{AQ} &= \text{Actual Quantity} = 850 \text{ Kgs} \\
 \text{AP} &= \text{Actual Price} = \text{Rs.1.80} \\
 \text{Material cost variance} &= (\text{SQAO} \times \text{SP}) - (\text{AQ} \times \text{AP}) \\
 &= (800 \text{ Kg} \times \text{Rs.2}) - (850 \text{ Kg} \times \text{Rs.1.8}) \\
 &= \text{Rs.1600} - \text{Rs.1530} \\
 &= \text{Rs.70 (F)}
 \end{aligned}$$

Notes

The material cost variance of the above problem is favourable due to lesser actual cost over the standard cost of materials.

### **Material Price Variance**

It is very simple to understand that the name of the variance is self-explanatory in explaining the meaning of the variance. It is a variance in between two different prices *viz.* the standard price and actual price of raw materials. The difference should be expressed only in terms of the actual usage of materials. The ultimate aim of expressing this variance in the lights of actual usage of materials is to identify the deviation of the price changes in line with the purchase of raw materials.

$$\text{Material Price Variance} = (\text{SP} - \text{AP}) \text{AQ}$$

From the earlier illustration, the material price variance is as follows

Standard price = Rs. 2 per unit

Actual price = Rs. 1.80 per unit

Actual quantity of materials consumed = 850 Kg

Material price variance = 850 Kg (2.00 - 1.80)

Material price variance = Rs.170 (F)

**Decision criterion:** If the resultant is positive, it means that the planned price which was scientifically developed is more than the actual price. In precise terms, the price fluctuations in the market are well within the planned price. If it is within the standard, quantified as favourable for a firm. If not, otherwise, the excessive/exorbitant cost of purchase of raw material more than the standard is unfavourable/adverse for the firm, the reason is the firm has paid more on the cost towards the purchase of materials than the planned one.

### **Material Usage or Quantity Variance**

The variance/deviation is in between the standard quantity of materials and the actual quantity of materials consumed. The found variance in Kg of raw materials should be expressed in monetary values i.e. in terms of Rupees, through the multiplication with the standard price. The ultimate aim of expressing the variance in terms of standard price is the price, which is totally free from market fluctuations i.e. supply and demand factors of the market.

$$\text{Materials Usage Variance} = \text{Standard Price} \times (\text{Standard quantity of materials for actual output} - \text{Actual quantity of materials used})$$

**Example:** (Output more than one unit)

Standard quantity of raw materials required to produce one unit of X was 10 kgs @ Rs. 6 per Kg

Actual units produced during that period was 500 units. Actual quantity of materials was 5500 Kgs @ Rs. 5.5 Kg.

Calculate the material cost, price and usage variance.

**Solution:** From the above problem, it came to understand that the actual production of a firm is more than a unit i.e. 500 units.

Standard quantity of raw materials for actual output has to be computed to the tune of actual production 500 units

Standard quantity of raw materials fore actual output

$$= \text{Standard Quantity of Materials} \times \text{Actual Production}$$

For One unit of out put the standard quantity of raw material is 10 Kg

For 500 units of actual production, how much would be the standard quantity of raw materials ?

$$\text{SQAO} = 10 \text{ Kg} \times 500 \text{ Units} = 5000 \text{ Kg, Standard Price} = \text{Rs. } 6 \text{ Kg}$$

$$\text{AQ} = 5500 \text{ Kgs, Actual Price} = \text{Rs. } 5.5 \text{ Kg}$$

$$\begin{aligned} \text{Material Cost Variance} &= \text{SQAO} \times \text{SP} - \text{AQ} \times \text{AP} \\ &= (5000 \text{ Kg} \times \text{Rs. } 6) - (5500 \text{ Kg} \times \text{Rs. } 5.5) \\ &= (\text{Rs. } 30000) - (\text{Rs. } 30250) = (\text{Rs. } 250) \text{ (A)} \end{aligned}$$

$$\begin{aligned} \text{Material Price Variance} &= (\text{SP} - \text{AP}) \times \text{AQ} \\ &= (\text{Rs. } 6 - \text{Rs. } 5.5) \times 5500 = \text{Rs. } 2750 \text{ (F)} \end{aligned}$$

$$\begin{aligned} \text{Material Usage Variance} &= (\text{SQAO} - \text{AQ}) \text{ SP} \\ &= (5000 - 5500) \text{ Rs. } 6 = \text{Rs. } 3000 \text{ (A)} \end{aligned}$$

**Verification:** The indirect method of computing the material cost variance facilitates to verify the answer computed under the material variances.

$$\text{MCV} = \text{MPV} + \text{MUV}$$

$$\text{Rs. } 250 \text{ (A)} = \text{Rs. } 2750 \text{ (F)} + \text{Rs. } 3000 \text{ (A)}$$

$$\text{L.H.S} = \text{R.H.S}$$

### Student Activity

If the closing stock of raw materials is given, how the material variance can be computed?

Standard quantity of materials = 5000 Kgs @ Rs.5 per Kg

Actual quantity of materials purchased = 5500 Kgs @ Rs.6 per Kg

Closing stock of raw materials = 300 Kgs

### **Material Mix Variance**

This kind of variance arises only due to the mixture of various raw materials to produce and to get an output. Normally the process of production involves more than two materials to get the output. For example the firm mixes the raw materials of A & B at the ratio of 3:2. The mixture is called Material Mix.

The above mentioned ratio is being changed by the firm for actual production in producing a unit of product as 4:1.

The change in the material mix due to various reasons, those are following:

1. Inadequate supply of raw materials
2. Price factor of a material

3. Introduction of a new system of production due to expansion
4. Substitution of a material due better quality and cheaper price than the existing material in current system of procurement.

This material mix variance is highly applicable in the following industries that chemicals, fertilizers, pharmaceuticals, consumables, etc.

Notes

The variance should be computed in between two different materials viz. Standard quantity of materials and Actual quantity of materials.

Actual quantity of materials is the volume of materials registered the change in the usage of raw materials mixture but the standard quantity of raw materials is totally free from the change of mixture in the raw materials.

While studying the variance, the factors of comparison should be weighed equally with each other. For instance, the standard quantity of material should not be a rational factor of comparison with actual.

**When the total standard quantity of materials is equivalent to Actual quantity of materials:**  
From the below example, the ultimate aim of revising the standard is explained as follows:

**Example:** Before the commencement of production process, the standard mix of materials for the production of one unit of output included two different mixture of quantities of material viz. A&B amounted 70 tons and 30 tons respectively; which formed the 70% and 30% in the production of a unit of out put with the current system of material procurement.

Due to shortage of material A, the firm is required to redesign the material procurement system to have an uninterrupted flow of production of one unit of product. In order to meet out the shortage of raw material A, the firm should replace the shortage only against the adequate supply of material B from the market. The firm should restructure the procurement system of material as follows i.e. 60% of material A and 40% material B. The restructurisation is done only on the actual but not on the standard. While studying the variance analysis in between the quantity of materials, standard of 70% of A and 30% of B should be tuned towards the actual 60% of A and 40% of B procured during the process.

Standard Quantity of Materials		Actual Quantity of Materials	
Material A	70 tons	Material A	60 tons
Material B	30 tons	Material B	40 tons

Revised standard quantity of material

$$\text{Actual Material} = \text{Standard quantity of Material A/B} \times \text{Total Quantity}$$

Total Quantity of Standard Material

$$\text{For A} = 70/100 \times 100 = 70 \text{ tons}$$

$$\text{For B} = 30/100 \times 100 = 30 \text{ tons}$$

Revised Quantity of Material
Revised quantity of Material A = 70 Tons
Revised quantity of Material B = 30 Tons

From the above, if the total quantity of standard materials is equivalent to actual quantity of materials, the revised quantity of materials will be as same as the standard quantity of materials.

**When the total standard quantity of materials is not equivalent to total actual quantity of materials consumed:** If the Standard quantity of materials of X and Y are 60 tons and 40 tons respectively. The actual quantity of materials 90 tons and 60 tons. The total standard quantity of materials and actual quantity of materials amounted 100 tons and 150 tons respectively.



The revised standard mix of materials of X and Y are as follows:

$$X = \frac{60}{100} \times 150 = 90 \text{ tons}$$

Notes

$$Y = \frac{40}{100} \times 150 = 60 \text{ tons}$$

Material Mix Variance = Standard Price (Revised Standard Quantity – Actual Quantity)

From the early discussions, it is clearly understood that the revised standard mix of materials will be the same only during the moment at which the total actual and standard quantity of materials are equivalent to each other and vice versa.

**Example:** From the following information, calculate the materials mix variance

Materials	Standard	Actuals
A	200 Units @ Rs.12	160 Units @ Rs.13
B	100 Units @ Rs.10	140 Units @ Rs.10

Due to shortage of material, it was decided to reduce the consumption of A by 15% and increase that of material B by 30%.

The above problem does not have any difference in between the total actual quantity and standard quantity of materials. In both the cases the total quantity of materials are equivalent to 300 units. If both are equivalent to each other, the standard mix would be the revised standard mix of the materials.

**Solution:**

**Revised Standard Mix:**

$$\text{Material A} = \frac{200}{300} \times 300 \text{ Units} = 200 \text{ units}$$

$$\text{Material B} = \frac{100}{300} \times 300 \text{ Units} = 100 \text{ units}$$

After finding out the revised standard mix of the materials, the changes on the consumption should be incorporated due to the shortage of materials to the tune of actual quantity of materials.

For material A, there is reduction in the actual consumption in the quantity of materials amounted 15%.

For material B, there is spurt increase in the consumption of material B due to fill up the shortage of material A i.e 30% increase on material B.

Final Revised standard Mix of Material

$$A : 200 \text{ units} - 15\% \text{ of } 200 \text{ units} = 170 \text{ units}$$

$$B : 100 \text{ units} + 30\% \text{ of } 100 \text{ units} = 130 \text{ units}$$

### **Material Mix Variance**

Material Mix Variance = Standard Price (Revised Standard Quantity – Actual Quantity)

$$\text{MMV Material A} = \text{Rs.12} (170 \text{ units} - 160 \text{ units}) = \text{Rs.120 Favourable}$$

$$\text{MMV Material B} = \text{Rs.10} (130 \text{ units} - 140 \text{ units}) = \underline{\text{Rs.100 Adverse}}$$

$$\text{Total Material Mix Variance} = \underline{\underline{\text{Rs 20 Favourable.}}}$$



## Material Sub-usage Variance

This is the variance in between standard quantity and revised standard quantity of materials denominated in terms of standard price. The purpose of studying the difference in between these two is to analyse the amount of deviation of the standard against the revised standard in line with the actual fluctuation in the quantity of materials consumption during the production process. It is the only variance highlights the difference in between the early set standard and the redesigned standard in terms of actual quantity of materials for meaningful comparison.

Material Sub-usage Variance = Standard Cost per unit (Standard Quantity – Revised Standard Quantity).

If the total actual quantity of materials consumption in units is equivalent to the total standard quantity of materials, nullifies the material sub-usage variance in between the standard quantity of materials and revised standard quantity of materials. It means that the standard quantity of materials of the mix will be the revised standard quantity of materials. If both are equivalent to each other, the variance is equivalent to zero in terms of standard price/cost per unit.

**Example:** Find out the material sub-usage variance from the following:

Materials	Standard	Materials	Actuals
A	60 Kgs @ Rs.10	A	70Kgs @ Rs.10
B	40 Kgs @ Rs.12	B	50Kgs @ Rs.14
	100		120

**Solution:**

Revised Standard quantity of Materials:

$$A : \frac{60\text{kgs}}{100\text{kgs}} \times 120 \text{ Kgs} = 72 \text{ Kgs}$$

$$B : \frac{40\text{kgs}}{100\text{kgs}} \times 120 \text{ Kgs} = 48 \text{ Kgs}$$

Material Sub-usage Variance = Standard Price/Cost per unit (Standard Production for Actual Output – Revised Standard Quantity)

$$\text{Material A} = \text{Rs.10} (60 \text{ Kgs} - 72 \text{ Kgs}) = \text{Rs.120 (Adverse)}$$

$$\text{Material B} = \text{Rs.12} (40 \text{ Kgs} - 48 \text{ Kgs}) = \underline{\text{Rs.96 (Adverse)}}$$

$$\text{Material Sub-usage Variance} = \underline{\text{Rs.216 (Adverse)}}$$

From the above example, it is obviously understood that the early set standard is less than the revised standard quantity of materials due to change in the materials mix consumption i.e unexpectedly to replace one material with the another due to shortage any one of the materials in the mix. The greater the revised standard quantity of materials means that greater the volatility in the actual consumption of materials. If the variance is adverse, means that the standard which was initially set for comparison has not incorporated the fluctuations in the actual; being less than the revised standard which is an index of actual.

This material sub-usage variance is one of the components of the materials usage variance.

Material Usage Variance = Material Sub-usage Variance + Material Mix Variance

## Material Yield Variance

It is one of the components of the material usage variance which arises only due to the deviation in between the standard yield determined and the actual yield accrued. This

## Notes

variance highlights either the abnormal loss of materials or saving of materials. This variance plays most important role in the process industries, to assess the loss/wastage of materials. If the actual loss of materials is different from the standard loss of materials will result the variance in two different situations.

**When the standard and actual do not differ from each other:**

In this case, the yield variance is calculated as follows

Yield Variance = Standard Rate/Cost per unit (Actual Yield – Standard Yield)

Standard Rate has to be calculated from the following.

$$\text{Standard Rate} = \frac{\text{Standard cost of Standard Mix}}{\text{Net Standard Output (Gross Standard Output – Standard Loss)}}$$

**When the actual mix differs from the standard mix:** In the second case, standard mix has to be tuned to the requirement of actual mix, which is revised standard mix, realistic in sense for meaningful comparison, to highlight the deviation in between two different yields viz. actual yield and revised standard yield. The standard rate has to be calculated only for the revised standard mix of materials.

$$\text{Standard Rate} = \frac{\text{Standard Cost of Revised Standard Mix}}{\text{Net Standard Mix/Output (Gross Standard Output – Standard Loss)}}$$

### Calculate Material Yield Variance

**Example:** The total standard mix is equivalent to total actual mix

Particulars	Standard		Actual	
	Qty in Kg	Price	Qty in Kg	Price
Material A	90	6	60	5
Material B	60	8	90	9
	150		150	

Normal loss is allowed 10% Actual output 130 units

Revised standard output has to be computed. In this problem, the total mixes are equivalent to each other, but, the normal loss is a loss 10% expected on the normal output. Though, this problem does not have the difference between the mixes, the revised standard mix should have to be computed to register the expected loss (normal loss) on the standard output.

$$\begin{aligned} \text{Revised standard mix} &= \text{Standard Mix} - \text{Normal Loss (Expected Loss)} \\ &= 150 \text{ Kgs} - 10\% \text{ on } 150 \text{ Kgs} = 135 \text{ Kgs} \end{aligned}$$

The next step is to find out the standard rate/price

Standard price per unit

$$= \frac{\text{Standard Cost/Price of Standard Mix}}{\text{Net Standard Mix/Output (Gross Standard Output – Standard Loss)}}$$

$$= \frac{(90 \text{ kgs} \times \text{Rs. } 6) + (60 \text{ kgs} \times \text{Rs. } 8)}{135} = \frac{\text{Rs. } 540 + \text{Rs. } 480}{135} = \frac{1020}{135} = \text{Rs. } 7.55/-$$

$$\begin{aligned} \text{Material Yield Variance} &= \text{Standard Price (Actual Yield – Revised Standard Yield)} \\ &= \text{Rs. } 7.55 (130 \text{ Units} - 135 \text{ Units}) = \text{Rs. } 7.55 (-5 \text{ Units}) \\ &= \text{Rs. } 37.55 (\text{Adverse}) \end{aligned}$$

## Labour Variance

Labour Variance is known in other words as Labour Cost Variance. The cost of the labour is usually denominated by the wages paid/incurred during the production. Labour Variance Analysis, is studying the deviation in between the actual cost of the labour incurred and standard/budgeted cost of the labour. This is another most important cost variance, next to material cost variance, which considers the rate of the wage per hour for the computation of the total standard cost of labour and actual cost of labour like price of the materials per kg.

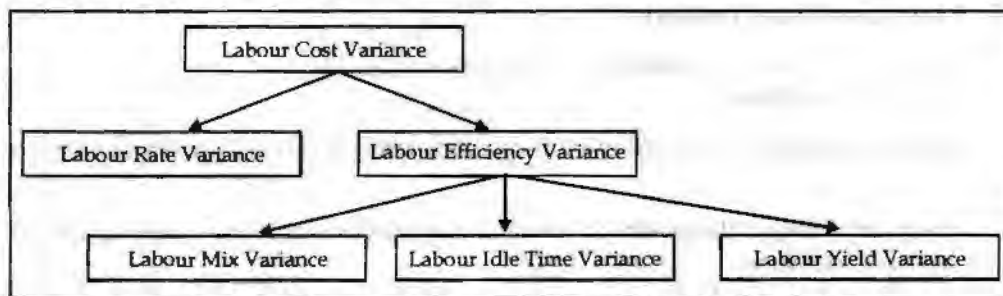
### Labour Cost Variance

Labour cost variance is the tool studies the deviation in between the total standard cost of the labour and actual cost of labour. The actual labour cost may vary due to many reasons from the planned i.e standard.

Causes for the variance:

1. The hourly rate of the labour may vary due to demand and supply of the labour force.
2. The hourly rate of the labour may vary due to nature of the labour required i.e. Skilled/Semi-Skilled/Unskilled. The rate differs from one category to another due to efficiency of the labours.
3. The Labour cost variance is in relevance with the time component of the job. The time required to complete the job may vary due to too many reasons; more specifically time wastage results in the production.

The following is the structure of the labour cost variance, which will illustrate the various components of the labour variance.



Labour Cost Variance = Standard Cost of the Labour\* - Actual Cost of Labour\*\*

\*Standard Cost of the Labour = Standard Hours for Actual Output × Standard Hour Wage Rate

\*\*Actual Cost of the Labour = Actual Hours taken for production × Actual Hour Wage Rate

### Labour Rate or Wage Pay Variance

This is the variance, resultant, due to the change in the wage rate. The Labour rate variance is the difference between standard wage rate, which already determined and the actual wage rate incurred during the production. The variance should be denominated in terms of the actual hours of production.

The actual hours taken is into consideration only for reality, that is the time moments consumed by the production process. This expression facilitates to understand the excessive/lesser amount spent on the labour, which depicts, how much was over / under spent by the firm for the payment of wages than the planned during the production?

The causes of labour wage rate or pay variance:

1. It is due to changes occurred in the structure of basic wages.
2. The ratio of the labour mix is varied due to the nature of the order. Undertaken by the firm to meet the needs of the consumers. The special order from the buyer may

Notes

require the goldsmith to take more special care in the design of an ornament than the regular or routine design. This leads to involvement of more amount of skilled labour, which finally escalates/increases the cost of the labour.

3. To fulfill the immediate and excessive orders of the consumers which are to be supplied to their requirements leads to greater payment of wages through over time charges; which is normally greater than the regular wage rate.
4. This variance mainly occurs in the industry, which is connected with seasonal business. This variance mainly plays pivotal role in the industries of soft drinks, fans, refrigerator, fertilizer, crackers and so on.

The Labour Rate Variance (LRV) = Actual hours taken (Standard Rate – Actual Rate)

### **Labour Efficiency Variance**

The efficiency of the labour is denominated only in actual hours for actual output, which should be less than the standard hours expected to perform during the job. The labour efficiency variance is the deviation in between two standard hours for actual output and actual hours taken for actual output. The expression of variance in terms of hours should be expressed in terms of wage rate i.e. standard wage rate.

#### **Why the expression should be in the standard wage rate?**

The aim of expressing Efficiency variance in terms of standard wage is to express them in monetary units and should be free from the demand and supply forces of the labour force which directly has an impact on the basic labour wage rate

Labour Efficiency Variance = Standard Rate (Standard Hours for Actual Output – Actual Hours for Actual Output)

#### **What are causes of this variance?**

1. Due to poor working conditions, the efficiency of the working force to complete the job is coming down.
2. Quality of maintenance of the machinery is facilitating the working force to maintain the efficiency.
3. Frequent change in the quality of materials may lead change in the hours required to complete the work.
4. Poor personnel relations of the workers.

### **Idle Time Variance**

The wages which are paid for unproductive hours to the labourers are known as idle time.

The idle time may be classified into two categories:

1. Normal idle time
2. Abnormal idle time

#### **Normal Idle Time**

This idle time is known as authorised idle time, which can be understood in other words as unavoidable idle time. Normally the worker is paid for that time during which he does not produce anything.

Time taken by the employees to change the dress.

Time taken by the employees to ease themselves during the hours of production i.e. going to the toilet for easing and for refreshment going to the canteen.

The employees are paid during the above-enlisted occasions at when they do not produce anything

In between two different shifts, the production of finished goods do not normally take place due to change over the control from one employee to another.

### **Abnormal Idle Time**

This is known as avoidable idle time; during which the workers are paid for nil production. This type of idle time could be slashed down or downsized through an effective planning. This idle time is the resultant of too many ineffective schedules e.g. inadequate supply of raw materials, power shortage/failure, breakdown of machinery and so on. The aforementioned could be easily sorted out through proper planning and scheduling; which will automatically reduce the unproductive time of labour force. Whatever the payment of wages to the working force during the idle time are to be considered as adverse. It means that the firm makes the payment of wages to the labourers/working force without any production/productivity.

Idle Time Variance = Idle hours × Standard Rate (Always "A")

### **Labour Mix Variance**

This variance arises due to deviations in between the actual mixture of labour force for the job and standard mixture of labour force planned to complete the job. The mixture of work force is considered to be most important for completion. Normally, the mixture is in tri colours viz. Skilled, Semi-Skilled and Unskilled. The standards are prepared by considering the requirements of the job to be completed. For completing the job, 5 skilled, 3 semi-skilled and 2 unskilled employees are required. Due to non-availability of skilled labour force, the firm is required to carry out the operations without any lacuna through the induction of more semi-skilled labour force. The actual composition of the labour force is 2 skilled, 6 semi-skilled and 2 unskilled which finally led to labour mix variance.

Reasons for the labour mix variance:

1. Absenteeism
2. Labour turnover
3. Non-availability of required labour force from the business environment.

The above critical factors directly influence the efficiency of the labour force.

Labour Mix Variance = Standard Rate (Revised Standard Hours – Actual Hours)

Standard hours for the job were determined for the Standard mixture of labour force but these hours are not denominated to the tune of actual hours taken by the actual mixture of labour force. To study the variance in between them, the standard hours should be in line with the actual. The standard hours which are converted to the tune of actual hours is known as Revised standard hours considered to be level platform for an effective comparison.

Labour Mix Variance = Standard Rate (Revised Standard Hours – Actual Hours)

### **Labour Sub-efficiency Variance**

It is one of the components of the labour efficiency variance.

Labour Sub-efficiency Variance = Standard Rate (Standard Hours for Actual Output – Revised Standard Hours)



**Labour Yield Variance**

## Notes

It is considered to be as one of the components of labour efficiency variance. This is a variance in between two different outputs of the enterprise viz. standard output for actual hours and actual output.

This is a variance facilitates to study the deviation in between two different levels i.e. how many number of outputs would be produced during the actual hours and how many number of actual outputs were produced during the actual hours.

$$\text{Labour Yield Variance} = \text{Standard Cost per unit (Actual Output - Standard Output in Actual Hours)}$$

or

$$= \text{Standard Cost per unit (Actual Yield in Units - Standard Yield in Actual Hours)}$$

If Actual output or Actual yield in units is greater than the standard yield in actual hours, it means that the firm's actual production in units is greater than the standard estimates nothing but favourable to the business enterprise.

**Example:** The standard and actual data of a manufacturing concern are given:

Standard time	2,000 Hrs
Standard rate per hour	Rs. 2
Actual time taken	1,900 Hrs
Actual wages paid per hour	Rs. 2.50

Calculate labour variances.

**Solution:**

First step is to compute the labour cost variance

$$\begin{aligned} &= (\text{Standard Hrs for Actual Output} \times \text{Standard Rate}) - (\text{Actual Hours} \times \text{Actual Rate}) \\ &= (2,000 \text{ Hrs} \times \text{Rs. } 2) - (1,900 \text{ Hrs} \times \text{Rs. } 2.50) \\ &= \text{Rs. } 4,000 - \text{Rs. } 4,750 \\ &= \text{Rs. } 750 \text{ (Adverse)} \end{aligned}$$

The next step is to find out the labour rate variance

$$\begin{aligned} &= \text{Actual Hours (Standard Rate - Actual Rate)} \\ &= 1,900 \text{ Hours } (2 - 2.50) = \text{Rs. } 950 \text{ (Adverse)} \end{aligned}$$

The next variance is to be find out the labour efficiency variance

$$\begin{aligned} &= \text{Standard Rate (Standard Hours for Actual Output - Actual Hours)} \\ &= \text{Rs. } 2.00 (2,000 - 1,900) = \text{Rs. } 200 \text{ (Favourable)} \end{aligned}$$

**Verification**

Labour Cost Variance = Labour Rate Variance + Labour Efficiency Variance

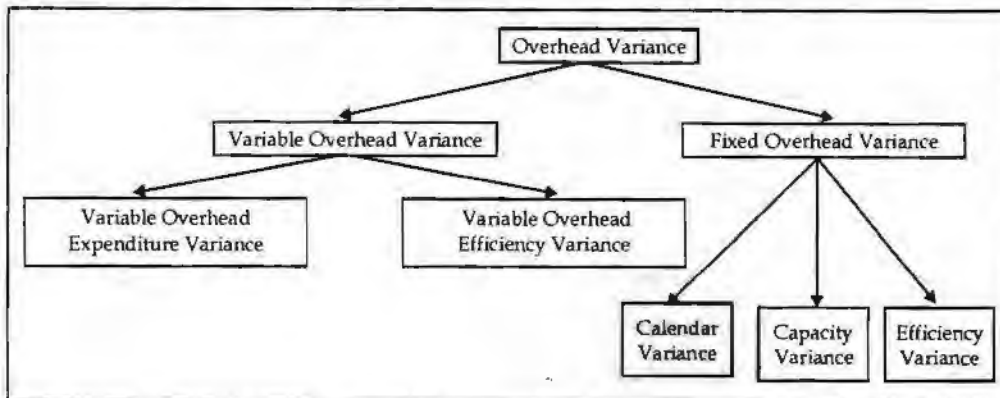
$$750 \text{ (Adverse)} = \text{Rs. } 950 \text{ (Adverse)} + \text{Rs. } 200 \text{ (Favourable)}$$

$$750 \text{ (Adverse)} = \text{Rs. } 750 \text{ (Adverse)}$$



## Overhead Variances

Notes



In general, the overhead variance is defined as the variance in between standard cost of overhead estimated for the actual output and actual cost of overhead really incurred.

With reference to absorption overheads, the variance occurs only during either over or under absorption of overheads.

Under absorption of overheads means that the standard cost of the overhead is more than that of the incurred actual overhead. In brief, it is a favourable situation as far as the firm concerned and vice versa in the case of over absorption of overheads.

1. **Variable overhead cost variance:** It is the variance or deviation in between the standard variable overhead for actual production of units and Actual overhead incurred  

$$= \text{Standard variable overhead rate per unit} \times \text{Actual output} - \text{Actual variable overheads incurred}$$
2. **Variable overhead expenditure variance:** This is the variance in between the two different rates of variable overheads *viz.* standard rate and actual rate; denominated in terms of Actual hours taken consumed by the firm.  

$$= \text{Actual Hours} (\text{Standard Rate} - \text{Actual Rate})$$
3. **Variable overhead efficiency variance:** It is another variance which is in between the standard hours for actual output and actual hours consumed during the production; denominated in terms of standard rate.  

$$= \text{Standard Rate} (\text{Standard Hours for Actual Output} - \text{Actual Hours})$$
4. **Fixed overhead cost variance:** The most important variance is overhead cost variance  

$$= \text{Standard Overhead Cost for Actual Output} - \text{Actual Overheads}$$

The second important variance is Budgeted or Expenditure variance  

$$= \text{Budgeted Overheads} - \text{Actual Overheads}$$

What is the difference in between the budgeted figures and standards?

Budgeted figures are not adjusted to the actual but the standards could be adjusted or tuned towards the actual.

The next important variance is overhead volume variance

- (a) If the standard overhead rate per unit is given  

$$= \text{Standard Rate per Unit} (\text{Actual Production} - \text{Budgeted Production})$$
- (b) If the standard overhead rate per hour is given  

$$= \text{Standard Rate per Hour} (\text{Standard Hours for Actual Production} - \text{Budgeted Production})$$

The next important variance is overhead efficiency variance

- (a) If the standard rate per unit is given  
 $= \text{Standard Overhead Rate per Unit (Actual Production - Standard Production in Actual Hours)}$
- (b) If the standard rate per hour is given  
 $= \text{Standard Overhead Rate per Hour (Actual Hours - Standard Hours for Actual Production)}$

The last as well as most important variance

- (a) If the standard rate per unit is given  
 $= \text{Standard Rate per Unit (Standard Production - Actual Production)}$
- (b) When standard rate per hour is given  
 $= \text{Standard Rate per Unit (Actual Hours - Budgeted Hours of Production)}$

**Example:** Standard hours = 6 per unit  
 Standard cost = Rs.4 per hour  
 Actual hours taken = 640 hours  
 Actual production = 100 units  
 Actual overheads = Rs. 2,500

The first step is to determine the variable overhead cost variance

$= \text{Standard Variable Overhead Cost - Actual Variable Overhead Incurred}$

The next step is to find out the standard variable overhead cost for actual production

$= \text{Standard Hours per Unit} \times \text{Standard Cost} \times \text{Actual Production}$

$= 6 \text{ per unit} \times \text{Rs.4 per hour} \times 100 \text{ units} = \text{Rs. 2,400}$

The next step is to determine the variance

$= \text{Rs. 2,400} - \text{Rs. 2,500} = \text{Rs. 100 (Adverse)}$

The next one is Expenditure variance

$= \text{Actual Hours (Standard Rate - Actual Rate)}$

The first step is to determine the actual hourly rate of the variable overheads

$= \text{Actual Hourly Rate of Variable Overheads} = \frac{\text{Total Actual Overheads}}{\text{Actual Hours Taken}}$

$= \frac{\text{Rs. 2,500}}{640 \text{ Hours}} = \text{Rs. 3.91}$

$= 640 \text{ Hours (Rs. 4 per unit - Rs. 3.9 per unit)} = \text{Rs. 64 (Favourable)}$

The next variance is to find out that variable overhead efficiency variance

$= \text{Standard Rate (Standard Hours for Actual Output - Actual Hours)}$

The next step is to find out the standard hours for actual output

$= \text{Standard Hours} \times \text{Actual Output} = 6 \text{ hours per unit} \times 100 \text{ Units} = 600 \text{ Hours}$

$= \text{Rs. 4 (600 Hours - 640 Hours)} = \text{Rs. 160 (Adverse)}$

**Example:** Budgeted hours for month of Mar. 2004, 180 units

Standard rate of article produced per hour 50 units

Budgeted fixed overheads Rs. 2,700

Actual production March 2004; 9,200 units

Actual hours for production 175 hours

Actual fixed overheads Rs. 2,800

Notes

Calculate overhead cost variance, overhead budget variance, overhead volume variance, overhead efficiency variance and overhead capacity variance.

**Solution:**

The first one to determine the overhead cost variance

= Standard Overhead Cost – Actual Overhead Cost

The standard overhead cost is to be found out

Standard overhead cost for actual production has to be computed from the below given formula

= Standard Rate per Unit × Actual Production in Units

First step is to determine the standard rate per unit

$$= \frac{\text{Budgeted Fixed Overheads}}{\text{Budgeted Hours} \times \text{Standard Rate of Article Produced per hour}}$$

$$= \frac{\text{Rs. 2,700}}{180 \times 50} = .3 \text{ paise}$$

The next one is to find out the overhead cost

= 9,200 units × .30 paise = Rs. 2,760

Overhead Cost Variance = Rs. 2,760 – Rs. 2,800 = Rs. 40 (Adverse)

Overhead Budget Variance = Budgeted Overhead – Actual Overhead

= Rs. 2,700 – Rs. 2,800 = Rs. 100 (Adverse)

Overhead Volume Variance = Standard Overhead – Budgeted Overhead

= Rs. 2,760 – Rs. 2,700 = Rs. 60 (Favourable)

The overhead efficiency variance could be calculated in two different ways.

The efficiency is expressed in terms of hours and units. If the firm is able to produce the goods or articles in lesser hours of duration, known as more efficient in time management than the standard.

Likewise, the efficiency could be denominated in terms of units of production. If the actual production is more than that of the standard production in units, the firm is favourable in position in producing the articles than the standard.

Overhead Efficiency Variance = (Actual Production in Units – Standard Production in Units) × Standard Rate

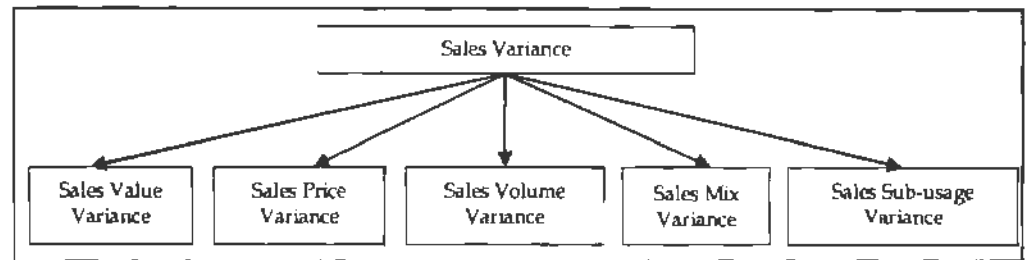
= (9,200 units – 8,750 units) .30 = 450 units .30 = 135 (Favourable)

## Sales Variance

Sales variances is the only component accompanied the profit volume variance of the business transaction. The sales variances are computed and analysed in order to study the effect of sales value and facilitates the sales manager to easily understand the various sales efforts taken by the team.

The sales variance can be classified into various categories. They are as follows:

Notes



### **Sales Values Variance**

The name of the variance is self explanatory in explaining the meaning of the variance, that is difference in between the actual value of sales and standard value of sales.

The causes/influences of sales value variance are many more and some of them highlighted for easy understanding about overall picture.

1. The fluctuation in the selling price may lead to variance with the standard selling price — Selling Price Variance.
2. The fluctuation in the actual volume of sales may be due to various factors, mainly the preference of the buyers over the standard/budgeted volume of sales — Sales Volume Variance.
3. Actual mix of various varieties may differ from the standard mix, which leads — Sales mix variance
4. Revised standard sales quantity may be varied from the budgeted sales quantity — Sales quantity/Sub-usage variance

$$\text{Sales Value Variance} = \text{Actual Value of Sales} - \text{Standard Value of Sales}$$

The decision criterion is that more the actual sales volume leads to greater and better the position of the firm than the budgeted sales volume, which leads to favourable position for the firm and vice versa.

### **Sales Price Variance**

It is one of the components as well as influences of the sales variances. It is the variance in between two different prices viz. actual price and standard price of the products.

The variance can be computed as follows:

$$\text{Sales Price Variance} = \text{Actual Quantity sold} (\text{Actual Price} - \text{Standard Price})$$

The price variance should be finally expressed in terms of the actual number of goods sold. The main aim of expressing them in actual quantity of goods sold is to express the variance in terms of actual performance in units.

The price variation may be due to many reasons

1. The price variance may be due to changes taken place in the structure of competition. The nature of competition changes due to market potential for example monopoly to duopoly; duopoly to perfect competition and so on; leads to change in the structure of pricing in order to retain the consumer base in line with the business.
2. The price variance may be due to two courses of action, which are as follows:
  - (a) Cost effectiveness strategy and (b) Distinctiveness Strategy.

## Sales Volume Variance

It is one of the elements of sales variance, which is in between the actual sales quantity and budgeted sales quantity. The variance is normally expressed in terms of price i.e. standard price. The purpose of expressing the variance in terms of standard price is that price which is free from market forces.

$$\text{Sales Volume Variance} = \text{Standard Price (Actual Quantity of Sale - Standard Quantity of Sales)}$$

The sales volume variance can be divided into two different streams that sales mix variance and sales quantity variance/sub-usage variance.

1. **Sales Mix Variance:** It is the difference in between the actual sales and standard sales mix. This variance will arise only due to change in the proportion of goods sold. This is a most important variance usually computed/calculated, at the moment, the firm which deals more than one commodity.

If both, the standard and actual mixes are equivalent to each other, there will not be any mix variance in between the above mentioned.

If the mixes are totally different from each other, the sales mix variance is to be computed, through the development of revised standard mix of quantities with reference to actual quantities sold, then only the comparison will be meaningful to study the variances occurred in between above mentioned. The sales mix variance is expressed in between two different quantities and finally should be denominated in terms of standard price. The reason for the expression in terms of standard price is the price which is totally free from the demand and supply forces of the market.

$$\text{Sales Mix Variance} = \text{Standard Price (Actual Quantity - Revised Standard Quantity)}$$

2. **Sale Sub-usage variance:** It is another component of usage variance, which expresses the deviation in between the revised standard quantity to the tune of actual quantities sold and the early set standard quantities expected to sell.

This variance also elucidates the differences of the above mentioned only in terms of standard price, which is the ideal indicator free from the market forces i.e free from fluctuation.

$$\text{Sales Sub-usage Variance} = \text{Standard Price (Revised Standard Quantity - Standard Quantity)}$$

**Example:**

Product	Budgeted		Actual	
	Qty	Price (Rs.)	Qty	Price (Rs.)
A	400	30	500	31
B	200	25	100	24

Calculate the various types of sales variances.

**Solution:**

$$\text{Sales value variance} = \text{Actual Sales} - \text{Standard Sales}$$

First step is to find out the Actual Sales

$$\text{Actual Sales} = \text{Actual Quantity} \times \text{Actual Price}$$

$$\text{Actual Sales (A)} = 500 \times \text{Rs. } 31 = \text{Rs. } 15,500$$

$$\text{Actual Sales (B)} = 100 \times \text{Rs. } 24 = \text{Rs. } 2,400$$

Next step is to find out the standard quantity of sales

$$\text{Standard Quantity of Sales} = \text{Standard Quantity} \times \text{Standard Sales}$$

Notes

Standard Sales (A) = 400 × Rs. 30 = Rs. 12,000	
Standard Sales (B) = 200 × Rs. 25 = Rs. 5,000	
Sales Value Variance (A) = Rs. 15,500 – Rs. 12,000	= Rs. 3,500 (Favourable)
Sales Value Variance (B) = Rs. 2,400 – Rs. 5,000	= <u>Rs. 2,600 (Adverse)</u>
Total Sales Value Variance	= <u>Rs. 900 (Favourable)</u>

**Sales Price Variance:**

Sales Price Variance = (Actual Price – Standard Price) Actual Quantity	
Sales Price Variance (A) = 500 (Rs.31 – Rs.30)	= Rs.500 (Favourable)
(B) = 100 (Rs.24 – Rs.25)	= <u>Rs.100 (Adverse)</u>
	<u>Rs.400 (Favourable)</u>

**Sales Volume Variance:**

Sales Volume Variance = Standard Price (Actual Quantity – Standard Quantity)	
Sales Volume Variance (A) = Rs.30 (500 – 400)	= Rs.3,000 (Favorable)
(B) = Rs.25 (100 – 200)	= <u>Rs.2,500 (Adverse)</u>
	<u>Rs. 500 (Favourable)</u>

**Sales Mix Variance:**

Sales Mix Variance = Standard Price (Actual Quantity – Revised Standard Quantity)

First step in the process of computing the sales mix variance is the Revised standard quantity. As far as this problem concerned, sales mix variance would not arise due to equivalent mixes dealt in the problem *viz.* standard (budgeted) mix and actual mix amounted 600 each.

Though it is having equal volumes, revised standard quantity can be computed

$$\text{Revised Standard Quantity} = \frac{\text{Standard Quantity}}{\text{Total Standard Quantity}} \times \text{Total Actual Quantity}$$

$$\text{RSQ for A} = \frac{400}{600} \times 600 = 400$$

$$\text{RSQ for B} = \frac{200}{600} \times 600 = 200$$

Sales Mix Variance (A) = Rs. 30 ( 500 – 400)	= Rs. 3,000 (Favourable)
(B) = Rs. 25 (100 – 200)	= <u>Rs. 2,500 (Adverse)</u>
	<u>Rs. 500 (Favourable)</u>

From the above calculations, what is obviously understood?

If the mixes are equivalent to each other, the sales volume variance is equivalent to the sales mix variance. It means that, there would not be a sales mix variance

**Sales Sub-usage Variance:**

Sales Sub-usage Variance = Standard Price (Revised Standard Quantity – Actual Quantity)

Sales Sub Usage Variance (A) = Rs.30 (400 – 400)	= 0
(B) = Rs.25 (200 – 200)	= <u>0</u>
	<u>0</u>

There is no sub-usage variance.



**Verification:**

- Sales Value Variance = Sales Price Variance + Sales Volume Variance  

$$900(\text{F}) = 400(\text{F}) + 500(\text{F})$$
- Sales Volume Variance = Sales Mix Variance + Sales Sub-usage Variance  

$$500(\text{F}) = 500(\text{F}) + 0$$

Notes

**Summary**

The purpose of standard costing is to correct the variance, which is in between standard cost and actual cost.

There are two type of variances viz. cost variance and revenue variance.

**Keywords**

**Cost Variance:** Identifying the deviations in between the actual cost and standard cost which was already determined.

**Favourable Cost Variance:** It is due to greater standard cost over the actual cost.

**Favourable Revenue Variance:** It is due to greater actual revenue than the standards.

**Standard:** It is a predetermined or estimate figure calculated by considering the ideal conditions of the work environment.

**Revenue Variance:** Identifying the deviations in between the actual revenue and early determined standard revenue.

**Variance:** It is tool of standard costing in determining the deviations of the enterprise from the early estimates.

**Unfavourable Cost Variance:** It is due to greater actual cost than the determined standard cost.

**Unfavourable Revenue Variance:** It is an outcome due to greater standard sales than the actual sales.

**Review Questions**

- From the data given below, find out the material mix variance.

Consumption of 100 units of product.

Raw Material	Standard	Actual
A	40 units @ Rs.50 per unit	50 units @ Rs.50 per unit
B	60 units @ Rs.40 per unit	60 units @ Rs.45 per unit

- From the following data, calculate materials yield variance.

Particulars	Standard		Actual	
	Qty in Kg	Price	Qty in Kg	Price
Material A	200 units	Rs.12	160 units	Rs.13
Material B	100 units	Rs.10	140 units	Rs.10
	300 units		300 units	

Standard loss allowed is 10% of input. Actual output is 275 units.

3. From the following, find out the material yield variance.

Notes

Particulars	Standard		Actual	
	Qty in Kg	Price	Qty in Kg	Price
Material A	60 units	Rs.3,000	300 units	Rs.15,300
Material B	40 units	Rs.1,200	200 units	Rs.5,600

Standard loss allowed is 10% of input and standard rate of scrap realization is Rs. 6 per unit. Actual output is 440 units.

4. Find out the various labour variances from the following data:

Standard hours per unit = 20 Hours

Standard rate per unit = Rs. 5

Actual Production = 1000 units

Actual time taken = 20,400 Hours

Actual Rate paid = Rs. 4.80

5. From the following information calculate the labour variances.

	Standard	Actual
Number of men employed	100	90
Output in units	2,500	2,400
Number of working days in a month	20	18
Average wages per man per month	Rs.200	Rs.198

## Further Readings

M.P. Pandikumar, *Management Accounting*, Excel Books.

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# Unit 19 Responsibility Accounting

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Notes

## Unit Structure

- Introduction
- Responsibility Centers
- Controllability Concept
- Accounting Concepts
- Advantages and Disadvantages of Responsibility Accounting
- Summary
- Keywords
- Review Questions
- Further Readings

## Learning Objectives

At the conclusion of this unit, you should be able to:

- Describe the concept of responsibility accounting
- State the theory of revenue centers
- Explain Controllability concept
- Define Accounting concepts
- State the Advantages and disadvantages of responsibility accounting

## Introduction

Responsibility accounting is an underlying concept of accounting performance measurement systems. The basic idea is that large diversified organizations are difficult, if not impossible to manage as a single segment, thus they must be decentralized or separated into manageable parts. These parts, or segments are referred to as responsibility centers that include:

1. revenue centers,
2. cost centers,
3. profit centers, and
4. investment centers.

Responsibility accounting is appropriate where top management has delegated authority to make decisions. The idea behind responsibility accounting is that each manager's performance should be judged by how well he or she manages those items under his or her control. This approach allows responsibility to be assigned to the segment managers that have the greatest amount of influence over the key elements to be managed. These elements include revenue for a revenue center (a segment that mainly generates revenue with relatively little costs), costs for a cost center (a segment that generates costs, but no revenue), a measure of profitability for a profit center (a segment that generates both

revenue and costs) and return on investment (ROI) for an investment center (a segment such as a division of a company where the manager controls the acquisition and utilization of assets, as well as revenue and costs).

## Notes

## Responsibility Centers

The concept of responsibility accounting has emerged to accommodate the need for management information at a more specific level of detail than can be provided by financial accounting procedures. Responsibility accounting attempts to report results (actual performance) in such a way that:

1. significant variances from planned performance can be identified,
2. reasons for variances can be determined,
3. responsibility can be fixed, and
4. timely action can be taken to correct problems.

Under this approach, pertinent costs and revenues are assigned to various organizational units – departments, bureaus, and programs – designated as responsibility centers. A decentralized environment results in highly dispersed decision making. As a result, it is imperative to monitor and judge the effectiveness of each manager. This is easier said than done. Not all units are capable of being evaluated on the same basis. Some units do not generate any revenue; they only incur costs in support of some necessary function. Other units that deliver goods and services have the potential to be assessed on the basis of profit generation.

As a generalization, the part of an organization under the control of a manager is termed a "responsibility center." To aid performance evaluation it is first necessary to consider the specific character of each responsibility center. Some responsibility centers are cost centers and others are profit centers. On a broader scale, some are considered to be investment centers. The logical method of assessment will differ based on the core nature of the responsibility center.

### Cost Center

A cost center is the smallest segment of activity or area of responsibility for which costs are accumulated. Obviously most business units incur costs, so this alone does not define a cost center. A cost center is perhaps better defined by what is lacking; the absence of revenue, or at least the absence of control over revenue generation.

Human resources, accounting, legal, and other administrative departments are expensive to support and do not directly contribute to revenue generation. Cost centers are also present on the factory floor. Maintenance and engineering fall into this category. Many businesses also consider the actual manufacturing process to be a cost center even though a saleable product is produced (the sales "responsibility" is shouldered by other units).

It stands to reason that assessments of cost control are key in evaluating the performance of cost centers. This unit will show how standard costs and variance analysis can be used to pinpoint areas where performance is above or below expectation. Cost control should not be confused with cost minimization. It is easy to reduce costs to the point of destroying enterprise effectiveness. The goal is to control costs while maintaining enterprise effectiveness.

Non-financial metrics are also useful in monitoring cost centers: documents processed, error rates, customer satisfaction surveys, and other similar measures can be used.

- Example:*
1. The manager for purchasing department.
  2. The manager for maintenance department.

## Revenue Center

Revenue center can be defined as a distinctly identifiable department, division, or unit of a firm that generates revenue through sale of goods and/or services.

*Example:* Rooms department and food-&-beverages department of a hotel.

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## Profit Center

Some business units have control over both costs and revenues and are therefore evaluated on their profit outcomes. For such profit centers, "cost overruns" are expected if they are coupled with commensurate gains in revenue and profitability.

*Example:* A restaurant chain may evaluate each store as a separate profit center. The store manager is responsible for the store's revenues and expenses. A store with more revenue would obviously generate more food costs; an assessment of food cost alone would be foolhardy without giving consideration to the store's revenues.

Thus profit center is a segment of a business, often called a division that is responsible for both revenue and expenses. The reason been Revenue minus Cost is the Profit.

The manager is therefore overall responsible or accountable for making profit for the company.

*Example:* A company has many restaurants which are all profit centre. A manager is assigned to each restaurant to make sure it is a profit centre.

## Investment Center

At higher levels within an organization, unit managers will be held accountable not only for cost control and profit outcomes, but also for the amount of investment capital that is deployed to achieve those outcomes. In other words, the manager is responsible for adopting strategies that generate solid returns on the capital they are entrusted to deploy. Evaluation models for investment centers become more complex and diverse. They usually revolve around various calculated rates of returns.

Thus an investment center, like a profit center, is responsible for both revenue and expenses, but also for related investments of capital.

*Example:* An example of an investment centre is a Corporate division responsible for project investments.

Here, the manager is responsible for the investments which includes all the revenue, costs and investments (invested capital or assets)

Outside of relatively large corporations, the cost center is the most common building block for responsibility accounting. In fact, the terms cost center and responsibility center are often used interchangeably.

### Student Activity

Analyse different centers of a food chain of your choice and categorise them into various types of responsibility centers.

## Controllability Concept

An underlying concept of responsibility accounting is referred to as controllability. Conceptually, a manager should only be held responsible for those aspects of performance that he or she can control. In my view, this concept is rarely, if ever, applied successfully in practice because of the system variation present in all systems. Attempts to apply the controllability concept produce responsibility reports where each layer of management is held responsible for all subordinate management layers. The managers thus, should take care of certain essential elements to ensure adequate responsibility accounting.

## **Relevance**

The convention of relevance emphasizes the fact that only such information should be made available by accounting as is relevant and useful for achieving its objectives.

*Example:* Business is interested in knowing as to what has been total labor cost? It is not interested in knowing how much employees spend and what they save.

## **Objectivity**

The convention of objectivity emphasizes that accounting information should be measured and expressed by the standards which are commonly acceptable.

*Example:* Stock of goods lying unsold at the end of the year should be valued as its cost price not at a higher price even if it is likely to be sold at higher price in future. Reason is that no one can be sure about the price which will prevail in future.

## **Feasibility**

The convention of feasibility emphasizes that the time, labour and cost of analyzing accounting information should be compared vis-à-vis benefit arising out of it.

*Example:* the cost of 'oiling and greasing' the machinery is so small that its break-up per unit produced will be meaningless and will amount to wastage of labor and time of the accounting staff.

## **Accounting Concepts**

Responsibility accounting is based on certain concepts. They are utmost important to be followed while accounting the responsibility. A detailed discussion on each of them follows.

### **Materiality**

It refers to the relative importance of an item or event. Those who make accounting decisions continually confront the need to make judgments regarding materiality. Is this item large enough for users of the information to be influenced by it?

The essence of the materiality concept is the omission or misstatement of an item is material if, in the light of surrounding circumstances, the magnitude of the item is such that it is probable that the judgment of a reasonable person relying on the report would have been changed or influenced by the inclusion or correction of the item.

### **Accounting Period**

Though accounting practice believes in continuing entity concept i.e. life of the business is perpetual but still it has to report the 'results of the activity undertaken in specific period (normally one year). Thus, accounting attempts to present the gains earned or losses suffered by the business during the period under review. Normally, it is the calendar year (1st January to 31st December) but in other cases it may be financial year (1st April to 31st March) or any other period depending upon the convenience of the business or as per the business practices in country concerned.

Due to this concept it is necessary to take into account during the accounting period, all items of revenue and expenses accruing on the date of the accounting year. The problem confronting this concept is that proper allocation should be made between capital and revenue expenditure. Otherwise the results disclosed by the financial statements will be affected.



## **Realization**

This concept emphasizes that profit should be considered only when realized. The question is at what stage profit should be deemed to have accrued? Whether at the time of receiving the order or at the time of execution of the order or at the time of receiving the cash. For answering this question the accounting is in conformity with the law and recognizes the principle of law i.e. the revenue is earned only when the goods are transferred. It means that profit is deemed to have accrued when 'property in goods passes to the buyer' *viz.* when sales are affected.

## **Matching**

Though the business is a continuous affair yet its continuity is artificially split into several accounting years for determining its periodic results. This profit is the measure of the economic performance of a concern and as such it increases proprietor's equity. Since profit is an excess of revenue over expenditure it becomes necessary to bring together all revenues and expenses relating to the period under review. The realization and accrual concepts are essentially derived from the need of matching expenses with revenues earned during the accounting period. The earnings and expenses shown in an income statement must both refer to the same goods transferred or services rendered during the accounting period. The matching concept requires that expenses should be matched to the revenues of the appropriate accounting period. So we must determine the revenue earned during a particular accounting period and the expenses incurred to earn these revenues.

## **Entity**

According to this concept, the task of measuring income and wealth is undertaken by accounting, for an identifiable Unit or Entity. The unit or entity so identified is treated different and distinct from its owners or contributors. In law the distinction between owners and the business is drawn only in the case of joint stock companies but in accounting this distinction is made in the case of sole proprietor and partnership firm as well.

*Example:* Goods used from the stock of the business for business purposes are treated as a business expenditure but similar goods used by the proprietor i.e. owner for his personal use are treated as his drawings.

Such distinction between the owner and the business unit has helped accounting in reporting profitability more objectively and fairly. It has also led to the development of "responsibility accounting" which enables us to find out the profitability of even the different sub-units of the main business.

## **Stable Monetary Unit**

Accounting presumes that the purchasing power of monetary unit, say Rupee, remains the same throughout.

For example, the intrinsic worth of one Rupee is same and equal in the year 1900 and 2000 thus ignoring the effect of rising or falling purchasing power of monetary unit due to deflation or inflation. In spite of the fact that the assumption is unreal and the practice of ignoring changes in the value of money is now being extensively questioned, still the alternatives suggested incorporating the changing value of money in accounting statements *viz.*, Current Purchasing Power method (CPP) and Current Cost Accounting method (CCA) are in evolutionary stage. Therefore, for the time-being we have to be content with the 'stable monetary unit' concept.

## Cost

This concept is closely related to the going concern concept. According to this, an asset is ordinarily recorded in the books at the price at which it was acquired i.e. at its cost price. This 'cost' serves the basis for the accounting of this asset during the subsequent period. This 'cost' should not be confused with 'value'.

It must be remembered that as the real worth of the assets changes from time to time, it does not mean that the value of such an asset is wrongly recorded in the books. The book value of the assets as recorded does not reflect their real value. It does not signify that the values noted therein are the values for which they can be sold. Though the assets are recorded in the books at cost, in course of time, they become reduced in value on account of depreciation charges. In certain cases, only the assets like 'goodwill' when paid for will appear in the books at cost and when nothing is paid for, it will not appear even though this asset exists on name and fame created by a concern.

Therefore, the values attached to the assets in the balance sheet and the net income as shown in the Profit and Loss account cannot be said to reflect the correct measurement of the financial position of an undertaking, as they do not have any relation to the market value of the assets or their replacement values. This idea that the transactions should be recorded at cost rather than at a subjective or arbitrary value is known as Cost Concept. With the passage of time, the market value of fixed assets like land and buildings vary greatly from their cost.

These changes or variations in the value are generally ignored by the accountants and they continue to value them in the balance sheet at historical cost. The principle of valuing the fixed assets at their cost and not at market value is the underlying principle in cost concept. According to them, the current values alone will fairly represent the cost to the entity.

The cost principle is based on the principle of objectivity. The supporters of this method argue so long as the users of the financial statements have confidence in the statements, there is no necessity to change this method.

## Conservatism

This concept emphasizes that profit should never be overstated or anticipated. Traditionally, accounting follows the rule "anticipate no profit and provide for all possible losses.

*Example:* The closing stock is valued at cost price or market price, whichever is lower.

The effect of the above is that in case market price has come down then provide for the 'anticipated loss' but if the market price has gone up then ignore the 'anticipated profits'.

Critics point out that conservatism to an excess degree will result in the creation of secret reserve. This will be quite contrary to the doctrine of disclosure. However, conservatism to a reasonable degree may not come in for criticism.

## Advantages and Disadvantages of Responsibility Accounting

Responsibility accounting has been an accepted part of traditional accounting control systems for many years because it provides an organization with a number of advantages. Perhaps the most compelling argument for the responsibility accounting approach is that it provides a way to manage an organization that would otherwise be unmanageable.

1. In addition, assigning responsibility to lower level managers allows higher level managers to pursue other activities such as long term planning and policy making.

2. It also provides a way to motivate lower level managers and workers.
3. Managers and workers in an individualistic system tend to be motivated by measurements that emphasize their individual performances.

However, this emphasis on the performance of individuals and individual segments creates what some critics refer to as the "stovepipe organization." Others have used the term "functional silos" to describe the same idea.

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1. Information flows vertically, rather than horizontally.
2. Individuals in the various segments and functional areas are separated and tend to ignore the interdependencies within the organization.
3. Segment managers and individual workers within segments tend to compete to optimize their own performance measurements rather than working together to optimize the performance of the system.

Thus it can be said that an implicit assumption of responsibility accounting is that separating a company into responsibility centers that are controlled in a top down manner is the way to optimize the system. However, this separation inevitably fails to consider many of the interdependencies within the organization. Ignoring the interdependencies prevents teamwork and creates the need for buffers such as additional inventory, workers, managers and capacity. Of course, a system that prevents teamwork and creates excess is inconsistent with the lean enterprise concepts of just-in-time and the theory of constraints. For this reason, critics of traditional accounting control systems advocate managing the system as a whole to eliminate the need for buffers and excess. They also argue that companies need to develop process oriented learning support systems, not financial results, fear oriented control systems. The information system needs to reveal the company's problems and constraints in a timely manner and at a disaggregated level so that empowered users can identify how to correct problems, remove constraints and improve the process. According to these critics, accounting control information does not qualify in any of these categories because it is not timely, disaggregated, or user friendly.

This harsh criticism of accounting control information leads us to a very important controversial question. Can a company successfully implement just-in-time and other continuous improvement concepts while retaining a traditional responsibility accounting control system? Although the jury is still out on this question, a number of field research studies indicate that accounting based controls are playing a decreasing role in companies that adopt the lean enterprise concepts. In a recent study involving nine companies, each company answered this controversial question in a different way by using a different mix of process oriented versus results oriented learning and control information. Since each company is different, a generalized answer to this question for all firms in all situations cannot be provided.

### **Case: Out to Lunch Cuisine Inc.**

Out to Lunch was established in Vancouver, Canada, in 1985. It is a rapidly growing fast-food restaurant chain. Their business model revolves around a uniquely flavored hamburger, and a very simple menu consisting of a hamburger, fries, and drinks. They provide simple "round number" pricing, few products, and rapid service. Out to Lunch also has a catering service for sporting events, corporate outings, and similar occasions.

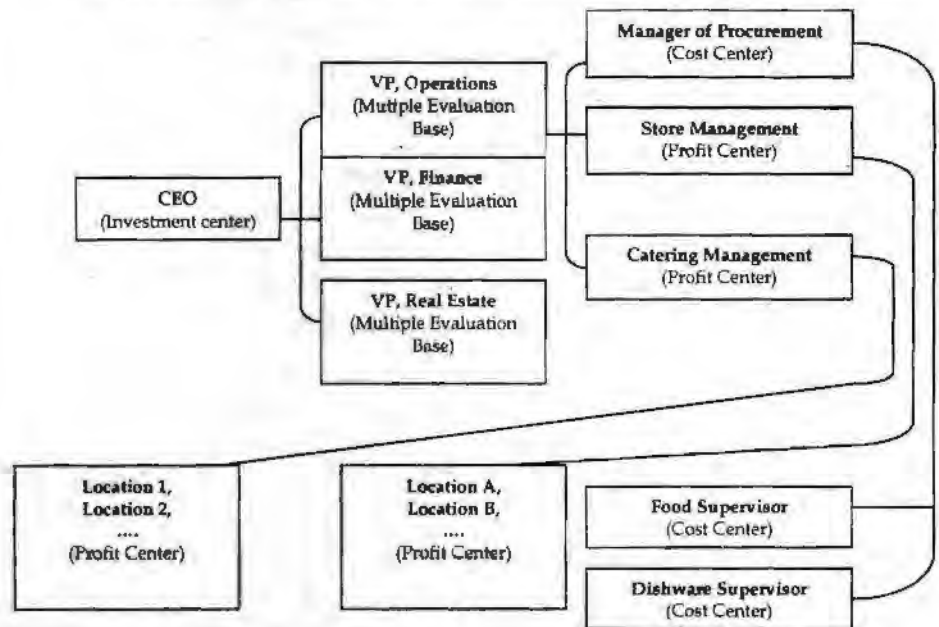
Refer to the chart below to understand the working of OTL Cuisine Inc. The blocks in the organization chart indicate the character of performance/responsibility evaluation that is germane to each position. The Chief Executive Officer reports to

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the owners, and the owners are primarily interested in their return on investment. Three vice presidents report to the CEO:

1. The VP of operations is responsible for the overall investment in operations, which is driven heavily by the combined profits of each store. The VP of Operations oversees procurement, store management, and catering management.
  - (a) The Procurement Manager oversees purchasing of food and dishware. The Procurement activities are evaluated as cost centers, relying on budgets and standard costs to control activities.
  - (b) The Store and Catering managers oversee supervisors from each location. The Store and Catering Managers are responsible for producing profits, and are evaluated accordingly.
2. The VP of Finance is viewed and evaluated as a cost center.
3. The VP of Real Estate is responsible for site acquisition and construction. Although the activities are largely viewed in the context of a cost center, there is an expected rate of return for each new real estate investment. Therefore, the VP of Real Estate is evaluated for cost control and return on investments.



The accounting system of the company supports preparation of an accounting report for each responsibility center. This information is essential to monitor, control, and direct each business unit. Each individual store has a customized performance report. Often, the reports provide a comparison between budgeted and actual data, with the difference being reported as a variance from budget. These performance reports are consistent with the organizational structure of the firm. At successively higher levels within the organization, the reports tend to include less transaction specific detail and more combinations of business units.

Notice that Location A's performance report is very detailed, and provides a basis for analysis of numerous facets of the business. Graphics are frequently used to facilitate understanding by those not accustomed to accounting reports. For example, each store supervisor knows that fries and drinks have the highest profit margins and they are encouraged to train employees to soft-sell these items by asking

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customers "what type of drink did you prefer?" rather than "did you want a drink with this order?" As a result, the report is "specialized" to show the product mix proportions. In addition, each manager gets a bonus if food costs are below 20% of sales; this incentive is designed to reduce food waste and encourage sales of high margin products. The report provides sufficient detail to show if the objectives are being met. Notice that unfavorable variances are highlighted in red. Summarizing the results for Location A, note that the budgeted goal for hamburger sales was not met. But, the profit objectives were nevertheless exceeded because the product mix of fries and drinks produced offsetting higher margins. In addition Location A managed to contain other variable costs.

PERFORMANCE REPORT  
STORE LOCATION A  
FOR THE YEAR ENDING DECEMBER 31, 20X5

	ACTUAL RESULTS		BUDGETED RESULTS		VARIANCE
	PERCENT OF SALES	Totals	PERCENT OF SALES	Totals	
<b>Sales:</b>					
Burgers	49%	\$ 1,000,000	47%	\$ 1,100,000	\$ (100,000)
Fries	21%	600,000	22%	550,000	50,000
Drinks	30%	900,000	35%	875,000	25,000
<b>Total Sales</b>	<b>100%</b>	<b>\$ 2,500,000</b>	<b>100%</b>	<b>\$ 2,525,000</b>	<b>\$ (25,000)</b>
<b>Less: Variable Expenses</b>					
Food cost	19%	\$ 475,000	20%	\$ 505,000	\$ (30,000)
Other variable expenses	7%	175,000	8%	200,000	(25,000)
<b>Total Variable Expenses</b>	<b>26%</b>	<b>\$ 650,000</b>	<b>28%</b>	<b>\$ 705,000</b>	<b>\$ (55,000)</b>
<b>Contribution Margin</b>		<b>\$ 1,850,000</b>		<b>\$ 1,820,000</b>	<b>\$ 30,000</b>
<b>Less: Traceable Fixed Costs</b>		<b>1,100,000</b>		<b>1,100,000</b>	
<b>Location A Margin</b>		<b>\$ 750,000</b>		<b>\$ 720,000</b>	<b>\$ 30,000</b>

Burgers (49%)  
Drinks (30%)  
Fries (21%)

The next step up in the organizational chart is the Senior Manager of Store Operations. This person is concerned with making sure that each unit is profitable. Underperforming stores are identified, problems are studied, and corrective measures are taken. Very little time is spent on locations that are meeting or exceeding corporate profit goals. Although this manager has access to the detailed reports for each store, the performance report of interest is a compilation of summary data for each location that quickly highlights the areas of needed improvement. Review the following performance report, noting the carry forward of Location A's data into the report. Obviously, some stores are performing much better than others; the senior manager will certainly want to focus on store E immediately! Also notice that there is \$1,500,000 of fixed costs associated with store operations that are not traceable to any specific location; nevertheless, the senior manager of store operations must control this cost and it is subtracted in calculating the overall margin. Thus, the total fixed cost for all store operations is \$9,500,000 (\$8,000,000 + \$1,500,000).

PERFORMANCE REPORT  
ALL STORES  
FOR THE YEAR ENDING DECEMBER 31, 20X5

	Combined	Location A	Location B	Location C	Location D	Location E	Location F	Location G
<b>Sales:</b>								
Burgers	\$ 7,050,000	\$ 1,000,000	\$ 875,000	\$ 1,200,000	\$ 1,400,000	\$ 600,000	\$ 875,000	\$ 1,100,000
Fries	3,675,000	600,000	400,000	750,000	800,000	200,000	300,000	625,000
Drinks	5,685,000	900,000	910,000	975,000	1,000,000	450,000	550,000	900,000
<b>Total Sales</b>	<b>\$ 16,410,000</b>	<b>\$ 2,500,000</b>	<b>\$ 2,185,000</b>	<b>\$ 2,925,000</b>	<b>\$ 3,200,000</b>	<b>\$ 1,250,000</b>	<b>\$ 1,725,000</b>	<b>\$ 2,625,000</b>
<b>Less: Variable Expenses</b>								
Food cost	\$ 3,334,350	\$ 475,000	\$ 458,850	\$ 570,000	\$ 640,000	\$ 337,000	\$ 293,250	\$ 603,750
Other variable expenses	1,241,100	175,000	131,100	234,000	224,000	142,500	207,000	157,500
<b>Total Variable Expenses</b>	<b>\$ 4,575,450</b>	<b>\$ 650,000</b>	<b>\$ 589,950</b>	<b>\$ 804,000</b>	<b>\$ 864,000</b>	<b>\$ 479,500</b>	<b>\$ 500,250</b>	<b>\$ 761,250</b>
<b>Contribution Margin</b>	<b>\$ 11,834,550</b>	<b>\$ 1,850,000</b>	<b>\$ 1,595,050</b>	<b>\$ 2,164,500</b>	<b>\$ 2,336,000</b>	<b>\$ 770,500</b>	<b>\$ 1,224,750</b>	<b>\$ 1,863,750</b>
<b>Traceable Fixed Costs</b>	<b>8,000,000</b>	<b>1,100,000</b>	<b>1,000,000</b>	<b>900,000</b>	<b>1,200,000</b>	<b>1,300,000</b>	<b>1,100,000</b>	<b>1,400,000</b>
<b>Location Margin</b>	<b>\$ 3,834,550</b>	<b>\$ 750,000</b>	<b>\$ 595,050</b>	<b>\$ 1,264,500</b>	<b>\$ 1,136,000</b>	<b>\$ (529,500)</b>	<b>\$ 124,750</b>	<b>\$ 463,750</b>
<b>Common Fixed Costs</b>	<b>1,500,000</b>							
<b>Stores Margin</b>	<b>\$ 2,334,550</b>							

Continuing up the organizational chart, the VP of Operations will focus on summary data from store management, catering management, and procurement. Notice that the "stores" column (below) is derived from information found in the "combined" column (above). Again, note the presence of fixed costs that are not traceable to any



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specific operating segment (\$1,300,000). Even though this cost is not assigned to a specific segment, it remains a cost for which the VP of Operations is responsible.

PERFORMANCE REPORT  
OPERATIONS  
FOR THE YEAR ENDING DECEMBER 31, 20X5

	Combined	Stores	Catering	Procurement
Total Sales	\$ 28,866,000	\$ 16,410,000	\$12,456,000	\$ -
Total Variable Expenses	\$ 6,942,590	\$ 4,575,950	\$ 2,366,640	\$ -
Contribution Margin	\$ 21,923,410	\$ 11,834,050	\$ 10,089,360	\$ -
Less: Traceable Fixed Costs	17,700,000	9,500,000	7,000,000	\$1,200,000
Unit Margin	\$ 4,223,410	\$ 2,334,050	\$ 3,089,360	\$ (1,200,000)
Less: Common Fixed Costs	1,300,000			
Operations Margin	\$ 2,923,410			

The next step in the corporate ladder is the CEO. This individual is evaluated on the overall financial statement outcomes. Although the CEO would have access to any and all of the reports from within the organization, they would mostly focus on the reports emanating from each vice president's unit.

**Questions**

1. After analysing the case above, do you think all the organizations, especially those in catering/hoteliering business, should run on the same model of responsibility accounting? Support your argument with reasons.
2. What problems do you see in responsibility accounting at OTL Cuisines Inc.?

Source: www.otlcatering.com

**Summary**

Responsibility accounting is a concept of accounting performance measurement systems. The basic idea under responsibility accounting is that large diversified organizations are difficult, if not impossible to manage as a single segment.

Thus, they must be decentralized or separated into manageable parts. These parts or segments are referred to as responsibility centers that include: cost centers, profit centers and investment centers.

This approach allows responsibility to be assigned to the segment managers that have the greatest amount of influence over the key elements to be managed. There are many advantages and disadvantages of responsibility accounting. The benefits exceed the limitations, thus rendering responsibility accounting a big space to settle in.

**Keywords**

**Cost Center:** A cost center is part of an organization that does not produce direct profit and adds to the cost of running a company.

**Investment Center:** A unit within an organisation whose manager not only has profit responsibility but also some influence on capital expenditures.

**Profit Center:** A segment of a business for which costs, revenues, and profits are separately calculated.

**Revenue Center:** Unit within an organization that is responsible for generating revenues.



## Review Questions

1. Can responsibility be delegated? Why?
2. Analyse the concept of revenue centers. How are they evaluated in traditional responsibility accounting?
3. How would you evaluate cost centers in traditional responsibility accounting?
4. How does an investment center differ from a profit center?
5. How are investment centers evaluated in traditional responsibility accounting?
6. Examine the key elements of the responsibility accounting controversy.
7. Put arguments to support traditional responsibility accounting.
8. Present arguments against traditional responsibility accounting.
9. Examine the controllability concept related to responsibility accounting.
10. An issue closely related to responsibility accounting is the controversy over budgeting and how budgets are used. For example, Jensen describes a problem with typical executive compensation plans where bonuses are based on budget targets. He argues that corporate budgeting is a joke because it encourages managers to lie, cheat, lowball targets and inflate results. Explain Jensen's argument and proposed solution.

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## Further Readings

McNair, C. J. and L. P. Carr, *Responsibility Redefined: Changing Concepts of Accounting-based Control*.

David W. Young, *Techniques of Management Accounting*, McGraw Hill.

[www.allbusiness.com](http://www.allbusiness.com)

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# Unit 20 Management Applications

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## Unit Structure

- Introduction
- Definition of Marginal Costing
- Importance of Marginal Costing
- Cost-Volume-Profit (CVP) Analysis
- Break-even Analysis
- Methods Decisions involving Alternative Choices
- Three Alternatives
- Break-even Models and Planning for Profit
- Application of Cost Volume Profit Analysis
- Pricing Decisions
- Methods of Pricing
- Summary
- Keywords
- Review Questions
- Further Readings

## Learning Objectives

**At the conclusion of this unit, you should be able to:**

- Know the importance of marginal costing
- Explain the objectives of cost-volume-profit analysis
- Calculate the Profit-Volume (P/V) Ratio
- State the decisions involving alternative choices (break even analysis)
- Take pricing decisions

## Introduction

It is one of the premier tools of management not only to take decisions but also to fix an appropriate price and to assess the level of profitability of the products/services. This is a only costing tool demarcates the fixed cost from the variable cost of the product/service in order to guide the firm to know the minimal point of sales to equate the cost of production. It is a tool of analysis highlighting the relationship in between the cost, volume of sales and profitability of the firm.

## Definition of Marginal Costing

According to ICMA, London "Marginal cost is the amount at any given volume of output, by which aggregate costs are charged, if the volume of output is increased or decreased by one unit."

Marginal cost is the cost nothing but a change occurred in the total cost due to changes taken place on the level of production i.e either an increase/decrease by one unit of product.

The firm XYZ Ltd. incurs Rs. 1000 for the production of 100 units at one level of operation. By increasing only one unit of product i.e. 101 units, the firm's total cost of production amounted Rs. 1010.

Total cost of production at first instance ( $C'$ ) = Rs.1000

Total cost of production at second instance ( $C''$ ) = Rs.1010

Total number of units during the first instance ( $U'$ ) = 100

Total number of units during the second instance ( $U''$ ) = 101

Increase in the level of production and Cost of production:

Change in the level of production in units =  $U'' - U' = DU$

Change in the total cost of production =  $C'' - C' = DC$

$$\text{Marginal Cost} = \frac{\text{Change (Increase) in the Total Cost of Production}}{\text{Change (Increase) in the Level of Production}} = \frac{\Delta C}{\Delta U} = \frac{\text{Rs. } 10}{1} = \text{Rs. } 10$$

If the same firm reduces the total volume from 100 units to 99 units, the total cost of production Rs. 990/-

Decrease in the level of production and cost of production:

$$\text{Marginal Cost} = \frac{\text{Change (Increase) in the Total Cost of Production}}{\text{Change (Increase) in the Level of Production}} = \frac{\Delta C}{\Delta U} = \frac{\text{Rs. } 10}{1} = \text{Rs. } 10$$

### **Why marginal cost is called as incremental cost?**

From the above example, it is obviously understood that marginal cost is nothing but a cost which incorporates the incremental changes in the cost of production due to either an increase or decrease in the level of production by one unit, meant as incremental cost.

### **Why marginal cost is called in other words as variable cost?**

From the following classifications of cost, the inter twined relationship in between the variable cost and marginal cost is explained as below:

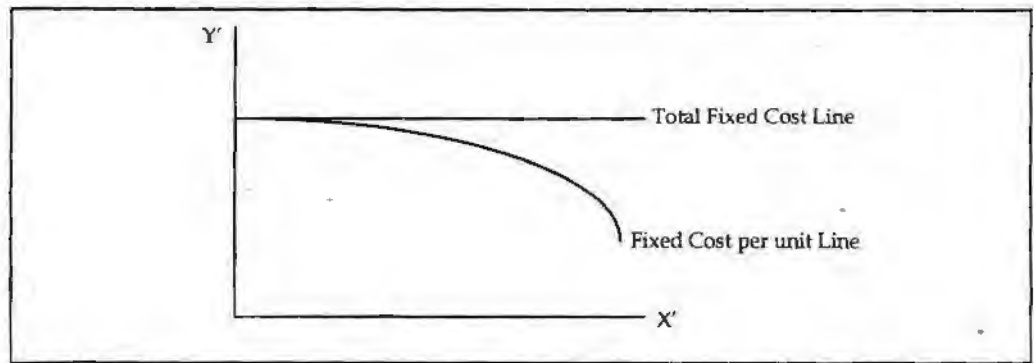
**Statement of Fixed, Variable and Total Costs and per Unit**

S.No.	Units	Fixed Cost (Rs.)	Fixed Cost per unit (Rs.)	Variable Cost (Rs.)	Variable Cost per unit (Rs.)	Marginal Cost (Rs.) $\Delta C/\Delta U$	Total Cost (Rs.)
1.	1	500	500	10	10	10	510
2.	50	500	100	500	10	10	1000
3.	100	500	5	1000	10	10	1500
4.	150	500	3.333	1500	10	10	2000

**Fixed Cost:** It is a cost remains constant or fixed irrespective level of production.

E.g: Rent Rs. 5,00/- is to be paid irrespective level of production. It remains constant/ fixed irrespective of changes taken place on the level of production.

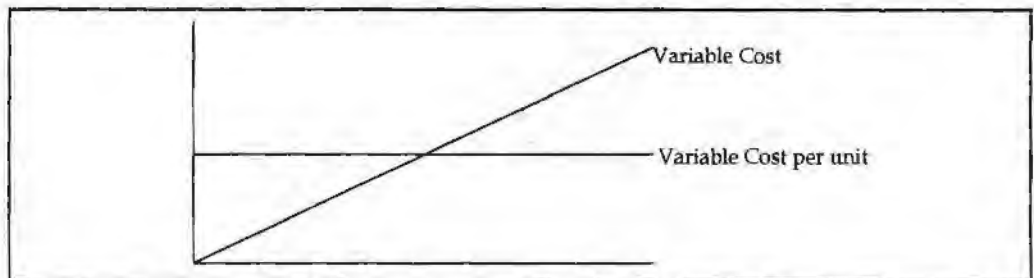
Notes



X' - Units

Y' - Cost in Rupees

**Variable Cost:** It is a cost, which varies with level of production.



X' - Units

Y' - Cost in Rupees

The following are the various components of variable cost:

1. **Direct Materials:** Materials cost consumed for the production of goods.
2. **Direct Labour:** Wages paid to the labourers who directly involved in the production of goods.
3. **Direct Expenses:** Other expenses directly involved in the production stream.
4. **Variable portion of Overheads:** Generally the overheads can be classified into two categories, viz. Variable overheads and Fixed overheads.

The variable overheads is the cost involved in the procurement of indirect materials, indirect labour and indirect expenses.

Indirect Material- cost of fuel, oil and soon

Indirect Labour- Wages paid to workers for maintenance of the firm.

The marginal cost is equivalent to the variable cost per unit of the various levels of production. The fixed cost of Rs. 500 is the cost remains the same at not only irrespective levels of production but also already absorbed at the initial level of production. The initial absorption of fixed overhead led the marginal cost to become as variable cost.

**Semi-variable cost:** Another major classification is semi variable/fixed cost which is a cost partly fixed/variable to the certain level of production or consumption e.g. Electricity charges, telephone charges and so on.

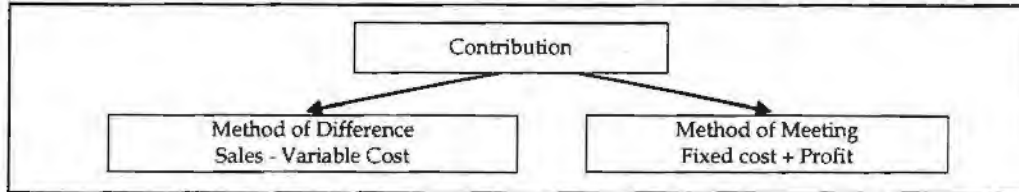
It jointly discards the importance of the fixed cost and the semi- variable cost for analysis while ascertaining the marginal cost.

Marginal Costing is defined as "the ascertainment of marginal cost and of the effect on profit of changes in volume or type of output by differentiating between fixed and variable costs."

In marginal costing, the change in the level of cost of operation is equivalent to variable cost due to fixed cost component which is fixed irrespective level of outputs.

### Importance of Marginal Costing

The costs are classified into two categories viz. fixed and variable cost. Variable cost per unit is considered as marginal cost of the product. Fixed costs are charged against contribution of the transaction. Selling price of the product = marginal cost + contribution.



Marginal costing profitability statement as follows:

Sales	xxxx
Variable Cost	<u>xxxx</u>
Contribution	xxxxx
Fixed Cost	<u>xxxx</u>
Profit	<u>xxxxx</u>

Sales Rs. 100,000, variable cost Rs. 25,000/- and fixed cost Rs. 20,000 find out the contribution and profit.

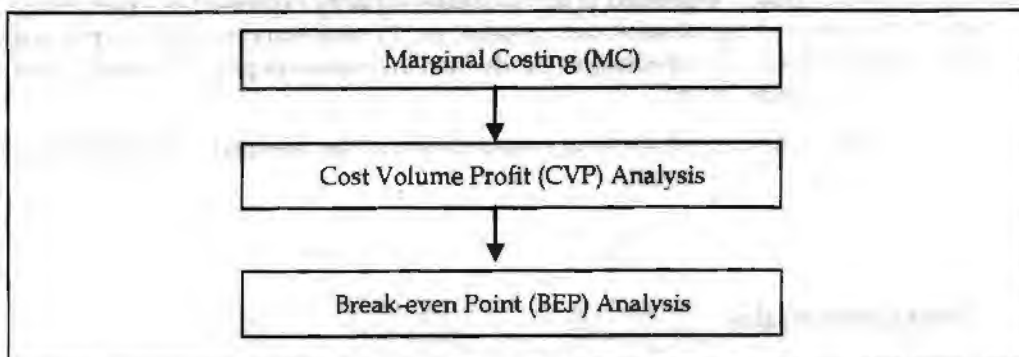
	Rs.
Sales	1,00,000
Variable Cost	<u>50,000</u>
Contribution	50,000
Fixed Cost	<u>20,000</u>
Profit	<u>30,000</u>

### Method of Difference

Under this method, the contribution can be computed through finding the differences in between Sales and Variable Cost i.e. Contribution = Sales – Variable Cost = Rs. 1,00,000 – 50,000 = Rs. 50,000

### Method of Coverages

In this method, the contribution is equated with the summation of Fixed cost and Profit i.e. Contribution = Fixed Cost + Profit = Rs. 20000 + 30000 = Rs. 50,000.



## Cost-Volume-Profit (CVP) Analysis

### Notes

The Cost-Volume-Profit (CVP) analysis helps management in finding out the relationship of costs and revenues to profit. The aim of an undertaking is to earn profit. Profit depends upon a large number of factors, the most important of which are the costs of the manufacturer and the volume of sales effected. Both these factors are interdependent – volume of sales depends upon the volume of production, which in turn is related to costs. Cost again is the result of the operation of a number of varying factors such as:

1. Volume of production,
2. Product mix,
3. Internal efficiency,
4. Methods of production,
5. Size of plant, etc.

Of all these, volume is perhaps the largest single factor which influences costs which can basically be divided into fixed costs and variable costs. Volume changes in a business are a frequent occurrence, often necessitated by outside factors over which management has no control and as costs do not always vary in proportion to changes in levels of output, management control of the factors of volume presents a peculiar problem.

As profits are affected by the interplay of costs and volume, the management must have, at its disposal, an analysis that can allow for a reasonably accurate presentation of the effect of a change in any of these factors which would have no profit performance. Cost-volume-profit analysis furnishes a picture of the profit at various levels of activity. This enables management to distinguish between the effect of sales volume fluctuations and the results of price or cost changes upon profits. This analysis helps in understanding the behaviour of profits in relation to output and sales.

Fixed costs would be the same for any designated period regardless of the volume of output accomplished during the period (provided the output is within the present limits of capacity). These costs are prescribed by contract or are incurred in order to ensure the existence of an operating organisation. Their inflexibility is maintained within the framework of a given combination of resources and within each capacity stage such costs remain fixed regardless of the changes in the volume of actual production. As fixed costs do not change with production, the amount per unit declines as output rises.

Absorption or full costing system seeks to allocate fixed costs to products. It creates the problem of apportionment and allocation of such costs to various products. By their very nature, fixed costs have little relation to the volume of production.

Variable costs are related to the activity itself. The amount per unit remains the same. These costs expand or contract as the activity rises or falls. Within a given time span, distinction has to be drawn between costs that are free of ups and downs of production and those that vary directly with these changes.

Study of behaviour of costs and CVP relationship needs proper definition of volume or activity. Volume is usually expressed in terms of sales capacity expressed as a percentage of maximum sales, volume of sales, unit of sales, etc. Production capacity is expressed as a percentage of maximum production, production in revenue of physical terms, direct labour hours or machine hours.

Analysis of cost-volume-profit involves consideration of the interplay of the following factors:

1. Volume of sales
2. Selling price
3. Product mix of sales



4. Variable cost per unit
5. Total fixed costs

The relationship between two or more of these factors may be (a) presented in the form of reports and statements (b) shown in charts or graphs, or (c) established in the form of mathematical deduction.

Notes

### Objectives of Cost-Volume-Profit Analysis

The objectives of cost-volume-profit analysis are given below:

1. In order to forecast profit accurately, it is essential to know the relationship between profits and costs on the one hand and volume on the other.
2. Cost-volume-profit analysis is useful in setting up flexible budgets which indicate costs at various levels of activity.
3. Cost-volume-profit analysis is of assistance in performance evaluation for the purpose of control. For reviewing profits achieved and costs incurred, the effects on cost of changes in volume are required to be evaluated.
4. Pricing plays an important part in stabilising and fixing up volume. Analysis of cost-volume-profit relationship may assist in formulating price policies to suit particular circumstances by projecting the effect which different price structures have on costs and profits.
5. As predetermined overhead rates are related to a selected volume of production, study of cost-volume relationship is necessary in order to know the amount of overhead costs which could be charged to product costs at various levels of operation.

### Profit-Volume (P/V) Ratio

The ratio or percentage of contribution margin to sales is known as P/V ratio. This ratio is known as marginal income ratio, contribution to sales ratio or variable profit ratio. P/V ratio, usually expressed as a percentage, is the rate at which profits increase with the increase in volume. The formulae for P/V ratio are

$$P/V \text{ ratio} = \text{Marginal contribution}/\text{Sales}$$

Or

$$\text{Sales value} - \text{Variable cost}/\text{Sales value}$$

Or

$$1 - \text{Variable cost}/\text{Sales value}$$

Or

$$\text{Fixed cost} + \text{Profit}/\text{Sales value}$$

Or

$$\text{Change in profits}/\text{Contributions}/\text{Changes}$$

### Break-even Analysis

Break even analysis examines the relationship between the total revenue, total costs and total profits of the firm at various levels of output. It is used to determine the sales volume required for the firm to break even and the total profits and losses at other sales level. Break even analysis is a method, as said by Dominick Salvatore, of revenue and total cost functions of the firm. According to Martz, Curry and Frank, a break even analysis indicates at what level cost and revenue are in equilibrium.

## Notes

In case of break even analysis, the break even point is of particular importance. Break even point is that volume of sales where the firm breaks even i.e., the total costs equal total revenue. It is, therefore, a point where losses cease to occur while profits have not yet begun. That is, it is the point of zero profit.

$$\text{BEP} = \frac{\text{Fixed Costs}}{\text{Selling price} - \text{Variable costs per unit}}$$

$$\text{For Example,} = \frac{\text{Fixed Costs Rs. 10,000}}{\text{Selling price Rs. 5 per unit} - \text{Variable costs Rs 3 per unit}}$$

$$\text{Therefore, BEP} = \frac{\text{Rs. 10,000}}{5 - 3} = 5,000 \text{ units.}$$

The conclusion that can be drawn from the above example is that sales volume of 5000 units will be the accurate point at which the manufacturing unit would not make any loss or profit.

### Uses of Break-even Analysis

Break even analysis is a very generalised approach for dealing with a wide variety of questions associated with profit planning and forecasting. Some of the important practical applications of break even analysis are:

1. What happens to overall profitability when a new product is introduced?
2. What level of sales is needed to cover all costs and earn, say, Rs. 1,00,000 profit or a 12% rate of return?
3. What happens to revenues and costs if the price of one of a company's product is hanged?
4. What happens to overall profitability if a company purchases new capital equipment or incurs higher or lower fixed or variable costs?
5. Between two alternative investments, which one offers the greater margin of profit (safety)?
6. What are the revenue and cost implications of changing the process of production?
7. Should one make, buy or lease capital equipment?

### Assumptions of Break-even Analysis

The break even analysis is based on certain assumptions, namely:

1. All costs are either perfectly variable or absolutely fixed over the entire period of production but this assumption does not hold good in practice.
2. The volume of production and the volume of sales are equal; but in reality they differ.
3. All revenue is perfectly variable with the physical volume of production and this assumption is not valid.
4. The assumption of stable product mix is unrealistic.

### Advantages of Break-even Analysis

The main advantages of using break even analysis in managerial decision making can be the following:

1. It helps in determining the optimum level of output below which it would not be profitable for a firm to produce.

2. It helps in determining the target capacity for a firm to get the benefit of minimum unit cost of production.
3. With the help of the break even analysis, the firm can determine minimum cost for a given level of output.
4. It helps the firms in deciding which products are to be produced and which are to be bought by the firm.
5. Plant expansion or contraction decisions are often based on the break even analysis of the perceived situation.
6. Impact of changes in prices and costs on profits of the firm can also be analysed with the help of break even technique.
7. Sometimes a management has to take decisions regarding dropping or adding a product to the product line. The break even analysis comes very handy in such situations.
8. It evaluates the percentage financial yield from a project and thereby helps in the choice between various alternative projects.
9. The break even analysis can be used in finding the selling price which would prove most profitable for the firm.
10. By finding out the break even point, the break even analysis helps in establishing the point wherefrom the firm can start payment of dividend to its shareholders.

Notes

### **Drawbacks of Break-even Analysis (BEA)**

This analysis will be useful only in situations relatively stable and slow moving rather than volatile and erratic ones. In conditions when proper managerial accounting techniques and procedures are maintained, the BEA will be useful. In a particular period costs are affected not by the output of that period but due to past output or a preparation for future output. As such the BEA cannot pin down that cost is the result of output of a particular period. It is difficult to deal with selling costs under the framework of BEA because changes in selling costs are a cause to bring out changes in output and not the result of output sales. In the real world, perfect competition is very rare and as such it is necessary to make calculations at different time periods. The relationship between cost, revenue and volume (output) is realistic only over narrow ranges of output and for long ranges. If too many products and too many plants are grouped together in a productive process, the BEA cannot identify which is good or which is bad, since all are grouped together. The BEA assumes that profits are the result of output but ignores that other factors like technological changes, improved management and variations in the proportions of fixed factors are also possible for profits. In spite of these, BEA is an important tool in decision making.

### **Limitations of Break-even Analysis**

Break even analysis is generally used to find out the output level at which the total fixed cost of a company are covered up by the contributions. But due to non-availability of separate data for fixed and variable cost for each product manufactured by the company the analysis had to be carried out with respect to time.

The analysis itself has got some inherent limitations which have been mentioned earlier.

The company considered manufacturing a wide range of products and is operating at various locations. Hence, to carry out the analysis at company scale is a very complex procedure which involves sorting of relevant data from a heap of data and then compiling it in the form required by the analysis. Generally companies don't differentiate very clearly and hence don't record costs on the basis of fixed and variable cost.

Data needed for the analysis is generally kept secret by the companies – otherwise it can indicate their profit margins per unit.

**Example:** From the following information relating to quick standards Ltd., you are required to find out (i) PV ratio (ii) break even point (iii) margin of safety (iv) calculate the volume of sales to earn profit of Rs. 6,000/-

Total Fixed Costs Rs. 4,500

Total Variable Cost Rs. 7,500

Total Sales Rs. 15,000

**Solution:**

First step to find out the Contribution volume

Sales	Rs. 15,000
Variable Cost	Rs. 7,500
Contribution	<u>Rs. 7,500</u>
Fixed Cost	<u>Rs. 4,500</u>
Profit	<u>Rs. 3,000</u>

1. Second step to determine the PV ratio

$$\text{PV ratio} = \frac{\text{Contribution}}{\text{Sales}} \times 100 = \frac{7,500}{15,000} \times 100 = 50\%$$

Third step to find out the Break even sales

$$2. \text{ Break even sales} = \frac{\text{Fixed cost}}{\text{PV ratio}} = \frac{4,500}{50\%} = 9,000$$

3. Margin of safety can be found out in two ways

$$(a) \text{ Margin of Safety} = \text{Actual sales} - \text{Break even sales} \\ = \text{Rs.}15,000 - \text{Rs.}9,000 = \text{Rs.}6,000$$

$$(b) \text{ Margin of Safety} = \frac{\text{Profit}}{\text{PVratio}} = \frac{\text{Rs.}3,000}{50\%} = \text{Rs.}6,000$$

4. Sales required to earn profit = Rs.6,000/-

To determine the sales volume to earn desired level of profit

$$= \frac{\text{Fixed Cost} + \text{Desired Profit}}{\text{PV ratio}} \\ = \frac{\text{Rs.}4,500 + \text{Rs.}6,000}{50\%} = \text{Rs.}21,000$$

## Methods Decisions involving Alternative Choices

The break even analysis can be performed by the following two methods:

1. Break Even Charts
2. Algebraic Method.

## Break Even Chart

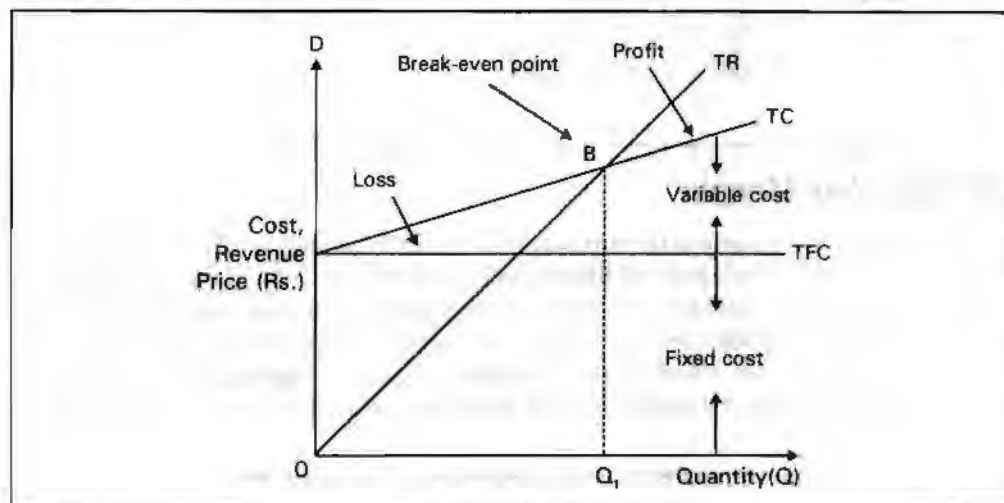
The difference between Price and Average Variable Cost ( $P - AVC$ ) is defined as 'profit contribution'. That is, revenue on the sale of a unit of output after variable costs are covered represents a contribution toward profit. At low rates of output, the firm may be losing money because fixed costs have not yet been covered by the profit contribution. Thus, at these low rates of output, profit contribution is used to cover fixed costs. After fixed costs are covered, the firm will be earning a profit.

A manager may want to know the output rate necessary to cover all fixed costs and to earn a "required" profit of  $R$ . Assume that both price and variable cost per unit of output ( $AVC$ ) are constant. Profit is equal to total revenue ( $P.Q.$ ) less the sum of Total Variable Costs ( $Q.TVC$ ) and fixed costs. Thus

$$\pi_R = PQ - [(Q \cdot AVC) + FC]$$

$$\pi_R = TR - TC$$

The break even chart shows the extent of profit or loss to the firm at different levels of activity. A break even chart may be defined as an analysis in graphic form of the relationship of production and sales to profit. The Break even analysis utilises a break even chart in which the Total Revenue ( $TR$ ) and the Total Cost ( $TC$ ) curves are represented by straight lines, as in figure below.



In the figure total revenues and total costs are plotted on the vertical axis whereas output or sales per time period are plotted on the horizontal axis. The slope of the  $TR$  curve refers to the constant price at which the firm can sell its output. The  $TC$  curve indicates Total Fixed Costs ( $TFC$ ) (The vertical intercept) and a constant average variable cost (the slope of the  $TC$  curve). This is often the case for many firms for small changes in output or sales. The firm breaks even (with  $TR=TC$ ) at  $Q_1$  (point  $B$  in the figure) and incurs losses at smaller outputs while earnings profits at higher levels of output.

Both the Total Cost ( $TC$ ) and Total Revenue ( $TR$ ) curves are shown as linear.  $TR$  curve is linear as it is assumed that the price is given, irrespective of the output level. Linearity of  $TC$  curve results from the assumption of constant variable costs.

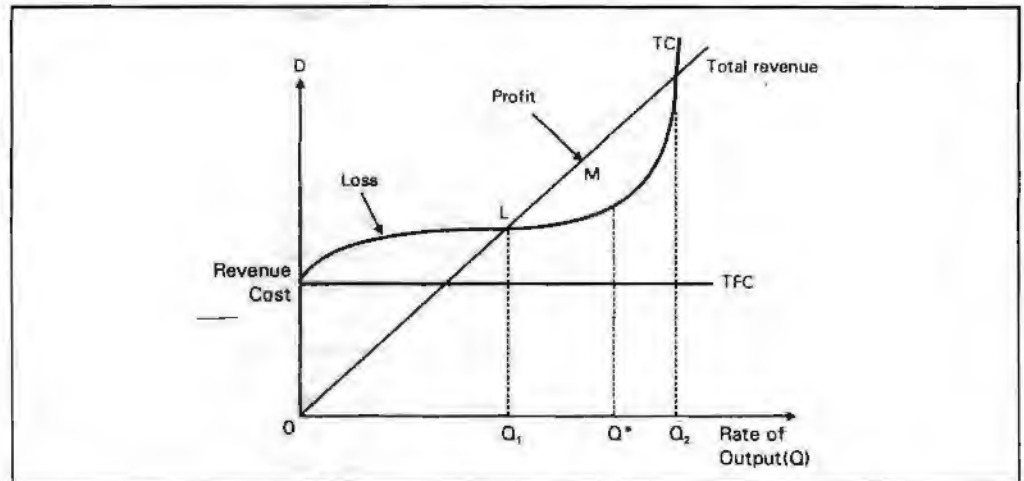
If the assumptions of constant price and average variable cost are relaxed, break even analysis can still be applied, although the key relationship (total revenue and total cost) will not be linear functions of output. Nonlinear total revenue and cost functions are shown in the following figure. The cost function is conventional in the sense that at first costs increase but less than in proportion to output and then increase more than in proportion to output. There are two break even points -  $L$  and  $M$ . Note that profit which



Notes

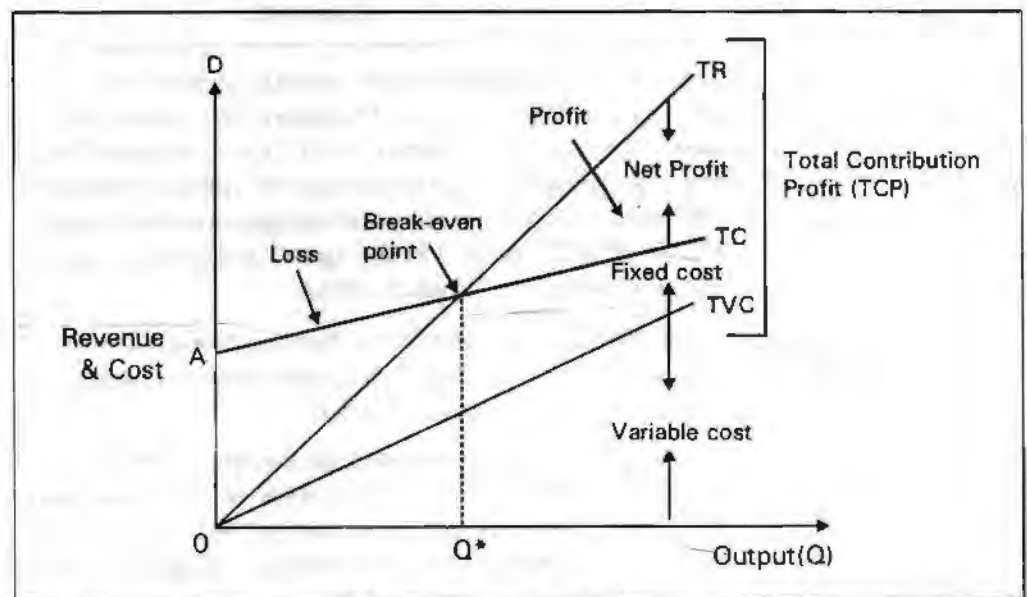
is the vertical distance between the total revenue and total cost functions, is maximised at output rate  $Q^*$ .

Of the two break even points, only the first, corresponding to output rate  $Q_1$  is relevant. When a firm begins production, management usually expects to incur losses. But it is important to know at what output rate the firm will go from a loss to a profit situation. In figure below the firm would want to get to the break even output rate  $Q_1$  as soon as possible and then of course, move to the profit maximising rate  $Q^*$ . However, the firm would not expand production beyond  $Q^*$  because this would result in a reduction of profit.



**Contribution Margin**

In the short run, where many of the firms costs are fixed, businessmen are often interested in determining the contribution additional sales make towards fixed costs and profits. Contribution analysis provides this information. Total contribution profit is defined as the difference between total revenues and total variable costs, which equals price less average variable cost on a per unit basis. The following figure highlights the meaning of contribution profit. Total contribution profit, it can be seen, is also equal to total net profit plus total fixed costs.



Contribution profit analysis provides a useful format for examining a variety of price and output decisions.



As is clear from above figure Total Contribution Profit (TCP) = Total Revenue (TR) – Total Variable Cost (TVC)

= Total Net Profit (TNP) + Total Fixed Cost (TFC)

Therefore, if TNP = 0 then, TCP = TFC. This occurs at break even point. From the above equation it is also clear that

$$\begin{aligned} \text{TR} &= \text{TCP} + \text{TVC} \\ &= (\text{TNP} + \text{TFC}) + \text{TVC} \\ &\quad \text{Total Contribution Profit (TCP)} \\ &= \text{TR} - \text{TVC} \\ &= \text{Net Profit} + \text{Fixed Cost} \end{aligned}$$

Notes

### Algebraic Method

Break even analysis can also be performed algebraically, as follows. Total revenue is equal to the selling price (P) per unit times the quantity of output or sales (Q). That is

$$\text{TR} = (P) \cdot (Q)$$

Total costs equal total fixed costs plus Total Variable Costs (TVC). Since TVC is equal to the Average (per unit) Variable Cost (AVC) times the quantity of output or sales, we have

$$\text{TC} = \text{TFC} + \text{TVC}$$

$$\text{or, TC} = \text{TFC} + (\text{AVC}) \cdot (Q)$$

Setting total revenue equal to total costs and substituting  $Q_B$  (the break even output) for Q, we have

$$\text{TR} = \text{TC}$$

$$(P) \cdot (Q_B) = \text{TFC} + (\text{AVC}) \cdot (Q_B)$$

$$\text{Or, TFC} = P \cdot (Q_B) - (\text{AVC}) (Q_B)$$

$$\text{TFC} = Q_B \cdot (P - \text{AVC})$$

$$\text{OB (the break even output)} = \frac{\text{TFC}}{(P - \text{AVC})} = \frac{\text{TFC}}{\text{ACM}}$$

The denominator in the above equation (i.e.,  $P - \text{AVC}$ ) is called the contribution margin per unit (ACM) because it represents the portion of the selling price that can be applied to cover the fixed costs of the firm and to provide for profits.

#### Student Activity

Break even sales	Rs.1,60,000
Sales for the year 1987	Rs. 2,00,000
Profit for the year 1987	Rs.12,000

Calculate:

1. Profit or loss on a sale value of Rs. 3,00,000.
2. During 1988, it is expected that selling price will be reduced by 10%. What should be the sale if the company desires to earn the same amount of profit as in 1987?

### Three Alternatives

Notes

The break even point may now be computed in one of three different but interrelated ways. To illustrate, assume that a factory can produce a maximum of 20,000 units of output per month. These 20,000 units can be sold at a price of Rs. 100 per unit. Variable costs are Rs. 20 per unit and the total fixed costs are Rs. 2,00,000.

$$1. \quad \text{By direct application of the equation, } Q_b = \frac{\text{TFC}}{(P - \text{AVC})}$$

$$= \frac{2,00,000}{100 - 20} = 2500 \text{ units}$$

In order to verify this, we could simply compute the TR and the TC when output equals 2500 units

$$\begin{aligned} \text{TR} &= P \times Q \\ &= 100 \times 2500 \\ &= \text{Rs. } 250,000 \end{aligned}$$

$$\begin{aligned} \text{TC} &= \text{TFC} + Q(\text{AVC}) \\ &= (200,000) + (2500) (\text{Rs. } 20) \\ &= \text{Rs. } 250,000 \end{aligned}$$

2. By modification of the equation above when one is to determine the break even measured in terms of rupee sales

$$Q_b = \frac{\text{TFC}}{P - \text{AVC}} = \frac{\text{TFC}}{1 - \frac{\text{AVC}}{P}} \quad \dots(1)$$

$$\text{or } S_b = P \cdot Q_b = \left( \frac{\text{TFC}}{P - \text{AVC}} \right) \cdot P$$

$$= \frac{\text{TFC}}{1 - \left( \frac{\text{AVC} \cdot Q_b}{P \cdot Q_b} \right)}$$

$$S_b = \frac{\text{TFC}}{1 - \left( \frac{\text{TVC}}{\text{TR}} \right)} \quad \dots(2)$$

or

Where  $S_b$  is the break-even sales level. The denominator,  $1 - \frac{\text{TVC}}{\text{TR}}$ , provides a measure of the contribution made by the product to recover fixed costs. For example, the break even level in rupee sales is :

$$S_b = \frac{\text{Rs. } 2,00,000}{1 - \left( \frac{20}{100} \right)} = \text{Rs. } 2,50,000$$

which is the same result that can be obtained by multiplying the break even quantity by unit price. In equation (1) the contribution margin is calculated on a per unit basis from the ratio of AVC to price. In equation (2) the contribution margin is calculated on a total sales revenue basis from the ratio of TVC to TR. The ratio is the same in each case and in both the situations the calculated ratio is subtracted from the equation,  $Q_b (P - \text{AVC}) = \text{TVC}$ , to yield the percentage of revenue that contributes to recovery of fixed costs or overheads.

3. In order to determine the break even point in terms of percentage utilisation of plant capacity (% B), (or load factor to be achieved) the equation:

$$Q_b = \frac{TFC}{(P - AVC)} = \frac{TFC}{ACM} \text{ has}$$

to be modified as

$$\% B = \frac{TFC}{(P - AVC) \times Q(\text{cap})} \times 100$$

where, Q (cap) is the maximum capacity of the plant expressed in units of output.

$$\% B = \frac{\text{Rs. } 2,00,000}{(\text{Rs. } 100 - \text{Rs. } 20) 20,000} \times 100$$

= 12.5%, which indicates that the firm can break even by using only 12.5% of its capacity.

**Example:** Indian Airlines has a capacity to carry a maximum of 10,000 passengers per month from Kolkata to Guwahati at a fare of Rs. 500. Variable costs are Rs. 100 per passenger, and fixed costs are Rs. 3,00,000 per month. How many passengers should be carried per month to break even? What load factor (i.e., average percentage of seating capacity filled) must be reached to break even?

**Solution:**

$$P - AVC = \text{Rs. } 500 - \text{Rs. } 100 = \text{Rs. } 400$$

$$Q_b(\text{Passengers}) = \frac{\text{Rs. } 3,00,000}{\text{Rs. } 400} = 7,500 \text{ passengers}$$

The break even sales value

$$Q_s = \frac{\text{Rs. } 3,00,000}{1 - \left(\frac{\text{Rs. } 100}{\text{Rs. } 500}\right)} = \frac{\text{Rs. } 3,00,000}{0.8} = \text{Rs. } 3,75,000$$

## Break-even Models and Planning for Profit

The break even point represents the volume of sales at which revenue equals expenses; that is, at which profit is zero. The break even volume is arrived at by dividing fixed costs (costs that do not vary with output) by the contribution margin per unit, i.e., selling price minus variable costs (costs that vary directly with output). In certain situations, and especially in the consideration of multi-products, break even volume is measured in terms of rupee sales value rather than units. This is done by dividing the fixed costs or overheads by the contribution margin ratio (contribution margin divided by selling price). Generally, in these types of computations, the desired profit is added to the fixed costs in the numerator in order to ascertain the sales volume necessary for producing the target profit.

If management plans for a certain profit, then revenue needed to cover all costs plus the desired profit is

$$P \cdot Q = TR = TFC + AVC \times Q + \text{Profit}$$

and 
$$Q_b = \frac{TFC + \text{Profit}}{P - AVC}$$

or 
$$Q_b = \frac{TFC + \pi}{P - AVC} = \frac{TFC + \pi}{ACM} \text{ where, } \pi = \text{Profit.}$$

Notes

Notes

$$\text{and } S_B = P \cdot Q_B = \frac{TFC + \pi}{1 - \left(\frac{AVC}{P}\right)}$$

$$\text{and } \% B = \frac{TFC + \pi}{(P - AVC) (Q(\text{cap}))}$$

Thus, in the example used above,

$$Q_{\text{cap}} = 20,000$$

$$P = \text{Rs } 100$$

$$AVC = \text{Rs } 20$$

$$TFC = \text{Rs } 200,000$$

$$Q_B = 2500 \text{ units}$$

$$S_B = \text{Rs } 250,000$$

$$\% B = 12.5$$

If the management now wants to earn a target profit of Rs. 50,000, then we get new levels of  $Q_B = 321,500$  and  $\% B = 15,625$ . If we add this target profit to the fixed costs we see that the break even levels of all three factors we increased. The information in this example could be extended so as to make provisions for such factors as payment of taxes or for payment of any other fixed obligations that might be associated with the fixed costs (such as interest payments on bonds or debentures used to finance an investment).

## Application of Cost Volume Profit Analysis

**Make or Buy Decision:** The firms, which are routinely in need of spares, accessories are bought from the outsiders instead of any production or manufacturing, though the requirement is at regular intervals. Most of the automobile manufacturers are usually buying the components from outside instead of producing them on their own. The Maruti Udyog Ltd. had given a contract to the Nettur Technical Training Foundation, Bangalore to design the tool for the panel and to manufacture regularly to the tune of the orders.

The leading four wheeler manufacture in India is buying the panel from the NTTF on contract basis in stead of manufacturing.

Why don't they manufacture in spite of buying them from the NTTF?

The main reason of buying is cheaper than the production of an article.

**Example:** The management of a company finds that while the cost of making a component part is Rs. 20, the same is available in the market at Rs. 18 with an assurance of continuous supply.

Give a suggestion whether to make or buy this part. Give also your views in case the supplier reduces the price from Rs. 18 to Rs. 16

The cost information is as follows:

	Rs.
Material	7.00
Direct Labour	8.00
Other variable expenses	2.00
Fixed expenses	3.00
Total	<u>Rs.20.00</u>

**Solution:** The first point to be found out that the contribution of the transaction. The cost of manufacturing should be compared with the price of the product which is available in the market.

To find out the worth of the transactions, first the cost of manufacturing should be found out

Notes

	Rs.
Material	7.00
Direct Labour	8.00
Other variable expenses	<u>2.00</u>
Total	<u>17.00</u>

The cost of manufacturing a component is Rs. 17.00. While calculating the cost of manufacturing a component, the fixed expenses was not considered. The fixed expenses were not considered for computation. Why?

The costs will be incurred irrespective of the production status of the firm; for which the expenses should not be added.

If the company manufactures the product/component at Rs. 17 which will facilitate to book profit Re. 1 from the price of Rs. 18 which is available from the market.

The next stage is decision criteria.

**Worth of Production:** Cost of the production < Price of the product available in the market

The firm is better advised to take the course of production rather than purchase of the product.

**Worth of Purchase:** Cost of the production > Price of the product available in the market

The product available in the market is same cheaper than the manufacturing of a product. The firm is better advised to buy the product rather than the manufacturing of a product. If the product price comes down to the price of Rs. 16 facilitates the firm to save Re. 1 from the cost of manufacturing.

### **Accepting the Export Offer**

The cost statement of a product is furnished below:

		Rs.
Direct material		10.00
Direct wages		6.00
<b>Factory overhead</b>		
Fixed	Re1.00	
Variable	<u>Re.1.00</u>	2.00
Administrative expenses		1.50
<b>Selling or distribution overheads</b>		
Fixed	Re.0.50	
Variable	<u>Re.1.00</u>	1.50
Selling price per unit Rs. 24.00		<u>21.00</u>

## Notes

The above figures are for an output of 50,000 units. The capacity for the firm is 65,000 units. A foreign customer is desirous of buying 15,000 units at a price of Rs. 20 per unit.

Advise the manufacturer whether the order should be accepted, what will be your advice if the order were from the local merchant?

The acceptance of the order is mainly based on the two important covenants *viz.* Additional cost and Additional revenue.

If the additional demand of the foreign buyer is able to generate the additional revenue more than the additional cost of the operations, the firm should have to accept the foreign order.

**Decision criteria:** Marginal/ Additional cost for the additional order of 15,000 units

		Per unit (Rs.)	15,000 units
Selling price		20	3,00,000
Less: Marginal cost Rs			
Direct material	10.00		
Direct wages	6.00		
Variable overhead			
Factory	1.00		
Selling & Distribution	1.00	18	2,70,000
		2	30,000

The acceptance of the order will generate marginal profit of Rs. 30,000 which should be accepted. The fixed portion of the factory and selling overheads were already met out which should not be included again in the computation of the marginal or additional cost of the foreign order placed by the business enterprise.

Instead, If the firm accepts the local order at the rate of Rs. 20 which automatically will spoil the relationship with the very good customers who regularly purchase at the rate of Rs. 24. This will lead to cannibalization of the existing pricing strategy.

**Key factor:** Key factor is nothing but a limiting factor or deterring factor on sales volume, production, labour, materials and so on.

The limiting factor normally differs from one to another.

Volume of sales - the limiting factor is that production of required number of articles.

Volume of production- the limiting factors are as follows in adequate supply of raw materials, labour, inability to sell the produced articles and so on.

The limiting factors are studied in the lights of the contribution. The limiting factor is bearing the inverse relationship with the volume of contribution. To study the worth of the business proposals among the limiting factors, the contribution is considered as a parameter to rank them one after another.

**Selecting the suitable product Mix:** In the market, dealership is offered by the various companies to the individual intermediaries in promoting the sale of products. Before reaching an agreement with the company to act as a dealer, normally every individual consider the profitability of the product mix offered by the firm. For example, There are two different companies brought forth their advertisements in offering the dealership to the individual trading firms *viz.* HCL and IBM.

The profitability under the dealership banner should be appropriately considered prior to take decision. To take rational decision, the firm should compare the profitability of



both different dealership of two different giant industrial brands. The greater the share of the profitability in volume will be selected and *vice versa*.

**Example:** From the following information has been extracted of EXCEL Rubber Products Ltd:

Direct materials A	Rs. 16
Direct Materials B	Rs. 12
Direct wages A	24 Hrs at 50 paise per hour
Direct wages B	16 Hrs at 50 paise per hour
Variable overheads	150% of wages
Fixed overheads	Rs. 1,500
Selling price A	Rs. 50
Selling price B	Rs. 40

The directors want to be acquainted with the desirability of adopting any one of the following alternative sales mixes in the budget for the next period:

- 250 units of A and 250 units of B
- 400 units of B only
- 400 units of A and 100 units of B
- 150 units of A and 350 units of B

State which of the alternative sales mixes you would recommend to the management?

**Solution:**

The first step is to determine the contribution margin per unit of A and B

The determination of the contribution of product A and B are through the preparation of Marginal costing statement.

Particulars	Product A	(Rs)	Product B	(Rs)
Selling price		50		40
Less: Direct Materials	16		12	
Direct wages	12		8	
Variable overheads	18		12	
Variable cost		46		32
Contribution		4		8

The next step is to determine the profit level of every mix

- 250 units of A and 250 units of B.

The first step is to determine the total contribution of the mix. Why the total contribution has to be found out?

The main reason is to determine the profit level of the mix through the deduction of the fixed overheads

	Rs.
Product of A 250 units × 4 =	1,000
Product of B 250 units × 8 =	2,000
Contribution	<u>3,000</u>
Fixed overheads	<u>1,500</u>
Profit	<u>1,500</u>

Notes

2.	400 units of B only		
	Product B Contribution 400 units × Rs.8 =		3,200
	Fixed overheads		<u>1,500</u>
	Profit		<u>1,700</u>
3.	400 units of A and 100 units of B		
	Product of A 400 units × Rs.4		1,600
	Product of B 100 units × Rs.8		<u>800</u>
	Contribution		2,400
	Fixed overheads		<u>1,500</u>
	Profit		<u>900</u>
4.	150 units of A and 350 units of B		
	Product A 150units × Rs.4		600
	Product B 350units × Rs.8		<u>2,800</u>
	Contribution		3,400
	Fixed overheads		<u>1,500</u>
	Profit		<u>1,900</u>

Mix	A	B	C	D
Contribution	Rs.1,500	1,700	900	1,900

The profit level among the given various mixes, the mix (d) is able to generate highest volume of profit over the others.

**Determining optimum level of operations:** Under this method, the level has to be found out which is having lesser selling price, cost of operations and greater profits known as optimum level of operations

## Pricing Decisions

Pricing which is part of the overall marketing strategy plays a very critical role in the success of a company as it is able to increase the profitability and or increase the market share.

Normally, the higher the prices means higher profit being attained but might means lower market share. Pricing ties very closely with the various stages of a product life cycle.

Before a decision on the pricing is made, certain factors need to be consider:

1. What are the objectives of the company — to maximize profit/to gain market share/ to penetrate the new market, etc.;
2. What are the existing economic conditions?
3. Any government regulations;
4. Cost structure of the organization;
5. Demand for the product which should includes a study of the price elasticity of demand;
6. Inflation;
7. Surplus production capacity;
8. Level of competition; and
9. Political scenario.

## Methods of Pricing

The various methods of pricing include the following:

1. Full cost pricing;
2. Variable/Marginal cost plus pricing;
3. Rate of return pricing;
4. Break-even pricing;
5. Minimum pricing

Notes

### Full Cost Pricing

Full Cost Pricing is a traditional method of pricing a product. It has following features:

1. Most commonly used method;
2. Prices are set by adding a percentage of profit (either a mark up or a margin) to the total cost of the product;
3. Consistent with the absorption costing technique;
4. Commonly used by wholesalers, retailers, construction contractors, services, government contractors.

Full Cost Pricing is useful in situation where:

1. Products are made based on specification by the customers;
2. Main objective is to make profit after considering fixed costs of the business;
3. The costs are difficult to estimate in advance;
4. Expected demand at different price levels is difficult to estimate.

**Example:** Let's look at Product A:

Production cost as follows:

Variable cost-material \$1.50

Variable cost-labor \$1.50

Total variable cost \$3.00

Fixed cost \$3.00

(excludes administrative and selling overheads)

Required 50% mark up on total production cost.

For Full-Cost Plus Pricing:

Total cost = \$ 3.00 + \$ 3.00 = \$ 6.00

50% on total/full cost = 50% × \$ 6.00 = \$ 3.00

Hence, Selling price = \$ 6.00 + \$ 3.00 = \$ 9.00 per unit.

By pricing at \$ 9.00, the company wants Product A to at least cover its total production cost.

Full Cost Pricing has many advantages. A few of them are as under:

1. Easy and simple to understand;
2. Pricing decisions become standardized;

3. Adopts a conservative approach that in the long run to at least ensure the recovery of fixed cost of a business;
4. Difficult of estimating demands can be avoided.

Notes

Like everything else, full cost pricing also has certain disadvantages which are as under:

1. Tendency to set prices on inaccurate estimates;
2. Challenges of apportioning the fixed overheads properly into different products;
3. Unsuitable for short term decisions making particularly in situation like surplus production capacity, tendering for contracts price and others;
4. Ignores competition and price elasticity of demand; and
5. Ignores opportunity costs and relevant costs.

### Variable/Marginal Cost Pricing

Under marginal Cost pricing, selling price is determined by adding a mark up or margin on the total variable costs (marginal cost). Its salient features are as under:

1. Based on the assumption that any price above variable cost would generate a certain level of contribution towards meeting fixed costs;
2. Consistent with the marginal costing technique;
3. When using this pricing method, need to be careful to ensure that it is sufficient to cover all fixed cost and to generate sufficient margin for profit otherwise the long-term survival of the business might be at stake.

*Example:* Let's look at Product A:

Production cost as follows:

Variable/direct material \$1.50

Variable/direct labor \$1.50

Variable Production overheads \$1.00

Variable Administrative overheads \$0.50

Variable Selling overheads \$0.10

Total variable costs \$4.60

Say required mark up of 65% \$3.00

Variable Cost Plus Pricing \$7.60

The selling price is determined at \$7.60 where the company wants Product A to at least cover its total variable cost and contribute towards recovery fixed costs and profit.

The Advantages of Variable/ Marginal Cost Pricing are as under:

1. As it adopts the margin cost approach, it provides better information as it segregate the variable and fixed costs;
2. Highlights the importance of contribution;
3. Useful for contract bidding where competition could be quite intense;
4. Eliminates the difficulty of computing fixed costs into the products.

Disadvantages of Variable/Marginal Cost Pricing:

1. For short-term pricing decision, it's alright otherwise needs to be very careful the pricing in the long-term can recover fixed costs and generate sufficient profit for the business;
2. Might be unsuitable for production costs consist a lot of fixed costs.

Notes

### Rate of Return Pricing

For this type of pricing, the company needs to specify the rate of return on its capital invested. Similar to Cost pricing, the difference is that the marked up will be based on the target rate of return. The salient features include:

1. The target rate of return varies with market norm or what management considers a fair return.
2. Useful method to use when a business has invested too much on the project or products.
3. However, difficult to use where a company has too many product lines or competes in many markets.

**Example:** Capital invested/employed \$2,000,000

Target return 10%

Estimated costs \$500,000

Mark up = 10% × \$2,000,000

\$500,000 = 40%

### Break-even Pricing

For this type of pricing, the price at which the products will break-even is used. This break-even price will then be added a profit mark up.

**Example:** If Fixed Cost \$25,000, Variable cost \$2.00 per unit, Number of Units produced 4,000 and Mark-up is 15% on the break-even price, what will be selling price to the customers?

**Solution:**

Break-even price = Fixed Cost + Variable Cost / Marginal Cost

Total Number of units produced = \$25,000 + \$8,000

4,000 = \$8.25 + mark up of 15% (\$1.24)

= \$9.50 which is the selling price to the customer.

### Minimum Pricing

For this type of pricing, the selling price is the lowest price that a company may sell its product. Normally the price will be the Total Relevant Costs of Manufacturing. Its salient features include:

1. Useful method in situations where there is a lot of intense competition, surplus production capacity, clearance of old stocks, getting special orders and or improving market share of the product.
2. Minimum Price is Incremental costs of manufacturing + Opportunity Costs (if any)

*Example:* Assuming the following details of product X:

	Material	\$2.50
	Labor (2 hrs. @ \$3.00)	\$6.00
Notes	Variable production overhead	\$2.50
	Fixed production overhead	\$1.20
	Total	\$9.70

Say that the labor is in short supply and is used for other product Y which generates a contribution of \$6 per unit and requires 2 hours of the same labor.

Material \$2.50

Labor \$6.00

Variable production overhead \$2.50

Add:

Opportunity cost from labor scarcity:

$\$6/2 \text{ hours} = \$3.00 \text{ per hr} \times 2 \text{ hr} = \$6.00$

Minimum price = \$17.00

## Summary

Marginal costing is one of the important tools of management not only to take decision, but also to fix an appropriate price and to assess the level of profitability. Marginal cost is nothing, but a change occurred in the total cost due to small change in the quantity produced. The cost-volume-profit analysis is a tool to show the relationship between various ingredients of profit planning. The crucial step in this analysis is the determination of break-even point. BEP is defined as the sales level at which the total revenue equals total cost. Pricing which is part of the overall marketing strategy plays a very critical role in the success of a company as it is able to increase the profitability and or increase the market share. Before determining prices certain important factors should be taken care of. The various methods of pricing include the following: Full cost pricing; Variable/Marginal Cost Plus pricing; Rate of Return Pricing; Break-even Pricing; Minimum Pricing, etc

## Keywords

**BEP (Units):** It is the level of units at which the firm neither incurs a loss nor earns profit

**BEP (Volume):** It is the level of sales in Rupees at which the firm neither incurs a loss nor earns profit.

**Contribution:** It is an amount of balance available after the deduction of variable cost from the sales.

**Desired Profit:** It is a profit level desired by the firm to earn at the given level of sales volume.

**Fixed Cost:** It is a cost which is fixed or remains the same for irrespective level of production.

**Key Factor:** Factor of influence on the component of contribution.

**Marginal Cost:** Change occurred in the cost of operations due to change in the level of production.

**PV Ratio:** Profit volume ratio which is nothing but the ratio in between the contribution and sales.

**Variable Cost:** It varies along with the level of production.



## Review Questions

1. SV Ltd. a multi-product company, furnishes you the following data relating to the year 1979:

Particulars	First half of the year	Second half of the year
Sales	Rs. 45,000	Rs. 50,000
Total cost	Rs. 40,000	Rs. 43,000

Notes

Assuming that there is no change in prices and variable costs that the fixed expenses are incurred equally in the two half year periods calculate for the year 1979.

Calculate:

- PV ratio
  - Fixed expenses
  - Break even sales
  - Margin of safety
2. A refrigerator manufacturer purchases a certain component @ Rs. 50 per unit. If he manufactures the same product he has to incur a fixed cost of Rs. 20,000 and variable cost per unit is Rs. 40 when can the manufacturer make on his own or when he can buy from outside?

When the requirements is Rs. 5,000 units, will you advise to make or buy?

3. From the following data, which product would you recommend to be manufactured in a factory, time being the key factor?

Particulars	Per unit of Product A (Rs)	Per unit of Product B R(₹)
Direct Material	24	14
Direct Labour @ Re. 1 per hr	2	3
Variable overhead Rs.2 per hr	4	6
Selling price	100	110
Standard time to produce	2 Hours	3 Hours

4. The following particulars are obtained from costing records of a factory:

Particulars	Per unit of Product A (Rs)	Per unit of Product B (Rs)
Direct Material Rs.20 per Kg	80	320
Direct Labor @ Rs. 10 per hr	100	200
Variable overhead	40	80
Selling price	400	1,000
Total fixed overheads	Rs.30,000	

5. A factory engaged in manufacturing plastic buckets is working at 40% capacity and produces 10,000 buckets per annum.

The present cost break up for bucket is as under

Material	Rs. 10
Labour	Rs. 3
Overheads	Rs. 5(60% fixed)

The selling price is Rs. 20 per bucket.

Notes

If it is decided to work the factory at 50% capacity, the selling price falls by 3%. At 90% capacity the selling price falls by 5% accompanied by a similar fall in the prices of material.

You are required to calculate the profit at 50% and 90% capacities and also calculate break even point for the same capacity productions.

6. Analyse the important of the following in relation to break-even analysis:
  - (a) Break-even point
  - (b) Margin of safety
  - (c) Profit volume ratio
7. Illustrate the graphic approach of BEP analysis.
8. Examine the concept of the profit volume ratio.
9. Examine the various kinds of managerial decisions.
10. "Pricing plays a very important role in the marketing strategy of a firm and a significant one in the overall success." Evaluate the statement.

### **Further Readings**

M.P. Pandikumar, *Management Accounting*, Excel Books.

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# Unit 21 Activity-based and Target- based Costing

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## Unit Structure

- Introduction
- Concept of Activity-based Costing
- Target Costing
- Summary
- Keywords
- Review Questions
- Further Readings

## Learning Objectives

At the conclusion of this unit, you should be able to:

- Explain the concept of activity-based costing
- Describe the Uses of activity-based costing
- State the model of activity-based costing
- Explain the concept of target-based costing
- Identify the process of target-based costing
- Recognise the tools and techniques involved in target-based costing

## Introduction

Activity Based Costing (ABC) is an accounting technique that allows an organization to determine the actual cost associated with each product and service produced by the organization without regard to the organizational structure. It is developed to provide more-accurate ways of assigning the costs of indirect and support resources to activities, business processes, products, services, and customers. ABC systems recognize that many organizational resources are required not for physical production of units of product but to provide a broad array of support activities that enable a variety of products and services to be produced for a diverse group of customers. The goal of ABC is not to allocate common costs to products. The goal is to measure and then price out all the resources used for activities that support the production and delivery of products and services to customers.

## Concept of Activity-based Costing

An organization performs activities to do its business. These activities define the kind of business you are in: a ship owner has an activity to unpack boats; an accounting firm prepares tax returns; a manufacturer produces products; a council delivers services; a university teaches students. All activities consume resources. It is the consumption of these resources that adds to overhead costs.

Notes

The basis of Activity Based Costing is look at the activities required to produce the cost of the product or service. The activities consume resources and the cost of these can be calculated. The amount of activity required for each product and service is determined, hence the real cost can be determined.

### What's in ABC?

1. The activity is the work that is done.
2. The resource is what the activity uses to do the work e.g. people, equipment, and services, resources cost money.
3. The cost of the activity depends on the quantity of resources used to accomplish the activity.
4. The cost driver for an activity is the factor that influences the amount of the resources that will be consumed by this activity.

- (a) The activity is delivering goods.

*Example:* The costs of this activity include the truck drivers' wages, fuel, depreciation of the truck, insurance, etc. The quantities of the resources that will be consumed by this activity are influenced by the number of deliveries made per year. Hence the cost driver could be the number of deliveries. A cost driver is designed to allocate the delivery activity cost pool to the cost objects.

- (b) The activity driver measures how much of the activity is used by the cost object.

*Example:* Product A is delivered once a month, whereas product B is delivered once a week. Products A and B require a different number of deliveries, hence the cost of the delivery activity should be assigned to each product on the basis of the number of deliveries each uses.

- (c) The cost object is whatever it is you wish to cost. It could be a product, service, process, job or customer.

While traditional costing arbitrarily allocates overhead costs, ABC traces overhead costs by looking at the activities that each product and service calls upon. With ABC the products consume the activities. It is the activities that cost money.

### Uses of Activity-based Costing

Activity-based Costing is necessary for the following reasons:

1. Understand true profitability of the customers, products, or services.
2. Quantify the cost of non-value added activities such as errors and reworks.
3. Identify opportunities to reduce costs and /or increase efficiency.
4. Obtain actionable information to negotiate price increases for unprofitable clients.
5. Understand why profitability may be mediocre despite good strategic fundamentals.
6. Stratify overhead costs so they can be managed more effectively.

### ABC Model

The first stage in an initial ABC study is to develop a fundamental understanding of the Resources (expenditures) and Activities (work performed) of an organization. The Resources are then mapped to the Activities, thereby quantifying the cost of performing each of these Activities. These costs are traced to Cost Objects (customers, products, or services) providing tremendous insight into where an organization is making and losing money.

The objective of an ABC implementation is to relate all of the costs of doing business to products, services, or customers. Developing the initial model consists of the following five steps:

1. Identify the Resources (expenditures) of an organization
2. Determine Activities (work performed) that are supported by Resources
3. Define Cost Objects (products, services, customers)
4. Develop Resource Drivers to link Resources to Activities
5. Develop Cost Drivers to link Activities to Cost Objects

These steps are discussed in greater length below.

### **Step 1: Identify Resources**

Resources represent the expenditures of an organization. Examples include production labor, sales and marketing labor, occupancy and utilities, equipment, and supplies. These are the same costs that are represented in a traditional accounting view; unlike traditional accounting, ABC links these costs to products, customers, or services.

### **Step 2: Identify Activities**

Activities represent the work performed in an organization. ABC Activities for the sales department in a typical organization might include:

1. Making sales calls to existing customers
2. Making sales calls to potential customers
3. Making customer service calls
4. Training product representatives
5. Evaluating products and improving product knowledge
6. Distributing samples
7. Attending trade shows and other events

Traditional accounting will often break the cost of the sales department into salaries, benefits, allocated rent, supplies, and so on. Unlike traditional accounting, which reports what the costs are (i.e. salaries, benefits, rent), ABC accounts for these costs based on what activities caused them to occur. By determining the actual activities that occur in various departments, such as accounting, customer service, and sales, it is then possible to more accurately relate these costs to customers, products, and services.

### **Step 3: Identify Cost Objects**

ABC provides profitability by one or more cost object, usually represented by products, customers, and/or services.

Cost Object profitability is utilized to identify money losing customers, to validate separate divisions or business units, or to measure the performance of individual projects, jobs, or contracts. Defining the outputs to be viewed is an important step in a successful ABC implementation.

### **Step 4: Determine Resource Drivers**

Resource Drivers provide the link between the expenditures of an organization and the activities performed within the organization.

**Example:** The total salary of a customer service representative would likely be allocated to the Activities performed based on the amount of time spent performing the Activity. If 50%

Notes

of her time is spent performing the activity, taking orders for existing customers, 50% of her salary (including all costs such as benefits, taxes, and insurance) would be allocated to this Activity.

## Notes

### Step 5: Determine Cost Drivers

Determination of Cost Drivers completes the last stage of the model. Cost Drivers trace, or link, the cost of performing certain Activities to Cost Objects.

**Example:** Taking orders for existing customers may be linked to specific customers based on the number of orders taken, if each order takes approximately the same amount of time. If order taking time varies based on the customer, this cost may be linked based on another driver or multiple drivers.

## Target Costing

Target Costing is a disciplined process that uses data and information in a logical series of steps to determine and achieve a target cost for the product. In addition, the price and cost are for specified product functionality, which is determined from understanding the needs of the customer and the willingness of the customer to pay for each function.

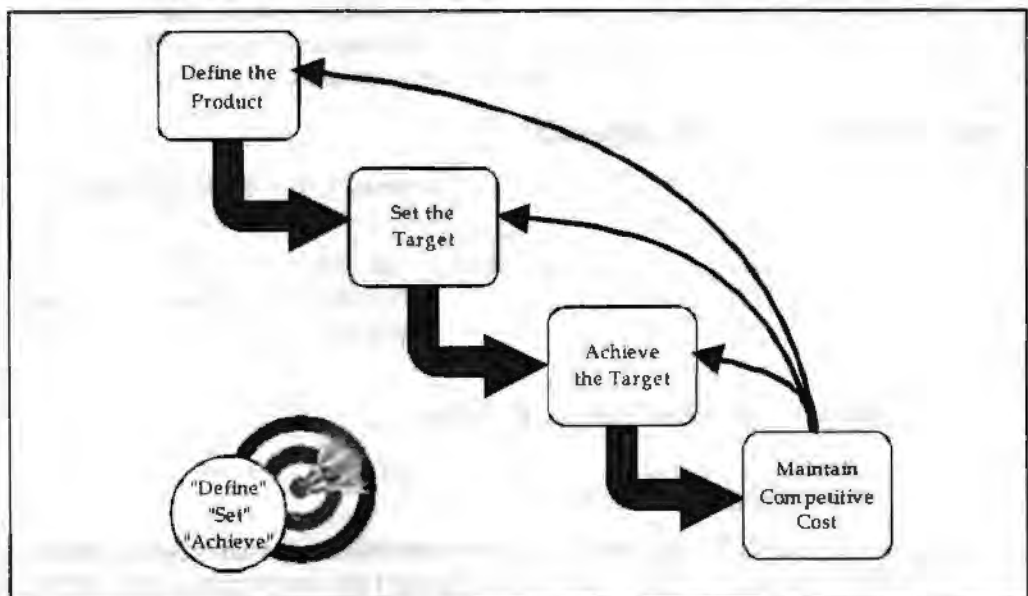
Another interesting aspect of Target Costing is its inherent recognition that there are important variables in the process that are essentially beyond the control of the design group or even the company.

**Example:** The selling price is determined by the marketplace – the global collection of customers, competitors and the general economic conditions at the time the product is being sold.

The desired profit is another variable that is beyond the control of the design organization. It may be set at the corporate level. It is influenced by the expectation of the stockholders and the financial markets. And, the desired profit is benchmarked against others in the same industry and against all businesses. In this complicated environment, it is the role of Target Costing to balance these external variables and help develop a product at a cost that is within the constraints imposed. In short, traditional approaches, such as simple "cost-plus" is a recipe for market failure, and giving the customers more than they are willing to pay for is a recipe for insolvency.

### The Basic Process

The following figure shows at a high level the basic stages in the Target-Costing process:





The stages are market-driven:

**Stage 1: Define the Product:** answers the fundamental questions of

"What are you selling?"

"To whom?"

"What do they want it to do?"

**Stage 2: Set the Target:** addresses the issue of

"What will they pay for it?"

"What should it cost to produce?"

**Stage 3: Achieve the Target:** is concerned with

"How can we get there?"

"Are we getting there?"

**Stage 4: Maintain Competitive Cost:** deals with

"How can we stay ahead?"

One of the key points is that the target cost is the dependent variable. The market-based price must be determined first, then the desired profitability. Finally, the Target Cost is simply the Price minus the Profit. This may seem elementary, but many firms still fall into the trap of first determining the cost of their design, adding a profit margin and letting the sum be the price.

## When are Costs Set?

Target Costing recognizes that the costs of a product are established very early in the development cycle. We have seen that by the time a product reaches the manufacturing stage – where traditional cost-reduction takes place – most of the costs are "locked in", and it is quite difficult to find substantial cost improvements. In fact, much of the cost of a product is determined in the early stages of defining the product concept and determining the customer requirements – well before the detailed design is started. Target Costing should begin at the very beginning of the so-called "fuzzy front end" of the product-realization process. That is when it is most important to get the product and its functional architecture right the first time. We have found a strong correlation between the cost savings obtained and how early in the product-realization cycle Target Costing was initiated. The moral: start early!

## Tools and Techniques

Target Costing is a largely quantitative process. There are many tools and techniques that can be used. Some examples used in the various Target-Costing steps include:

**Define the Product** – Conjoint Analysis, Quality Function Deployment, Market Analysis, Competitor Analysis, Product Roadmapping, Market-Feature Tables.

**Set the Target** – Conjoint Analysis, Experience Curves, Price Roadmapping, Competitive Intelligence, Reverse Engineering.

**Achieve the Target** – Value Engineering & Analysis, Component Roadmapping, Cost Analysis Tools, ABC Practices, Simulation Tools, Supply-Chain Analysis.

**Maintain Competitive Cost** – Cost-Reduction Methodology.

**Mapping the Product to the Market** – While it is not as quantitative as some of the other tools, we have found the Market-Feature Table to be a simple but powerful way to focus on customer needs. A depiction is shown below, for one market segments.

Notes

	MARKET SEGMENTS		
	Market 1 (# of customers)	Market 2 (# of customers)	Market 3 (# of customers)
<b>Premium:</b> Further additional features desired by some customers will to pay a premium price	Feature L Feature M ... (2,000)	... ... ... (200)	... ... ... (20)
<b>Step-up:</b> Additional features desired to some customers who are willing to pay a higher price	Feature H Feature I Feature J ... (200,000)	... ... ... (20,000)	... ... ... (2,000)
<b>Basic:</b> Features desired by all customers, that they are all willing to pay for.	Feature A Feature B Feature C Feature D ... (2,000,000)	... ... ... ... (200,000)	... ... ... ... (20,000)

The idea is to map the features desired by different market segments onto a single page. This forces you to concentrate on the really important features or functionalities at a high level. The Market for the potential product is divided into "natural" market segments. These distinctions may be by geographic region, by customer's type of business, by consumer-government-business, by relative customer affluence, etc. Then the features desired by each market segment are divided into three categories:

**Basic** - features desired by all customers in the segment, that they are all willing to pay for.

**Step-up** - additional or optional features desired by some customers in the segment who are willing to pay a higher price to get them.

**Premium** - further optional features that a few customers want, and that carry a premium price.

The size of the market in each category is also listed, in terms of number of potential units that can be sold, or by potential revenues.

It is very important to separate the optional features from the basic ones, because if you make an optional feature - that only some customers want - part of the basic product, you will either force all customers in that segment to pay for it, or you will be giving it away. It is also important to establish - and achieve - the target cost for the basic product, because that is where most of the sales or revenues will be and so that is where you have to capture market share while remaining profitable. Finally, we contend that a Market-Feature Table should play as great a role in determining the architecture of a product as do physical and engineering considerations.

### First, Price

Once you have established the high-level product requirements, the next step is to establish the market price for the time at which the product is going to be sold. We have found that Experience Curves (sometimes called Learning Curves) are very helpful. In this approach, the historical market price of the product is plotted as a function, not of calendar time, but of the industry's cumulative sales of the product. On a log-log plot, the result is usually a straight line that is a very reliable predictor of prices for some time into the future. Note that often you should not always use the quantities of the product as the "sales", but some key parameter that represents the functionality that the customer is really buying and which is really driving the industry's experience. For example, in the famous "Moore Curve" showing the decrease in price of semiconductor memory, the price per bit of memory is plotted against the cumulative bits that have been sold. (It is not a plot of price per memory chip vs. the cumulative number of chips - the customers are really buying memory

bits, not packaged ICs.) If the product were cellular telephone network equipment, you would plot the price of the equipment divided by the number of subscribers that it can serve vs. the cumulative number of cell-phone subscribers in the world.

There are other ways to help triangulate on likely prices. Conjoint Analysis is quite quantitative, and it gives insights about customers' willingness to pay for various specific features and capabilities. Other methods include gleaning information from bids and proposals, competitor's prices, reverse engineering, comparable technologies or products that do similar things, analyst's reports, and so on.

Notes

## Then, Cost

When you have determined the price for the time when the product will be sold, you can set the target cost. It is important to first decide how much of the company's cost elements to include. Traditionally, people have looked only at Cost of Goods Sold (COGS), the cost of the raw materials and purchased subsystems that go into a product plus the "conversion costs" (labor and manufacturing overheads). In that case, you only need to know the healthy gross margin rate required by the company in order to calculate the target cost ( $= \text{Price} * [100\% - \text{G.M.\%}]$ ). However, we have found it better to try to capture as much of the company's costs as possible (e.g.: engineering, installation, transportation, tariffs & duties, R&D, marketing & sales, taxes, etc.) If you use the company's required net margin then you can establish a full-stream target cost. The benefit is that, as ways to reach the target cost are explored, it is possible that design and other choices can significantly reduce costs that lie beyond the area of COGS. It goes without saying that Activity-Based Costing (ABC), if the company uses it, makes this cost decomposition more meaningful and effective.

Once you have set the overall target cost, the next step is to set cost targets for each of the components, subsystems and elements that go into making up the set of full-stream costs that are being included. We have found that Value Engineering is a valuable tool to assist in this step. Space does not permit a detailed explanation here. But the basic concept is to create a matrix that relates different product features to the various elements that make up the product. The cells of the matrix are filled with the extent (percent) to which each of the elements contributes to each feature. Then, knowing the relative importance (to the customers) of each feature, and applying some matrix multiplication it is possible to get a suggestion of the cost target for each product element. Comparing those costs with current or projected costs (again, ABC helps substantially) you can discover which elements need the most attention in cost-reduction efforts – based on an understanding of their relative importance to the customer.

*Example:* If 35% of the value to the customer is derived from a single feature, this feature is allocated 35% of the cost of the product. Actual mapping of the product features to product cost is a bit more complicated in practice but this is the basic point.

## Finding Paths to the Targets

At this point, you have a clear idea of what the customers want and what they are willing to pay, a target for the price, and cost targets for the significant elements that are part of the product's cost structure. Frequently it becomes evident that the cost of the product will be too high to sustain a healthy profit. In that case it is necessary to find ways to take cost out of the product without sacrificing capability or quality.

In such case, a cross-functional team approach is best. It is best to use individuals from all the stakeholder organizations – product management, marketing, sales, engineering, design, manufacturing, installation, etc. It is also very beneficial to include subject-matter experts from outside the organizations directly involved in the specific product – they bring fresh ideas and outlooks to the table. Such individuals could even come from suppliers. Once the business needs and target-setting has been laid out before the team, we recommend that it use proper brainstorming techniques to generate cost-reducing

ideas. We also recommend that sub-teams, each focused on a specific major product element, have separate brainstorming sessions.

At this point, for fairly complex products, we find that we typically have 100-150 cost-reducing ideas. Then the sub-teams must evaluate the ideas – that is, eliminate redundant and clearly infeasible ones, determine the cost impact of the remainder, and estimate how much incremental effort (if any) it will take to implement them. This usually takes a few weeks. At the end of the evaluation phase, the teams should report to the management their target-cost goals, the ideas to close the cost gaps, and the plan to implement the ideas.

### Maintaining Cost

Through the rest of the product-development phase the cross-functional teams are responsible for implementing the cost-reduction ideas, and seeing that the product stays within its cost targets. It is especially important to resist "feature creep" – the temptation to add incremental features to the product. It is one thing if a customer wants a new feature and is willing to pay for it. But if it is deemed necessary to add a feature without increasing the price, then the team has to accept the challenge of finding further cost reductions in order to still achieve the target cost.

#### Student Activity

Analyse your most favourite products in the FMCG industry. What do you think is the better way to go for their accounting and why?

### Summary

Activity-based Costing (ABC) is a costing model that identifies activities in an organization. It assigns the cost of each activity resource to all products and services according to the actual consumption by each: it assigns more indirect costs (overhead) into direct costs.

In this way an organization can establish the true cost of its individual products and services for the purposes of identifying and eliminating those which are unprofitable and lowering the prices of those which are overpriced. In a business organization, the ABC methodology assigns an organization's resource costs through activities to the products and services provided to its customers. It is generally used as a tool for understanding product and customer cost and profitability.

As such, ABC has predominantly been used to support strategic decisions such as pricing, outsourcing and identification and measurement of process improvement initiatives. Target costing is a simple, straightforward process that can have significant impact on the health and profitability of many, if not most, businesses. It doesn't require an army of specialists, large-scale software implementations, or complex management structures and procedures.

It's mostly logical, disciplined common sense that can be imbedded into a company's existing procedures and processes.

### Keywords

**Constraint:** A constraint is a restriction on the degree of freedom you have in providing a solution.

**Cost Object:** A cost object is a tangible input for a product manufactured / service provided, like labor or material.

**Resource Driver:** Activity based costing measure of quantity of resource consumed or required by an activity.



**Experience Curve:** Graph that depicts the 'experience effect' (increases in productivity) as reflected in reduced average and marginal costs.

## Review Questions

Notes

1. Sparkling Housecleaning provides housecleaning services to its clients. The company uses an activity-based costing system for its overhead costs. The company has provided the following data from its activity-based costing system.

Activity Cost Pool	Cleaning	Job support	Client support	Other	Total
Total Cost	\$645,576	\$129,546	\$ 20,900	\$110,000	\$906,022
Total Activity	72,700 hrs	5,400 jobs	760 clients	Not applicable	

The "Other" activity cost pool consists of the costs of idle capacity and organization-sustaining costs.

One particular client, the Lotus family, requested 31 jobs during the year that required a total of 62 hours of housecleaning. For this service, the client was charged \$1,620.

Using the activity-based costing system, compute the customer margin for the Lotus family. Round off all calculations to the nearest whole cent.

2. Assume the company of question 7 decides instead to use a traditional costing system in which all costs are allocated to customers on the basis of cleaning hours. Compute the margin for the Lotus family. Round off all calculations to the nearest whole cent.
3. "One of the key points in target based costing is that the target cost is the dependent variable." What is so important about the statement? Analyse and answer.
4. "A fundamental shift in performance often needs a radical change in the way an organisation is managed." Comment.
5. "Historically, target costing has been developed and used in manufacturing companies." Does this imply that target based costing is less/not useful for non-manufacturing companies?

## Further Readings

Kaplan, R.S. and Cooper, R., *Make Cost Right: Make the Right Decisions*, Harvard Business Review, September-October 1988

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# Unit 22 Contemporary Issues in Management Accounting

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## Unit Structure

- Introduction
- Life Cycle Costing
- Quality Costing
- Kaizen Costing
- Throughput Costing
- Backflush Costing
- Summary
- Keywords
- Review Questions
- Further Readings

## Learning Objectives

At the conclusion of this unit, you should be able to:

- Define life cycle costing
- Explain the meaning of quality costing
- Define Kaizen costing
- Describe throughput costing
- Explain backflush costing

## Introduction

There are many contemporary issues in accounting which are a must for every manager today. These are considered to be very important with the increasing importance of concepts like those of quality control and cost effectiveness.

Let us look at some such issues in this unit.

## Life Cycle Costing

Whole-life cost refers to the total cost of ownership over the life of an asset. It is also commonly referred to as "cradle to grave" or "womb to tomb" costs. Typical areas of expenditure which are included in calculating the whole-life cost are:

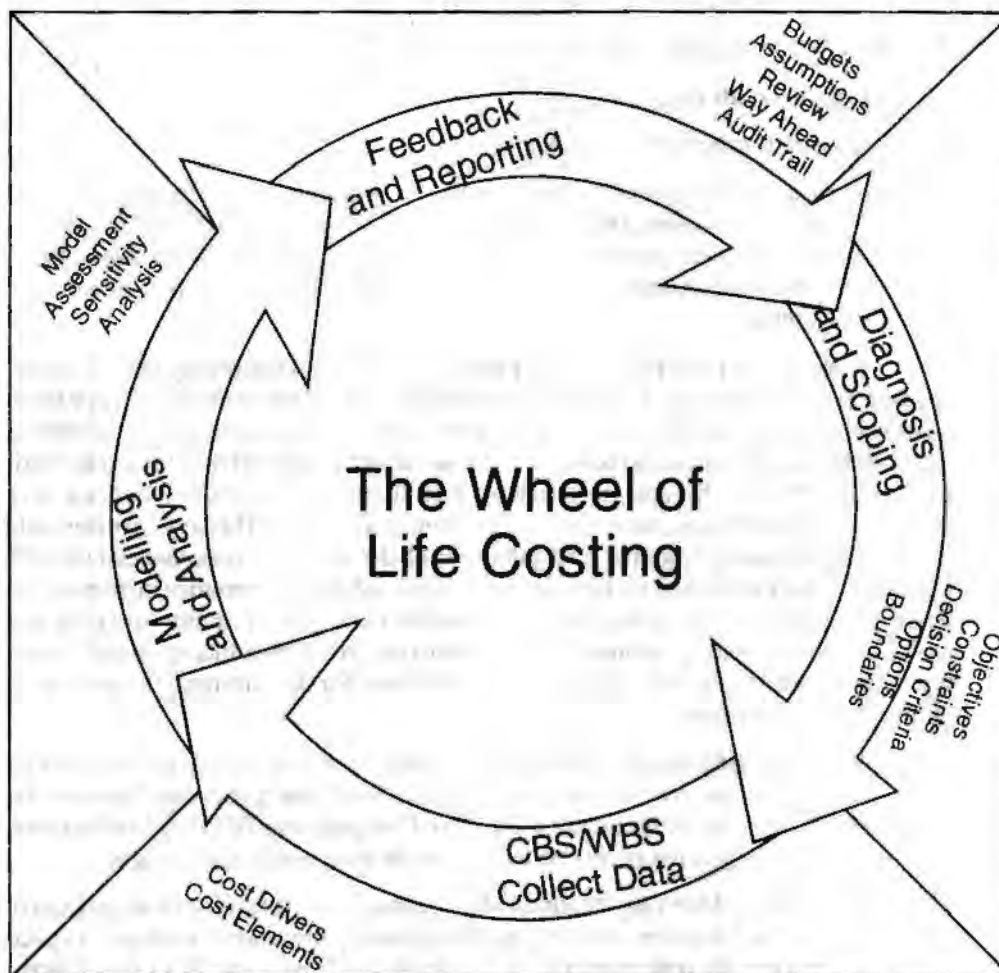
1. Planning
2. Design
3. Construction/acquisition



4. Operations
5. Maintenance
6. Renewal/rehabilitation
7. Financial (e.g. depreciation and cost of finance)
8. Replacement or disposal

Whole-life cost is most commonly used for:

1. option evaluation when procuring new assets,
2. decision-making to minimise whole-life costs throughout the life of an asset,
3. comparison of actual costs for similar asset types, as feedback into future design and acquisition decisions.



### **Advantages**

The primary benefit of whole-life costing is that costs which occur after an asset has been constructed or acquired, such as maintenance, operation, disposal, become an important consideration in decision-making. Previously, the focus has been on the up-front capital costs of creation or acquisition, and organisations may have failed to take account of the longer-term costs of an asset. It allows an analysis of business function interrelationships. Low development costs may lead to high maintenance or customer service costs in the future.

Notes

1. Whole-life costing is a key component in the economic appraisal associated with evaluating asset acquisition proposals. An economic appraisal is generally a broader based assessment, considering benefits and indirect or intangible costs as well as direct costs. In this way, the whole-life costs and benefits of each option are considered and usually converted using discount rates into present-value costs and benefits. This results in a benefit cost ratio for each option, usually compared to the "do-nothing" counterfactual. Typically the highest benefit-cost ratio option is chosen as the preferred option.
2. During the life of the asset, decisions about how to maintain and operate the asset need to be taken in context with the effect these activities might have on the residual life of the asset. If by investing 10% more per annum in maintenance costs the asset life can be doubled, this might be a worthwhile investment.

Other issues which influence the lifecycle costs of an asset include:

- (a) site conditions,
- (b) historic performance of assets or materials,
- (c) effective monitoring techniques,
- (d) appropriate intervention strategies.

Although the general approach to determining whole-life costs is common to most types of asset, each asset will have specific issues to be considered and the detail of the assessment needs to be tailored to the importance and value of the asset. High cost assets (and asset systems) will likely have more detail, as will critical assets and asset systems.

3. In IT, whole-life cost is often referred to as "Total Cost of Ownership (TCO)" when applied to IT hardware and software acquisitions. Use of the term "TCO" appears to have been popularised by Gartner Group as a concept with a number of different methodologies and software tools. A TCO assessment ideally offers a final statement reflecting not only the cost of purchase but all aspects in the further use and maintenance of the equipment, device, or system considered. This includes the costs of training support personnel and the users of the system, costs associated with failure or outage (planned and unplanned), diminished performance incidents (i.e. if users are kept waiting), costs of security breaches (in loss of reputation and recovery costs), costs of disaster preparedness and recovery, etc. When incorporated in any financial benefit analysis TCO provides a cost basis for determining the economic value of that investment.
4. Total cost of ownership is also common in the automobile industry. In this context, the TCO denotes the cost of owning a vehicle from the purchase, through its maintenance, and finally its sale as a used car. Comparative TCO studies between various models help consumers choose a car to fit their needs and budget.

TCO can and often does vary dramatically against TCA (total cost of acquisition), although TCO is far more relevant in determining the viability of any capital investment, especially with modern credit markets and financing. TCO also directly relates to a business's total costs across all projects and processes and, thus, its profitability. Some instances of "TCO" appear to refer to "total cost of operation", but this may be a subset of the total cost of ownership if it excludes maintenance and support costs.

## Quality Costing

Quality costs are the costs associated with preventing, finding, and correcting defective work. These costs are huge, running at 20% - 40% of sales. Many of these costs can be significantly reduced or completely avoided. One of the key functions of a Quality Engineer is the reduction of the total cost of quality associated with a product.

Quality costs may be of following types:

1. **Prevention Costs:** Costs of activities that are specifically designed to prevent poor quality. Examples of "poor quality" include coding errors, design errors, mistakes in the user manuals, as well as badly documented or unmaintainably complex code.
2. **Appraisal Costs:** Costs of activities designed to find quality problems, such as code inspections and any type of testing.
3. **Failure Costs:** Costs that result from poor quality, such as the cost of fixing bugs and the cost of dealing with customer complaints. Failure costs can be classified as following:

- (a) **Internal Failure Costs:** Failure costs that arise before your company supplies its product to the customer. Along with costs of finding and fixing bugs are many internal failure costs borne by groups outside of Product Development. If a bug blocks someone in your company from doing her job, the costs of the wasted time, the missed milestones, and the overtime to get back onto schedule are all internal failure costs.

*Example:* If your company sells thousands of copies of the same program, you will probably print several thousand copies of a multi-color box that contains and describes the program. You (your company) will often be able to get a much better deal by booking press time with the printer in advance. However, if you don't get the artwork to the printer on time, you might have to pay for some or all of that wasted press time anyway, and then you may have to pay additional printing fees and rush charges to get the printing done on the new schedule. This can be an added expense of many thousands of rupees.

- (b) **External Failure Costs:** External Failure Costs include failure costs that arise after your company supplies the product to the customer, such as customer service costs, or the cost of patching a released product and distributing the patch.

External failure costs are huge. It is much cheaper to fix problems before shipping the defective product to customers. Some of these costs must be treated with care.

*Example:* The cost of public relations efforts to soften the publicity effects of bugs is probably not a huge percentage of your company's PR budget. You can't charge the entire PR budget as a quality-related cost. But any money that the PR group has to spend to specifically cope with potentially bad publicity due to bugs is a failure cost.

4. **Total Cost of Quality: The sum of costs:**

Prevention + Appraisal + Internal Failure + External Failure.

## Examples of Quality Costs Associated with Software Products

Notes

Prevention	Appraisal
<ul style="list-style-type: none"> <li>● Staff training</li> <li>● Requirements analysis</li> <li>● Early prototyping</li> <li>● Fault-tolerant design</li> <li>● Defensive programming</li> <li>● Usability analysis</li> <li>● Clear specification</li> <li>● Accurate internal documentation</li> <li>● Evaluation of the reliability of development tools (before buying them) or of other potential components of the product</li> </ul>	<ul style="list-style-type: none"> <li>● Design review</li> <li>● Code inspection</li> <li>● Glass box testing</li> <li>● Black box testing</li> <li>● Training testers</li> <li>● Beta testing</li> <li>● Test automation</li> <li>● Usability testing</li> <li>● Pre-release out-of-box testing by customer service staff</li> </ul>
Internal Failure	External Failure
<ul style="list-style-type: none"> <li>● Bug fixes</li> <li>● Regression testing</li> <li>● Wasted in-house user time</li> <li>● Wasted tester time</li> <li>● Wasted writer time</li> <li>● Wasted marketer time</li> <li>● Wasted advertisements</li> <li>● Direct cost of late shipment</li> <li>● Opportunity cost of late shipment</li> </ul>	<ul style="list-style-type: none"> <li>● Technical support calls</li> <li>● Preparation of support answer books</li> <li>● Investigation of customer complaints</li> <li>● Refunds and recalls</li> <li>● Coding/testing of interim bug fix releases</li> <li>● Shipping of updated product</li> <li>● Added expense of supporting multiple versions of the product in the field</li> <li>● PR work to soften drafts of harsh reviews</li> <li>● Lost sales</li> <li>● Lost customer goodwill</li> <li>● Discounts to resellers to encourage them to keep selling the product</li> <li>● Warranty costs</li> <li>● Liability costs</li> <li>● Government investigations</li> <li>● Penalties</li> <li>● All other costs imposed by law</li> </ul>

**What makes this Approach Powerful?**

Over the long term, a project (or corporate) cost accounting system that tracks quality-related costs can be a fundamentally important management tool. There is significant benefit in using the language and insights of quality cost analysis, on a project/product by project/product basis, even in a company that has no interest in Total Quality Management or other formal quality management models.

*Example:* Suppose you are a software developer and you find that some feature has been designed in a way that you believe will be awkward and annoying for the customer. You raise the issue and the project manager rejects your report as subjective. It's "not a bug." Where do you go if you don't want to drop this issue? One approach is to keep taking it to higher-level managers within product development (or within the company as a whole). But without additional arguments, you'll often keep losing, without making any friends in the process.

Suppose that you change your emphasis instead. Rather than saying that, in your opinion, customers won't be happy, collect some other data:

*Ask the writers:* Is this design odd enough that it is causing extra effort to document? Would a simpler design reduce writing time and the number of pages in the manual?

*Ask the training staff:* Are they going to have to spend extra time in class, and to write more supplementary materials because of this design?

*Ask Technical Support and Customer Service:* Will this design increase support costs? Will it take longer to train support staff? Will there be more calls for explanations or help? More complaints? Have customers asked for refunds in previous versions of the product because of features designed like this one?

**Check for related problems:** Is this design having other effects on the reliability of the program? Has it caused other bugs? Made the code harder to change? (Ask the programmers.)

**Ask the sales staff:** If you think that this feature is very visible, and visibly wrong, ask whether it will interfere with sales demonstrations, or add to customer resistance.

**What about magazine reviews?** Is this problem likely to be visible enough to be complained about by reviewers? If you think so, check your impression with someone in Marketing or PR.

You won't get cost estimates from everyone, but you might be able to get ballpark estimates from most, along with one or two carefully considered estimates. This is enough to give you a range to present at the next project meeting, or in a follow-up to your original bug report.

By the above example, you can notice the difference in your posture:

1. You're no longer presenting your opinion that the feature is a problem. You're presenting information collected from several parts of the company that demonstrates that this feature's design is a problem.
2. You're no longer arguing that the feature should be changed just to improve the quality. No one else in the room can posture and say that you're being "idealistic" whereas a more pragmatic, real-world businessperson wouldn't worry about problems like this one. Instead, you're the one making the hard-nosed business argument, "This design is going to cost us Rs X in failure costs. How much will it cost to fix it?"
3. Your estimates are based on information from other stakeholders in this project. If you've fairly represented their views, you'll get support from them, at least to the extent of them saying that you are honestly representing the data you've collected.

Along with arguing about individual problem, or groups of problems, this approach opens up opportunities for you to make business cases on several other types of issues.

**Example:**

1. The question of who should do unit testing can be phrased and studied as a cost-of-quality issue. In the above example, the programmers, the testers, or no one. The programmers might be more efficient than testers who don't know the code, but the testers might be less expensive per hour than the programmers, and easier to recruit and train, and safer (unlike newly added programmers, new testers can't write new bugs into the code) to add late in the project.
2. The depth of the user manual's index is a cost-of-quality issue. An excellent index might cost 35 indexer-minutes per page of the manual (so a 200 page book would take over three person-weeks to index). Trade this cost against the reduction in support calls because people can find answers to their questions in the manual.
3. The best investment to achieve better quality might be additional training and staffing of the programming group (prevent the problems rather than find and fix them).
4. You (in combination with the Documentation, Marketing, or Customer Service group) might demonstrate that the user interface must be fixed and frozen sooner because of the impact of late changes on the costs of developing documentation, packaging, marketing collaterals, training materials, and support materials.

## Implementation Risks

Gryna and Juran & Gryna point out several problems that have caused cost-of-quality approaches to fail. Two most important of them are mentioned here:

*First*, it's unwise to try to achieve too much, too fast.

*Second*, beware of insisting on controversial costs. There are several types of costs that other managers might challenge as not being quality-related. If you include these costs in



your totals (such as total cost of quality), some readers will believe that you are padding these totals, to achieve a more dramatic effect. But if you do not include them, it can lead you to underestimate your customer's probable dissatisfaction with your product.

## Notes

### Disadvantages of Quality Cost Analysis

Quality Cost Analysis looks at the company's costs, not the customer's costs. The manufacturer and seller are definitely not the only people who suffer quality-related costs. The customer suffers quality-related costs too. If a manufacturer sells a bad product, the customer faces significant expenses in dealing with that bad product.

#### Case: General Motors Corp.

In the case of General Motors Corp. v. Johnston (1992), filed in US court, it was stated that a PROM controlled the fuel injector in a pickup truck. The truck stalled because of a defect in the PROM and in the ensuing accident, Johnston's seven-year old grandchild was killed.

The Alabama Supreme Court justified an award of \$7.5 million in punitive damages against GM by noting that GM "saved approximately \$42,000,000 by not having a recall or otherwise notifying its purchasers of the problem related to the PROM."

#### Questions

1. Do you think that GM failed to foresee the effect of the lacuna?
2. What steps had you taken if in the above case, you were in the place of:
  - (a) GM quality manager
  - (b) Court Judge
  - (c) Johnston

Source: [www.economist.com](http://www.economist.com)

Most project failures don't lead to deaths. Most projects involve conscious tradeoffs among several factors, including cost, time to completion, richness of the feature set, and reliability. There is nothing wrong with doing this type of business tradeoff, consciously and explicitly, unless you fail to take into account the fact that some of the problems that you leave in the product might cost your customers much, much more than they cost your company.

#### Comparison of External Failure Costs Borne by the Buyer and the Seller

Seller: External Failure Costs	Customer: Failure Costs
These are the types of costs absorbed by the seller that releases a defective product.	These are the types of costs absorbed by the customer who buys a defective product.
<ul style="list-style-type: none"> <li>• Technical support calls</li> <li>• Preparation of support answer books</li> <li>• Investigation of customer complaints</li> <li>• Refunds and recalls</li> <li>• Coding/testing of interim bug fix releases</li> <li>• Shipping of updated product</li> <li>• Added expense of supporting multiple versions of the product in the field</li> <li>• PR work to soften drafts of harsh reviews</li> <li>• Lost sales</li> <li>• Lost customer goodwill</li> <li>• Discounts to resellers to encourage them to keep selling the product</li> <li>• Warranty costs</li> <li>• Liability costs</li> <li>• Government investigations</li> <li>• Penalties</li> <li>• All other costs imposed by law</li> </ul>	<ul style="list-style-type: none"> <li>• Wasted time</li> <li>• Lost data</li> <li>• Lost business</li> <li>• Embarrassment</li> <li>• Frustrated employees quit</li> <li>• Demos or presentations to potential customers fail because of the software</li> <li>• Failure when attempting other tasks that can only be done once</li> <li>• Cost of replacing product</li> <li>• Cost of reconfiguring the system</li> <li>• Cost of recovery software</li> <li>• Cost of tech support</li> <li>• Injury/death</li> </ul>



The problem of cost-of-quality analysis is that it sets us up to underestimate our litigation and customer dissatisfaction risks. We think, when we have estimated the total cost of quality associated with a project, that we have done a fairly complete analysis. But if we don't take customers' external failure costs into account at some point, we can be surprised by huge increased costs (lawsuits) over decisions that we thought, in our incomplete analyses, were safe and reasonable.

## Kaizen Costing

Kaizen costing can be understood a philosophy that sees improvement in productivity as a gradual and methodical process. Kaizen is a Japanese term meaning "change for the better". The word Kaizen costing is most consistent with the saying "slow and steady wins the race."

The concept of Kaizen encompasses a wide range of ideas: it involves making the work environment more efficient and effective by creating a team atmosphere, improving everyday procedures, ensuring employee satisfaction and making a job more fulfilling, less tiring and safer.

Some of the key objectives of the Kaizen philosophy include the elimination of waste, quality control, just-in-time delivery, standardized work and the use of efficient equipment.

*Example:* In Toyota of the Kaizen philosophy in action is the Toyota production system, in which suggestions for improvement are encouraged and rewarded, and the production line is stopped when a malfunction occurs.

Kaizen costing is the process of cost reduction during the manufacturing phase of an existing product.

### What is the difference between Standard Costing and Kaizen Costing?

Standard Costing	Kaizen Costing
Cost-control system concept	Cost-reduction system concept
Assumes stability in current manufacturing process	Assumes continuous improvements in manufacturing
Goal is to meet cost performance standards	Goal is to achieve cost reduction standards
Standards are set annually or semi-annually	Cost reduction targets are set and applied monthly
Variance analysis involves comparing actual to standard costs	Variance analysis involves target Kaizen costs versus actual cost reduction amounts
Investigation occurs when standards are not met	Investigation occurs when target reductions are not attained
Managers and engineers develop standards	Workers are closest to the process and thus know best

The main limitations that Kaizen costing has is that the system places enormous pressure on employees to reduce every conceivable cost.

### Student Activity

How can you implement Kaizen in your facility? Make a plan for the same.

## Throughput Costing

Throughput Accounting (TA) is a dynamic, integrated, principle-based, and comprehensive management accounting approach that provides managers with decision support information for enterprise optimization. TA is a relatively new management accounting approach based largely on the identification of factors that limit an organization from reaching its goal and is proposed by Eliyahu M. Goldratt as an alternative to cost accounting.

## Notes

Throughput Accounting is neither cost accounting nor costing because it is cash focused and does not allocate all costs (variable and fixed expenses, including overheads) to products and services sold or provided by an enterprise. Considering the laws of variation, only costs that vary totally with units of output (see definition of T below for TVC) e.g. raw materials, are allocated to products and services which are deducted from sales to determine Throughput.

Throughput Accounting is a management accounting technique used as the performance measures in the Theory of Constraints (TOC). It is the business intelligence used for maximizing profits, however, unlike cost accounting that primarily focuses on 'cutting costs' and reducing expenses to make a profit, throughput accounting primarily focuses on generating more throughput. Conceptually, throughput accounting seeks to increase the velocity or speed at which throughput (see definition of T below) is generated by products and services with respect to an organization's constraint, whether the constraint is internal or external to the organization. Throughput Accounting is the only management accounting methodology that considers constraints as factors limiting the performance of organizations.

The goal for a profit maximizing firm is easily stated, to increase profit now and in the future. Throughput accounting applies to not-for-profit organizations too, but they have to develop a goal that makes sense in their individual cases.

Throughput accounting also pays particular attention to the concept of in the manufacturing or servicing processes.

Throughput accounting uses three measures of income and expense:

1. **Throughput (T):** It is the rate at which the system produces "goal units." When the goal units are money (in for-profit businesses), throughput is net sales (S) less totally variable cost (TVC), generally the cost of the raw materials ( $T = S - TVC$ ).

**Notes:** T only exists when there is a sale of the product or service. Producing materials that sit in a warehouse does not form part of throughput but rather investment.

2. **Investment (I):** It is the money tied up in the system. This is money associated with inventory, machinery, buildings, and other assets and liabilities.
3. **Operating expense (OE):** It is the money the system spends in generating "goal units." For physical products, OE is all expenses except the cost of the raw materials. OE includes maintenance, utilities, rent, taxes and payroll.

Organizations that wish to increase their attainment of the goal should therefore require managers to test proposed decisions against three questions. Will the proposed change:

1. Increase throughput? How?
2. Reduce investment (money that cannot be used)? How?
3. Reduce operating expense? How?

The answers to these questions determine the effect of proposed changes on system wide measurements:

1. Net Profit (NP) = Throughput - Operating Expense =  $T - OE$
2. Return on Investment (ROI) = Net Profit / Investment =  $NP / I$
3. TA Productivity = Throughput / Operating Expense =  $T / OE$
4. Investment Turns (IT) = Throughput / Investment =  $T / I$

One of the most important aspects of Throughput Accounting is the relevance of the information it produces. Throughput accounting is used in Critical Chain Project Management (CCPM), in businesses that are internally or externally constrained,

particularly where the lack of customer orders denotes a market constraint, in strategy, planning and tactics, etc.

## Backflush Costing

Backflush Costing can be understood as product costing approach, used in a just-in time operating environment, in which costing is delayed until goods are finished. Standard costs are then flushed backward through the system to assign costs to products. The result is that detailed tracking of costs is eliminated. The system is best suited to companies that maintain low inventories because costs then flow directly to cost of goods sold. Work-in-process is usually eliminated, journal entries to inventory accounts may be delayed until the time of product completion or even the time of sale, and standard costs are used to assign costs to units when journal entries are made, that is, to flush costs backward to the points at which inventories remain.

It can be argued that backflush accounting simplifies costing since it ignores both labour variances and work-in-progress. Backflush accounting is employed where the overall cycle time is relatively short and inventory levels are low. Back flush is used for materials which are a must in the product and having fixed relationship with the product.

## Summary

Life Cycle Costs (LCC) are cradle to grave costs summarized as an economics model of evaluating alternatives for equipment and projects. Cost reduction techniques can include working with suppliers to reduce the costs in their processes, implementing less costly re-designs of the product, or reducing waste costs. Quality cost is the sum of all costs a company invests into the release of a quality product.

There are four types of quality costs: prevention costs, appraisal costs, internal failure costs, and external failure costs. Kaizen refers to continual and gradual improvement through small betterment activities, rather than large or radical improvement made through innovation or large investments in technology. Kaizen costing refers to making improvements to a process through small, incremental amounts rather than through large innovations.

Throughput accounting is an important development in modern accounting that allows managers to understand the contribution of constrained resources to the overall profitability of the enterprise. Throughput accounting reports what currently happens in business functions such as operations, distribution and marketing.

Backflush Costing can be understood as product costing approach, used in a just-in time operating environment, in which costing is delayed until goods are finished.

## Keywords

**Backflush:** Back flushing is automatic accounting of material consumed for production, at the time of confirmation of the production.

**Kaizen:** A philosophy, of making "continuous improvement"-slow, incremental but constant.

**Throughput:** Throughput is the amount of work that can be performed or the amount of output that be produced by a system or component in a given period of time

## Review Questions

1. What is Kaizen? Analyse the benefits of Kaizen.
2. After going through this unit what do you analyse as the parameters of Quality cost?

3. What do you think should be the main constraints in throughput costing? Give answer keeping in mind what prevents us from achieving an ideal throughput.
4. Illustrate only through examples what do you mean by backflush costing.
5. What will you like to take under primary consideration while starting a project on hiring a plane for your CEO- life cycle cost or sheer utility and why?
6. Kaizen is a popular concept in west. Find out which companies do Kaizen costing in India and make a short report on the profits they have incurred through it.
7. "Throughput Accounting is neither cost accounting nor costing." Justify the statement with appropriate reasoning.
8. As a throughput accountant, what questions would you suggest to be asked by the managers of the organizations that wish to increase their attainment of the goal?
9. The problem of cost-of-quality analysis is that it sets us up to underestimate our litigation and customer dissatisfaction risks- why / why not?
10. Illustrate through example how a customer suffers quality-related costs.
11. What do you think is the better approach – managing on the basis of quality costing or cost effectiveness and why?
12. Taking the example of automobile industry, elucidate upon total cost of ownership.

### Further Readings

J.M. Juran, *Quality Control Handbook*, McGraw Hill.

Margaret Drever, Patricia Stanton, Susan McGowan, *Contemporary Issues in Accounting*, Wiley.

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