AAM
Business School

Accounting for Decision Making

I SEMESTER

(Approved by Alagappa University)

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Text Book:

Accounting Text and Cases, Robert N Anthony, David F Hawkins, Kenneth A Merchant, TMH

Reference Books:

1. Contemporary Accounting: A Strategic Approach for Users Author/s: Phil Hancock, Peter Robinson, Mike Bazley, Cengage

2. Accounting for Management Texts & Cases, S.K.Bhattarcharyya, John Dearden, Vikas

3. Financial Accounting for Management, Ambrish Gupta, Pearson Education

MBA - I Semester

Accounting for Decision Making

Introduction

Accounting is aptly called the language of business. This designation is applied to accounting because it is the method of communicating business information. The basic function of any language is to serve as a means of communication. Accounting duly serves this function. The task of learning accounting is essentially the same as the task of learning a new language. But the acceleration of change in business organization has contributed to increase the complexities in this language. Like other languages, it is undergoing continuous change in an attempt to discover better means of communications. To enable the accounting language to convey the same meaning to all stakeholders, it should be made standard. To make it a standard language certain accounting principles, concepts and standards have been developed over a period of time.

Evolution of Accounting

Accounting is as old as money itself. It has evolved, as have medicine, law and most other fields of human activity in response to the social and economic needs of society. People in all civilizations have maintained various types of records of business activities. The oldest known are clay tablet records of the payment of wages in babylonia around 600 b.c. accounting was practiced in India twenty-four centuries ago as is clear from kautilya's book 'arthshastra' which clearly indicates the existence and need of proper accounting and audit.

For the most part, early accounting dealt only with limited aspects of the financial operations of private or governmental enterprises. Complete accounting system for an enterprise which came to be called as "double entry system" was developed in italy in the 15th century. The first known description of the system was published there in 1494 by **luca pacioli.**

The expanded business operations initiated by the industrial revolution required increasingly large amounts of money which in turn resulted in the development of the corporation form of organizations. As corporations became larger, an increasing number of individuals and institutions looked to accountants to provide economic information about these enterprises. For e.g. Prospective investors and creditors

sought information about a corporation’s financial status. Government agencies required financial information for purposes of taxation and regulation. Thus, accounting began to expand its function of meeting the needs of

relatively few owners to a public role of meeting the needs of a variety of interested parties.

Book Keeping And Accounting

Book-keeping is that branch of knowledge which tells us how to keep a record of business transactions. It is considered as an art of recording systematically the various types of transactions that occur in a business concern in the books of accounts. According to spicer and pegler, “book-keeping is the art of recording all money transactions, so that the financial position of an undertaking and its relationship to both its proprietors and to outside persons can be readily ascertained”. Accounting is a term which refers to a systematic study of the principles and methods of keeping accounts. Accountancy and book-keeping are related terms; the former relates to the theoretical study and the latter refers to the practical work.

Definition of Accounting

The American Institute of Certified and Public Accountants defined accounting as:

“Accounting is the art of recording, classifying and summarizing, in a significant manner and in terms of money, transactions and events which are, in part at least, of a financial character and interpreting the results thereof ”.

Scope and Functions of Accounting

Individuals engaged in such areas of business as finance, production, marketing, personnel and general management need not be expert accountants but their effectiveness is no doubt increased if they have a good understanding of accounting principles. Everyone engaged in business activity, from the bottom level employee to the chief executive and owner, comes into contact with accounting. The higher the level of authority and responsibility, the greater is the need for an understanding of accounting concepts and terminology.

Though accounting is generally associated with business, it is not only business people who make use of accounting but also many individuals in non-business areas that make use of accounting data and need to understand accounting principles and terminology. For e.g. An engineer responsible for selecting the most desirable solution to a technical manufacturing problem may consider cost accounting data to be the decisive factor. Lawyers want accounting data in tax cases and damages from breach of contract. Governmental agencies rely on an accounting data in evaluating the efficiency of government operations and for approving the feasibility of proposed taxation and spending programs. Accounting thus plays an important role in modern

society and broadly speaking all citizens are affected by accounting in some way or the other.

Accounting which is so important to all, discharges the following vital functions:

1.Keeping Systematic Records:

This is the fundamental function of accounting. The transactions of the business are properly recorded, classified and summarized into final financial statements – income statement and the balance sheet.

2.Protecting The Business Properties:

The second function of accounting is to protect the properties of the business by maintaining proper record of various assets and thus enabling the management to exercise proper control over them.

3.Communicating The Results:

As accounting has been designated as the language of business, its third function is to communicate financial information in respect of net profits, assets, liabilities, etc., to the interested parties.

4.Meeting Legal Requirements:

The fourth and last function of accounting is to devise such a system as will meet the legal requirements. The provisions of various laws such as the companies act, income tax act, etc., require the submission of various statements like income tax returns, annual accounts and so on. Accounting system aims at fulfilling this requirement of law.

Groups Interested In Accounting Information

There are several groups of people who are interested in the accounting information relating to the business enterprise. Following are some of them:

1.Shareholders:

Shareholders as owners are interested in knowing the profitability of the business transactions and the distribution of capital in the form of assets and liabilities. In fact,

accounting developed several centuries ago to supply information to those who had invested their funds in business enterprise.

2.Management:

With the advent of joint stock company form of organization the gap between ownership and management widened. In most cases the shareholders act merely as renders of capital and the management of the company passes into the hands of professional managers. The accounting disclosures greatly help them in knowing about what has happened and what should be done to improve the profitability and financial position of the enterprise.

3.Potential Investors:

An individual who is planning to make an investment in a business would like to know about its profitability and financial position. An analysis of the financial statements would help him in this respect.

4.Creditors:

As creditors have extended credit to the company, they are much worried about the repaying capacity of the company. For this purpose they require its financial statements, an analysis of which will tell about the solvency position of the company.

5.Government:

Any popular government has to keep a watch on big businesses regarding the manner in which they build business empires without regard to the interests of the community. Restricting monopolies is something that is common even in capitalist countries. For this, it is necessary that proper accounts are made available to the government. Also, accounting data are required for collection of sale-tax, income-tax, excise duty etc.

6.Employees:

Like creditors, employees are interested in the financial statements in view of various profit sharing and bonus schemes. Their interest may further increase when they hold shares of the companies in which they are employed.

7.Researchers:

Researchers are interested in interpreting the financial statements of the concern for a given objective.

8.Citizens:

Any citizen may be interested in the accounting records of business enterprises including public utilities and government companies as a voter and tax payer.

PURPOSE OF ACCOUNTING:

The purpose of accounting is to accumulate and report on financial information about the performance, financial position, and cash flows of a business. This information is then used to reach decisions about how to manage the business, or invest in it, or lend money to it. This information is accumulated in accounting records with accounting transactions, which are recorded either through such standardized business transactions as customer invoicing or supplier invoices, or through more specialized transactions, known as journal entries.

Once this financial information has been stored in the accounting records, it is usually compiled into financial statements, which include the following documents:

- Income statement
- Balance sheet
- Statement of cash flows
- Statement of retained earnings
- Disclosures that accompany the financial statements

GAAP

Financial statements are assembled under certain sets of rules, known as accounting frameworks, of which the best known are Generally Accepted Accounting Principles (GAAP) and International Financial Reporting Standards (IFRS). The results shown in financial statements can vary somewhat, depending on the framework used. The framework that a business uses depends upon which one the recipient of the financial statements wants. Thus, a European

investor might want to see financial statements based on IFRS, while an American investor might want to see statements that comply with GAAP.

The accountant may generate additional reports for special purposes, such as determining the profit on sale of a product, or the revenues generated from a particular sales region. These are usually considered to be managerial reports, rather than the financial reports issued to outsiders.

Thus, the purpose of accounting centers on the collection and subsequent reporting of financial information.

CHOICES OF ACCOUNTING SYSTEM

There are two types of accounting systems: The first is a Single-Entry System where a small business records every transaction as a line item in a ledger. The other is a Double Entry System, where every transaction is recorded both as a debit and credit in separate accounts. A Double Entry System ensures a company's books balance.

Difference between single and double entry book keeping:

A single-entry system of accounting is usually used by very small businesses for its simplicity. Perhaps the business does not do a lot of transactions in a given day, or it's a sole proprietorship and the owner does not require or have time for extensive bookkeeping. A single-entry system is convenient, simple (no formal training is needed) and provides costs savings as it does not require complex software. A small business owner could run a single-entry system of accounting on an excel program, if he so desired.

There are drawbacks to a single-entry system. Due to the incomplete nature of the data entered, proper financial reporting is impossible. As such, it's hard for the business owner to do a financial analysis and plan resources for the future. Errors are much more likely to go unnoticed and theft is less likely to be detected (because there is no asset inventory in place). Tax authorities do not recognize a single-entry system of accounting for reporting purposes of any kind.

A double entry system is a much more detailed bookkeeping process, typically used by larger businesses. A double entry system will provide complete records and allows for the creation of proper financial statements. Errors are also quicker to detect. A

double entry system of accounting paints a much more accurate picture of a company's finances.

A double entry system is costly, often complex, and time-consuming. It is also subject to error too, if an entire transaction is not recorded there is no way for the system to know International Accounting Standards (IASs) were issued by the antecedent International Accounting Standards Council (IASC), and endorsed and amended by the International Accounting Standards Board (IASB). The IASB will also reissue standards in this

Nature and Meaning of Accounting Principles

The rules and conventions of accounting are commonly referred to as principles. The american institute of certified public accountants has defined the accounting principle as, ***"a general law or rule adopted or professed as a guide to action; a settled ground or basis of conduct or practice"***
. Accounting principles are judged on their general acceptability to the makers and users of financial statements and reports. They present a generally accepted and uniform view of the accounting profession in relation to good accounting practice and procedures. Hence the name generally accepted accounting principles.

Accounting Concepts

The important accounting concepts are discussed hereunder:

Business Entity Concept:

It is generally accepted that the moment a business enterprise is
started it attains a separate entity as distinct from the persons who own it.
In recording the transactions of a business, the important question is:

To quote an example, if a proprietor has taken rs.5000/- from the business for paying house tax for his residence, the amount should be deducted from the capital contributed by him. Instead if it is added to the other business expenses then the profit will be reduced by rs.5000/- and also his capital more by the same amount. This affects

the results of the business and also its financial position. Not only this, since the profit is lowered, the consequential tax payment also will be less which is against the provisions of the income-tax act.

Going Concern Concept:

This concept assumes that the business enterprise will continue to operate for a fairly long period in the future. The significance of this concept is that the accountant while valuing the assets of the enterprise does not take into account their current resale values as there is no immediate expectation of selling it. Moreover, depreciation on fixed assets is charged on the basis of their expected life rather than on their market values. When there is conclusive evidence that the business enterprise has a limited life, the accounting procedures should be appropriate to the expected terminal date of the enterprise. In such cases, the financial statements could clearly disclose the limited life of the enterprise and should be prepared from the ‘quitting concern’ point of view rather than from a ‘going concern’ point of view.

Money Measurement Concept:

Accounting records only those transactions which can be expressed in monetary terms. This feature is well emphasized in the two definitions on accounting as given by the american institute of certified public accountants and the American accounting principles board. The importance of this concept is that money provides a common denomination by means of which heterogeneous facts about a business enterprise can be expressed and measured in a much better way. For e.g. When it is stated that a business owns rs.1,00,000 cash, 500 tons of raw material, 10 machinery items, 3000 square meters of land and building etc., these amounts cannot be added together to produce a meaningful total of what the business owns. However, by expressing these items in monetary terms such as rs.1,00,000 cash, rs.5,00,000 worth raw materials, rs,10,00,000 worth machinery items and rs.30,00,000 worth land and building – such an addition is possible.

Cost Concept:

This concept is yet another fundamental concept of accounting which is closely related to the going-concern concept. As per this concept an asset is ordinarily entered in the accounting records at the price paid to acquire it i.e., at its cost and (ii) this cost is the basis for all subsequent accounting for the asset.

The implication of this concept is that the purchase of an asset is recorded in the books at the price actually paid for it irrespective of its market value. For e.g. If a business buys a building for Rs.3,00,000, the asset would be recorded in the books as rs.3,00,000 even if its market value at that time happens to be rs.4,00,000.

Dual Aspect Concept (Double Entry System):

This concept is the core of accounting. According to this concept every business transaction has a dual aspect.

Equities = Assets

Equities may be subdivided into two principal types: the rights of creditors and the rights of owners. The rights of creditors represent debts of the business and are called liabilities. The rights of the owners are called capital.

Expansion of the equation to give recognition to the two types of equities results in the following which is known as the accounting equation:

Liabilities + Capital = Assets

Accounting Period Concept:

According to this concept accounting measures activities for a specified interval of time called the accounting period. For the purpose of reporting to various interested parties one year is the usual accounting period. Though pacioli wrote that books should be closed each year especially in a partnership, it applies to all types of business organizations.

Periodic Matching of Costs And Revenues:

This concept is based on the accounting period concept. It is widely accepted that desire of making profit is the most important motivation to keep the proprietors engaged in business activities. Hence a major share of attention of the accountant is being devoted towards evolving appropriate techniques of measuring profits. One such technique is periodic matching of costs and revenues.

In order to ascertain the profits made by the business during a period, the accountant should match the revenues of the period with the costs of that period. By 'matching' we mean appropriate association of related revenues and expenses pertaining to a particular accounting period. To put it in other words, profits made by a business in a particular accounting period can be ascertained only when the revenues earned during that period are compared with the expenses incurred for earning that revenue. The question as to when the payment was actually received or made is irrelevant. For e.g. In a business enterprise which adopts calendar year as accounting year, if rent for december 1989 was paid in january 1990, the rent so paid should be taken as the expenditure of the year 1989, revenues of that year should be matched with the costs incurred for earning that revenue including the rent for december 1989, though paid in january 1990. It is on account of this concept that adjustments are made for outstanding expenses, accrued incomes, prepaid expenses etc. While preparing financial statements at the end of the accounting period.

Difference between Mercantile and Cash system of Accounting:

The system of accounting which follows the concept of matching is called as mercantile system. In contrast to this there is another system of accounting called as cash system of accounting where entries are made only when cash is received or paid, no entry being made when a payment or receipt is merely due.

Accounting Conventions

Convention Of Conservatism:

It is a world of uncertainty. So, it is always better to pursue the policy of playing safe. This is the principle behind the convention of conservatism. According to this convention the accountant must be very careful while recognizing increases in an enterprise's profits rather than recognizing decreases in profits. For this the accountants have to follow the rule, anticipate no profit, provide for all possible losses, while recording business transactions. It is on account of this convention that the inventory is valued at cost or market price whichever is less, i.e. When the market price of the inventories has fallen below its cost price it is shown at market price i.e. The possible loss is provided and when it is above the cost price it is shown at cost price i.e. The anticipated profit is not recorded. It is for the same reason that provision for bad and doubtful debts, provision for fluctuation in investments, etc., are created. This concept affects principally the current assets.

Convention of Full Disclosure:

The emergence of joint stock company forms of business organization resulted in the divorce between ownership and management. This necessitated the full disclosure of accounting information about the enterprise to the owners and various

other interested parties. Thus, the convention of full disclosure became important. By this convention it is implied that accounts must be honestly prepared and all material information must be adequately disclosed therein. But it does not mean that all information that someone desires are to be disclosed in the financial statements. It only implies that there should be adequate disclosure of information which is of considerable value to owners, investors, creditors, government, etc. The following are some examples:

a. Contingent liabilities appearing as a note
b. Market value of investments appearing as a note

Convention of Consistency:

According to this concept it is essential that accounting procedures, practices and method should remain unchanged from one accounting period to another. This enables comparison of performance in one accounting period with that in the past. For e.g. If material issues are priced on the basis of fifo method the same basis should be followed year after year. Similarly, if depreciation is charged on fixed assets according to diminishing balance method it should be done in subsequent year also. But consistency never implies inflexibility as not to permit the introduction of improved techniques of accounting. However if introduction of a new technique results in inflating or deflating the figures of profit as compared to the previous methods, the fact should be well disclosed in the financial statement.

Convention of Materiality:

The implication of this convention is that accountant should attach importance to material details and ignore insignificant ones. In the absence of this distinction, accounting will unnecessarily be overburdened with minute details.
Some examples of material financial information are: fall in the value of stock, loss of markets due to competition, change in the demand pattern due to change in government regulations, etc.
Examples of insignificant financial information are: rounding of income to nearest ten for tax purposes etc.

Accounting Standards

An accounting standard is a common set of principles, standards and procedures that define the basis of financial accounting policies and practices. Accounting standards improve the transparency of financial reporting in all countries. In the United States, the Generally Accepted Accounting Principles form the set of accounting standards widely accepted for preparing financial statements. International companies follow

the International Financial Reporting Standards, which are set by the International Accounting Standards Board and serve as the guideline for non-U.S. GAAP companies reporting financial statements.

Accounting standards relate to all aspects of an entity's finances, including assets, liabilities, revenue, expenses and shareholders' equity. Specific examples of an accounting standard include revenue recognition, asset classification, allowable methods for depreciation, what is considered depreciable, lease classifications and outstanding share measurement.

Ind AS stands for Indian Accounting Standard and are converged standards for IFRS (International Financial Reporting Standards). Ind AS are documents and policies that provide principles for recognition, measurement, treatment, presentation and disclosures of accounting transactions in the Ind AS financial statements.

For example: Ind AS 16 on Property, Plant and Equipment (PPE) will provide principles on the criteria on the basis of which PPE is recognised, what all cost will form part of PPE, how to treat those cost and how to present PPE in the financial statement and relevant disclosures. Ind AS are prepared keeping IFRS in mind, in actual these are IFRS in their converged form.There are 41 Ind AS notified till now.

Objective of Indian Accounting Standards:

Before the introduction of Indian AS, financial statements were prepared on the basis of Accounting Standards (AS) which were not in line with the standards and principles applicable globally (IFRS). Due to this investors were not able to assess and compare the financial position of Indian companies with other global companies. In order to make the financial statements uniform, Ind AS were introduced which are converged form of IFRS (global standards). Moreover, introduction of Ind AS will bring consistency in the accounting practices and principles followed by companies in India and other companies across world, leading to enhanced accessibility and reliability.

India has many benefits, some of which are discussed below:

• Wider acceptability:
Since Ind AS are converged form of IFRS which are widely acceptable and will give confidence to the user of financial statements.

• Comparability of Financials:

Financial statements prepared using Ind AS are easily comparable with the financial statements prepared by companies of other countries.

• Changes in standards as per economic situations:

Principles of Ind AS are revised/modified in case there is any major change in economy. Ind AS 29 is 'Financial Reporting in hyperinflationary Economies' which deals with situations related to inflation.

• Attracts Foreign Investment:

Adopting Ind AS may attract foreign investors to invest in Indian Companies as that will ensure better comparability with similar companies across the globe.

• Saves financial statement preparation cost:

For multinational companies, it will be beneficial as it will be able to use the same accounting standards in all the markets in which they operate. This will save preparation costs of aligning financial statements of Indian company with other operations.

SEBI

Securities and Exchange Board of India (SEBI) is a statutory regulatory body entrusted with the responsibility to regulate the Indian capital markets. It monitors and regulates the securities market and protects the interests of the investors by enforcing certain rules and regulations.

SEBI was founded on April 12, 1992, under the SEBI Act, 1992. Headquartered in Mumbai, India, SEBI has regional offices in New Delhi, Chennai, Kolkata and Ahmedabad along with other local regional offices across prominent cities in India.

The objective of SEBI is to ensure that the Indian capital market works in a systematic manner and provide investors with a transparent environment for their investment. To put it simply, the primary reason for setting up SEBI was to prevent malpractices in the capital market of India and promote the development of the capital markets.

Structure of SEBI

SEBI, just like any corporate firm has a hierarchical structure and consists of numerous departments headed by their respective heads. Following is a list of some of the departments of SEBI:

- Foreign Portfolio Investors and Custodians

- Human Resources Department
- Information Technology
- Investment Management Department
- Office of International Affairs
- Commodity and Derivative Market Regulation Department
- National Institute of Securities Market

Apart from the department heads, the senior management of SEBI consists of a Board of Directors who are appointed as follows:

- 1 chairman nominated by the Union Government of India
- 2 members from the Union Finance Ministry of India
- 1 member from the Reserve Bank of India (RBI)
- 5 members nominated by the Union Government of India

Functions of SEBI

The functions and powers of SEBI have been listed in the SEBI Act,1992. SEBI caters to the needs of three parties operating in the Indian Capital Market. These three participants are mentioned below:

- Issuers of the Securities: Companies that issue securities are listed on the stock exchange. They issue shares to raise funds. SEBI ensures that the issuance of Initial Public Offerings (IPOs) and Follow-up Public Offers (FPOs) can take place in a healthy and transparent way.
- Protects the Interests of Traders & Investors: It is a fact that the capital markets are functioning just because the traders exist. SEBI is responsible for safeguarding their interests and ensuring that the investors do not become victims of any stock market fraud or manipulation.
- Financial Intermediaries: SEBI acts as a mediator in the stock market to ensure that all the market transactions take place in a secure and smooth manner. It monitors every activity of the financial intermediaries, such as broker, sub-broker, NBFCs, etc

What are the Powers of SEBI?

Securities and Exchange Board of India has the following three powers:

Quasi-Judicial: With this authority, SEBI can conduct hearings and pass ruling judgements in cases of unethical and fraudulent trade practices. This ensures

transparency, fairness, accountability and reliability in the capital market. SEBI PACL case is an example of this power.

Quasi-Legislative: Powers under this segment allow SEBI to draft rules and regulations for the protection of the interests of the investor. One such regulation is SEBI LODR (Listing Obligation and Disclosure Requirements). It aims at consolidating and streamlining the provisions of existing listing agreements for several segments of the financial market like equity shares. This type of regulation formulated by SEBI aims to keep any malpractice and fraudulent trading activates at bay.

Quasi-Executive: SEBI is authorised to file a case against anyone who violates its rules and regulation. It is empowered to inspect account books and other documents as well if it finds traces of any suspicious activity.

ETHICS AND CORPORATE GOVERNANACE

“Corporate governance” is the term used to refer to the policies and processes by which a corporation (or other large, complex institution) is controlled and directed. It refers especially to the way power and accountability flow between shareholders, boards of directors, CEOs, and senior managers.

For most corporations, the basic governance structure is this: shareholders vote for, and hence empower, a board of directors, who then have a fiduciary responsibility to look out for shareholders’ interests. The board hires a CEO, who is accountable to the board. The CEO (sometimes with input from the board) hires a management team, and so on. At each step, there is a flow of power down the chain (from shareholders through to front-line employees), and a flow of accountability back up that chain. And there are all sorts of rules — including various policies and principles of good governance — that establish how that power and accountability is to be implemented. There will be internal rules, for example (partly determined by relevant corporate law), about how board elections are to be carried out. There are also governance principles that apply to things like the inclusion of external, “independent” directors on the board.

In case it’s not obvious, I’ll say it explicitly: corporate governance is out-and-out a matter of ethics. It is about who is responsible to whom, and for what, and under what conditions.

Every organization, as they grow has many stakeholders like shareholders, employees, customers, vendors, community, etc. For survival and growth, they have to rely upon healthy relations with all these stockholders. Hence organizations need

to provide good returns for shareholders but also good jobs for employees, reliable products for consumers, responsible relations with the community and a clean environment.

Business ethics is the application of general ethical principles to business dilemmas and encompasses a broader range of issues and concerns than laws do, as everything that is legal is not ethical. Ethics involves learning what is right or wrong, and then doing the right thing -- but "the right thing" is not nearly as straightforward.

Business Ethics has the following purposes: - To give people the tools for dealing with moral complexity in business - Business decisions have an ethical component - Ethical implications must be weighed before acting

Corporate governance is concerned with the ownership, control and accountability of companies, and how the corporate pursuit of economic objectives relates to a number of wider ethical and societal considerations. It is the application of best management practices, compliance of law in true letter and spirit and adherence to ethical standards for effective management and distribution of wealth and discharge of social responsibility for sustainable development of all stakeholders.

Good Corporate Governance is key to Growing Profits and Reputation. It represents the relationship among stakeholders that is used to determine and control the strategic direction and performance of organizations. Accountability is a key element as well as requirement for corporate governance, fortifying the latter in such a way that it provides a transparent template for governing critical decisions, procedures, and activities.

Corporate Governance deals with the questions: (1) Who benefits from corporate decisions/senior management actions? (2) Who should benefit from corporate decisions/senior management actions?

There are a number of reasons why businesses should act ethically. As behavior is based on values priorities, a mutual effort at all levels to deal with corporate ethics begins with a clear understanding of core values, both individually and organizationally.

Good corporate governance begins with a company's own internal practices and policies. While corporate governance issues are common across organizations, each company requires governance principles that are unique in their approach. Good governance is, ultimately, the sine qua non for continued growth and prosperity.

Corporate governance ensures that long term strategic objectives and plans are established and that the proper management structure is in place. Companies that provide good governance, both in terms of practices and results can expect the backing not only of investors but of customers too.

Corporate Governance represents the moral framework, the ethical framework and the value framework under which an enterprise takes decisions. In the long run ethical behavior has a positive impact on the company's performance.

UNIT 2:

Profit vs Wealth

The essential difference between the maximization of profits and the maximization of wealth is that the profits focus is on short-term earnings, while the wealth focus

is on increasing the overall value of the business entity over time. These differences are substantial, as noted below:

- *Planning duration*. Under profit maximization, the immediate increase of profits is paramount, so management may elect not to pay for discretionary expenses, such as advertising, research, and maintenance. Under wealth maximization, management always pays for the discretionary expenditures.
- *Risk management*. Under profit maximization, management minimizes expenditures, so it is less likely to pay for hedges that could reduce the organization's risk profile. A wealth-focused company would work on risk mitigation, so its risk of loss is reduced.
- *Pricing strategy*. When management wants to maximize profits, it prices products as high as possible in order to increase margins. A wealth-oriented company could do the reverse, electing to reduce prices in order to build market share over the long term.
- *Capacity planning*. A profit-oriented business will spend just enough on its productive capacity to handle the existing sales level and perhaps the short-term sales forecast. A wealth-oriented business will spend more heavily on capacity in order to meet its long-term sales projections.

It should be apparent from the preceding discussion that profit maximization is a strictly short-term approach to managing a business, which could be damaging over the long term. Wealth maximization focuses attention on the long term, requiring a larger investment and lower short-term profits, but with a long-term payoff that increases the value of the business.

BALANCE SCORECARD

Kaplan & Norton's Balanced Scorecard model was developed in the early 1990's as an attempt to help firms measure business performance using both financial and non-financial data.

The aim of the Balanced Scorecard was "to align business activities to the vision and strategy of the business, improve internal and external communications, and monitor business performance against strategic goals."

The balanced scorecard provides a relevant range of financial and non-financial information that supports effective business management.

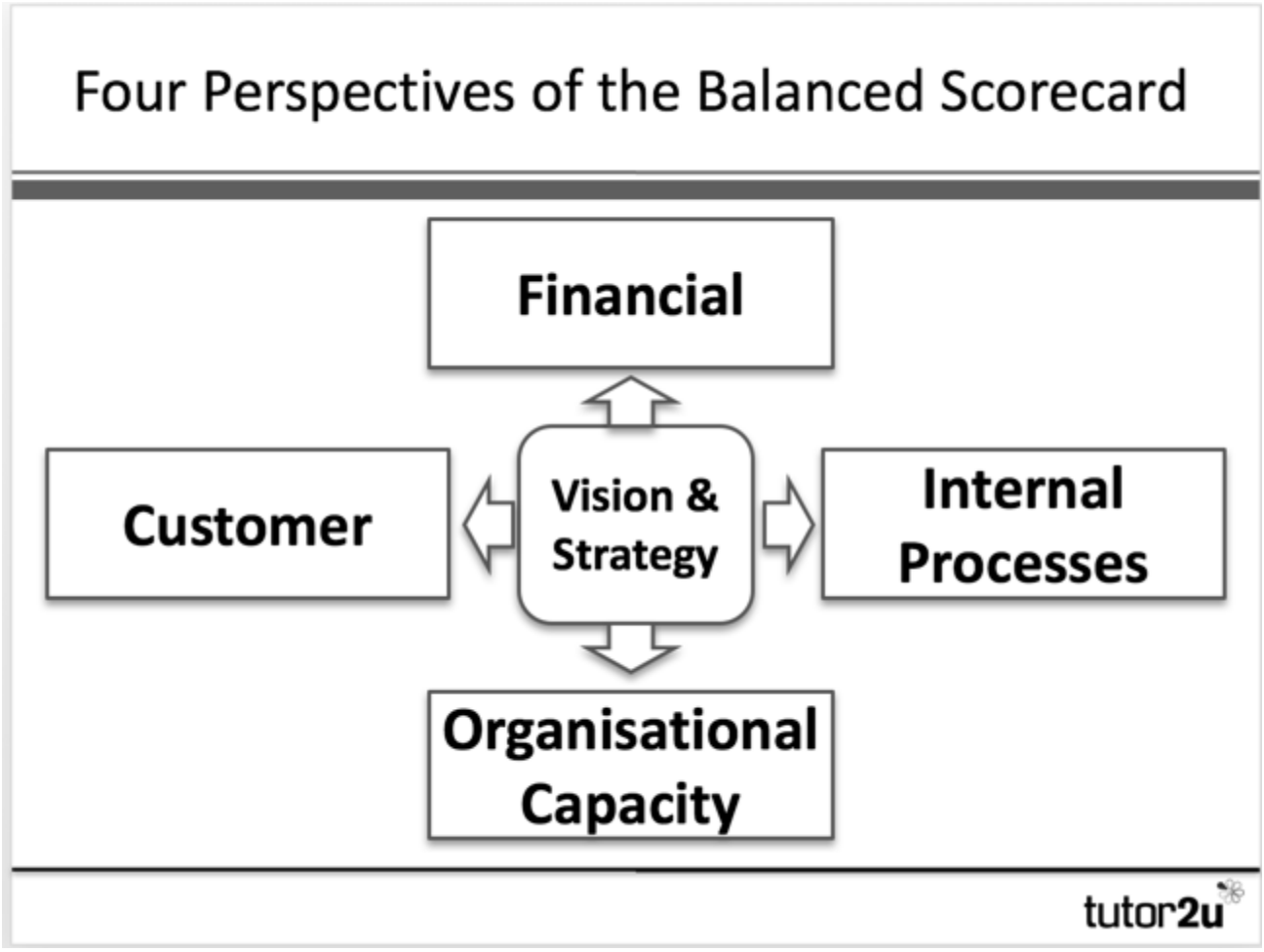
Background to the Balanced Scorecard:

No single measures can give a broad picture of the organisation's health.

So instead of a single measure why not a use a composite scorecard involving a number of different measures.

Kaplan and Norton devised a framework based on four perspectives – financial, customer, internal and learning and growth.

The organisation should select critical measures for each of these perspectives.



The Four Perspectives of the Balanced Scorecard

In what way is the scorecard a balance?

The scorecard produces a balance between:

Four key business perspectives: financial, customer, internal processes and innovation.

How the organisation sees itself and how others see it.

The short run and the long run

The situation at a moment in time and change over time

Main benefits of using the balanced scorecard

Helps companies focus on what has to be done in order to create a breakthrough performance

Acts as an integrating device for a variety of corporate programmes

Makes strategy operational by translating it into performance measures and targets

Helps break down corporate level measures so that local managers and employees can see what they need to do well if they want to improve organisational effectiveness

Provides a comprehensive view that overturns the traditional idea of the organisation as a collection of isolated, independent functions and departments

Some drawbacks of the balanced scorecard model A danger that a business will have too many performance indicators Need to have balance between the four perspectives – not easy

Senior management may still be too concerned with financial performance Needs to be updated regularly to be useful

The Balanced Scorecard (or **balance score card**) is a strategic performance measurement model which is developed by Robert Kaplan and David Norton. Its objective is to translate an organization's mission and vision into actual (operational) actions (strategic planning).

In addition, it can help provide information on the chosen strategy more, manage feedback and learning processes and determine the target figures. The (operational) actions are set up with measurable indicators that provide support for understanding and adjusting the chosen strategy. The starting points of the balanced scorecard are the vision and the strategy that are viewed from four perspectives: the financial perspective, the customer perspective, the internal business processes and learning & growth.

Financial perspective

The financial perspective is important for all shareholders and other financial backers of an organization. It answers the question: "*How attractive must we appear to our shareholders and financial backers?*". This is mainly a quantitative benchmark based on figures from the past.

In addition, it provides a reliable insight into the operational management and the sustainability of the chosen strategy. The delivered added value from the other three perspectives will be translated into a financial success. This is therefore a quantification of the added value that is delivered in the organization. After all in the balanced scorecard, when there is a higher added value, the profits will also be higher.

Customer perspective

Each organization serves a specific need in the market. This is done with a target group in mind, namely its customers. Customers determine for example the quality, price, service and the acceptable margins on these products and/or services. Organizations always try to meet customer expectations that may change at any time. The existence of alternatives (those of the competitor) has a large influence on customer expectation. This perspective answers the question: "*How attractive should we appear to our customers?*"

Internal Business Processes

From the perspective of internal processes the question should be asked what internal processes have actually added value within the organizations and what activities need to be carried out within these processes. Added value is mainly expressed as the performance geared towards the customer resulting from an optimal alignment between processes, activities and decisions. This perspective answers the question: "*What must we excel at to satisfy our customers and shareholders/ financial backers?*"

Learning and growth

An organization's learning ability and innovation indicate whether an organization is capable of continuous improvement and/or growth in a dynamic environment. This dynamic environment is subject to change on a daily basis due to new legislation and regulations, economic changes or even increasing competition. This perspective answers the question: "*How can we sustain our ability to achieve our chosen strategy?*".

The balance within

As the name suggests, the equilibrium or balance is an important principle in the balanced scorecard model. There must be a balance between the short-term and the long-term objectives, financial and non-financial criteria, leading and lagging indicators and external and internal perspectives. It is about cohesion in which an improvement in one perspective must not be an obstacle in another perspective. This cohesion is reflected in the model through the mutually connected arrows between the four perspectives.

Balanced Scorecard implementation

The implementation of the Balanced Scorecard consists of a number of steps. The first step in this is that senior management sets up a mission, vision and strategy. This strategy is linked to a number of objectives which are referred to as strategic objectives. Then middle management is informed about the mission, vision and the strategic objectives. In an open discussion, managers can express their opinions, indicate the critical success factors per perspective and they can point out or set up indicators themselves so that these can be monitored in the future. For the financial and customer perspectives within the Balanced Scorecard it is possible to carry out a survey or conduct interviews among the (potential) shareholders or customers to assess what their expectations are. This could provide an insight into the direction of the objectives the necessary objectives.

In consultation with middle management and senior management several objectives are formulated in which the different critical success factors are indicated per objective, the indicators are used to measure this, specific values such as targets and initiatives are meant to achieve these objectives. It is possible to go one step further by linking personal objectives to the objectives of middle management. As a result, all personal initiatives will contribute to the chosen strategy of the organization. The implementation of the Balanced Scorecard can be carried out in different manners.

Preparation of Final Accounts

Introduction

The primary objective of any business concern is to earn income. Ascertainment of the periodic income of a business enterprise is perhaps the important objective of the accounting process. This objective is achieved by the preparation of profit and loss account or the income statement. Profit and loss account is generally considered to be of greatest interest and importance to end users of accounting information. The profit and loss account enables all concerned to find out whether the business operations have been profitable or not during a particular period. Usually the profit and loss account is accompanied by the balance sheet as on the last date of the accounting period for which the profit and loss account is prepared. A balance sheet shows the financial position of a business enterprise as of a specified moment of time. It contains a list of the assets, the liabilities and the capital of a business entity as of a specified date, usually at the close of the last day of a month or a year**. While the profit and loss account is categorized as a flow report (for a particular period), the balance sheet is categorized as a status report (as on a particular date).**

Balance Sheet

The balance sheet is basically a historical report showing the cumulative effect of past transactions. It is often described as a detailed expression of the following fundamental accounting equation:

Assets = Liabilities + Owners' Equity (Capital)

Assets are costs which represent expected future economic benefits to the business enterprise. However, the rights to assets have been acquired by the Enterprise as a result of past transactions.

Liabilities also result from past transactions. They represent obligations which require settlement in the future either by conveying assets or by performing services. Implicit in these concepts of the nature of assets and liabilities is the meaning of owners' equity as the residual interest in the assets of the enterprise.

Order Of Liquidity

Liabilities	Assets
Bank Overdraft	Cash
Bills Payable	Bank
Creditors	Marketable Securities
Outstanding Expenses	Debtors
Income Received In Advance	Inventory
Provision For Income-Tax	Bills Receivable
Mortgage Loan	Prepaid Expenses
Debentures	Investments
Owners' Equity	Furniture And Fixtures
	Plant And Machinery
	Land And Buildings
	Patents
	Trade Marks
	Goodwill
	Preliminary Expenses

Order Of Permanence

Liabilities	Assets
Owners' Equity	Goodwill
Debentures	Trade Marks
Mortgage Loan	Patents
Provision For Income-Tax	Land And Buildings
Income Received In Advance	Plant And Machinery
Outstanding Expenses	Furniture And Fixtures
Creditors	Investments
Bills Payable	Prepaid Expenses
	Inventory
	Debtors
	Marketable Securities
	Bank
	Cash
	Bills Receivables

Ratio Analysis

Introduction

Financial statements by themselves do not give the required information both for internal management and for outsiders. They are passive statements showing the results of the business i.e. Profit or loss and the financial position of the business. They will not disclose any reasons for dismal performance of the business if it is so. What is wrong with the business, where it went wrong, why it went wrong, etc. Are some of the questions for which no answers will be available in the financial statements. Similarly, no information will be available in the financial statements about the financial strengths and weaknesses of the concern. Hence, to get meaningful information from the financial statements which would facilitate vital decisions to be taken, financial statements must be analysed and interpreted. Through the analysis and interpretation of financial statements full diagnosis of the profitability and financial soundness of the business is made possible. The term `analysis of financial statements' means methodical classification of the data given in the financial statements. The term `interpretation of financial statements' means explaining the meaning and significance of the data so classified. A number of tools are available for the purpose of analysing and interpreting the financial statements like common size statement, trend analysis, etc.,

Nature of Financial Analysis

The focus of financial analysis is on the key figures contained in the financial statements and the significant relationship that exists between them. "analyzing financial statements is a process of evaluating the relationship between the component parts of the financial statements to obtain a better understanding of a firm's position and performance".

The type of relationship to be investigated depends upon the objective and purpose of evaluation. The purpose of evaluation of financial statements differs among various groups: creditors, shareholders, potential investors, management and so on. For example, short-term creditors are primarily interested in judging the firm's ability to pay its currently-maturing obligations. The relevant information for them is the composition of the short-term (current) liabilities. The debenture-holders or financial institutions granting long-term loans would be concerned with examining the capital structures, past and projected earnings and changes in the financial position. The shareholders as well as potential investors would

naturally be interested in the earnings per share and dividends per share as these factors are likely to have a significant bearing on the market price of shares. The management of the firms, in contrast, analyses the financial statements for self-evaluation and decision making.

The first task of the financial analyst is to select the information relevant to the decision under consideration from the total information contained in the financial statements. The second step involved in financial analysis is to arrange the information in such a way as to highlight significant relationships. The final step is the interpretation and drawing of inferences and conclusions. In brief, financial analysis is the process of selection, relation and evaluation.

Tools of Financial Analysis

The following are the important tools of financial analysis which can be appropriately used by the financial analysts:

1. Common-size financial statements
2. Comparative financial statements
3. Trend percentages
4. Ratio analysis
5. Funds flow analysis
6. Cash flow analysis

Common-Size Financial Statements:

In this type of statements, figures in the original financial statements are converted into percentages in relation to a common base. The common base may be sales in the case of income statements (profit and loss account) and total of assets or liabilities in the case of balance sheet. For e.g. In the case of common-size income statement, sales of the traditional financial statement are taken as 100 and every other item in the income statement is converted into percentages with reference to sales. Similarly, in the case of common-size balance sheet, the total of asset/liability side will be taken as 100 and each individual asset/liability is converted into relevant percentages.

Comparative Financial Statements:

This type of financial statements are ideal for carrying out horizontal analysis. Comparative financial statements are so designed to give them perspective to the review and analysis of the various elements of profitability and financial position displayed in such statements. In these statements, figures for two or more periods are compared to find out the changes both in absolute figures and in percentages that have taken place in the latest year as compared to the previous year(s). Comparative financial statements can be prepared both for income statement and balance sheet.

Trend Percentages:

Analysis of one year figures or analysis of even two years figures will not reveal the real trend of profitability or financial stability or otherwise of any concern. To get an idea about how consistent is the performance of a concern, figures of a number of years must be analysed and compared. Here comes the role of trend percentages and the analysis which is done with the help of these percentages is called as trend analysis.

Trend analysis:

Is a useful tool for the management since it reduces the large amount of absolute data into a simple and easily readable form. The trend analysis is studied by various methods. The most popular forms of trend analysis are year to year trend change percentage and index-number trend series. The year to year trend change percentage would be meaningful and manageable where the trend for a few years, say a five year or six year period is to be analysed.

Generally trend percentage are calculated only for some important items which can be logically related with each other. For e.g. Trend ratio for sales, though shows a clear-cut increasing tendency, becomes meaningful in the real sense when it is compared with cost of goods sold which might have increased at a lower level.

Ratio Analysis:

Of all the tools of financial analysis available with a financial analyst the most important and the most widely used tool is ratio analysis. Simply stated ratio analysis is an analysis of financial statements done with the help of ratios. A ratio expresses the relationship that exists between two numbers and in financial statement analysis a ratio shows the relationship between two interrelated accounting figures. Both the accounting figures may be taken from the balance sheet and the resulting ratio is called a balance sheet ratio. But if both the figures are taken from profit and loss account then the resulting ratio is called as profit and loss account ratio. Composite ratio is that ratio which is calculated by taking one figure from profit and loss account and the other figure from balance sheet. A detailed discussion on ratio analysis is made available in the pages to come.

Funds Flow Analysis:

The purpose of this analysis is to go beyond and behind the information contained in the financial statements. Income statement tells the quantum of profit earned or loss suffered for a particular accounting year. Balance sheet gives the assets and liabilities position as on a particular date. But in an accounting year a number of financial transactions take place which have a bearing on the performance of the concern but which are not revealed by the financial statements. For e.g. A concern collects finance through various sources and uses them for various purposes. But these details could not be known from the traditional financial statements. Funds flow analysis gives an opening in this respect. All the more, funds flow analysis reveals the changes in working capital position. If there is an increase in working capital what resulted in the increase and if there is a decrease in working capital what caused the decrease, etc. Will be made available through funds flow analysis.

Cash Flow Analysis:

While funds flow analysis studies the reasons for the changes in working capital by analysing the sources and application of funds, cash flow analysis pays attention to the changes in cash position that has taken place between two accounting periods. These reasons are not available in the traditional financial statements. Changes in the cash position can

be analysed with the help of a statement known as cash flow statement. A cash flow statement summarises the change in cash position of the concern. Transactions which increase the cash position of the concern are labelled as `inflows' of cash and those which decrease the cash position as `outflows' of cash.

Meaning and Nature of Ratio Analysis

Ratio expresses numerical relationship between two numbers. Thus, the ratio is a measuring device to judge the growth, development and present condition of a concern. It plays an important role in measuring the comparative significance of the income and position statement. Accounting ratios are expressed in the form of time, proportion, percentage, or per one rupee. Ratio analysis is not only a technique to point out relationship between two figures but also points out the devices to measure the fundamental strengths or weaknesses of a concern. The main purpose of ratio analysis is to measure past performance and project future trends. It is also used for inter-firm and intra-firm comparison as a measure of comparative productivity. The significance of the various components of financial statements can be judged only by ratio analysis.

The main objectives of ratio analysis are:

a. To simplify the comparative picture of financial statements.
b. To assist the management in decision making.
c. To guage the profitability, solvency and efficiency of an enterprise,
d. To ascertain the rate and direction of change and future potentiality.

Classification of Ratios

Financial ratios may be categorised in various ways. Van horne has divided financial ratios into four categories, viz., liquidity, debt, profitability and coverage ratios. The first two types of ratios are computed from the balance sheet. The last two are computed from the income statement and sometimes, from both the statements.

Capital Structure or Leverage Ratios

Financial strength indicates the soundness of the financial resources of an organisation to perform its operations in the long run. The parties associated with the organisation are interested in knowing the financial strength of the organisation. Financial strength is directly associated with the operational ability of the organisation

and its efficient management of resources. The financial strength analysis can be made with the help of the following ratios:

(1) Debt-equity ratio
(2) Capital gearing ratio
(3) Financial leverage
(4) Proprietary ratio and
(5) Interest coverage.

Debt-Equity Ratio:

The debt-equity ratio is determined to ascertain the soundness of the long-term financial policies of the company. This ratio indicates the proportion between the shareholders' funds (i.e. Tangible net worth) and the total borrowed funds. Ideal ratio is 1. In other words, the investor may take debt equity ratio as quite satisfactory if shareholders' funds are equal

to borrowed funds. However, creditors would prefer a low debt-equity ratio as they are much concerned about the security of their investment. This ratio can be calculated by dividing the total debt by shareholders' equity. For the purpose of calculation of this ratio, the term shareholders' equity includes share capital, reserves and surplus and borrowed funds which includes both long-term funds and short-term funds.

$$\textbf{Debt-equity ratio} = \frac{\text{Debt}}{\text{Equity}}$$

A high ratio indicates that the claims of creditors are higher as compared to owners' funds and a low debt-equity ratio may result in a higher claim of equity.

Capital Gearing Ratio: This ratio establishes the relationship between the fixed interest-bearing securities and equity shares of a company. It is calculated as follows:

$$\text{Capital gearing ratio} = \frac{\text{Fixed interest-bearing securities}}{\text{Equity shareholders' funds}}$$

Fixed-interest bearing securities carry with them the fixed rate of dividend or interest and include preference share capital and debentures. A firm is said to be highly geared if the lion's share of the total capital is in the form of fixed interest-bearing securities or this ratio is more than one. If this ratio is less than one, it is said to be low geared. If it is exactly one, it is evenly geared. This ratio must be carefully planned as it affects the firm's capacity to maintain a uniform dividend policy during difficult trading periods that may occur. Too much capital should not be raised by way of debentures, because debentures do not share in business losses.

Financial Leverage Ratio:

Financial leverage results from the presence of fixed financial charges in the firm's income stream. These fixed charges do not vary with the earnings before interest and tax (ebit) or operating profits. They have to be paid regardless of the amount of earnings before interest and taxes available to pay them. After paying them, the operating profits (ebit) belong to the ordinary shareholders. Financial leverage is concerned with the effects of changes in earnings before interest and taxes on the

earnings available to equity holders. It is defined as the ability of a firm to use fixed financial charges to magnify the effects of changes in ebit on the firm's earning per share. Financial leverage and trading on equity are synonymous terms. The ebit is calculated by adding back the interest (interest on loan capital + interest on long term loans + interest on other loans) and taxes to the amount of net profit. Financial leverage ratio is calculated by dividing ebit by ebt (earnings before tax). Neither a very high leverage nor a very low leverage represents a sound picture. (ebit ÷ ebt).

Proprietary Ratio:

This ratio establishes the relationship between the proprietors' funds and the total tangible assets. A high ratio shows that a concern is less dependent on outside funds for capital. A high ratio suggests sound financial strength of a firm due to greater margin of owners' funds against outside sources of finance and a greater margin of safety for the creditors. A low ratio indicates a small number of owners' funds to finance total assets and more dependence on outside funds for working capital. In the form of formula this ratio can be expressed as: -

$$\text{Net worth} = \frac{\text{Proprietary Ratio}}{\text{Total Assets}}$$

Interest Coverage:

This ratio measures the debt servicing capacity of a firm in so far as fixed interest on long-term loan is concerned. It is determined by dividing the operating profits or earnings before interest and taxes (ebit) by the fixed interest charges on loans. Thus,

$$\text{EBIT} = \frac{\text{Interest Coverage}}{\text{Interest}}$$

It should be noted that this ratio uses the concept of net profits

before taxes because interest is tax-deductible so that tax is calculated after paying interest on long-term loans. This ratio, as the name suggests, shows how many times the interest charges are covered by the ebit out of which they will be paid. From the point of view of creditors, the larger the coverage, the greater the ability of the firm to handle fixed-charge liabilities and the more assured the payment of interest to the creditors.

Analysis of Turnover (Or) Analysis of Efficiency

Turnover ratios also referred to as activity ratios are concerned with measuring the efficiency in asset management. Sometimes, these ratios are also called as efficiency ratios or asset utilization ratios. The efficiency with which the assets are used would be reflected in the speed and rapidity with which assets are converted into sales. The greater the rate

of turnover or conversion, the more efficient the utilization/management, other things being equal.

Some of the more widely used turnover ratios are:-

Fixed Assets Turnover Ratio
Inventory (Or Stock) Turnover
Ratio Debtors Turnover Ratio
Creditors Turnover Ratio

Fixed Assets Turnover Ratio:

The fixed assets turnover ratio measures the efficiency with which the firm is utilizing its investment in fixed assets, such as land, building, plant and machinery, furniture, etc. It also indicates the adequacy of sales in relation to investment in fixed assets.

$$\text{Fixed Assets Turnover Ratio} = \frac{\text{Sales}}{\text{Net Fixed Assets}}$$

A high fixed assets turnover ratio indicates efficient utilization of fixed assets in generating operating revenue. A low ratio signifies idle capacity, inefficient utilization and management of fixed assets.

Inventory Turnover Ratio:

The inventory turnover ratio, also known as stock turnover ratio normally establishes the relationship between cost of goods sold and average inventory. This ratio indicates whether investment in inventory is within proper limit or not. The formula for the computation of this ratio may be expressed thus:

$$\text{Inventory Turnover Ratio} = \frac{\text{Cost of Goods Sold}}{\text{Average Inventory}}$$

In general, a high inventory turnover ratio is better than a low ratio. A high ratio implies good inventory management. A very low inventory turnover ratio is dangerous. It signifies excessive inventory or over-investment in inventory. A very low ratio may be the results of inferior quality goods, over-valuation of closing inventory, stock of unsaleable/obsolete goods.

Debtors Turnover Ratio and Collection Period:

One of the major activity ratios is the receivables or debtors turnover ratio. Allied and closely related to this is the average collection period. It shows how quickly receivables or debtors are converted into cash. In other words, the debtors turnover ratio is a test of the liquidity of the debtors of a firm. The liquidity of a firm's receivables can be examined in two ways:
(i) debtors/receivables turnover and (ii) average collection period. The debtors turnover shows the relationship between credit sales and debtors of a firm. Thus,

$$\text{Debtors Turnover Ratio} = \frac{\text{Net Credit Sales}}{\text{Average Debtors}}$$

Net credit sales consist of gross credit sales minus returns if any, from the customers. Average debtors is the simple average of debtors at the beginning and at the end of the year.

$$\text{Average Collection Period} = \frac{\text{Days In Year}}{\text{Debtors Turnover}}$$

This ratio indicates the speed with which debtors/accounts receivables are being collected. The higher the turnover ratio and shorter the average collection period, the better the trade credit management and better the liquidity of debtors. On the other hand, low turnover ratio and

long collection period reflects that payments by debtors are delayed. In general, short collection period (high turnover ratio) is preferable.

Creditors' Turnover Ratio and Debt Payment Period:

Creditors' turnover ratio indicates the speed with which the payments for credit purchases are made to the creditors. This ratio can be computed as follows: -

$$\text{Creditors' Turnover Ratio} = \frac{\text{Average Accounts Payable}}{\text{Net Credit Purchases}}$$

The term accounts payable include trade creditors and bills payable. A high ratio indicates that creditors are not paid in time while a low ratio gives an idea that the business is not taking full advantage of credit period allowed by the creditors.

Sometimes, it is also required to calculate the average payment period or average age of payables or debt period enjoyed to indicate the speed with which payments for credit purchases are made to creditors. It is calculated as:

$$\text{Average Age of Payables} = \frac{\text{Days in A Year}}{\text{Creditors' Turnover Ratio}}$$

Both the creditors' turnover ratio and the debt payment period enjoyed ratio indicate about the promptness or otherwise in making payment for credit purchases. A higher creditors' turnover ratio or lower credit period enjoyed ratio signifies that the creditors are being paid promptly.

Analysis Of Liquidity Position

The liquidity ratios measure the ability of a firm to meet its short-term obligations and reflect the short-term financial strength/solvency of a firm. The term liquidity is described as convertibility of assets ultimately into cash in the course of normal business operations and the maintenance of a regular cash flow. A sound liquid position is of primary concern to management from the point of view of meeting current liabilities as and when they mature as well as for assuring continuity of operations. Liquidity

position of a firm depends upon the amount invested in current assets and the nature of current assets. The under mentioned ratios are used to measure the liquidity position: -

- Current ratio
- Liquid (or) quick ratio
- Cash to current assets ratio cash to working capital ratio

Current Ratio:

The most widely used measure of liquid position of an enterprise is the current ratio, i.e., the ratio of the firm's current assets to current liabilities. It is calculated by dividing current assets by current liabilities:

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

The current assets of a firm represent those assets which can be in the ordinary course of business, converted into cash within a short period of time, normally not exceeding one year and include cash and bank balance, marketable securities, inventory of raw materials, semi-finished (work-in-progress) and finished goods, debtors net of provision for bad and doubtful debts, bills receivable and pre-paid expenses. The current liabilities defined as liabilities which are short-term maturing obligations to be met, as originally contemplated, within a year, consist of trade creditors, bills payable, bank credit, provision for taxation, dividends payable and outstanding expenses. N.l.hingorani and others observe:

"current ratio is a tool for measuring the short-term stability or ability of the company to carry on its day-to-day work and meet the short-term commitments earlier". Generally, 2:1 is considered ideal for a concern i.e., current assets should be twice of the current liabilities. If the current assets are two times of the current liabilities, there will be no adverse effect on business operations when the payment of current liabilities is made. If the ratio is less than 2, difficulty may be experienced in the payment of current liabilities and day-to-day operations of the business may suffer. If the ratio is higher than 2, it is very comfortable for the creditors but, for the concern, it indicates idle funds and lack of enthusiasm for work.

Liquid (Or) Quick Ratio: liquid (or) quick ratio is a measurement of a firm's ability to convert its current assets quickly into cash in order to meet its current liabilities. It is a measure of judging the immediate ability of the firm to pay-off its current obligations. It is calculated by dividing the quick assets by current liabilities:

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

The term quick assets refers to current assets which can be converted into cash immediately or at a short notice without diminution of value. Thus quick assets consists of cash, marketable securities and accounts receivable. Inventories are excluded from quick assets because they are slower to convert into cash and generally exhibit more uncertainty as to the conversion price.

This ratio provides a more stringent test of solvency. 1:1 ratio is considered ideal ratio for a firm because it is wise to keep the liquid assets atleast equal to the current liabilities at all time

Analysis of Profitability

Profitability is a measure of efficiency and control. It indicates the efficiency or effectiveness with which the operations of the business are carried on. Poor operational performance may result in poor sales and therefore low profits. Low profitability may be due to lack of control over expenses resulting in low profits. Profitability ratios are employed by management in order to assess how efficiently they carry on business operations. Profitability is the main base for liquidity as well as solvency. Creditors, banks and financial institutions are interested in profitability ratios since they indicate liquidity or capacity of the business to meet interest obligations and regular and improved profits enhance the long-term solvency position of the business. Owners are interested in profitability for they indicate the growth and also the rate of return on their investments. The importance of measuring profitability has been stressed by Hingorani, Ramanathan And Grewal in these words: "***a measure of profitability is the overall measure of efficiency".***

An appraisal of the financial position of any enterprise is incomplete unless its overall profitability is measured in relation to the sales, assets, capital employed, net worth and earnings per share. The following ratios are used to measure the profitability position from various angles:

- Gross Profit Ratio Net Profit Ratio
- Return on Capital Employed Operating Ratio
- Operating Profit Ratio
- Return on Owners' Equity Earnings Per Share
- Dividend Pay Out Ratio

Gross Profit Ratio:

The gross profit ratio or gross profit margin ratio expresses the relationship of gross profit on sales / net sales.

. The formula used to compute gross profit ratio is:

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

Gross profit ratio indicates to what extent the selling prices of goods per unit may be reduced without incurring losses on operations. A low gross profit ratio will suggest decline in business which may be due to insufficient sales, higher cost of production with the existing or reduced selling price or the all-round inefficient management. A high gross profit ratio is a sign of good and effective management.

Net Profit Ratio:

Net profit is a good indicator of the efficiency of a firm. Net profit ratio or net profit margin ratio is determined by relating net income after taxes to net sales. Net profit here is the balance of profit and loss account which is arrived at after considering all non-operating incomes such as interest on investments, dividends received, etc. And non-operating expenses like loss on sale of investments, provisions for contingent liabilities, etc. This ratio indicates net margin earned on a sale of rs.100. The formula for calculating the ratio is:

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

This ratio is widely used as a measure of overall profitability and is very useful for proprietors. A higher ratio indicates better position.

Return on Capital Employed:

The prime objective of making investments in any business is to obtain satisfactory return on capital invested. Hence, the return on capital employed is used as a measure of success of a business in realizing this objective. Otherwise known as return on investments, this is the overall profitability ratio. It indicates the percentage of return on capital employed in the business and it can be used to show the efficiency of the business as

a whole. The formula for calculating the ratio is:

$$\text{Return On Capital Employed} = \frac{\text{Operating Profit}}{\text{Capital Employed}} \times 100$$

The term “capital employed” means [share capital + reserves and surplus + long term loans] minus [non-business assets + fictitious assets] and the term “operating profit” means profit before interest and tax. The term `interest’ means interest on long-term borrowings. Non-trading income should be excluded for the above purpose. A higher ratio indicates that the funds are invested profitably.

Operating Ratio:

This ratio establishes the relationship between total operating expenses and sales. Total operating expenses includes cost of goods sold plus other operating expenses. A higher ratio indicates that operating expenses are high and the profit margin is less and therefore lower the ratio, better is the position. The operating ratio is an index of the efficiency of the conduct of business operations. An ideal norm for this ratio is between 75% to 85% in a manufacturing concern. The formula for calculating the operating ratio is thus:

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

Operating Profit Ratio: this ratio indicates net-margin earned on a sale of rs.100. It is calculated as follows:

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

The operating profit ratio helps in determining the efficiency with which affairs of the business are being managed. An increase in the ratio over the previous period indicates improvement in the operational efficiency of the business provided the gross profit ratio is constant. Operating profit is estimated without considering non-operating income such as profit on sale of fixed assets, interest on investments and non-

operating expenses such as loss on sale of fixed assets. This is thus, an effective tool to measure the profitability of a business concern.

Return on Owners' Equity (Or) Shareholders' Fund (Or) The Net Worth:

The ratio of return on owners' equity is a valuable measure for judging the profitability of an organization. This ratio helps the shareholders of a firm to know the return on investment in terms of profits. Shareholders are always interested in knowing as to what return they earned on their invested capital since they bear all the risk, participate in management and are entitled to all the profits remaining after all outside claims including preference dividend are met in full. This ratio is computed as a percentage by using the formula:

$$\text{Return On Owners' Equity} = \frac{\text{Net Profit After Interest And Tax}}{\text{Owners' Equity (Net Worth)}} \times 100$$

This is the single most important ratio to judge whether the firm has earned a satisfactory return for its equity-shareholders or not. A higher ratio indicates the better utilization of owners' fund and higher productivity. A low ratio may indicate that the business is not very successful because of inefficient and ineffective management and over investment in assets.

Earnings Per Share (EPS):

The profitability of a firm from the point of view of the ordinary shareholders is analyzed through the ratio `EPS'. It measures the profit available to the equity shareholders on a per share basis, i.e. The amount that they can get on every share held. It is calculated by dividing the profits available to the shareholders by the number of the outstanding shares. The profits available to the ordinary shareholders are represented by net profit after taxes and preference dividend.

$$\text{Earnings Per Share} = \frac{\text{Net Profit After Tax} - \text{Preference Dividend}}{\text{Number Of Equity Shares}}$$

This ratio is an important index because it indicates whether the wealth of each shareholder on a per-share basis has changed over the period. The performance and prospects of the firm are affected by eps. If eps increase, there is a possibility that the company may pay more dividend or issue bonus shares. In short, the market price of the share of a firm will be affected by all these factors.

Dividend Pay Out Ratio:

This ratio measures the relationship between the earnings belonging to the ordinary shareholders and the dividend paid to them. In other words, the dividend payout ratio shows what percentage share of the net profits after taxes and preference dividend is paid out as dividend to the equity shareholders. It can be calculated by dividing the total dividend paid to the owners by the earnings available to them. The formula for computing this ratio is:

$$\text{Dividend Payout Ratio} = \frac{\text{Dividend Per Equity Share}}{\text{Earnings Per Share}}$$

This ratio is very important from shareholder's point of view as it tells him that if a firm has used whole, or substantially the whole of its earnings for paying dividend and retained nothing for future growth and expansion purposes, then there will be very dim chances of capital appreciation in the price of shares of such firms. In other words, an investor who is more interested in capital appreciation must look for a firm having low payout ratio.

Analysis of Operational Efficiency

The operational efficiency of an organization is its ability to utilize the available resources to the maximum extent. Success or failure of a business in the economic sense is judged in relation to expectations, returns on invested capital and objectives of the business concern. There are many techniques available for evaluating financial as well as operational performance of a firm. The two important techniques adopted in this study are:

1. Turnover to capital employed or return on investment (ROI)
2. Financial operations ratio

Turnover to Capital Employed:

This is the ratio of operating revenue to capital employed. This is one of the important ratios to find out the efficiency with which the firms are utilizing their capital. It signifies the number of times the total capital employed was turned into sales volumes. The term capital employed includes total assets minus current liabilities. The ratio for calculating turnover to capital employed (in percentage) is:

$$\text{Turnover To Capital Employed} = \frac{\text{Operating Revenue}}{\text{Capital Employed}} \times 100$$

The higher the ratio, the better is the position.

Financial Operations Ratio:

The efficiency of the financial management of a firm is calculated through financial operations ratio. This ratio is a calculating device of the cost and the return of financial charges. This ratio signifies a relationship between net profit after tax and operating profit. The formula for the computation of this ratio is:

$$\text{Financial Operations Ratio} = \frac{\text{Net Profit After Tax}}{\text{Operating Profit}} \times 100$$

Here, the term “operating profit” means sales minus operating expenses. A higher ratio indicates the better financial performance of the firm.

Ratios from Shareholders’ Point Of View

Preference dividend cover: this ratio expresses net profit after tax as so many times of preference dividend payable. This is calculated as:

$$\frac{\text{Net Profit After Tax}}{\text{Preference Dividend}}$$

Equity Dividend Cover: this ratio gives information about net profit available to equity shareholders. This ratio expresses profit as number of times of equity dividend payable. This ratio is calculated usi

the following formula:

$$\frac{\text{Net Profit After Tax – Preference Dividend}}{\text{Equity Dividend}}$$

Dividend Yield on Equity Shares Or Yield Ratio: this ratio interprets dividend as a percentage of market price per share. It is calculated as:

$$\frac{\text{Dividend Per Share}}{\text{Market Price Per Share}} \times 100$$

Price Earnings Ratio: this ratio tells how many times of earnings per share is the market price of the share of a company. The formula to calculate this ratio is:

$$\frac{\text{Market Price Per Share}}{\text{Earnings Per Share}}$$

The following are the financial statements of yesye limited for the year 2005.

Balance Sheet As At 31-12-2005

	Rs.		Rs.
Equity Share Capital	1,00,000	Fixed Assets	1,50,000
General Reserve	90,000	Stock	42,500
Profit & Loss Balance	7,500	debtors	19,000
Sundry Creditors	35,000	Cash	61,000
6% Debentures	30,000	Proposed Dividends	10,000
	2,72,500		2,72,500

Trading And Profit And Loss Account

For The Year Ended 31-12-2005

	Rs.		Rs.
To Cost Of Goods Sold	1,80,000	By Sales	3 ,00,000
To Gross Profit C/D	1,20,000		
	3,00,000		3,00,000

To Expenses	1,00,000	By Gross Profit B/D	1,20,000
To Net Profit	20,000		
	1,20,000		1,20,000

You are required to compute the following:

1) Current Ratio
2) Acid Test Ratio
3) Gross Profit Ratio
4) Debtors' Turnover Ratio
5) Fixed Assets To Net Tangible Worth
6) Turnover To Fixed Assets

Solution:

$$\text{1) Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

$$= \frac{1,22,500}{45,000} = 2.7:1.$$

$$\text{2) Acid Test Ratio} = \frac{\text{Quick Assets}}{\text{Quick Liabilities}}$$

$$= \frac{80,000}{45,000} = 1.8:1.$$

$$\text{3) Gross Profit Ratio} = \frac{\text{Gross Profit}}{\text{Sales}} \times 100$$

$$= \frac{1,20,000}{3,00,000} \times 100 = 40\%$$

$$\text{4) Debtors' Turnover Ratio} = \frac{\text{Net Sales}}{\text{Average Debtors}}$$

$$= \frac{3,00,000}{19,000} = 15.78 \text{ Times.}$$

$$\text{Collection Period} = \frac{\text{No. Of Days In The Year}}{\text{Debtors' Turnover}}$$

$$= \frac{365}{15.78} = 23 \text{ Days}$$

$$\text{5) Fixed Asset To Net Tangible Worth} = \frac{\text{Fixed Assets}}{\text{Proprietor's Fund}} \times 100$$

$$= \frac{1,50,000}{1,97,500} \times 100 = 76\%$$

$$\text{6) Turnover to Fixed Assets} = \frac{\text{Net Sales}}{\text{Fixed Assets}}$$

$$= \frac{3,00,000}{1,50,000} = 2 \text{ Times}$$

from the following details prepare a statement of proprietary fund with as many details as possible.

1) Stock Velocity 6
2) Capital Turnover Ratio 2
3) Fixed Assets Turnover Ratio 4
4) Gross Profit Turnover Ratio 20%
5) Debtors' Velocity 2 Months
6) creditors' velocity 73 days

Gross profit was rs.60,000. Reserves and surplus amount to 20,000. Closing stock was rs.5,000 in excess of opening stock.

Solution:

1. Calculation Of Sales

$$\text{Gross Profit Ratio} = \frac{\text{Gross Profit}}{\text{Sales}} \times 100 = 20\%$$

$$= \frac{\text{Rs.60,000}}{\text{Sales}} = \frac{20}{100}$$

$$= \frac{1}{5}$$

Sales: Rs.3,00,000

2. Calculation Of Sundry

$$\text{Debtors' Velocity} = \frac{\text{Debtors}}{\text{Sales}} \times 12 \text{ Months}$$

Let Debtors Be X

$$2 = \frac{X}{3,00,000} \times 12$$

$$\frac{X}{3,00,000} = \frac{1}{6}$$

$$X = \text{Rs.}50,000$$

Debtors: Rs.50,000

It Is Assumed That All Sales Are Credit Sales.

3. Calculation Of Stock

$$\text{Stock Turnover Ratio} = \frac{\text{Cost Of Goods Sold}}{\text{Average Stock}} = 6$$

$$\text{Cost Of Goods Sold} = \text{Sales} - \text{Gross Profit}$$

= Rs.3,00,000 – Rs.60,000

= Rs.2,40,000

Rs.2,40,000
---------- = 6
Average Stock

Rs.2,40,000
Average Stock = ---------- = Rs.40,000
6

Opening Stock + Closing Stock
Average Stock = ----------
2

Let Opening Stock Be Rs.X.
Then Closing Stock Will Be X + 5,000

X + X + 5,000
---------- = 40,000
2

2X + 5,000
---------- = 40,000
2

Cross Multiplying

2X + 5,000 = 80,000
2X = 80,000 – 5,000
= 75,000
X = 37,500

4. Calculation Of Creditors

Total Creditors
Creditors' Velocity = ---------- X 365
Days Credit Purchases

= 73 Days

Purchase = Cost Of Goods + Closing Stock – Opening Stock
= Rs.2,40,000 + 42,500 – 37,500
= Rs.2,45,000

Let The Creditors Be X

X
---------- X 365 = 73

2,45,000

365 X = 2,45,000 X 73

2,45,000 X 73

X = ----------

365

=

Creditors Rs.49,000

5. Calculation Of Fixed Assets

Costs Of Goods Sold

Fixed Assets Turnover Ratio = ----------

---------- = 4

Fixed Assets

Let Fixed Assets Be X

2,40,000

=

---------- 4

X

X = 60,000

=

Fixed Assets Rs.60,000

6. Shareholders' Fund

Cost Of Goods Sold

Capital Turnover = ----------

Ratio ---------- = 2

Proprietary Fund

2,40,000

---------- = 2

Proprietary Fund

Proprietary Fund = Rs.1,20,000

Shareholders' Fund Includes Share Capital, Profit & Reserve.

Share Capital = Shareholders' Fund – (Profit + Reserve)

= Rs.1,20,000 – Rs.80,000

= Rs.40,000

7. Calculation Of Bank Balance

Shareholders' Fund + Current Liabilities = Fixed Assets + Current Assets

Rs.1,20,000 + 49,000 = Rs.60,000 + Current Assets

Current Assets = Rs.1,09,000

Current Assets	= Stock + Debtors + Bank
Bank Balance	= Current Assets – (Stock + Debtors)
	= Rs.1,09,000– (42,500 + 50,000)
	= Rs.1,09,000 – 92,500
	= Rs.16,500

Balance Sheet as On …

Liabilities	Rs.	Assets	Rs.
Share Capital	40,000	Fixed Assets	60,000
Reserves & Surplus	20,000	Current Assets:	
Profit	60,000	Stock	42,500
Current Liabilities	49,000	Debtors	50,000
		Bank	16,500
	1,69,000		1,69,000

3. The Following Data Is Furnished:

A) Working Capital Rs.45,000
B) Current Ratio 2.5
C) Liquidity Ratio 1.5
D) Proprietary Ratio – (Fixed Assets To Proprietary Funds) 0.75
E) Overdraft Rs.10,000
F) Retained Earnings Rs.30,000

There Are No Long Term Loans And Fictitious Assets.

Find Out:

1) Current Assets
2) Current Liabilities
3) Fixed Assets
4) Quick Assets
5) Quick Liabilities
6) Stock
7) Equity

Solution:

Current Assets

Current Assets 2.5

Current Liability 1.0

Working Capital 1.5

If Working Capital Is 1.5, Current Asset Will Be 2.5.

If Working Capital Is Rs.45,000, Current Assets Will Be

Rs.75,000 Current Assets = Rs.75,000

Current Liability

Current Liability = Current Assets – Working Capital

= Rs.75,000 – Rs.45,000

= Rs.30,000

Fixed Assets

Shareholders' Fund+ Current Liabilities = Fixed Assets + Current Assets Shareholders' Fund=Fixed Assets + Current Assets – Current Liabilities

= Fixed Assets + Rs.75,000 – Rs.30,000

= Fixed Assets + Rs.45,000

Let The Shareholders' Fund Be X, Fixed Assets Will Be ¾ X

X	=	Rs. ¾ X + Rs.45,000
¼ X	=	Rs.45,000
X	=	Rs.1,80,000
¾ X	=	Rs.1,35,000
Fixed Assets	=	Rs.1,35,000
Shareholders Funds	=	Rs.1,35,000 + Rs.45,000
	=	Rs.1,80,000

Stock

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

Quick Assets = Current Assets – Stock

Quick Liabilities = Current Liabilities – Bank Overdraft

Let The Value Of Stock Be X.

$$\frac{\text{Quick Assets}}{\text{Quick Liabilities}} = \frac{\text{Rs.75,000} - X}{30{,}000 - 10{,}000}$$

$$= \frac{75{,}000 - X}{20{,}000} = 1.5$$

Cross Multiplying

75,000 – X	=	20,000 X 1.5
75,000 – X	=	30,000
X	=	45,000
Stock	=	Rs.45,000
Quick Assets	=	Rs.75,000 – Rs.45,000
	=	Rs.30,000
Quick Liabilities	=	Rs.20,000

Equity

Shareholders' Fund	=	Equity + Retained Earnings
Shareholders' Fund	=	Rs.1,80,000 (As Calculated)
Retained Earnings	=	Rs.30,000 (As Given)
Equity	=	Rs.1,50,000

Illustration 4:

From the following balance sheet of dinesh limited calculate (i) current ratio (ii) liquid ratio (iii) debt-equity ratio (iv) proprietary ratio, and (v) capital gearing ratio.

Balance Sheet Of Dinesh Limited As On 31-12-2005

Liabilities	Rs.	Assets	Rs.
Equity share capital	10,00,000	goodwill	5,00,000
6% preference capital	l 5,00,000	plant & machinery	6,00,000
Reserves	1,00,000	land & buildings	7,00,000
Profit & loss a/c	4,00,000	furniture	1,00,000
Tax provision	1,76,000	stock	6,00,000
Bills payable	1,24,000	bills receivables	30,000
Bank overdraft	20,000	sundry debtors	1,50,000
Sundry creditors	80,000	bank account	2,00,000
12% debentures	5,00,000	short term investment 20,000	
	29,00,000		29,00,000

$$\text{(I) Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

$$= \frac{\text{Stock + Bills Receivables + Debtors + Bank + S.T. Investments}}{\text{S.Creditors + Bills Payable + Bank O.D. + Tax Provision}}$$

$$= \frac{10,00,000}{4,00,000} = 2.5 : 1.$$

Interpretation:

The current ratio in the said firm is 2.5:1 against a standard ratio of 2:1. It is a good sign of liquidity. However, the stock is found occupying 60 percent of current assets which may not be easily realisable.

$$\text{(II) Liquid Ratio} = \frac{\text{Current Assets – Stocks}}{\text{Current Liabilities}}$$

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

$$= \frac{4,00,000}{4,00,000}$$

$$= 1:1.$$

Interpretation:

The standard for quick ratio is 1:1. The calculated ratio in case of dinesh limited is also 1:1. The above two ratios show the safety in respect of liquidity in the said firm.

$$\text{(III) Debt Equity Ratio} = \frac{\text{Long Term Debt}}{\text{Equity Shareholders' Fund}}$$

$$= \frac{\text{Debentures}}{\text{Equity Capital + Preference Capital + Reserves + Profit \& Loss A/C}}$$

$$= \frac{5,00,000}{10,00,000 + 5,00,000 + 1,00,000 + 4,00,000}$$

= 1:4.

Interpretation:

Debt-equity ratio indicates the firm's long term solvency. It can be observed that the firm's long term loans are constituting 25 percent to that of the owners' fund. Although such a low ratio indicates better long term solvency, the less use of debt in capital structure may not enable the firm to gain from the full stream of leverage effects.

$$\text{(IV) Proprietary Ratio} = \frac{\text{Proprietors' Funds}}{\text{Total Assets}}$$

$$= \frac{20,00,000}{29,00,000} = 20:29$$

Interpretation:

Out of total assets, seven-tenths are found financed by owners' funds. In other words a large majority of long term funds are well invested in various long term assets in the firm.

$$\text{(V) Capital Gearing Ratio} = \frac{\text{Owners' Resources}}{\text{Fixed-Interest Bearing Resources}}$$

$$\text{A/C} = \frac{\text{Equity Share Capital + Reserves + P\&L A/C}}{\text{Preference Capital + Debentures}}$$

$$= \frac{10,00,000 + 1,00,000 + 4,00,000}{5,00,000 + 5,00,000}$$

$$= \frac{15,00,000}{10,00,000} = 1.5:1.$$

Interpretation:

Keeping rs.15 lakhs of equity funds as security, the firm is found to have mobilized rs.10 lakhs from fixed interest-bearing sources. It indicates that the capital structure is low geared.

Illustration 4:

The following are the balance sheet and profit and loss account of

sundara products limited as on 31st December 2005.

Profit And Loss Account

To Opening Stock	1,00,000	By Sales	8,50,000
Purchases	5,50,000	Closing Stock	1,50,000
Direct Expenses	15,000		
Gross Profit	3,35,000		
	10,00,000		10,00,000
To Admn. Expenses	50,000	By Gross Profit	3,35,000
Office Establishment	1,50,000	Non-Operating Income	15,000
Financial Expenses	50,000		
Non-Operating Expenses/Losses	50,000		
Net Profit	50,000		
	3,50,000		3,50,000

Balance Sheet

Liabilities	Rs.	Assets	Rs.
Equity Share Capital (2000 @ 100)	2,00,000	Land & Buildings	1,50,000
Reserves	1,50,000	Plant & Machinery	1,00,000
		Stock In Trade	1,50,000

Current Liabilities	1,50,000	Sundry Debtors	1,00,000
P&L A/C Balance	50,000	Cash & Bank	50,000
	5,50,000		5,50,000

Calculate Turnover Ratios.

Solution:

(I) Share Capital To Turnover Ratio

$$= \frac{\text{Sales}}{\text{Total Capital Employed}}$$

$$= \frac{\text{Sales}}{\text{Equity + Reserve + P \& L A/C Balance}}$$

$$= \frac{8,50,000}{4,00,000}$$

= 2.13 Times.

Interpretation:

This turnover ratio indicates that the firm has actually converted its share capital into sales for about 2.13 times. This ratio indicates the efficiency in use of capital resources and a high turnover ratio ensures good profitability on operations on an enterprise.

(ii) fixed asset's turnover ratio

$$= \frac{\text{Sales}}{\text{Total fixed assets}}$$

$$= \frac{\text{Sales}}{\text{Land + Plant \& Machinery}}$$

$$= \frac{8,50,000}{2,50,000}$$

= 3.4 times.

Interpretation:

Although fixed assets are not directly involved in the process of generating sales, these are said to back up the production process. A ratio of 3.4 times indicates the efficient utilization of various fixed assets in this organisation.

(iii) Net working capital turnover:

$$= \frac{\text{Sales}}{\text{Net Working Capital}}$$

$$= \frac{\text{Sales}}{\text{Current Assets – Current Liabilities}}$$

$$= \frac{8,50,000}{3,00,000 – 1,50,000}$$

= 5.67 Times.

Interpretation:

Net working capital indicates the excess of current assets financed by permanent sources of capital. An efficient utilisation of such funds is of prime importance to ensure sufficient profitability along with greater liquidity. A turnover ratio of 5.7 times is really appreciable.

(iv) Average Collection Period:

$$\text{Debtor's Turnover} = \frac{\text{Credit Sales}}{\text{Average Debtors}}$$

Assuming that 80% of the sales of 8,50,000 as credit sales:

$$= \frac{6,80,000}{1,00,000}$$

$$= 6.8 \text{ times}$$

Average collection period

$$= \frac{360 \text{ Days}}{\text{Debtors' Turnover}}$$

$$= \frac{360}{6.8}$$

$$= 53 \text{ Days}$$

Interpretation:

Average collection period indicates the time taken by a firm in collecting its debts. The calculated ratio shows that the realisation of cash on credit sales is taking an average period of 53 days. A period of roughly two months indicate that the credit policy is liberal and needs a correction.

(v) Stock Turnover Ratio

$$= \frac{\text{Cost Of Goods Sold}}{\text{Average Stock}}$$

$$= \frac{\text{Sales} - \text{Gross Profit}}{(\text{Opening Stock} + \text{Closing Stock}) + 2}$$

$$= \frac{5,15,000}{1,25,000}$$

4.12 times.

Interpretation:

Stock velocity indicates the firm's efficiency and profitability. The stock turnover ratio shows that on an average inventory balances are cleared once in 3 months. Since there is no standard for this ratio, the period of operating cycle of this firm is to be compared with the industry average for better interpretation.

Illustration 9:

Comment on the performance of arasu limited from the ratios given below:

	Industry average Ratios	Ratios of Arasu ltd.
1. Current ratio	2:1	2.5:1
2. Debt-equity ratio	2:1	1:1
3. Stock turnover ratio	9.5	3.5
4. Net profit margin ratio	23.5%	15.1%

Solution:

(i) Current Ratio:

This ratio indicates the liquidity position of a firm. The ability of a firm in meeting its current liabilities could be understood by this ratio. The calculated results show that the liquidity in arasu limited is even greater than industry average, showing the safety. However, excess liquidity locks up the capital in unnecessary current assets.

(ii) Debt-Equity Ratio:

It is an indicator of a firm's solvency in terms of its ability to repay long term loans in time. The calculated ratio shows better solvency of 1:1 indicating that for every one rupee of debt capital, to repay one rupee of equity base exists in arasu ltd. However, this ratio is not likely to ensure the leverage benefits that a firm gains by using higher dose of debt.

(iii) Stock Turnover Ratio:

Stock velocity is an indicator of a firm's activeness. It directly influences the profitability of a firm. The calculated ratio for arasu ltd. Is very poor when compared to industry average. This poor ratio indicates the inefficient use of capacities, consequently, the likely low profitability.

(iv) Net Profit Margin Ratio:

Although the firms in a particular industry could sell the product more or less at same price, the net profits differ among firms due to their cost of production, excessive administrative and establishment expenses etc. This picture is found true in case of arasu ltd. A poor profitability of 15.1% compared to an industry average of 23.5% may be due to low stock turnover, inefficiency in management, excess overhead cost and excessive interest burdens.

Funds Flow Analysis And Cash Flow Analysis

Introduction

At the end of each accounting period, preparation and presentation of financial statements are undertaken with an objective of providing as much information as possible for the public. The balance sheet presents a snapshot picture of the financial position at a given point of time and the income statement shows a summary of revenues and expenses during the accounting period. Though these are significant statements especially in terms of the principal goals of the enterprise, yet there is a need for one more statement which will indicate the changes and movement of funds between two balance sheet dates which are not clearly mirrored in the balance sheet and income statement. That statement is called as funds flow statement. The analysis which studies the flow and movement of funds is called as funds flow analysis. Similarly one more statement has to be prepared known as cash flow statement. This requires the doing of cash flow analysis. The focus of cash flow analysis is to study the movement and flow of cash during the accounting period. This lesson deals at length both the analyses.

Concept of Funds

How are funds defined? Perhaps the most ambiguous aspect of funds flow statement is understanding what is meant by funds. Unfortunately there is no general agreement as to precisely how funds should be defined.

To a lay man the concept of funds means `cash'. According to a few, `funds' means `net current monetary assets' arrived at by considering current assets (cash + marketable securities + short term receivables) minus short term obligations. A third view, which is the most acceptable one, is that concept of funds means `working capital' and in this lesson the term `funds' is used in the sense of Working capital.

Working Capital Concept of Funds

The excess of an enterprise's total current assets over its total current liabilities at some point of time may be termed as its net current assets or working capital. To illustrate this, let us assume that on the balance sheet date the total current assets of an enterprise are rs.3,00,000 and its total

current liabilities are rs.2,00,000. Its working capital on that date will be rs.3,00,000 – rs.2,00,000 = rs.1,00,000. It follows from the above, that any increase in total current assets or any decrease in total current liabilities will result in a change in working capital.

Flow Of Funds

The term `flow' means change and therefore, the term `flow of funds' means `change in funds' or `change in working capital'. According to manmohan and goyal, "the flow of funds" refers to movement of funds described in terms of the flow in and out of the working capital area. In short, any increase or decrease in working capital means `flow of funds'. Many transactions which take place in a business enterprise may increase its working capital, may decrease it or may not effect any change in it. Let us consider the following examples.

(i) Purchased Machinery for Rs.3,00,000:

The effect of this transaction is that working capital decreases by 3,00,000 as cash balance is reduced. This change (decrease) in working capital is called as application of funds. Here the accounts involved are current assets (cash a/c) and fixed asset (machinery a/c).

(ii) Issue Of Share Capital Of Rs.10,00,000:

This transaction will increase the working capital as cash balance increases. This change (increase) in working capital is called as source of funds. Here the two accounts involved are current assets (cash a/c) and long-term liability (share capital a/c).

(iii) Sold Plant For Rs.3,00,000:

This transaction will have the effect of increasing the working capital by rs.3,00,000 as the cash balance increases by rs.3,00,000. It is a source of funds. Here the accounts involved are current assets (cash a/c) and fixed assets (plant a/c).

(iv) Redeemed Debentures Worth Rs.1,00,000:

This transaction has the effect of reducing the working capital, as the redemption of debentures results in reduction in cash balance. Hence this is an example of application of funds. The two accounts affected by this transaction are current assets (cash a/c) and long-term liability (debenture a/c).

(v) Purchased Inventory Worth Rs.10,000:

This transaction results in decrease in cash by rs.10,000 and increase in stock by rs.10,000 thereby keeping the total current assets at the same figure. Hence there will be no change in the working capital (there is no flow of funds in this transaction). Both the accounts affected are current assets.

(vi) Notes Payable Drawn By Creditors Accepted For Rs.30,000:

The effect of this transaction on working capital is nil as it results in increase in notes payable (a current liability) and decreases the creditors (another current liability). Since there is no change in total current liabilities there is no flow of funds.

(vii) Building Purchased For Rs.30,00,000 And Payment Is Made By Shares:

This transaction will not have any impact on working capital as it does not result in any change either in the current asset or in the current liability. Hence there is no flow of funds. The two accounts affected are fixed assets (building a/c) and long term liabilities (capital a/c).

From the above series of examples, we arrive at the following rules on flow of funds:

I. There Will Be Flow Of Funds Only When There Is A Cross-Transaction I.E., Only When The Transaction Involves:

Current Assets And Fixed Assets E.G., Purchase Of Machinery For Cash (Application Of Funds) Or Sale Of Plant For A Cash (Source Of Funds).

Current Assets And Capital, E.G., Issue Of Shares (Source Of Funds).
Current Assets And Long Term Liabilities, E.G., Redemption Of Debentures In Cash (Application Of Funds).
Current Liabilities And Long-Term Liabilities, E.G., Creditors Paid Off In Debentures Or Shares (Source Of Funds).
Current Liabilities And Fixed Assets, E.G., Building Transferred To Creditors In Satisfaction Of Their Claims (Source Of Funds).

Ii. There Will Be No Flow Of Funds When There Is No Cross Transaction I.E., When The Transaction Involves:

Current Assets And Current Assets, E.G., Inventory Purchased For Cash.
Current Liabilities And Current Liabilities, E.G., Notes Payable Issued To Creditors.
Current Assets And Current Liabilities, E.G., Payments Made To Creditors.
Fixed Assets And Long Term Liabilities, E.G., Building Purchased And Payment Made In Shares Or Debentures.

(a) Sources And Application Of Funds: the following are the main sources of funds:

(i) Funds From Operations: the operations of the business generate revenue and entail expenses. Revenues augment working capital and expenses other than depreciation and other amortizations. The following adjustments will be required in the figures of net profit for finding out the real funds from operations:

Funds From Operations

Net profit for the year		x	x	x
Add*: depreciation of fixed assets	x	x	x	
Preliminary expenses, goodwill, etc. Written off		x	x	x
Loss on sale of fixed assets	x	x	x	
Transfers to reserve	x	x	x	
Less: profit on sale or revaluation		x	x	x
Dividends received, etc.		X	x	x
Funds from operations		x	x	x

these items are added as they do not result in outflow of funds. In case of `net loss' for the year these items will be deducted.

(ii) Issue Of Share Capital: an issue of share capital results in an inflow of funds.

(iii) Long-Term Borrowings: when a long-term loan is taken, there is an increase in working capital because of cash inflow. A short term loan, however, does not increase the working capital because a short-term loan increases the current assets (cash) and the current liability (short term loan) by the same amount, leaving the size of working capital unchanged.

(iv) Sale Of Non-Current Assets: when a fixed asset or a long-term investment or any other non-current asset is sold, there will be inflow represented by cash or short-term receivables.

(b) Uses Of Funds: the following are the main uses of funds:

(i) Payment Of Dividend: the transaction results in decrease in working capital owing to outflow of cash.

(ii) Repayment Of Long-Term Liability:

The repayment of long-term loan involves cash outflow and hence it is used for working capital. The repayment of a current liability does not affect the amount of working capital because it entails an equal reduction in current liabilities and current assets.

(iii) Purchase Of Non-Current Assets:

when a firm purchases fixed assets or other non-current assets, and if it pays cash or incurs a short-term debt, its working capital decreases. Hence it is a use of funds.

Importance And Utility Of Funds Flow Analysis

Funds flow analysis provides an insight into the movement of funds and helps in understanding the change in the structure of assets, liabilities and owners' equity. This analysis helps financial managers to find answers to questions like:

I how far capital investment has been supported by long term financing?

(ii) how far short-term sources of financing have been used to support capital investment?

(iii) how much funds have been generated from the operations of a business?

(iv) to what extent the enterprise has relied on external sources of financing?

(v) what major commitments of funds have been made during the year?

(vi) where did profits go?

(vii) why were dividends not larger?

(viii) how was it possible to distribute dividends in excess of current earnings or in the presence of a net loss during the current period?

(ix) why are the current assets down although the income is up?

(x) has the liquidity position of the firm improved?

(xi) what accounted for an increase in net current assets despite a net loss for the period?

(xii) how was the increase in working capital financed?

Preparation of Funds Flow Statement

Two statements are involved in funds flow analysis.

(I) Statement Or Schedule Of Changes In Working Capital

(II) Statement Of Funds Flow

(a) Statement Of Changes In Working Capital:

This statement when prepared shows whether the working capital has increased or decreased during two balance sheet dates. But this does not give the reasons for increase or decrease in working capital. This statement is prepared by comparing the current assets and the current liabilities of two periods. It may be shown in the following form:

Schedule Of Changes In Working Capital (Proforma)				
Items	As on	As on	Change	
Current Assets			Increase	Decrease
Cash Balances				
Bank Balances				
Marketable Securities				
Stock In Trade				
Pre-Paid Expenses				

Current Liabilities				
Bank Overdraft				
Outstanding Expenses				
Accounts Payable				
Provision For Tax				
Dividend				
Increase / Decrease In Working Capital				

Any increase in current assets will result in increase in working capital and any decrease in current assets will result in decrease in working capital. Any increase in current liability will result in decrease in working capital and any decrease in current liability will result in increase in working capital.

(b) Funds Flow Statement:

Funds flow statement is also called as statement of changes in financial position or statement of sources and applications of funds or where got, where gone statement. The purpose of the funds flow statement is to provide information about the enterprise's investing and financing activities. The activities that the funds flow statement describes can be classified into two categories:

(i) activities that generate funds, called sources, and

(ii) activities that involve spending of funds, called uses.

When the funds generated are more than funds used, we get an increase in working capital and when funds generated are lesser than the funds used, we get decrease in working capital. The increase or decrease in working capital disclosed by the schedule of changes in working capital should tally with the increase or decrease disclosed by the funds flow statement.

The funds flow statement may be prepared either in the form of a statement or in `t' shape form. When prepared in the form of statement it would appear as follows:

Funds Flow Statement

Sources Of Funds				
Issues of shares		x	x	x
Issue of debentures		x	x	x
Long term borrowings		x	x	x
Sale of fixed assets		x	x	x
*operating profit (funds from operations)		x	x	x
Total sources	x	x	x	

Application Of Funds

Redemption of redeemable Preference shares		x	x	x
Redemption of debentures		x	x	x
Payments for other long-term loans	x	x	x	
Purchase of fixed assets		x	x	x
* operation loss (funds lost from Operations)	-	x	x	x
Total uses		x	x	x

Net increase / decrease in working capital (total sources – total uses)

When prepared in `t' shape form, the funds flow statement would Appear as follows:

Funds Flow Statement

Sources Of Funds		Application Of Funds	
* Funds From Operation	x x x	*Funds Lost In Operations	xx x
Issue Of Shares	x x x	Redemption Of Preference Shares	x x x
Issue Of Debentures	x x x	Redemption Of Debentures	x x x
Long-Term Borrowings	x x x	Payment Of Other Long-Term Loans	x x x
Sale Of Fixed Assets	x x x	Purchase Of Fixed Assets	x x x
* Decrease In Working Capital	x x x	Payment Of Dividend, Tax, Etc.	x x x

Increase In Working Capital	x x x

---

*Only One Figure Will Be There.

It may be seen from the proforma that in the funds flow statement preparation, current assets and current liabilities are ignored. Attention is given only to change in fixed assets and fixed liabilities.

In this connection an important point about **provision for taxation and proposed dividend** is worth mentioning. These two may either be treated as current liability or long-term liability. When treated as current liabilities they will be taken to `schedule of changes in working capital' and thereafter no adjustment is required anywhere. If they are treated as long-term liabilities there is no place for them in the schedule of changes in working capital. The amount of tax provided and dividend proposed during the current year will be added to net profits to find the funds from operations. The amount of actual tax and dividend paid will be shown as application of funds in the funds flow statement. In this lesson, we have taken them as **current liabilities.**

Illustration 2:

The balance sheet of mathi limited for two years was as follows:

Liabilities			Assets		
	2010	2011		2010	2011
Share Capital	40,000	60,000	Land & Buildings	27,700	56,600
Share Premium	4,000	6,000	Plant & Machinery	17,800	25,650

General Reserve	3,000	4,500	Furniture	1,200	750
Profit & Loss A/C	9,750	10,400	Stock	11,050	13,000
5% Debentures	---	13,000	Debtors	18,250	19,550
Creditors	16,750	18,200	Bank	2,400	2,000
Provision For Taxation	4,900	5,450			
	78,400	1,17,550		78,400	1,17,550

Additional Information

Depreciation written off during the year was:

Plant and machinery	rs.6,400
Furniture	rs. 200

Prepare: a schedule of changes in working capital and a statement of sources and application of funds.

Schedule Of Changes In Working Capital

			Working Capital	
	2010 Rs.	2011 Rs.	Increase Rs.	Decrease Rs.
Current Assets				
Stock	11,050	13,000	1,950	
Debtors	18,250	19,550	1,300	
Bank	2,400	2,000		400
(a)	31,700	34,550		
Current Liabilities				
Creditors	16,750	18,200		1,450
Provision for Taxation	4,900	5,450		550
(b)	21,650	23,650		
Working capital (a) – (b)	10,050			10,900

Increase in working Capital	850		850
	10,900	10,900	3,250	3,250

Calculation Of Funds From Operations

Profit And Loss A/C As On 31-12-2011			10,400
Add: Transfer To Reserve			1,500
Depreciation –		Plant & Machinery	
	6,400	Furniture	200
			18,500
Less: P&L A/C As On 1-1-2011			9,750
Funds From Operations			8,750

Land & Building A/C

To Balance B/D	27,700	By Balance C/D	56,600
To Bank Purchase (Balancing Figure)	28,900		
	56,600		56,600

Plant & Machinery A/C

To Balance B/D	17,800	By Depreciation	6,400
To Bank Purchase (Balancing Figure)	14,250	By Balance C/D	25,650
	32,050		32,050

Furniture A/C

To Balance B/D	1,200	By Depreciation	200
		By Bank – Sale (Balancing Figure)	250
		By Balance C/D	750
	1,200		1,200

Statement of Sources And Application of Funds

Sources	Rs.	Applications	Rs.
Funds From Operations	8,750	Purchase Of Land & Buildings	28,900
Share Capital	20,000	Purchase Of Plant &	14,250
Share Premium	2,000	Increase In Working Capital	850
Debentures	13,000		
Sale Of Furniture	250		
	44,000		44,000

Meaning of Concepts of Cash, Cash Flow and Cash Flow Analysis

While explaining the concept of `fund' it was mentioned that in a narrower sense the term `fund' is also used to denote cash. The term `cash' in the context of cash flow analysis stands for cash and bank balances. Cash flow refers to the actual movement of cash in and out of an organisation. When cash flows into the organisation it is called cash inflow or positive cash flow. In the same way when cash flows out of the organisation, it is called cash outflow or negative cash flows. Cash flow analysis is an analysis based on the movement of cash and bank balances. Under cash flow analysis, all movements of cash would be considered.

Cash Flow Statement

A cash flow statement is a statement depicting changes in cash position from one period to another i.e. The result of cash flow analysis is given in the cash flow statement. For example if the cash balance of a concern as per its balance sheet as on 31st march 2004 is rs.90,000 and the cash balance as per its balance sheet as on 31st march 2005 is rs.1,20,000, there has been an inflow of cash of rs.30,000 in the year 2004-05 as compared to the year 2003-04. The cash flow statement explains the reasons for such inflows or outflows of cash as the case may be. Normally the following are principal sources of inflows of cash:

Issue Of Shares And Debentures For Cash

Sale Of Fixed Assets And Investments For Cash

Borrowings From Banks And Other Financial Institution

Cash From Operations

Outflows of cash generally include:

Redemption Of Shares And Debentures By Cash

Purchase Of Fixed Assets And Investments By

Cash Repayment Of Loans

Cash Lost In Operations

The following is the format of a cash flow statement:

Cash Flow Statement For The Year Ending Say 31st March 2012

Balance as on 1-4-2011		**balance as on 1-4-2011**	
		bank overdraft (if any)	xx x
Cash in hand	x x x		
Cash at bank	x x x		
Add: cash inflows:		**cash outflows:**	
Here the items mentioned As sources of cash inflows		here the items mentioned as outflows of cash above	
Above will be recorded		will be recorded	
Balance as on 31-3-2012		**balance as on 31-3-2012**	
Bank overdraft (if any)	x x x	cash in hand	xx x
Cash at bank	x x x		
	------		------
	x x x		x x x
	------		------

The accounting standard 3 issued by the institute of chartered accountants of india requires the companies to prepare cash flow statement and present them as part of their annual reports.

Calculation of Cash From Operations

The important step in the preparation of cash flow statement is the calculation of cash from operations. It is calculated as follows:

The first step in the calculation of cash from operations is the calculation of funds from operations (which is already explained in the lesson on funds flow analysis). To the funds from operations the decrease in current assets and increase in current liabilities will be added (except cash, bank and bank o.d.). From the added total, increase in current assets and decrease in current liabilities will be deducted (except cash, bank and bank o.d.). The resultant figure is cash from operations (refer illustration 3).

Proforma Of Cash From Operations Statement

Funds from operations or funds lost from operations	x x x x
Add: Decrease in current assets	x x x x
Increase in current liabilities	x x x x
	--------
	x x x x

Less: Increase in current assets	x x x
Decrease in current liabilities	x x x
	x x x x

Cash from operations or cash lost from operations

As in the case of fund flow analysis here also we assume **provision for taxation** and proposed dividend as current liabilities.

Utility of Cash Flow Analysis

Cash flow analysis yields the following advantages:
It is very helpful in understanding the cash position of the firm. This would enable the management to plan and coordinate the financial operations properly.
Since it provides information about cash which would be available from operations the management would be in a position to plan repayment of loans, replacement of assets, etc.
It throws light on the factors contributing to the reduction of cash balance inspite of increase in income and vice versa.
A comparison of the cash flow statement with the cash budget for the same period helps in comparing and controlling cash inflows and cash outflows.

However cash flow analysis is not without limitations. The cash balance as disclosed by the cash flow statement may not represent the real liquid position of the business since it can be easily influenced by postponing purchases and other payments. Further cash flow statement cannot replace the income statement or funds flow statement. Each of them has a separate function to perform.

Cash Flow Analysis Vs. Funds Flow Analysis

A cash flow statement is concerned only with the changes in cash position while funds flow analysis is concerned with changes in working capital position between two balance sheet dates.
Cash flow analysis is a tool of short-term financial analysis while the funds flow analysis is comparatively a long-term one.
Cash is part of working capital and therefore an improvement in cash position results in improvement in the funds position but not vice versa. In other words “inflow of cash” results in “inflow of funds” but inflow of funds may not necessarily result in “inflow of cash”.
In funds flow analysis, the changes in various current assets and current liabilities are shown in a separate statement called schedule of changes in working capital in order to ascertain the net increase or decrease in working capital. But in cash flow analysis, such changes are adjusted to funds from operations in order to ascertain cash from operations.

Illustration 3:

From the following balances calculate cash from operations:

	December 31	
	2010	2011
Profit and loss a/c balance	75,000	1,55,000
Debtors	45,000	42,000
Creditors	20,000	26,000
Bills receivable	12,000	15,000
Cash in hand	2,500	3,000
Prepaid expenses	1,600	1,400
Bills payable	18,000	16,000
Cash at bank	8,000	10,000
Outstanding expenses	1,200	1,600
Income received in advance	250	300
Outstanding income	800	900

Additional Information:

(i) depreciation written off during the year rs.10,000

(ii) transfer to general reserve rs.10,000

Calculation Of Funds From Operations

	Rs.
Profit & Loss A/C As On 31St December 2011	1,55,000
Add: Depreciation	10,000
Transfer To General Reserve	10,000
	1,75,000
Less : P & L A/C As On 1St January 2011	75,000
Funds From Operations	1,00,000
Calculation Of Cash From Operations	
Funds from operations	1,00,000
Add: Decrease In Current Assets	
Decrease in debtors	3,000
Decrease in prepaid expenses	200
Increase In Current Liabilities	
Increase in creditors	6,000
Increase in outstanding expenses	400
Increase in income received in advance	50
	1,09,650
Less: Increase In Current Assets	
Increase in bills receivables	3,000
Increase in outstanding income	100
Decrease In Current Liabilities	
Decrease in bills payable	2,000
	5,100
Cash from operations	1.04,550

Note: decrease in current assets means current assets are converted into cash and increase in current liabilities results in further generation of cash. Hence they are added. Increase in current assets and decrease in current liabilities result in outflow of cash. Hence they are deducted.

Illustration 4: balance sheets of somy thomas as on 1-1-2011 and 31-12-2011 were as follows:

Liabilities	2010 Rs.	2011 Rs.	Assets	2010 Rs.	2011 Rs.
Credits	40,000	44,000	Cash	10,000	7,000
Bills Payable	25,000	---	Debtors	30,000	50,000
Loans From Bank	40,000	50,000	Stock	35,000	25,000
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

During the year, a machine costing rs.10,000 (accumulated depreciation rs.3,000) was sold for rs.5,000. The provision for depreciation against machinery as on 1-1-2011 was rs.25,000 and on 31-12-2011 it was rs.40,000. Net profit for the year 2011 amounted to rs.45,000. Prepare cash flow statement.

Calculation of Cash From Operations

			Rs.
Net Profit For The Year 2011			45,000
Add:	Addition To Provision For Depreciation		18,000
	Loss Of Sale Of Machinery		2,000
	Funds From Operations		65,000
Add:	Decrease In Stock		10,000
	Increase In Creditors		4,000
			79,000
Less :	Increase In Debtors	20,000	
	Decrease In Bills Payable	25,000	
			45,000
Cash From Operations			34,000

Capital A/C

To Drawings (Balancing Figure)	17,000	By Balance B/D	1,25,000
To Balance C/D	1,53,000	By Net Profit For The Year	45,000
	1,70,000		1,70,000

Machinery A/C

To Balance B/D (80000 + 25000)	1,05,000	By Bank Sale	5,000
		By Provision For Dep.	3,000
		By P&L A/C – Loss	2,000
		By Balance C/D (55000 + 40000)	95,000
	1,05,000		1,05,000

Provision For Depreciation A/C

To Machinery A/C (Dep. On Machinery Sold)	3,000	By Balance B/D	25,000
		By P&L A/C	
To Balance C/D	40,000	Dep. For The Current Year	18,000
	43,000		43,000

Cash Flow Statement

Cash As On 1-1-2011	10,000		
Add: Inflows		Cash Outflows:	
Cash From Operations	34,000	Drawings	17,000
Loan From Bank	10,000	Purchase Of Land	10,000
Sale Of Machinery	5,000	Purchase Of Building	25,000
		Cash As On 31-12-2011	7,000
	59,000		59,000

Performance Measurement

Measuring the profitability and value of a business is very important because it is a key consideration when there is discussion of a merger or acquisition, when capital investment decisions are being considered, and in designing management incentive compensation plans. The efficiency with which profit centers (PC) of companies employ their assets to generate profits is often measured by the companies` Return On Net Assets (RONA). There are different way to evaluate the performance of PC's, namely

1.Return on Investment (ROI),

2. Residual Income (RI), and

3. Economic Value Added (EVA).

Residual Income

According to Colley, RI consists of the profit remaining after the suppliers of all of the resources that were consumed to generate revenues have been fairly compensated, including the supplier of the capital, the investor or the parent corporation. Further, RI is calculated by assessing a corporate capital charge against the earnings of a PC, which is subtracted from division income, to arrive at division residual income.

Anthony and Reece defined RI as the "…profit (before interest expense) minus a capital charge rate (analogous to the return rate used in discounted cash flow techniques) levied on the investment in the center`s assets or net assets." "The capital charge is calculated by multiplying the relevant investment base by a prescribed interest rate that reflects the required return to the suppliers of capital." (Colley, Doyle, Hardie, Logan, Stettinius, 2007, p. 249) According to Anthony and Reece (1979, p. 513) the RI can be calculated as follows:

RI = Profit (pre interest) – (Capital Charge x investment)

Whereby the capital charge is the minimum required return or the levies on capital charge on assets employed; not the cost of capital.

Using RI, more investments seem to be attractive then using the Return On Investment (ROI); thus the ROI (net operating income / average operating assets) could decrease in an investment center (IC) or PC at certain investments, while IC or PC still create an residual income at the same investment. This and comparison to the capital employed makes RI a powerful tool to compare PC's/IC's which each other and more investments will be undertaken in comparison to the ROI (following LYCOS, 2009).

Economic Value Added (EVA)

According to 12manage (n.d.) EVA is defined as: "Economic Value Added (EVA) is a financial performance method to calculate the true economic profit of a corporation. EVA can be calculated as Net Operating Profit After Tax minus a charge for the opportunity cost of the capital invested." The capital charges consist of both, equity and interest. Therefore, EVA also evaluates the Weighted Average Cost of Capital

(WACC) times the invested capital. Thus the EVA is only calculated with the actual costs of investments. According to 12manage (n.d.) the EVA can be evaluated as follows:

EVA = Net Operating Profit After Tax (NOPAT) – Capital Charges (Invested Capital x Cost of Capital)

Taking the all cost of capital into consideration EVA gives the real financial outcome of wealth, which businesses create or destroy in a reporting period. “If the shareholders expect, say, a 10% return on their investment, they earn money only to the extent that their share of the NOPAT exceeds 10% of equity capital.” (12manage, n.d.) Thus any number underneath 10% is not desirable for shareholders. Therefore, EVA can be used to increase shareholder wealth. Companies using EVA will try to improve their WACC, which can also result in a buyback of shares, if the expectations are high and the estimated EVA is high (ValueBasedManagement.net, 2009)

Similarities and differences between EVA and RI

EVA and RI are in terms of its calculation quit similar. The major difference is that RI uses the minimum required return (occurring from current assets employed), whereby EVA takes the WACC into consideration. This difference results in a range of other differences in the usage of both. EVA therefore seems to be more interesting for shareholder, since it is a measure for shareholder’s wealth. RI by contrast can be seen more as a tool for profit center calculations. Both measures can be use to evaluate investments accordingly to the additional profit of one company. RI is evaluates the residual income with internal figures (minimum required return occurring from capital employed), whereas EVA uses the WACC. At investment decisions, investments will be chosen that give a positive outcome. Assuming that the minimum required return of a company is 25% and the WACC is 10% the company will make more investments by using EVA. Thus EVA supports the number of investments and contributes more to the residual income of companies. This can be display by the following example:

Whereby the NOPAT is $10,000 and the investment is $50,000.

EVA = NOPAT – WACC x investment = 10,000 – 10% x 50,000 = **$5,000**

RI = NOPAT – Minimum required return x investment = 10,000 – 25% x 50,000 = **($2,500)**

If a company would undertake the investment decision with RI the investment would not be made, because the residual income appears negative. If same investment calculation would be made with the EVA, the investment would have been undertaken, because the investment gives a residual income of $5,000.

However, both measures are performance measurement tools for companies, which focus on wealth creation. Another similarity is that EVA and RI are measures for the residual income of a company, as it increases when the measures are positive. Throughout introductive literature of accounting both measure are treated the same, e.g. in Managerial Accounting by Garrison and Noreen (2003).

Conclusion

In order to undertake investment decisions and to measure the performance of companies many ratios and performance figure have been established. The ROI can

be a misleading figure and leads ultimately to the result that companies only keep the most profitable products and undertake the most profitable investments. Nonetheless, the residual income also contributes to the performance of companies. The RI is based on the internal usage of current assets, which only point to residual income above the current usage of these assets. The ‘real’ residual income however is best measured by the EVA, since only real cost comparisons matter as it takes the WACC into consideration and not the minimum required return.

Unit – IV: Management Accounting

Lesson 4.1: Marginal Costing

4.1.1 Introduction

Marginal costing is a technique of costing. This technique of costing uses the concept `marginal cost'. Marginal cost is the change in the total cost of production as a result of change in the production by one unit. Thus marginal cost is nothing but variable cost. In marginal costing technique only variable costs are considered while calculating the cost of the product, while fixed costs are charged against the revenue of the period. The revenue arising from the excess of sales over variable costs is known as `contribution'. Using contribution as a vital tool, marginal costing helps to a great extent in the managerial decision making process. This unit deals with the various aspects of marginal costing.

4.1.3.1 Various Elements Of Marginal Costing

According to the institute of cost and management accountants (icma), london, marginal cost is `the amount at any given volume of output by which aggregate costs are changed if the volume of output is increased or decreased by one unit'. Thus marginal cost is the added cost of an extra unit of output.

Mc = Direct Material + Direct Labour + Other Variable Costs = Total Cost – Fixed Cost.

Contribution

The difference between selling price and variable cost (or marginal cost) is known as `contribution' or `gross margin'. It may be considered as some sort of fund from out of which all fixed costs are met. The difference between contribution and fixed cost represents either profit or loss, as the case may be. Contribution is calculated thus:

Contribution = Selling Price – Variable Cost

=Fixed Cost + Profit Or – Loss

It is clear from the above equation that profit arises only when contribution exceeds fixed costs. In other terms, the point of 'no profit no loss' will be at a level where contribution is equal to fixed costs.

Marginal cost equation

The algebraic expression of contribution is known as marginal cost equation. It can be expressed thus:

	S – V	=	F + P
	S – V	=	C
	C	=	F + P And In Case Of Loss
	C	=	F – L
Where:	S	=	Sales
	V	=	Variable Cost
	C	=	Contribution
	F	=	Fixed Cost

P = Profit

L = Loss

Profit Volume Ratio (P/V Ratio)

The profitability of business operations can be found out by calculating the p/v ratio. It shows the relationship between contribution and sales and is usually expressed in percentage. It is also known as `marginal-income ratio', `contribution-sales ratio' or `variable-profit ratio'. P/v ratio thus is the ratio of contribution to sales, and is calculated thus:

$$\text{P/V Ratio} = \frac{\text{Contribution}}{\text{Sales}} \times 100$$

$$= \frac{C}{S} \text{ or } \frac{S - V}{S} \text{ or } \frac{F + P}{S}$$

$$= 1 - \frac{\text{Variable Costs}}{\text{Sales}}$$

The ratio can also be shown by comparing the change in contribution to change in sales, or change in profit to change in sales. Any increase in contribution, obviously, would mean increase in profit, as fixed expenses are assumed to be constant at all levels of production.

$$\text{P/V Ratio} = \frac{\text{Change In Contribution}}{\text{Change In Sales}}$$

$$= \frac{\text{Change In Profit}}{\text{Change In Sales}}$$

The importance of p/v ratio lies in its use for evaluating the profitability of alternative products, proposals or schemes. A higher ratio shows greater profitability. Management should, therefore, try to increase p/v ratio by widening the gap between the selling price and the variable costs. This can be achieved by increasing sale price, reducing variable costs or switching over to more profitable products.

Break-Even or Cost-Volume-Profit Analysis

Break-even analysis is a specific method of presenting and studying the inner relationship between costs, volume and profits. (hence, the name c-v-p analysis). It is an important tool of financial analysis whereby the impact on profit of the changes in volume, price, costs and mix can be found out with a certain amount of accuracy. A business is said to break even when its total sales are equal to its total costs. It is a point of no profit or no loss. At this point contribution is equal to fixed costs. Break-even point, can be calculated thus:

$$\text{B.E.P. (In Units)} = \frac{\text{Fixed Cost}}{\text{Contribution Per Unit}}$$

$$= \frac{\text{Fixed Cost}}{\text{Selling Price/Unit} - \text{Marginal Cost/Unit}}$$

$$\text{B.E.P. (Sales)} = \frac{\text{Fixed Cost}}{\text{Contribution Per Unit}} \times \text{Selling Price/Unit}$$

$$= \frac{\text{Fixed Cost}}{\text{Total Contribution}} \times \text{Total Sales}$$

$$\text{or} = \frac{F \times S}{S - V}$$

$$\text{or} = \frac{\text{Fixed Cost}}{1 - \frac{\text{Variable Cost Per Unit}}{\text{Selling Price Per Unit}}}$$

$$\text{or} = \frac{\text{Fixed Cost}}{\text{P/V Ratio}}$$

At break-even point the desired profit is zero. Where the volume of output or sales is to be calculated so as to earn a desired amount of profit, the amount of desired profits has to be added to the fixed cost given in the above formula.

$$\text{Units To Earn A Desired Profit} = \frac{\text{Fixed Cost + Desired Profit}}{\text{Contribution Per Unit}}$$

$$\text{Sales To Earn A Desired Profit} = \frac{\text{Fixed Cost + Desired Profit}}{\text{P/V Ratio}}$$

Cash Break-Even Point

It is the level of output or sales where the cash inflow will be equivalent to cash needed to meet immediate cash liabilities. To this end, fixed costs have to be divided into two parts (i) fixed cost which do not need immediate cash outlay (depreciation etc.) And (ii) fixed cost which need immediate cash outlay (rent etc.). Cash break-even point can be calculated thus:

$$\text{Cash Break-Even Point (Of Output)} = \frac{\text{Cash Fixed Costs}}{\text{Cash Contribution Per Unit}}$$

Composite Break-Even Point

Where a firm is dealing with several products, a composite breakeven point can be calculated using the following formula:

$$\text{Composite Break-Even Point (Sales)} = \frac{\text{Cash Fixed Costs}}{\text{Composite P/V Ratio}}$$

$$\text{or} = \frac{\text{Total Fixed Costs X Total Sales}}{\text{Total Contribution}}$$

$$\text{or} = \frac{\text{Total Contribution}}{\text{Total Sales}} \times 100$$

Margin of Safety

Total sales minus the sales at break-even point is known as the margin of safety. Lower break-even point means a higher margin of safety. Margin of safety can also be expressed as a percentage of total sales. The formula is:

$$\text{Margin Of Safety} = \frac{\text{Total Sales} - \text{Sales At B.E.P.}}{\text{P/V Ratio}} = \frac{\text{Profit}}{\text{P/V Ratio}}$$

$$\text{Margin Of Safety (As A Percentage)} = \frac{\text{Margin Of Safety}}{\text{Total Sales}} \times 100$$

Higher margin of safety shows that the business is sound and when sales substantially come down, (but not below break even sales) profit might be earned by the business. Lower margin of safety, as pointed out earlier, means that when sales come down slightly profit position might be affected adversely. Thus, margin of safety can be used to test the soundness of a business. In order to improve the margin of safety a business can increase selling prices (without affecting demand, of course) reducing fixed or variable costs and replacing unprofitable products with profitable one.

Illustration 1: beta manufacturers ltd. Has supplied you the following information in respect of one of its products:

Total Fixed Costs	18,000
Total Variable Costs	30,000
Total Sales	60,000
Units Sold	20,000

Find out (a) contribution per unit, (b) break-even point, (c) margin of safety, (d) profit, and (e) volume of sales to earn a profit of rs.24,000.

Solution:

$$\text{Selling Price Per Unit} = \frac{60,000}{20,000} = \text{Rs.3}$$

$$\text{Variable Cost Per Unit} = \frac{30,000}{20,000} = \text{Rs.1.50}$$

(A) Contribution Per Unit = Selling Price Per Unit – Variable Cost Per Unit

= Rs.3 – Rs.1.50

= Rs.1.50

$$\text{(B) Break-Even Point} = \frac{\text{Total Fixed Cost}}{\text{Contribution Per Unit}}$$

$$= \frac{\text{Rs.18,000}}{\text{Rs.1.50}}$$

= 12,000 Units

(C) Margin Of Safety = Units Sold – Break-Even Point

= 20,000 – 12,000

= 8,000 Units (Or) Rs.24,000

(D) Profit = (Units Sold X Contribution Per Unit) - Fixed Cost

= (20,000 X Rs.1.50) - Rs.18,000

= Rs.12,000

(E) Volume Of Sales To Earn A Profit Of Rs.24,000

$$= \frac{\text{Fixed Cost + Desired Profit}}{\text{Contribution Per Unit}}$$

$$= \frac{18,000 + 24,000}{1.50} = 28,000 \text{ units}$$

Illustration 2: Calculate `Margin Of Safety' from the following data:

Particulars	Mary & Co.	Geetha& Co.
Sales	1,00,000	1,00,000
Cost	80,000	80,000
Fixed – Mary & Co.	30,000	
Geetha & Co.	50,000	
Variable – Mary & Co.	50,000	
Geetha & Co.	30,000	
Profit	20,000	20,000

Solution:

Particulars	Mary& Co.	Geetha& Co.
Actual Sales	1,00,000	1,00,000
Less: Sales At Break-Even Point	60,000	71,429
Marginal Of Safety	40,000	28,571

$$\text{Break-Even Sales} = \frac{\text{Fixed Cost}}{\text{P/V Ratio}}$$

$$\text{P/V Ratio} = \frac{\text{Sales} - \text{Variable Cost}}{\text{Sales}}$$

Therefore;

P/V Ratio		
	1,00,000	1,00,000
	- 50,000	- 30,000
	50,000	70,000
	50%	70%

$$\text{Break-Even Sales} = \frac{30{,}000}{50\%} = \text{Rs.}60{,}000 \qquad \frac{50{,}000}{70\%} = \text{Rs.}71{,}429$$

Illustration 3:

From the following particulars, find out the selling price per unit if b.E.P. Is to be brought down to 9,000 units.

Variable Cost Per Unit Rs.75

Fixed Expenses	Rs.2,70,000
Selling Price Per Unit	Rs.100

Solution:

Let us assume that the contribution per unit at B.E.P. Sales of 9,000 is X.

$$\text{B.E.P.} = \frac{\text{Fixed Cost}}{\text{Contribution Per Unit}}$$

Contribution per unit is not known.

$$9{,}000 \text{ Units} = \frac{\text{Therefore, } 2{,}70{,}000}{X}$$

$$9{,}000\,X = 2{,}70{,}000$$

$$X = 30$$

Contribution Is Rs.30 Per Unit, In Place Of Rs.25. So, The Selling Price Should Be Rs.105, I.E. Rs.75 + Rs.30.

4.1.3.2 Benefits of Marginal Costing

The technique of marginal costing is of immense use to the management in taking various decisions, as explained below:

1. How Much to Produce?

Marginal costing helps in finding out the level of output which is most profitable for running a concern. This, in turn, helps in utilizing plant capacity in full, and realize maximum profits. By determining the most

profitable relationships between cost, price and volume, marginal costing helps a business determine most competitive prices for its products.

2. What to Produce?

By applying marginal costing techniques, the most suitable production line could be determined. The profitability of various products can be compared and those products which languish behind and which do not seem to be feasible (in view of their inability to recover marginal costs), may be eliminated from the production line by using marginal costing. It, thus, helps in selecting an optimum mix of products, keeping the capacity and resource constraints in mind. It will also serve as a guide in arriving at the price for new products.

3. Whether to Produce or Procure?

The marginal cost of producing an article inside the factory serves as a useful guide while arriving at make or buy decisions. The costs of manufacturing can be compared with the costs of buying outside and a suitable decision can be arrived at easily.

4. How to Produce?

In case a particular product can be produced by two or more methods, ascertaining the marginal cost of producing the product by each method will help in deciding as to which method should be allowed. The same is true in case of decisions to use machine power in place of manual labor.

5. When to Produce?

In periods of trade depression, marginal costing helps in deciding whether production in the plants should be suspended temporarily or continued in spite of low demand for the firm’s products.

6. At What Cost to Produce?

Marginal costing helps in determining the no profit- no-loss point. The efficiency and economy of various products, plants, departments can

also be determined. This helps in profit planning as well as cost control.

4.1.3.3 Application of Marginal Costing

Marginal costing technique helps management in several ways. These are discussed below:

1. Profit Planning

There are four important ways of improving the profit performance of a business: (i) increasing the volume, (ii) increasing the selling price, (iii) Decreasing variable cost, and (iv) decreasing fixed costs. Profit planning is the planning of future operations so as to attain maximum profit. The contribution ratio shows the relative profitability of various sectors of business whenever there is a change in the selling price, variable cost etc.

Illustration 4:

Two businesses, p ltd. And q ltd. Sell the same type of product in the same type of market. Their budgeted profit and loss accounts for the coming year are as under:

	P Ltd.		Q Ltd.	
Sales		1,50,000		1,50,000
Less: Variable Costs	1,20,000		1,00,000	
Fixed Costs	15,000	1,35,000	35,000	1,35,000
Budget Net Profit		15,000		15,000

You are required to:

Calculate the break-even point for each business

Calculate the sales volume at which each business will earn rs.5,000 Profit.

State which business is likely to earn greater profit in conditions of:

1. Heavy demand for the product
2. Low demand for the product, and, briefly give your argument also.

Solution:

(I) For Calculating The Break-Even Points, P/V Ratio Of P Ltd. And Q Ltd.,
Should Be Calculated:

$$\text{P/V Ratio} = \frac{\text{Contribution}}{\text{Sales}}$$

$$= \frac{\text{Fixed Expenses + Profit}}{\text{Sales}}$$

$$\text{P/V Ratio Of P} = \frac{15{,}000 + 15{,}000}{1{,}50{,}000} = \frac{1}{5} = 20\%$$

$$\text{P/V Ratio Of Q} = \frac{35{,}000 + 15{,}000}{1{,}50{,}000} = \frac{1}{3} = 3\ 1/3\%$$

$$\text{Break-Even Point} = \frac{\text{Fixed Expenses}}{\text{P/V Ratio}}$$

$$\text{P Ltd.} = \frac{15{,}000}{1/5} = \text{Rs.}75{,}000$$

$$\text{Q Ltd.} = \frac{35{,}000}{1/3} = \text{Rs.}1{,}05{,}000$$

(II) Sales Volume To Earn A Desired Profit (Rs.5000):

$$\text{Formula} = \frac{\text{Fixed Expenses + Desired Profit}}{\text{P/V Ratio}}$$

$$\text{P Ltd.} = \frac{15{,}000 + 5{,}000}{1/5} = \text{Rs.}1{,}00{,}000$$

Q Ltd. $= \frac{35,000 + 5,000}{1/3} = \text{Rs.}1,20,000$

In conditions of heavy demand, a concern with larger p/v ratio can earn greater profits because of greater contribution. Thus, q ltd. Is likely to earn greater profit. In conditions of low demand, a concern with lower break-even point is likely to earn more profits because it will start earning profits at a lower level of sales. In this case, p ltd. Will start earning profits when its sales reach a level of rs.75,000, Whereas q ltd. Will start earning profits when its sales reach rs.1,05,000. Therefore, in case of low demand, break-even point should be reached as early as possible so that the concern may start earning profits.

2. Introduction of A New Product

Sometimes, a product may be added to the existing lines of products with a view to utilize idle facilities, to capture a new market or for any other purpose. The profitability of this new product has to be found out initially. Usually, the new product will be manufactured if it is capable of contributing something toward fixed costs and profit after meeting its variable costs.

Illustration 5:

A concern manufacturing product x has provided the following information:

	Rs.
Sales	75,000
Direct materials	30,000
Direct labour	10,000
Variable overhead	10,000
Fixed overhead	15,000

In order to increase its sales by rs.25,000, the concern wants to introduce the product y, and estimates the costs in connection therewith as under:

Direct materials	10,000
Direct labour	8,000
Variable overhead	5,000

Fixed overhead Nil Advise whether the product Y will be profitable or not.

Solution:

Marginal Cost Statement

(in Rupees)

	X	Y	Total
Sales	75,000	25,000	1,00,000
Less: marginal costs:			
Direct materials	30,000	10,000	40,000
Direct labour	10,000	8,000	18,000
Variable overhead	10,000	5,000	15,000
	50,000	23,000	73,000
Contribution	25,000	2,000	27,000
Fixed cost			15,000
Profit			12,000

Commentary: if product Y is introduced, the profitability of product X is not affected in any manner. On the other hand, product Y provides a contribution of Rs.2,000 Towards fixed cost and profit. Therefore, Y should be introduced.

3. Level of Activity Planning

Marginal costing is of great help while planning the level of activity. Maximum contribution at a particular level of activity will show the position of maximum profitability.

Illustration 6:

Following is the cost structure of sundaram corporation, pondicherry, manufacturers of colour tvs.

	Level of activity		
	50%	70%	90%
Output (in units)	200	280	360
Cost (in rs.)			
Materials	10,00,000	14,00,000	18,00,000
Labour	3,00,000	4,20,000	5,40,000
Factory overhead	5,00,000	6,00,000	7,00,000
Factory Cost	18,00,000	24,20,000	30,40,000

In view of the fact that there will be no increase in fixed costs and import license for the picture tubes required in the manufacture of its tvs has been obtained, the corporation is considering an increase in production to its full installed capacity.

The management requires a statement showing all details of production costs at 100% level of activity.

Solution:

Marginal Cost Statement

(At 100% Level Of Activity With 400 Units)	Total Cost Rs.	Cost Per Unit Rs.
Materials	20,00,000	5,000
Labour	6,00,000	1,500
Variable Factory Overhead	5,00,000	1,250
Marginal Factory Cost	31,00,000	7,750
Fixed Factory Overhead	2,50,000	625
Total factory cost	33,50,000	8,375

Thus, the marginal factory cost per unit is rs.7,750 and the total production cost per unit is rs.8,375.

Commentary:

(i) Calculation Of Variable Factory Overheads Per Unit: Rs.6,00,000 – Rs.5,00,000

$$= \frac{\text{Rs.6,00,000 – Rs.5,00,000}}{\text{Units}} = \text{Rs.1,250 80}$$

(II) Calculation Of Fixed Factory Overheads:
Factory Overheads – (No. Of Units At Certain Level Of Activity X Variable Factory Overheads Per Unit).
Therefore Rs.5,00,000 – (200 Units X 1,250) Therefore
Rs.5,00,000 – Rs.2,50,000 = Rs.2,50,000
The Amount Can Be Verified By Making Calculation At Any Other Level Of Activity.
(III) Variable Factory Overheads At 100% Level Of Activity: 400 Units X 1,250 = Rs.5,00,000

4. Key Factor

A concern would produce and sell only those products which offer maximum profit. This is based on the assumption that it is possible to produce any quantity without any difficulty and sell likewise. However, in actual practice, this seems to be unrealistic as several constraints come in the way of manufacturing as well as selling. Such constraints that come in the way of management's efforts to produce and sell in unlimited quantities are called `key factors' or `limiting factors'. The limiting factors may be materials, labour, plant capacity, or demand. Management must ascertain the extent of the influence of the key factor for ensuring maximisation of profit. Normally, when contribution and key factors are known, the relative profitability of different products or processes can be measured with the help of the following formula:

$$\text{Profitability} = \frac{\text{Contribution}}{\text{Key Factor}}$$

Illustration 7: from the following data, which product would you recommend to be manufactured in a factory, time, being the key factor?

	Per Unit of Product X	Per Unit of Product Y
Direct Material	24	14
Direct Labour At Re.1 Per Hour	2	3
Variable Overhead At Rs.2 Per Hour	4	6
Selling Price	100	110
Standard Time To Produce	2 Hours	3 Hours

Solution:

		Per Unit of Product X		Per Unit of Product Y
Selling Price		100		110
Less: Marginal Cost:				
Direct Materials		24		14
Direct Labour		2		3
Variable Overhead	4	30	6	23
	--	---	--	---
Contribution		70		87
Standard Time To Produce		2 Hours		3 Hours
Contribution Per Hour		70/2		87/3
		= Rs.35		= Rs.29

Contribution per hour of product x is more than that of product y by rs.6. Therefore, product x is more profitable and is recommended to be manufactured.

5. Make or Buy Decisions

A company might be having unused capacity which may be utilized for making component parts or similar items instead of buying them from the market. In arriving at such a `make or buy' decision, the cost of manufacturing component parts should be compared with price quoted in the market. If the variable costs are lower than the purchase price, the component parts should be manufactured in the factory itself. Fixed costs are excluded on the assumption that they have been already incurred, and the manufacturing of components involves only variable cost. However, if there is an increase in fixed costs and any limiting factor is operating while producing components etc. That should also be taken into account. Consider the following illustration, throwing light on these aspects.

Illustrations 8:

You are the management accountant of XYZ CO. Ltd. The Managing director of the company seeks your advice on the following problem: the company produces a variety of products each having a number of computer parts. Product “B” takes 5 hours to produce on machine no.99

working at full capacity. “bB” has a selling price of rs.50 and a marginal cost, Rs.30 per unit. “A-10” a component part could be made on the same machine in 2 hours for marginal cost of Rs.5 per unit. The supplier’s price is Rs.12.50 per unit. Should the company make or buy “A10”? Assume that machine hour is the limiting factor.

Solution:

In this problem the cost of new product plus contribution lost during the time for manufacturing “A-10” should be compared with the supplier’s price to arrive at a decision.

	Rs.
“B” – Selling Price	50.00
Marginal Cost	30.00

	20.00

It takes 5 hours to produce one unit of “B.
Therefore, contribution earned per hour on machine no.99 is Rs.20/5 = Rs.4. “A-10” takes two hours to be manufactured on machine which is producing “B”. Real cost of “A-10” to the company = marginal cost of “aA-10” plus contribution lost for using the machine for “A-10”.

Rs.5 + Rs.8 = Rs.13

This is more than the seller’s price of rs.12.50 and so it is advisable for the company to buy the product from outside.

Illustration 9:

A t.V. Manufacturing company finds that while it costs Rs.6.25 To make each component X, the same is available in the market at Rs.4.85 Each, with an assurance of continued supply. The break down of cost is:

	Rs.	
Materials	2.75	Each
Labour	1.75	Each
Other Variables	0.50	Each
Depreciation And Other Fixed Costs	1.25	Each
	6.25	

Should you make or buy?

Solution:

Variable cost of manufacturing is Rs.5; (Rs.6.25 – Rs.1.25) but the market price is Rs.4.85. If the fixed cost of Rs.1.25 is also added, it is not profitable to make the component. Because there is a saving of Rs.0.15 even in variable cost, it is profitable to procure from outside.

6. Suitable Product Mix/Sales Mix

Normally, a business concern will select the product mix which gives the maximum profit. Product mix is the ratio in which various products are produced and sold. The marginal costing technique helps management in taking appropriate decisions regarding the product mix, i.e., in changing the ratio of product mix so as to maximise profits. The technique not only helps in dropping unprofitable products from the mix but also helps in dropping unprofitable departments, activities etc. Consider the following illustrations:

Illustration 10: (Product Mix)

The following figures are obtained from the accounts of a departmental store having four departments.

Departments

(Figures In Rs.)

Particulars	A	B	C	D	Total
Sales	5,000	8,000	6,000	7,000	26,000
Marginal Cost	5,500	6,000	2,000	2,000	15,500
Fixed Cost (Apportioned)	500	4,000	1,000	1,000	6,500
Total Cost	6,000	10,000	3,000	3,000	22,000
Profit/Loss(-)	1,000 (-)	2,000	3,000	4,000	4,000

On the above basis, it is decided to close down dept. B immediately, as the loss shown is the maximum. After that dept. A will be discarded. What is your advice to the management?

Statement Of Comparative Profitability

Particulars	Departments A	B	C	D	Total
Sales	5,000	8,000	6,000	7,000	26,000
Less:					
Marginal Cost	5,500	6,000	2,000	2,000	15,500
Contribution (-)	500	2,000	4,000	5,000	10,500
Fixed Cost					6,500
Profit					4,000

Commentary:

From the above, it is clear that the contribution of dept. A is negative and should be discarded immediately. As dept. B provides rs.2,000 towards fixed costs and profits, it should not be discarded.

Illustration 11 (Sales Mix):

Present the following information to show to the management: (a) the marginal product cost and the contribution per unit; (b) the total contribution and profits resulting from each of the following mixtures:

	Product	Per Unit (Rs.)
Direct Materials	A	10
	B	9
Direct Wages	A	3
	B	2

Fixed Expenses Rs.800

Variable Expenses Are Allocated To Products As 100% Of Direct Wages.

		Rs.
Sales Price	A	20
	B	15

Sales Mixtures:

1000 Units Of Product A And 2000 Units Of B 1500 Units Of Product A And 1500 Units Of B 2000 Units Of Product A And 1000 Units Of B

Solution:

(A) Marginal Cost Statement	A	B
Direct Materials	10	9
Direct Wages	3	2
Variable Overheads (100%)	3	2
	---	---
Marginal Cost	16	13
Sales Price	20	15
Contribution	4	2

(B) Sales Mix Choice	1000 A+ 2000 B (I)	1500 A+ 1500 B (II)	2000 A+ 1000 B (III)
	(Rs.)	(Rs.)	(Rs.)
Total Sales	(1000 X 20 + 2000 X 15) = 50,000	(1500 X 20 + 1500 X 15) = 52,500	(2000 X 20 + 1000 X 15) = 55,000
Less: Marginal Cost	(1000 X 16 + 2000 X 13) = 42,000	(1500 X 16 + 1500 X 13) = 43,500	(2000 X 16 + 1000 X 13) = 45,000
Contribution	8,000	9,000	10,000
Less: fixed costs	800	800	800
Profit	7,200	8,200	9,200

Therefore sales mixture (iii) will give the highest profit; and as such, mixture (iii) can be adopted.

7. Pricing Decisions

Marginal costing techniques help a firm to decide about the prices of various products in a fairly easy manner. Let's examine the following cases:

(I) Fixation of Selling

Price Illustration 12:

P/V Ratio Is 60% and the marginal cost of the product is Rs.50. What will be the selling price?

Solution:

$$\text{P/V Ratio} = \frac{S - V}{S} = 1 - \frac{V}{S} = \frac{C}{S}$$

$$\frac{\text{Variable Cost}}{\text{Sales}} = 40\% \quad \text{or} \quad \frac{40}{100}$$

$$\text{Selling Price} = \frac{50}{40\%} = \frac{50 \times 100}{40} = \text{Rs.}125$$

(ii) Reducing Selling

Price Illustration 13:

The Price Structure Of A Cycle Made By The Visu Cycle Co. Ltd. Is

As Follows:	Per Cycle
Materials	60
Labour	20
Variable Overheads	20

Fixed Overheads	100
Profit	50
Selling Price	50

	200

This is based on the manufacture of one lakh cycles per annum. The company expects that due to competition they will have to reduce selling prices, but they want to keep the total profits intact. What level of production will have to be reached, i.e., how many cycles will have to be made to get the same amount of profits, if:

(a) the selling price is reduced by 10%?

(b) the selling price is reduced by 20%?

Solution:

		(Rs.)		(Rs.)
Existing profit	=	1,00,000 x 50	=	50,00,000
Total fixed overheads	=	1,00,000 x 50	=	50,00,000

(a) Selling price is reduced by 10% and to get the existing profit of rs.50 lakhs.

New Selling Price = 200– 10% Of Rs.200

= 200– 20 =Rs.180

New Contribution = 180– 100 =Rs.80 Per Unit

Total Sales (Units) = F + P/Contribution Per Unit

$$= \frac{5,00,000 + 5,00,000}{80}$$

= 1,25,000 Cycles

Are to be obtained and sold to earn the existing profit of rs.5,00,000.

(b) Selling price reduced by 20% and to get the existing profit of rs.5,00,000.

New Selling Price = 200 – 20% Of Rs.200

= 200 – 40 = Rs.160

New Contribution = S – V

= 160 – 100 = Rs.80 Per Unit

Total Sales (Units) = F + P/Contribution Per Unit

$$= \frac{5,00,000 + 5,00,000}{60}$$

= 1,66,667 cycles are to be produced and sold to earn the existing profit of rs.50 Lakhs.

(iii) Pricing During

Recession: Illustration 14:

SSA company is working well below normal capacity due to recession. The directors of the company have been approached with an enquiry for special job. The costing department estimated the following in respect of the job.

Direct Materials	Rs.10,000
Direct Labour 500 Hours @	Rs.2 Per Hour
Overhead Costs: Normal Recovery Rates	
Variable	Re.0.50 Per Hour
Fixed	Re.1.00 Per Hour

The directors ask you to advise them on the minimum price to be charged.

Assume that there are no production difficulties regarding the job.

Solution:

Calculation Of Marginal Cost:

	(Rs.)
Direct Materials	10,000
Direct Labour	1,000
Variable Overhead @ Re.0.50 Per Hour	250
Marginal Cost	11,250

Commentary:

Here the minimum price to be quoted is Rs.11,250 which is the marginal cost. By quoting so, the company is sacrificing the recovery of the profit and the fixed-costs. The fixed costs will continue to be incurred even if the company does not accept the offer. So any price above Rs.11,250 is welcome.

7. Accepting Foreign Order

Marginal costing technique can also be used to take a decision as to whether to accept a foreign offer or not. The speciality of

this situation is that normally foreign order is requiring the manufacturer to supply the product at a price lower than the inland selling price. Here the decision is taken by comparing the marginal cost of the product with the foreign price offered. If the foreign order offers a price higher than the marginal cost then the offer can be accepted subject to availability of sufficient installed production capacity. The following illustration highlights this decision:

Illustration 15:

Due to industrial depression, a plant is running at present at 50% of the capacity. The following details are available:

Cost Of Production Per Unit	(Rs.)
Direct Materials	**2**
Direct Labour	1
Variable Overhead	3
Fixed Overhead	2

	8

Production Per Month	20,000 Units
Total Cost Of Production	Rs.1,60,000
Sale Price	Rs.1,40,000

Loss	Rs.20,000

An exporter offers to buy 5000 units per month at the rate of rs.6.50 per unit and the company is hesitant to accept the order for fear of increasing its already large operating losses. Advise whether the company should accept or decline this offer.

Solution:

At present the selling price per unit is Rs.7/- and the marginal cost per unit is Rs.6/- (Material Rs.2 + Labour Re.1 + Variable Overhead Rs.3). The foreign order offers a price of Rs.6.50 and there is ample production capacity (50%) available. Since the foreign offer is at a price higher than marginal cost the offer can be accepted. This is proved hereunder:

Marginal Cost Of 5000 Units	= 5000 X 6	= 30,000
Sale Price Of 5000 Units	= 5000 X 6.50	=32,500
Profit		2,500

Thus by accepting the foreign order the present loss of Rs.20,000 would be reduced to Rs.17,500 I.E., Rs.20000 Loss – Rs.2,500 Profit.

4.1.3.4 Limitations Of Marginal Costing

Marginal costing has the following
limitations:

1.difficulty in classification:

In marginal costing, costs are segregated into
Fixed and variable. In actual practice, this classification scheme proves to be
Superfluous in that, certain costs may be partly fixed and partly variable and

Certain other costs may have no relation to volume of output or even with the time. In short, the categorisation of costs into fixed and variable elements is a difficult and tedious job.

2.Difficulty In Application:

the marginal costing technique cannot be applied in industries where large stocks in the form of work-in-progress (job and contracting firms) are maintained.

3.Defective Inventory Valuation:

under marginal costing, fixed costs are not included in the value of finished goods and work in progress. As fixed costs are also incurred, these should form part of the cost of the product. By eliminating fixed costs from finished stock and work-in-progress, marginal costing techniques present stocks at less than their true value. Valuing stocks at marginal cost is objectionable because of other reasons also:

1. In case of loss by fire, full loss cannot be recovered from the insurance company.
2. Profits will be lower than that shown under absorption costing andhence may be objected to by tax authorities.
3. Circulating assets will be understated in the balance sheet.

4.Wrong Basis for Pricing:

In marginal costing, sales prices are arrived at on the basis of contribution alone. This is an objectionable practice. For example, in the long run, the selling price should not be fixed on the basis of contribution alone as it may result in losses or low profits. Other important factors such as fixed costs, capital employed should also be taken into account while fixing selling prices. Further, it is also not correct to lay more stress on selling function, as is done in marginal costing, and relegate production function to the backgroud.

5.Limited Scope:

The utility of marginal costing is limited to short-run profit planning and decision-making. For decisions of far-reaching importance, one is interested in special purpose cost rather than variable cost. Important decisions on several occasions, depend on non-cost considerations also, which are thoroughly discounted in marginal costing.

In view of these limitations, marginal costing needs to be applied with necessary care and caution. Fruitful results will emerge only when management tries to apply the technique in combination with other useful techniques such as budgetary control and standard costing.

4.1.3.5 Additional Illustrations

Illustration 16:

from the following information, find out the amount of profit earned during the year, using marginal cost equation:

Fixed Cost	Rs.5,00,000
Variable Cost	Rs.10 Per Unit
Selling Price	Rs.15 Per Unit
Output Level	1,50,000 Units

Solution:

Contribution = Selling Price – Variable Cost
=(1,50,000 X 15) – (1,50,000 X 10)
= Rs.22,50,000 – Rs.15,00,000
= Rs.7,50,000
Contribution = Fixed Cost + Profit
Rs.7,50,000 = 5,00,000 + Profit
Profit = 7,50,000 – 5,00,000
= (C – F)
Profit = Rs.2,50,000

Illustration 17:

Determine the amount of fixed costs from the following details, using the marginal cost equation.

Sales		Rs.2,40,000
Direct Materials	Rs.	80,000
Direct Labour	Rs.	50,000
Variable Overheads	Rs.	20,000
Profit	Rs.	50,000

Solution:

Marginal Costing Equation = S – V = F + P
= 2,40,000 – 1,50,000
= F + P
= 90,000
= F + 50,000
F = 90,000 – 50,000
F = Rs.40,000

Illustration 18:

Sales 10,000 Units @ Rs.25 Per Unit
Variable Cost Rs.15 Per Unit
Fixed Costs Rs.1,00,000
Find Out The Sales For Earning A Profit Of Rs.50,000

Solution:

Sales To Earn A Profit Of Rs.50,000

$$= \frac{\text{(Fixed Cost + Profit) Sales}}{\text{Sales – Variable Cost}}$$

$$= \frac{1,00,000 + 50,000 \text{ X } 2,50,000}{2,50,000 – 1,50,000}$$

$$= \frac{1,50,000 \text{ X } 2,50,000}{1,00,000}$$

= Rs.3,75,000

Illustration 19:

The records of ram ltd., Which has three departments give the following figures:

	Dept. A (Rs.)	Dept. B (Rs.)	Dept. C (Rs.)	Total (Rs.)
Sales	12,000	18,000	20,000	50,000
Marginal Cost	13,000	6,000	15,000	34,000
Fixed Cost	1,000	4,000	10,000	15,000
Total Cost	14,000	10,000	25,000	49,000
Profit/Loss	-2,000 +8,000		-5,000	1,000

The management wants to discontinue product c immediately as it gives the maximum loss. How would you advise the management?

Solution:

Marginal Cost Statement

Particulars	A (Rs.)	B (Rs.)	C (Rs.)	Total (Rs.)
Sales	12,000	18,000	20,000	50,000
Less: Marginal Cost	13,000	6,000	15,000	34,000

Contribution	-1,000	12,000	5,000	16,000
Fixed Cost				15,000

Profit				1,000

Here department A gives negative contribution, and as such it can be given up. Department C gives a contribution of Rs.5,000. If department C is closed, then it may lead to further loss. Therefore, C should be continued.

Lesson 4.2 - Cost Volume Profit Analysis

4.2.1 Introduction

The cost of a product consists of two items: fixed cost and variable cost. Fixed costs are those which remain the same in total amount regardless of changes in volume. Variable costs are those which vary in total amount as the volume of production increases or decreases. As a result, at different levels of activity, the cost structure of a firm changes. The effect on profit on account of such variations is studied through break even analysis or cost-volume-profit analysis. This lesson deals with the various concepts, tools and techniques of cost-volume profit analysis.

4.2.3.1 Meaning of Cost-Volume-Profit Analysis

Cost-volume-profit (CVP) analysis focuses on the way cost and profit change when volume changes. It is, broadly speaking, that system of analysis which determines the probable profit at any level of activity. This technique is generally used to analyse the incremental effect of volume on costs, revenues and profits. At what volume of operations are costs and revenues equal? What volume of output or sales would be necessary to earn a profit of say rs.2 lakhs? How much profit will be earned at a volume of, say 10,000 units? What will happen if there is a reduction of 10 percent in the selling price? Questions like these are sought to be answered through cvp analysis. This detailed analysis will help the management to know the profit levels at different activity levels of production and sales and various types of costs involved in it.

4.2.3.2 Application Of Cost-Volume-Profit Analysis

CPV analysis helps in:
Forecasting the profit in an accurate manner
Preparing the flexible budgets at different levels of activity Fixing prices for products

Illustration 1:

(Profit Planning) based on the following information, find out the break even point, the sales needed for a profit of rs.6,00,000 and the profit if 4,00,000 units are sold at rs.6 per unit.

Units Of Output	5,00,000
Fixed Costs	Rs.7,50,000
Variable Cost Per Unit	Rs. 2
Selling Price Per Unit	Rs. 5

Solution:

(1)Break-Even Point (Of Sales)

$$= \frac{\text{Fixed Costs}}{\text{Contribution Per Unit}} \times \text{Selling Price Per Unit}$$

$$= \frac{7,50,000}{3} \times 5 = \text{Rs.}12,50,000$$

(2) Sales Needed For A Profit Of

$$\text{Sales} = \frac{\text{Rs.6,00,000 Fc + Desired Profit}}{\text{P/V Ratio}}$$

$$= \frac{7,50,000 + 6,00,000}{3/5}$$

$$= 13,50,000 \times \frac{5}{3}$$

= Rs.22,50,000 [or]

$$= \frac{22,50,000}{(SP)\ 5}$$

= 4,50,000 Units

(3) Profit On Sale Of 4,00,000 Units At Rs.6 Per Unit Sales = 4,00,000 Units

= 4,00,000 X Rs.6

= Rs.24,00,000

Sales – V. Cost = Contribution

24 Lakhs – (4 Lakhs X 2 Per Unit) = 16,00,000

C – Fc = Profit

16,00,000 – 7,50,000 = Rs.8,50,000 [Or]

Unit Sales X Contribution Per Unit – Fc

4 Lakhs X Rs.4 = 16 Lakhs – 7,50,000 = 8,50,000

Illustration 2: (Pricing)

A company is considering a reduction in the price of its product by 10% because it is felt that such a step may lead to a greater volume of sales. It is anticipated that there will be no change in total fixed costs or variable costs per unit. The directors wish to maintain profit at the present level.

You are given the following information:

Sales (15,000 Units)	Rs.3,00,000
Variable Cost	Rs.13 Per Unit
Fixed Cost	Rs.60,000

From the above information, calculate P/V ratio and the amount of sales required to maintain profit at the present level after reduction of selling price by 10%.

Solution:

$$\text{P/V Ratio} = \frac{S - V}{S} = \frac{3,00,000 - (15,000 \times 13)}{3,00,000}$$

= 0.35 Or 35%

After reduction of price by 10% it will be Rs.18 (original price per unit Rs.20).

Present profit level = (35% of 3,00,000) – 60,000

= Rs.45,000

P/v ratio after price reduction

$$= \frac{S - V}{S} = \frac{18 - 13}{18} = \frac{5}{18}\ \%$$

To earn the same profit level

$$= \frac{F + \text{Desired Profit}}{}$$

$$= 1{,}05{,}000 \times \frac{\text{P/V Ratio}}{5} = 1{,}05{,}000 \times \frac{1}{8}$$

$$= \text{Rs.}3{,}78{,}000$$

Illustration 3:

From the following data, calculate the break-even point.

	First year	Second Year
Sales	80,000	90,000
Profit	Rs.10,000	Rs.14,000

Solution:

$$\text{Bep Sales} = \frac{\text{Fixed Costs}}{\text{P/V Ratio}}$$

$$\text{P/V Ratio} = \frac{\text{Change In Profit}}{\text{Change In Sales}} \times 100$$

$$= \frac{4{,}000}{10{,}000} \times 100 = 40\%$$

Fixed Cost = Contribution – Profit

$$= 80{,}000 \times \frac{40}{100} - \text{Rs.}10{,}000$$

$$= 32{,}000 - 10{,}000$$

$$= 22{,}000$$

$$\text{Bep Sales} = \frac{22{,}000 \times 100}{40} = \text{Rs.}55{,}000$$

Illustration 4:

A company is considering expansion. Fixed costs amount to rs.4,20,000 and are expected to increase by rs.1,25,000 when plant expansion is completed. The present plant capacity is 80,000 units a year. Capacity will increase by 50 percent with the expansion. Variable costs are currently rs.6.80 per unit and are expected to go down by re.0.40 per unit with the expansion. The current selling price is rs.16 per unit and is expected to remain the same under either alternative. What are the break-even points under either alternatives? Which alternative is better and why?

Solution:

Computation of BEP Under Two Alternatives

Items	Currently Rs.	Afterthexpansion Rs.
Fixed Costs	4,20,000	5,45,000
Capacity	80,000 Units	1,20,000Units
Variable Cost Per Unit	6.80	6.40
Contribution Margin Per Unit	9.20	9.60
Selling Price Per Unit	16	16

$$BEP = \frac{4,20,000}{9.20} = 45,652 \text{ Units}$$

$$\frac{5,45,000}{9.60} = 56,771 \text{ Units}$$

Assuming that the whole production can be sold, the profit under The two alternatives will be:

Items	Currently	After The Expansion
Sales	12,80,000	19,20,000
- Variable Cost	5,44,000	7,68,000
Contribution	7,36,000	11,52,000
- Fixed Cost	4,20,000	5,45,000
	3,16,000	6,07,000

It is obvious from the above calculations that the profits will be almost double after the expansion. Hence, the alternative of expansion is to be preferred.

Illustration 5:

A factory engaged in manufacturing plastic buckets is working at 40% capacity and produces 10,000 buckets per annum:

	Rs.
Material	10
Labour cost	3
Overheads	5 (60% fixed)

The selling price is rs.20 per bucket.

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 the break-even points for the same capacity productions.

Solution:

Statement showing profit and break-even point at different capacity levels:

	Capacity Level	50%		90%	
	Production (Units)		12,500		22,500
		Per Unit	Total	Per Unit	Total
		Rs.	Rs.	Rs.	Rs.
(A)	Sales	19.40	2,42,500	19.00	4,27,500
	Variable Cost				
	Materials	10.00	1,25,000	9.50	2,13,750
	Wages	3.00	37,500	3.00	67,500
	Variable Overhead	2.00	25,000	2.00	45,000
(B)	Total Variable Cost	15.00	1,87,500	14.50	3,26,250
(C)	Contribution (S-V)	4.40	55,000	4.50	1,01,250

Or (a-b)

Less Fixed Cost	30,000	30,000
	25,000	71,250

Break-even points at 50% at 90%

$$\text{Units} = \frac{\text{Fixed Costs}}{\text{Contribution Per Unit}}$$

$$= \frac{30,000}{4.40} = 6818 \qquad \frac{30,000}{4.50} = 6667$$

Sales Value = Rs.1,32,269 = Rs.1,26,667

Illustration 6:

Calculate:

The amount of fixed expenses

The number of units to break-even

The number of units to earn a profit of rs.40,000 The selling price can be assumed as rs.10.

The company sold in two successive periods 9,000 units and 7,000 units and has incurred a loss of rs.10,000 and earned rs.10,000 as profit respectively.

Solution:

Year	**Sales**	**Profit/Loss**
I	7,000 Units	Rs. (-)10,000
II	9,000 Units	Rs. (+)10,000
	2,000	20,000 (Change)

	Year I	Year II
(I) Contribution =	9,000Units X Rs.10 = Rs. 90,000	7,000Units Xrs.10 = Rs. 70,000
Less: Profit/Loss =	Rs. -10,000	= Rs.+10,000
Fixed Cost =	Rs. 80,000	= Rs. 80,000

(Contribution = Fixed Cost + Profit)

$$\text{(Ii) Contribution} = \frac{\text{Rs.20,000}}{\text{2,000 Units}} = \text{Rs.10 Per Unit}$$

$$\text{BEP} = \frac{\text{FC}}{\text{C}} = \frac{\text{Rs.80,000}}{\text{Rs.10}} = \text{8,000 Units}$$

(Iii) The No. Of Units To Earn A Profit Of Rs.40,000

$$= \frac{\text{F + Desired Profit}}{\text{C Per Unit}}$$

$$= \frac{\text{80,000 + 40,000}}{\text{10}} = \text{12,000 Units}$$

Illustration 7:

From The Following Data Calculate:

P/V Ratio

Profit When Sales Are Rs.20,000

Net Break-Even If Selling Price Is Reduced By 20% Fixed Expenses Rs.4,000

Break-Even Point 10,000

Solution:

$$\text{(I) Break-Even Sales} = \frac{\text{Fixed Expenses}}{\text{P/V Ratio}}$$

$$\text{or P/V Ratio} = \frac{\text{Fixed Expenses}}{\text{Break-Even Sales}}$$

$$= \frac{\text{4,000}}{\text{10,000}} = 40\%$$

(II) Profit When Sales Are Rs.20,000

Profit = Sales X P/V Ratio – Fixed Expenses

= Rs.20,000 X 40% − Rs.4,000

= Rs. 8,000 – Rs.4,000

= Rs. 4,000

(III) New Break-Even Point If Selling Price Is Reduced By 20% If Selling Price Is Rs.100, Now It Will Be Rs.80

V. Cost Per Unit = Rs.60 (I.E., 100 – 40% Old P/V Ratio)

$$\text{New P/V Ratio} = \frac{80 - 60}{80} = 25\%$$

$$\text{Break-Even Point} = \frac{4,000}{25\%} = \text{Rs.16,000}$$

Illustration 8:

From the following data calculate:

Break-even point in amount of sales in rupees.

Number of units that must be sold to earn a profit of Rs.60,000 Per year.

How many units must be sold to earn a net profit of 15% of sales?

Sales Price Unit	**Rs.20 Per**
Variable manufacturing costs	Rs.11 per unit
Variable selling costs	Rs. 3 per unit
Fixed factory overheads	Rs.5,40,000
Fixed selling costs	Rs.2,52,000

Solution:

(I) Items		Per Unit	Total Fixed Cost	
		Rs.		Rs.
Sales Price		20	Factory Overheads	5,40,000
Variable Costs			Selling Costs	2,52,000
Manufacturing	11			7,92,000
Selling	3	14		
Contribution Per Unit	6			

$$\text{BEP} = \frac{\text{Fixed Costs}}{\text{Contribution Per Unit}} = \frac{7,92,000}{6}$$

= 1,32,000 Units

Total Sales = 1,32,000 X Rs.20 = 26,40,000

$$\text{(II)}\quad \frac{\text{Fixed Cost + Desired Profit}}{\text{Contribution per unit}} = \frac{7,92,000 + 60,000}{6}$$

$$= \frac{8,52,000}{6}$$

= 1,42,000 units

(III) Let The No. Of Units Sold Be X. Marginal Cost Equation:

= S – V	= F + P
= 20X – 14X	= F + 15% Of Sales
= 20 X – 14 X	= 7,92,000 + 15% Of 20X
= 6 X	= 7,92,000 + 3 X
= 6 X – 3 X	= 7,92,000
= 3 X	= 7,92,000

$$X = \text{No. Of Units} = \frac{7,92,000}{3}$$

$$= 2,64,000$$

$$\text{Profit} = \frac{2,64,000 \text{ X Rs.20 X } 15}{100} = \text{Rs.7,92,000}$$

4.2.3.3 Break-Even Chart

The break-even point can also be shown graphically through the break-even chart. The break-even chart `shows the profitability or otherwise of an undertaking at various levels of activity and as a result indicates the point at which neither profit nor loss is made'. It shows the relationship, through a graph, between cost, volume and profit. The break-

even point lies at the point of intersection between the total cost line and the total sales line in the chart. In order to construct the breakeven chart, the following assumptions are made:

Assumptions Of Break-Even Chart

1. Fixed costs will remain constant and do not change with the level of activity.
2. Costs are bifurcated into fixed and variable costs. Variable costs change according to the volume of production.
3. Prices of variable cost factors (wage rates, price of materials, suppliers etc.) Will remain unchanged so that variable costs are truly variable.
4. Product specifications and methods of manufacturing and selling will not undergo a change.
5. Operating efficiency will not increase or decrease.
6. Selling price remains the same at different levels of activity.
7. Product mix will remain unchanged.
8. The number of units of sales will coincide with the units produced, and hence, there is no closing or opening stock.

4.2.3.4 Construction Of Break-Even Chart

The following steps are required to be taken while constructing the
Break-even chart:

1. Sales volume is plotted on the x-axis. Sales volume can be shown in the form of rupees, units or as a percentage of capacity. A horizontal line is drawn spacing equal distances showing sales at various activity levels.
2. Y axis represents revenues, fixed and variable costs. A vertical line is also spaced in equal parts.
3. Draw the sales line from point o onwards. Cost lines may be drawn in two ways (i) fixed cost line is drawn parallel to x axis and above it variable cost line is drawn from zero point of fixed cost line. This line is called the total cost line (fig.1) (ii) in the second method the variable cost line is drawn from point o and above this, fixed cost line is depicted running parallel to the variable cost line. This line may be called total cost line. (fig.2)

4. The point at which the total cost cuts across the sales line is the break-even point and volume at this point is break-even volume.
5. The angle of incidence is the angle between sales and the total cost line. It is formed at the intersection of the sales and the total cost line, indicating the profit earning capacity of a firm. The wider the angle the greater is the profit and vice versa. Usually, the angle of incidence and the margin of safety are considered together to show that a wider angle of incidence coupled with a high margin of safety would indicate the most suitable conditions.

Illustration 9:

from the following information, prepare a break-even chart Showing the break-even point.

Budget output	….	80,000 units
Fixed expenses	….	Rs.4,00,000
Selling price per unit	…..	Rs. 20
Variable cost per unit	….	Rs. 10

Solution:

Total costs and sales at varying levels of output:

Output (Units)	Variable Cost Rs.	Fixed Cost Rs.	Total Cost Rs.	Sales Cost Rs.
	@ 10 p.u.			@ 20 p.u.
20,000	2,00,000	4,00,000	6,00,000	4,00,000
40,000	4,00,000	4,00,000	8,00,000	8,00,000
60,000	6,00,000	4,00,000	10,00,000	12,00,000
80,000	8,00,000	4,00,000	12,00,000	16,00,000

Fig. 1

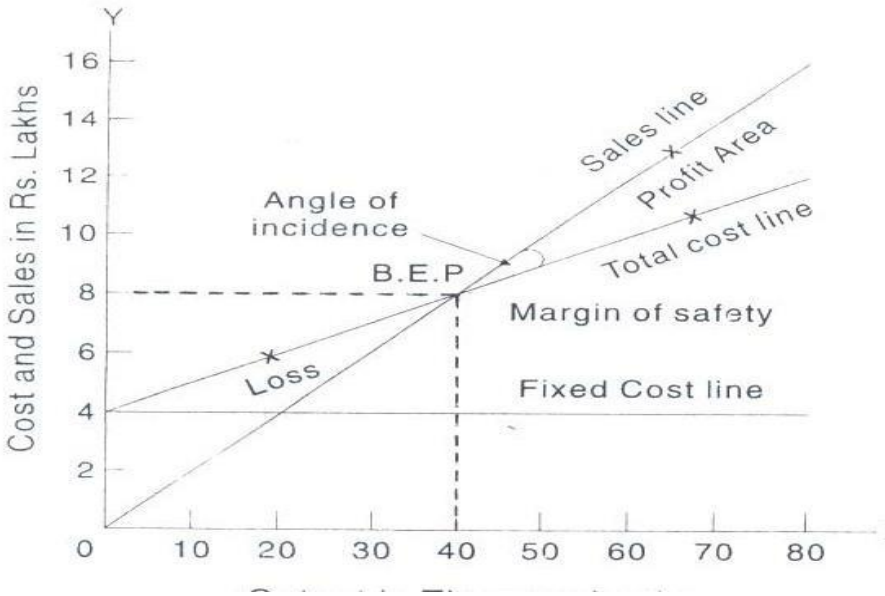
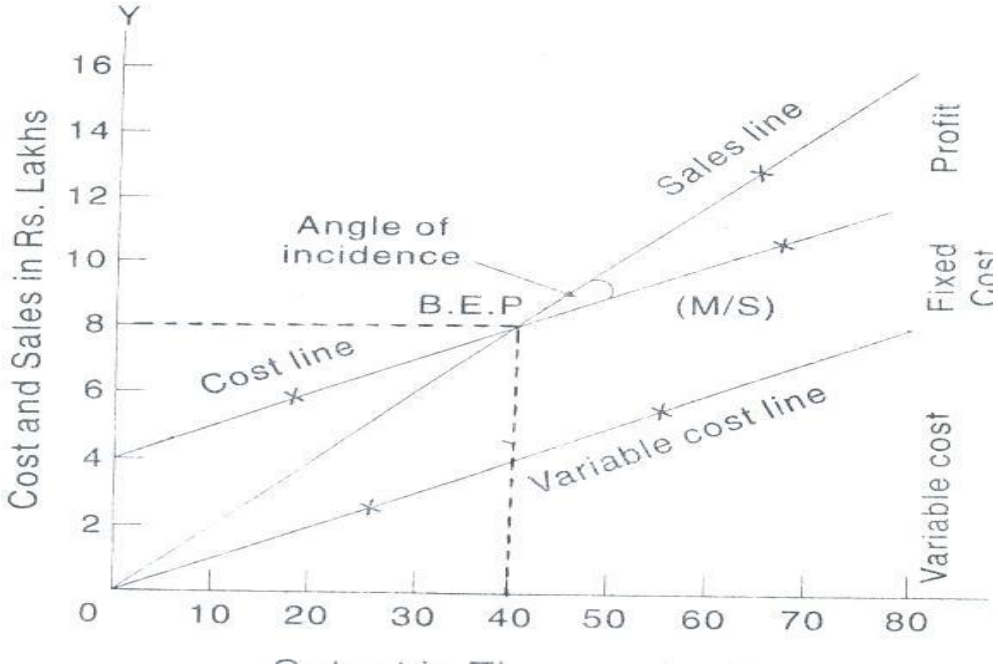

Y
16
14
12
10
8
6
4
2
0
10
20
30
40
50
60
70
80
Cost and Sales in Rs. Lakhs
Sales line
Profit Area
Angle of incidence
Total cost line
B.E.P
Margin of safety
Loss
Fixed Cost line

fig. 2


Y
16
14
12
10
8
6
4
2
0
10
20
30
40
50
60
70
80
Cost and Sales in Rs. Lakhs
Sales line
Profit
Angle of incidence
B.E.P
(M/S)
Fixed Cost
Cost line
Variable cost line
Variable cost

First Method (Fig.1)

Fixed cost line runs parallel to x-axis. Total cost line is drawn at rs.4 lakhs on y-axis and runs upward. Sales line drawn from point o.

B.E.P. is at 40,000 units, i.e., rs.8,00,000

M/S = Sales – B.E. Volume
= 80,000 – 40,000
= 40,000 Units (I.E. Rs.8,00,000)

Alternative Method (Fig.2)

Variable cost line starts from point o and runs upward. Total cost Line is drawn parallel to v.c.line from rs.4 lakhs point on y-axis. Total Cost and sales line cut each other at 40,000 units (i.e., rs.8,00,000 sales). This is the break-even point.

4.2.3.6 Advantages And Limitations Of Break-Even Analysis

The break-even analysis is a simple tool employed to graphically represent accounting data. The data revealed by financial statements and reports are difficult to understand and interpret. But when the same are presented through break-even charts, it becomes easy to understand them. Break-even charts help in:

1. Determining total cost, variable cost and fixed cost at a given level of activity.
2. Finding out break-even output or sales.
3. Understanding the cost, volume, profit relationship.
4. Making inter-firm comparisons.
5. Forecasting profits.
6. Selecting the best product mix.
7. Enforcing cost control.

On the negative side, break-even analysis suffers from the following limitations:

1.It is very difficult if not impossible to segregate costs into fixed and variable components. Further, fixed costs do not always remain constant. They have a tendency to rise to some extent after production reaches a certain level. Likewise, variable costs do not always vary proportionately. Another false assumption is regarding the sales revenue, which does not always change proportionately. As we all know selling prices are often lowered down with increased production in an attempt to boost up sales revenue. The breakeven analysis also does not take into account the

changes in the stock position (it is assumed, erroneously though, that stock changes do not affect the income) and the conditions of growth and expansion in an organisation.

2.The application of break-even analysis to a multiproduct firm is very difficult. A lot of complicated calculations are involved.

3.The break-even point has only limited importance. At best it would help management to indulge in cost reduction in times of dull business. Normally, it is not the objective of business to break-even, because no business is carried on in order to break-even. Further the term

bep indicates precision or mathematical accuracy of the point. However, in actual practice, the precise break-even volume cannot be determined and it can only be in the nature of a rough estimate. Therefore, critics have pointed out that the term `break-even area' should be used in place of bep.

4.Break-even analysis is a short-run concept, and it has a limited application in the long range planning.

Despite these limitations, break-even analysis has some practical utility in that it helps management in profit planning. According to wheldon, `if the limitations are accepted, and the chart is considered as being an instantaneous photograph of the present position and possible trends, there are some very important conclusions to be drawn from such a chart'.

Lesson 5.2

Standard Costing And Variance Analysis

Introduction

During the evolutionary stage of costing, the focus was only on the determination of actual cost i.e. The main activity of the cost accountants was determining the actual cost of production. This resulted in the non-availability of cost control measures to the management. Standard costing was developed by cost accountants to meet these contingencies.

Meaning Of Standard Costing

Standard costing is a technique which uses standards for costs and revenues for the purpose of control through variance analysis. Standard costing involves the setting of predetermined cost estimates in order to provide a basis for comparison with actual costs. Standard costing is universally accepted as an effective instrument for cost control in industries.

A standard cost is a planned cost for a unit of product or service rendered. According to h.j. wheldon, “standard costs are pre-determined or forecast estimates of cost to manufacture a single unit or a number of units of product during a specific immediate future period”. Standard cost is defined in the cima official terminology as: “a predetermined calculation of how much costs should be under specified working conditions. It is built up from an assessment of the value of cost elements and correlates technical specifications and the qualification of materials, labour and other costs to the prices and/or usage rates expected to apply during the period in which the standard cost is intended to be used. Its main purpose is to provide basis for control through variance accounting for the valuation of stock and work-in-progress and in some cases, for fixing selling prices”.

Objectives of Standard Costing

The objectives of standard costing technique are as follows:

a. To provide a formal basis for assessing performance and efficiency.

b. To control costs by establishing standards and analyzing of variances.

c. To enable the principle of ‘management by exception’ to be practiced at the detailed operational level.

d. To assist in setting budgets different overheads

Ascertaining the actual cost of production
Ascertaining the variances by comparing actual costs with standard costs
Analyze the variances to know the reason for variances.
Adopting corrective measures to control the variances in futures.

Advantages Of Standard Costing

A good standard costing system results in the following advantages:

The setting of standards should result in the best resources and methods being used and thereby increase efficiency.

Budgets are compiled from standards.

Actual costs can be compared with standard costs in order to evaluate performance

Areas of strengths and weakness are highlighted

- It acts as a form of feed forward control that allows an organization to plan the manufacturing inputs required for different levels of output.
- It acts as a form of feedback control by highlighting performance that did not achieve the standard set.
- It operates via the management by exception principle where only those variances (i.e. Differences between actual and expected results) which are outside certain tolerance limits are investigated, thereby saving managerial time and maximizing managerial efficiency.
- The process of setting, revising and monitoring standards encourages reappraised of methods, materials and techniques thus leading to cost control as an immediate effect and to cost reduction as a long-term effect.

Limitations of Standard Costing

Standard costing suffers from the following limitations:

- a. A lot of input data is required which can be expensive
- Unless standards are accurately set any performance, evaluation will be meaningless.
- c. Uncertainty in standard costing can be caused by inflation,

Technological change, economic and political factors, etc.

Standards therefore need to be continually updated and revised.

The maintenance of the cost data base is expensive.

Setting of standards involves forecasting and subjective judgments with inherent possibilities of error and ambiguity.
Standard costing cannot be adopted in the firms which do not have uniform and standard production programme.
It is very difficult to predict controllable and uncontrollable variances.

Standard Costing Vs. Budgetary Control

Standard costing and budgetary control are control techniques adopted in a firm with specific objectives. Following points of differences between the two can be observed:

1.Standard costing is a long-range control activity developed and adopted with focus on production. Budgetary control is an activity concerned with every functional area of the firms and functional budgets are prepared to control that function in a shorter term.
2.Standard costs are scientifically predetermined. Budgetary control is concerned with the overall profitability and financial position of the concern.
3.Standard costing is concerned with ascertainment and control of costs. Budgetary control is concerned with the overall profitability and financial position of the concern.
4.The emphasis of standard costing is on what should be the cost whereas in budgetary control the emphasis is on the level of costs not to be exceeded.
5.Standards are determined for each element of cost. Budgets are determined for a specified period.
6.Standard cost is a projection of cost accounts. Budget is a production of financial accounts.
7.Standard costing is concerned with the control of costs and is more intensive in scope. Budgetary control is concerned with the operation of business as a whole and is more extensive.

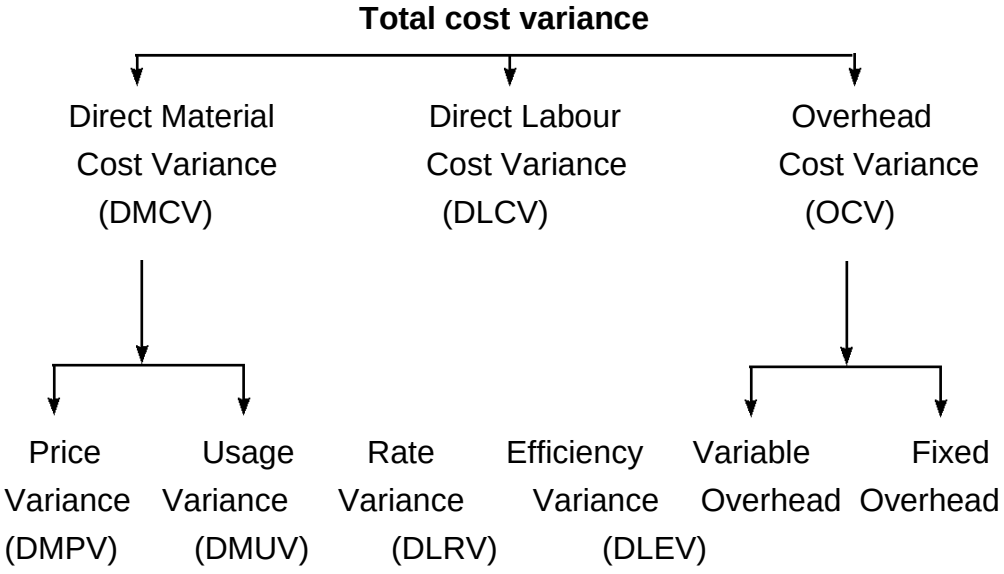
Variance Analysis

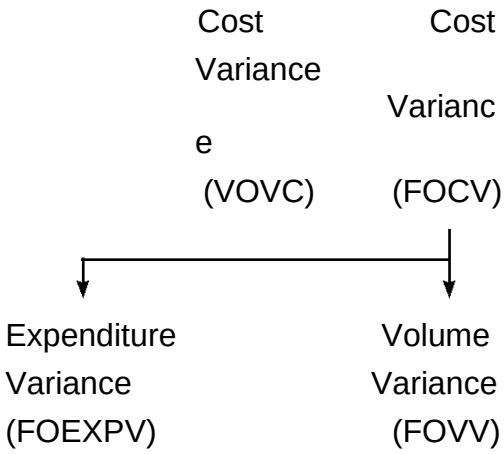
The difference between the standard cost and the actual cost is known as ‘cost variance’. If actual cost is less than the standard cost, the variance is favorable. If the actual cost is more than the standard cost, the variance is unfavorable. A favorable variance indicates efficiency, while an unfavorable one denotes inefficiency. However, mere knowledge of these variances would not be useful for ensuring cost control. These have to be thoroughly analyzed so as to find out the contributory factors. It would then be possible to find out whether the variances are amenable to control or not. The term ‘variance analysis’, thus, may be defined as ‘the resolution into constituent parts and the explanation of variances’.

Variances are of two types: cost variances and sales variances. In this lesson cost variances relating to material and labour are explained.

Cost Variances

As noted previously, the difference between the standard cost and the actual cost is known as ‘cost variance’. The total cost variance should be split into its constituent parts, in order to analyze the cost variances in greater detail. The following figure reveals the picture clearly:





Direct Material Cost Variance

It is the difference between the standard cost of material specified for the output achieved and the actual cost of materials used. The standard cost materials is computed by multiplying the standard price with the standard quantity for actual output and the actual cost is obtained by multiplying the actual price with actual quantity. The formula is:

= Standard Cost For Actual Output – Actual Cost or

DMCV = (Standard Price × Standard Quantity For Actual Output)

– (Actual Price × Actual Quantity)

= (SP × SQ) – (AP × AQ).

Example 1.

The standard cost of material for manufacturing a unit of a particular product is estimated as under :

16 kg of raw materials @ rs. 1 per kg. On completion of the unit it was found that 20 kg. Of raw material costing rs. 1.50 per kg. have been consumed. Compute material cost variance:

DMCV= (SP × SQ) – (AP × AQ)

= (16 × 1) – (20 × 1.50)

= Rs. 14 (Adverse)

Direct Material Price Variance (DMPV)

It is that portion of material cost variance which is due to the difference between the standard prices specified and the actual price paid. This variance may be due to a number of reasons: change in price, inefficient buying, standard quality of materials not purchased, favorable discounts not obtained etc. The formula is:

Dmpv = actual quantity (standard price – actual price)

If the actual price is more than the standard price, the variance would be adverse and in case the standard price is more than the actual price, it would result in a favourable variance.

Example 2.

Use the information given in example 1 and compute the material price variance.

DMPV = AQ (SP – AP)
= 20 (1 – 1.50)
= Rs. (10) Adverse.

Direct Material Usage Or Quantity Variance (DMUV)

It is the difference between the standard quantity specified and the actual quantity used. This variance may arise because of: careless handling of materials, wastage, spoilage, theft, pilferage, changes in product design, use of inferior materials, defective tools and equipment etc. The formula is:

DMUV = Standard Price (Standard Quantity For Actual Output – Actual Quantity)

= SP (SQ – AQ).

Example 3.

Use the information given in example 1 and compute the material usage variance.

DMUV = SP (SQ – AQ)
=1 (16 – 20)
=Rs. 4 (Adverse)

Note. The total of material price and usage variances is equal to material cost variance. Thus,

DMCV = DMPV + DMUV

in the example that has been used so far, let us verify this:

DMCV = DMPV + DMUV
Rs. 14 (A) = Rs. 10 (A) + Rs. 4 (A)

Illustration 1.

A manufacturing concern which had adopted standard costing furnishes the following information.

Standard :

Material for 70 kgs. Finished products 100 kgs.

Price Of Material	Rs. 1 Per Kg.

Actual :

Output	2,10,000 kgs.
Materials used	2,80,000 kgs.
Cost of materials	Rs.2,52,000

Calculate :

a)Material usage variance
b)Material price variance
c)Material cost variance

Solution:

For an output of Rs.70 kgs. Of finished products, standard quantity of material output is 100 kgs.

Therefore for the output of 2,10,000 kgs., standard quantity of material input should be = {100/70 × 2,10,000}= 3,00,000 kgs. Actual price per kg. = 2,52,000 / 2,80,000 = .90 paise

(a) Material usage variance :

= Standard Price (Standard Quantity – Actual Quantity)

= Rs.1 (3,00,000 – 2,80,000) = Rs. 20,000 (Favorable)

(b) Material price variance :

= Actual Quantity (Standard Price – Actual Price)

= 2,80,000 (1- .90) = Rs. 28,000 (Favorable)

(c) Material cost variance :

= Standard Quantity × Standard Price – Actual Quantity × Actual Price

= (3,00,000 × 1) – (2,52,000)

= Rs. 48,000 (Favorable)

Verification:

Material cost variance = material price variance + material usage variance.

Rs.48,000 (Favorable) = Rs.28,000 (Favorable) + Rs.20,000 (Favorable).

Illustration 2.

From the following particulars calculate :

Total materials cost variance; Material price variance; and Material usage variance.

	Standard		*Actual*	
	Materials	*Units*	*Price (Rs.)*	*Units*
Price (Rs.)				
1.2	A	1,010	1.0	1,080
1.8	B	410	1.5	380
1.9	C	350	2.0	380

Solution:

(i) **Material Cost Variance** = (SQ × SP) – (AQ × AP)

	Standard Cost Materials		Actualcost Materials	
	Rs.	Rs.	Rs.	Rs.
Material A	1,010 Units @ 1.0 =	1,010	1080Units@1.20 =1,296	
Material B	410 Units @ 1.5 =	615	380Units@1.80 =684	
Material C	350 Units @ 2.0 =	700	380Units@1.90 =722	
Total Standard Cost		2,325	Totalactualcost	2,702

. . . Materials Cost Variance = Rs. 2,325 – Rs. 2,702
= Rs. 377 Adverse.

(ii) Material Price Variance = Actual Quantity (St. Price – Actual Price)

Material A : 1,080 Units (1 – 1.20) = 216 Adverse
Material B : 380 Units (1.5 – 1.80) = 114 Adverse
Material C : 380 Units (2.0 – 1.90) = 38 Favourable

Total Material Price Variance = 292 Adverse

(iii) Material Usage Variance = St. Price (St. Quantity – Actual Quantity)

Material A : Rs. 1 (1,010 Units – 1,080 Units) = Rs. 70 Adverse
Material B : Rs. 1.5 (410 Units – 380 Units) = Rs. 45 Favourable
Material C : Rs. 2 (350 Units – 380 Units) = Rs. 60 Adverse

Total Material Usage Variance = Rs. 85 Adverse

Verification

Materials Cost Variance = Materials Price Variance + Material Usage Variance

Rs. 377 (A) = Rs. 292 (A) + Rs. 85 (A)

= Rs. 377 Adverse

Illustration 3.

From the following particulars compute material cost variance, price variance and usage variance.

Quantity Of Materials Purchased	3000Unit
Value Of Materials Purchased	Rs. 9,000
Standard Quantity Of Materials Required Per Tonne Of Output	30 Units
Standard Price Of Material	Rs.2.50Per Unit
Opening Stock Of Material	Nil
Closing Stock Of Material	500Units
Output During The Period	80Tonnes.

Solution.

Material Consumed = 3,000 – 500 = 2,500 Units

Actual Price Of Material = Rs. 9,000/3,000 = Rs. 3 Per Unit

Standard Quantity For Actual Output = 30 × 80 = 2,400 Units

Material Cost Variance (DMCV)= (St. Price × Std. Qty) – (Actual Price × Actual Quantity)

= (2.50 × 2,400) – (3 × 2,500)

= 6,000 – 7,500 = Rs. 1,500 (Adverse)

Material Price Variance (DMPV)= Actual Quantity (Sp – Ap)

= 2,500 (2.50 – 3) = 2,500(.50)

= Rs. 1,250 (Adverse)

Material Usage Variance (DMUV) = Std. Price (Sq - Aq)

= 2.50(2,400 – 2,500)

= Rs. 250 (Adverse)

Verification :

DMCV = DMPV + DMUV

1,500 (A) = 1,250 (A) + 250 (A)

Illustration 4.

Given that the cost standards for material consumption are 40 kgs.

At rs. 10 per kg., compute the variances when actuals are :

(a) 48 kgs. At rs. 10 per kg.
(b) 40 kgs. At rs. 12 per kg.
(c) 48 kgs. At rs. 12 per kg.
(d) 36 kgs. At rs. 10 per kg.

Solution :

Material Cost Variance = (SQ × SP) – (AQ × AP)

(a) 40 kgs. @ rs. 10 – 48 kgs. @ rs. 10 = rs. 80 adverse
(b) 40 kgs. @ rs. 10 – 40 kgs. @ rs. 12 = rs. 80 adverse
(c) 40 kgs. @ rs. 10 – 48 kgs. @ rs. 12 = rs. 176 adverse
(d) 40 kgs. @ rs. 10 – 36 kgs. @ rs. 10 = rs. 40 favourable

Material Usage Variance = Standard Price (Standard Qty. – Actual Qty.)

(a) Rs. 10 [40 kgs. – 48 kgs.] = rs. 80 adverse
(b) Rs. 10 [40 kgs. – 40 kgs.] = nil
(c) Rs. 10 [40 kgs. – 48 kgs.] = rs. 80 adverse
(d) Rs. 10 [40 kgs. – 36 kgs.] = rs. 40 favourable

Material Price Variance = AQ(SP – AP)

(a) 48 kgs. [rs. 10 – rs. 10] = nil
(b) 40 kgs. [rs. 10 – rs. 12] = 80 adverse
(c) 48 kgs. [rs. 10 – rs. 12] = 96 adverse
(d) 36 kgs. [rs. 10 – rs. 10] = nil

5.2.3.9 Direct Labour Cost Variance (DLCV)

Labour variances are calculated like material variances. The direct labour cost variance is the difference between the standard direct wages specified for the activity achieved and the actual direct wages paid. The formula is :

DLCV = Standard Cost For Actual Output – Actual Cost or
= (Standard Rate × Standard Time For Actual Output) – (Actual Rate × Actual Time)
= (SR × ST) – (AR × AT)

Example 4 :

Standard Hours	5,000
Standard Wage Rate	Rs.4 Per Unit
Actual Hours	6,000
Actual Wage Rate	Rs.3.50 Per Unit

calculate labour cost variance.

Solution :

DLCV = (SR × ST) – (AR × AT)
= (4 × 5,000) – (3.50 × 6,000)
= 20,000 – 21,000
= Rs. 1,000 (Adverse)

The labour cost variance may arise on account of difference in either rates of wage or time. Thus, it may be analysed further as (i) labour rate variance, and (ii) labour time or efficiency variance.

Direct Labour Rate Variance (DLRV)

It is the difference between the standard rate specified and the actual rate paid. It is also called ‘rate of pay variance or wage rate variance’. This would arise, usually, because of : (i) excessive overtime, (ii) employment of wrong type of labour (employing skilled person in place of an unskilled one), (iii) overtime workers engaged more or less than the standard, (iv)

employment of labour at higher rates due to shortage of workers etc. The formula for calculating labour rate variance is as under :

Direct Labour Rate Variance = Actual Time (Standard Rate – Actual Rate)
DLRV = AT (SR – AR)

Direct Labour Time Or Efficiency Variance (DLEV)

It is the difference between the standard labour hours specified and the actual hours spent on the works. This variance is primarily concerned with the standard wage rate. As such, where piece wage payment is in force, there will be no labour efficiency variance. Labour efficiency variance arises on account of any one or combination of factors such as : (i) lack of supervision, (ii) poor working conditions in the factory, (iii) use of sub-standard or higher standard materials, (iv) inefficiency of workers due to inadequate training, (v) lack of proper tools, equipment and machinery, (vi) higher labour turnover etc. Symbolically,

Labour Time Or Efficiency Variance = Standard Rate (Standard Time For Actual Output – Actual Time)
DLEV = SR (ST – AT)

Illustration 5.

Data Relating To A Job Are As Thus:

Standard Rate Of Wages Per Hour	Rs. 10
Standard Hours	300
Actual Rate Of Wages Per Hour	Rs. 12
Actual Hours	200

You are required to calculate –
(i) labour cost variance, (ii) labour rate variance and (iii) labour efficiency variance.

Solution.

(i) Labour Cost Variance = Standard Cost – Actual Cost
= Std. Rate × Std. Time) –
(Actual Rate × Actual Time)
= (300 × 10) – (200 × 12)
= 3,000 – 2,400 = 600 (Favourable)

(ii) Labour Rate Variance = Actual Time (Std. Rate – Actual Rate)
= 200 (10 – 12) = 400 (Adverse)

(iii) Labour Efficiency
Variance = Std. Rate (Std. Time – Actual Time)
= 10 (300 – 200) = 1,000 (Favourable).

Verification :

DLCV = DLRV + DLEV
600 (F) = 400 (A) + 1000 (F)

Illustration 6.

Standard hours for manufacturing two products m and n are 15 hours per unit and 20 hours per unit respectively. Both products require identical kind of labour and the standard wage rate per hour is rs. 5. In the year 2011, 10,000 units of m and 15,000 units of n were manufactured. The total of labour hours actually worked were 4,50,500 and the actual wage bill came to rs. 23,00,000. This included 12,000 hours paid for @ rs. 7 per hour and 9,400 hours paid for @ rs. 7.50 per hour, the balance having been paid at rs. 5 per hour. You are required to compute the labour variances.

Solution :

LabourCostVariance=StandardCostForActualOutput–ActualCost

Standard cost :

Standard Time : M = 10,000 × 15 = 1,50,000
N = 15,000 × 20 = 3,00,000
- ---- - - - - - - -
4,50,000 Hours
--- - - - - - - - - -

Rs.
For Product M = 10,000 × 15 × 5 = 7,50,000
For Product N = 15,000 × 20 × 5 = 15,00,000

Total Standard Cost	22,50,000

	Rs.	Rs.
Total Actual Cost	= 23,00,000	
Labour Cost Variance	= 22,50,000 – 23,00,000	
	= 50,000 (A)	

Labour Rate Variance = Actual Hours × (Std. Rate – Actual Rate)

	Rs.	Rs.
	= 12,000(5 – 7)	= 24,000 (A)
	= 9,400(5 – 7.50)	= 23,500 (A)
	= 4,29,100(5 – 5)	= –
Total		47,500 (A)

Labour Rate Variance = Std. Rate × (Std. Time – Actual Time)
= Rs. 5 × (4,50,000 – 4,50,500)
= Rs.2,500 (A)

Verification:

labour Cost Variance = Labour Rate Variance + Labour Efficiency Variance
50,000 (A) = Rs. 47,500 (A) + Rs. 2,500 (A)
= Rs. 50,000 (A)

Idle Time Variance (ITV)

Idle time variance, a component of labour efficiency variance, is represented by the standard cost of the actual hours for which the workers remain idle due to abnormal circumstances, like non-availability of raw materials, power cut, breakdown of machinery etc. Symbolically :

Idle Time Variance = Standard Hourly Rate × Idle Time Or
Hours = SR × IT

This variance is always adverse. The total of labour rate, idle time and efficiency variances would be equal to labour cost variance, as shown below:

Illustration 7.

100 workers are working in a factory at a standard wage of rs. 4.80 per hour. During a month there are four weeks of 40 hours each. The standard performance is set at 360 units per hour. The following is the summary of the wages paid during the month:

91 workers were paid @ rs. 4.80 per hour
5 workers were paid @ rs. 5.00 per hour
The remaining were paid @ rs. 4.60 per hour
Power failure stopped production for 2 hours actual production 57,960 units. Calculate labour variances.

Solution.

1. Labour Cost Variance

= Standard Cost – Actual Cost
= Rs. 77,280 – Rs. 76,832 = Rs. 448 (Fav.)

(I) Standard Cost

= Std. Rate Per Hour × 100 × Units Produced / Std. Production per hour

= 4.80 × 100 × 57,960 / 360 = Rs. 77,280

(Ii) ***Actual Cost*** For The Month (For 40 × 4 = 160 Hrs.) No. Of Workers × Hrs. During The Month × Rate Paid.

	Rs.
91 × 160 × 4.80 =	69,888
5 × 160 × 4.80 =	4,000
4 × 160 × 4.60 =	2,944
	- - - - - -
	76,832
	- - - - - -

2. Labour rate variance

= Actual Hours (Std. Rate – Actual Rate)

(A) (5 × 160) (Rs. 4.80 – Rs. 5.00) = Rs. – 160 (Adv.)

(B) (4 × 160) (Rs. 4.80 – Rs. 4.60) = Rs. + 128 (Fav.)

\- - - - - - - -

Rs. – 32 (Adv.)

Note. For 91 workers rate variance is not calculated because they are paid at std. Rate.

3. Labour efficiency variance

= Std. Rate (Standard Time – Actual Time)

= Rs. 4.80 (16,100 Hours – 15,800 Hours)

= Rs. 1,440 (Fav.)

Notes. (I) Standard Time

= No. Of Employees × Quantity Produced / Std. Quantity Per Hour

= 100 × 57,960 / 360 = 16,100 Hours.

(Ii) Actual Time

= Possible Hours – Idle Time

= 100 × 160 Hours – 100 × 2 Hours

= 15,800 Hours

4. Idle Time Variance

= Std. Rate × Idle Time

= Rs. 4.80 × 200 Hours = 960 (A)

Verification :

LCV = LRV + LEV + ITV

448 (F) = Rs. 32 (A) + Rs. 1,440 (F) + 960 (A)

= Rs. 448 (F).

5.2.3.10 Summary

Cost control is a concrete step towards profit maximization and standard costing with the aid of variance analysis ensures this. Cost control is achieved by adopting the following steps: pre – determination of standard costs, consumption of actual costs, comparison of actual costs with standard costs and recording of the variances if any and analyzing and reporting on these variances to the management so that suitable action may be taken whenever necessary in order to control the costs in future.

Balance Score Card

The balanced scorecard is a strategic planning and performance management framework used by business, government, and non-profits to align day-to-day activities with enterprise vision, mission, and values. The balanced scorecard tracks financial and non-financial measures to determine the degree to which the enterprise is performing as desired and when corrective action is necessary.

The balanced scorecard is a widely used management tool, particularly in the U.S., the UK, Northern Europe, and Japan. Enterprises that are comfortable with the rigor required derive significant benefits from it. However, the balanced scorecard requires a great deal of effort to implement and use effectively. Enterprises must have the necessary resources and discipline to make the balanced scorecard successful.

The balanced scorecard helps enterprises in several ways. It reminds executives that in addition to tracking financial metrics, it is also important to track quality and service. Too many companies focus exclusively on sales and expenses to the exclusion of other metrics. Second, the strategy map provides a clear, concise way to communicate priorities and goals to employees, customers, suppliers, and other stakeholders. The balanced scorecard also creates an explicit linkage from enterprise strategy to day-to-day activities. Enterprise goals and metrics can be decomposed into business unit or departmental goals and metrics, enabling all stakeholders to understand how their projects and activities contribute to overall enterprise success. Fourth, the balanced scorecard facilitates business planning by providing clear metrics that help the enterprise rank projects into priority sequence and enterprise products by importance. Finally, the framework helps the enterprise monitor and measure progress towards strategic objectives.

Success with the balanced scorecard

Implementing the balanced scorecard is a great deal of work with some implementations being abandoned before completion. Enterprises enjoying the best results share the following characteristics. They all have:

Robust operational systems

The balanced scorecard needs a great deal of high-quality data from the ERP and other foundational systems. When these systems are error-prone or produce incomplete data, additional manual effort is required to collect the necessary data.

Typically, the people affected waste time so much time arguing about whose data is correct, they lack the time to analyze the data and take corrective action.

Culture of measurement

Enterprises that are grounded in one of the STEM disciplines normally make decisions based on data and analysis. They are comfortable analyzing a comprehensive set of metrics that considers the same product or process from multiple perspectives. By contrast, enterprises that downplay the importance of data and rely on executive passion and energy, often find the executive team is uncomfortable discussing more than a handful of metrics. Enterprises operating on instinct are better off either not using the balanced scorecard or waiting until a new CEO or the board of directors demands data-based decision making. Even with CEO or board support, the balanced scorecard still represents a major cultural change. Implementation requires a long time and needs to be accompanied by significant organizational change management.

Executive support

In the absence of strong executive support, the necessary resources to collect and monitor the required information are unlikely to be available. Even if by some miracle all of the information could be collected, the executive team must use the balanced scorecard data or the rest of the enterprise will also ignore any corrective actions suggested by it. When this happens, the program will be neglected and eventually cancelled.

Appropriate metrics

Appropriate metrics vary by industry and enterprise. While the balanced scorecard does not provide rigid rules regarding appropriate metrics, it is critical to select metrics that accurately support enterprise goals. Good metrics should be easy to understand and quantitative, that is, expressed as a number. In addition, a good metric should show the trade-offs between cost and service. The call center of a large enterprise that prided itself on excellent customer service, measured call length without a corresponding quality measure. Not surprisingly talk time decreased. Unfortunately, so did customer service, much to their chagrin. As we know, what you measure is what you get.

Limited numbers of metrics

It can be difficult to select the right number of metrics. Enterprises that are just starting the balanced scorecard journey sometimes make the mistake of trying to measure everything. Although enough metrics are needed to provide a complete picture of

enterprise health, too much data is overwhelming and can make it difficult to understand what conclusions to reach and what actions to take.

Continuous improvement

It usually takes multiple years to get a large enterprise to fully embrace the balanced scorecard. Even with a well-designed initial implementation, updates will be required as lessons are learned, competition changes, and new challenges emerge. Regular feedback is critical for the enterprise to learn, adapt, and improve. This is particularly important in the public sector where performance targets are often a matter of public record.

Module 3:

In a world of changing expectations, companies must account for the way they impact the communities and environments where they operate. Businesses can sustain their growth only if society is generally satisfied with their overall contribution to societal well-being. Climate change; community health, education and development; and business sustainability are some of the most pressing issues of our time. This raises the importance of accurately and transparently accounting for and reporting these activities. Businesses cannot afford to function and survive in the long run unless it behaves in a legitimate and socially responsible manner. Governments of various countries began to scrutinize the activities of companies under the different dimensions of sustainable development. For this Sustainable Reporting was introduced as a tool to measure the performance. Sustainability Reporting (SR) or Non-Financial Reporting (NFR) is the process of communicating the social and environmental effects of organizations to particular interest groups within society and at large. Sustainability reporting is gaining momentum globally as an important communication tool for companies to disclose their sustainability plans and performance and enhance stakeholder confidence. By the year 2011, globally there are about 8,691 sustainability reports published based on the GRI framework. Indian Companies Getting Ready to Embrace SR This page was created using BCL ALLPDF Converter trial software. To purchase, go to http://store.bcltechnologies.com/productcart/pc/instPrd.asp?idproduct=1 With the growing significance of sustainability issues at the global level, companies in India are also getting ready to embrace reporting on sustainability to enhance competitiveness. The reporting scenario in India is still in nascent stage with nearly 47 companies disclosing their sustainability performance. Out of 8,691 reports only a handful of 122 reports are published by Indian companies. TATA (Automotive) is pioneer in

sustainability reporting in India. It has started reporting their sustainability performance from year 2001 based on GRI guidelines. Since then, reporting in India has been done primarily on voluntary basis. The companies with GRI based sustainability reports in India have benefited to a great extent. Drivers of Sustainability Reporting

- There are various drivers behind the increase in dialogue, discussion and publication of sustainability reports. Some of them are-
- Stakeholder exert pressure for SR because of their organization's participation in global supply chain.
- Brand and reputation of corporate sector in India and at international level is another significant driver behind SR by corporates.

Role of Governments/Regulators in pushing SR to make corporates more responsible. Facing competition worldwide is also the reason to accept the SR Sustainability Reporting –

Benefits The benefits of sustainability reporting include

- Improved financial performance
- Improved stakeholder relationships
- Improved risk management
- Improved investor relationships
- Identification of new markets and/or business opportunities

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