

# Management Reporting Issues and Analysis

10

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# Management Reporting Issues and Analysis

## **SLOB Mapped against the Module**

To develop detail understanding about management reporting system to facilitate preparation of reliable reports which will ensure accurate data driven cost effective decisions and will build brand image. (CMLO 5b)

## **Module Learning Objectives:**

Reporting can be defined as the communication with related information between the two parties. The process of providing information to the management is known as management reporting. These reports are provided to the various levels of management on regular basis to keep the management abreast of the effectiveness of their respective responsibility. The process of reporting to management is concerned with the proper selection of financial and operating data, arranging information in a proper form, analysing and interpreting the data, and then reporting it to the management through an appropriate method. After studying this module, the students will be able to –

- ✦ Analyse the Performance parameters of the Organisation like Capacity Utilization, Productivity, Utilities, Energy efficiencies, etc.
- ✦ Interpret Profitability Parameter and infer its importance.
- ✦ Learn about the Importance of Working Capital Management and Liquidity Management.
- ✦ Implement Various Management Accounting Tools which helps the Organisation's development and growth.

The purpose of reporting is to provide the information needed by the concerned service requisitioners and/or the Users of the function. The report is the essence of the management audit function for the areas reviewed.

### Introduction

Reporting can be defined as the communication of statements with related information between the two parties. The process of providing information to the management is known as management reporting. A report is a statement containing facts.

The quality of the Report brings clarity on the Objective for which the service was sought for, efficiency and ability of the Team deployed for review, depth of skill and handling specifics. These reports are provided to the various levels of management on regular basis to keep the management abreast about the effectiveness of their respective responsibility.

Reports are of various types and depends on the requirement of the Management. Management Team of respective entities feel for the different reports as per their requirement of exercising ready results/outcome of their function and imbibe suitable control measures and effectiveness of the controls. The operational purpose and level (organisation hierarchy) of the User determines the frequency, format and size of report.

As for example, CFO wants 'Daily collection Report at Branches with total (all SKU) Inventory level'; National Sales Head (NSH) requires a different report having same information with a more granular way i.e. SKU-wise daily collection in respective Branches.

As evident from above, the size of report varies due to difference between objective of CFO and SH.

Let's take another example, the Production Head (PH) of every Plant (multiple locations) wants Hourly Production of each Product. The National Plant Head (NPH) requires a report shift-wise and location-wise for each Product. Here also the objective is different due to hierarchy /level in the Organisation and objectivity/purpose.

The Frequency of Report also varies depending upon requirement of the management hierarchy e.g. Managing Director (MD) wants a cost benefit analysis at Product level on monthly basis whereas the Costing Head monitors the performance of each Product at individual Plant level.

The aforesaid Reports are mostly generated from designed ERP process to cater the requirement of Organisation and its' management Team and commonly called as 'Operational Reports', 'Business Intelligence'.

The distinguish function of Management Audit is there in the Organisation to:

- (i) help management in taking right decision at the right point of time by providing analytical views;

- (ii) imbibe a better control culture by suggesting appropriate controls in process. Timely flagging to the notice management such goals can be achieved.

As for example, to achieve higher sale in the month, last minute 'push' given by extending credit limit and invoicing against the same. For a huge conglomerate, the management auditor can take help of generating ERP based Report to analyze the cost of such extended credit and quality of sales made on account of fund blockage. This may help CFO and NSH to reconsider the 'credit limit' and 'cost of fund' w.r.t additional sales achieved.

- (iii) The Management Audit Reports are of analytical nature, of course, datum collected from the database maintained by the Company, IT Department. At the instance of Management Audit function, to facilitate decision making process, tailor-made reports are suggested to have better and quick database as per requirement.
- (iv) Management Audit Team carries out process improvement reviews also and for the sake of smooth operational flow and cost reduction, ERP based reports are suggested. As for example, Truck-wise TAT (Turn Around Time) monitoring increases the possibility of reduction in transit time and ensure availability of more Trucks. Accordingly, Fixed Cost incurred by the Truckers will be reduced when compared with number of Trips and a percentage of the same, if passed on to Company, the Transportation rate can be reduced.
- (v) Depending on the organisational hierarchy the Management Audit Report also may vary in length. For the topmost hierarchy, it should be as crispy, sharp and to the point as possible, while for middle and junior level the same report can be elaborate with action orientation.
- (vi) Management Auditor at time handles 'Special Assignments' also, scope of which varies assignment purpose-wise.

### Characteristics of Management Reports

Management Reports are purposive and depends upon management requirement. The reports prepared should be simple and clear in respect of various operating activities.

- a. **Financial Reports:** This type of report includes cash flow reports, borrowing vs. cost of borrowing, Performance vs Budget etc. Normally current period and comparative with earlier period/s, annual with prior year/s considered for comparison purposes.
- b. **Information Reports:** These reports are of three types, viz., trend reports, analytical reports, and activity reports. In trend reports, comparative information is provided over a period regarding the direction or trend of different activities. Analytical reports are based on the horizontal comparison of results. This analytically provides information about the comparison of different activities for a particular period. When reports are prepared for any particular activity of the business then they are known as activity reports. Segment reports are also information reports.
- c. **Control Reports:** Various responsibility centers are established in every business to have effective control. To know the performance of each responsibility center, periodically reports are prepared.

### Reports Based on Nature:

- a. **Enterprise Reports:** These are the reports, which give a detailed description of the various operating activities and financial position of the business. They are generally meant for external users i.e., bankers, financial institutions, shareholders, and government authorities.

**b. Investigative Reports:** These reports are specially prepared only when to investigate a particular problem.

**Functional Classification of Reports:**

These reports are normally for a particular function or a particular department or joint activity.

They are also of two types:

- a. Individual Activity Report:** Report is prepared for the individual activity of a single department working under the supervision of one executive is known as an individual activity report.
- b. Joint Activity Report:** This report is prepared when joint efforts are made in performing the activity e.g. Central Procurement Department with Project Department for a big Project, where delay in commissioning can be gauged with responsibility fixed.

# Performance Analysis

## 10.2

**B**usiness goals are the prerequisite for measuring performance against the same. A performance analysis is an evaluation of how a business or individual has performed within the limited timeframe against set parameters. Any variations from projected metrics, need to be under focus to understand the next course of action to preempt the possibility of any future failure/shortcoming.

### **What's included in a business performance analysis?**

A business performance analysis includes company performance metrics and goals. Depending on the scope and focus of the analysis, these may be more or less comprehensive. Here are some specific metrics or goals a company might consider during a performance analysis:

- ⦿ parameters against which performance to be measured.
- ⦿ past parameters and measuring yardstick.
- ⦿ ensuring no change in parameters and yardstick.
- ⦿ measurement of actual delivery.
- ⦿ assumptions used for both micro and macro conditions with impact thereon.
- ⦿ adjustment at base level for the actuals at different point of time.
- ⦿ process of monitoring and review of parameters and actuals against the same.
- ⦿ equal period or timeframe for evaluation and period of appraisal.
- ⦿ 'root cause' analysis for deviations from expected performance.
- ⦿ feedback to employees on business performance improvement.

# Capacity Utilisation Analysis

## 10.3

Capacity utilization refers to the manufacturing and production capabilities that are being utilized at any given time against the pre-fixed tagged capability. It is the relationship between the output produced and the potential output with the given resources. The utilization can be disclosed by way of comparison of whole number or/and percentile.

### The formula for Capacity Utilization:

The mathematical formula for calculating capacity utilization is:

$$\text{Capacity Utilization} = \frac{\text{Actual Level of Output}}{\text{Maximum Level of Output}} \times 100$$

Suppose XYZ Company is producing 20,000 and it is determined that the company can produce 40,000 units. The company's capacity utilization rate is 50%  $[(20,000/40,000) \times 100]$ . If all the resources are utilized in production, the capacity rate is 100%, indicating full capacity. If the rate is low, it signifies a situation of "excess capacity" or "surplus capacity." or 'under utilization of capacity'.

One example may bring more clarity - Industry and respective entities under specific industry facing both the scenarios e.g Indian Cement industry overall capacity is higher than Demand, some players of which functioning over 100% of their respective Plant capacity while some even failed to achieve even 70% of the available capacity.

This is one of the Key Performance Area of Operational Efficiency which Management Auditor should focus on.

In layman's term, Capacity Utilisation indicates, how well the resources available to the management have been utilised.

These resources may interalia include : Plant & Machinery, Building, Land, Raw Materials, Man Power, Utilities etc.

Advantages of better / higher capacity utilisation is :

1. Better utilisation of above mentioned available resources
2. Reduced Per Unit Fixed Cost of Product leading to improved Profitability

For Lower Capacity Utilisation, reasons for the same should be looked into and appropriate corrective actions may be taken. (Illustrative List is provided below)

1. Machine Break Down – Better Maintenance is required
2. Losing Market Share – To launch better products / improved products with the help of R & D

3. Non Availability of Key Raw Materials
  - To develop new vendors
  - To put up own manufacturing Plant after proper Cost Benefit Analysis\
4. Non Availability of Electricity
  - Possibility may be explored to put up Wind Mills / Solar

**Economic Significance of Capacity Utilization:**

Capacities are build-up in anticipation of demand projection of the Product. Any change in market dynamics causes fluctuation in demand and consequential impact on capacity utilization. Economies with a capacity ratio of much less than 100% can significantly boost production without affecting the associated costs.

The capacity utilization rate is an important indicator for companies because it can be used to assess operating efficiency and provides an insight into cost structure. It can be used to determine the level at which costs per unit go up or down. When there is a rise in output, the average cost of production will decrease.

It means that the higher the capacity utilization, the lower the cost per unit, allowing a business to gain an edge over its competitors. Many companies aim to produce to the extent of fullest capacity. Low-capacity utilization leading to opportunity loss, since fixed cost recovery will be a challenge.

# Productivity and Efficiency Analysis

## 10.4

**P**roductive efficiency, also known as production efficiency, is the economic concept of producing the largest possible output from the available resources. Productivity enhancement and/or efficiency improvement are positives for growth and profitability.

### How Productive Efficiency Works:

Productive efficiency often comes into play when a production process relies on scarce resources. In microeconomics, this could involve two industries competing for the same raw materials and ending up limited by similar externalities.

As an example, consider the production of most rechargeable batteries, which require a steady supply of the mineral lithium and cobalt. When companies allocate these minerals toward the maximum production efficiency of car batteries, they reduce the available resources for other types of batteries that rely on the same core materials. If the car battery manufacturing process has reached its maximum productive efficiency, there will be higher marginal costs for any additional unit produced. In competitive markets, companies may be able to evade such situations by improving workflows, technical efficiency, and exploiting economies of scale. In the short run, they bump up against the limits of production efficiency.

### What Is the Production Possibility Frontier?

The production possibility frontier (PPF) refers to a graphic curve used in both macroeconomics and microeconomics to describe the output limits on two products that compete for the same finite resources. These resources can be physical materials such as wood or minerals. They can also refer to human capital, land, equipment, and production technology.

A PPF is represented on an XY coordinate plane where the X-axis represents the production of one commodity and the Y-axis represents the production of a different commodity. The PPF appears as a curve that tracks these metrics concurrently. A production possibility frontier is calculated via the combination of inputs from both products. An increase in the production of one product will lead to a decrease in the other product because both products must be made using the same pool of finite resources.

### Productive vs. Allocative Efficiency: What's the Difference?

Productive efficiency and allocative efficiency measure common characteristics, but the two terms are not synonyms.

Productive efficiency represents the maximum output of a product given scarce resources. The production of any additional units results in opportunity costs- one which is the reduced output of another product. This metric focuses entirely on monetary costs and resources.

Allocative efficiency measures the distribution of goods and services. Allocative efficiency is a state of market equilibrium where both producer and consumer benefit. Specifically, it means the marginal cost of production for each unit sold will equal the marginal benefit to the customer buying that good. To have true allocative efficiency,

both producers and buyers must benefit from the overall condition of the market. On a macroeconomic level, this applies to entire societies such that producers benefit in an open market and consumers pay reasonable prices for an enhanced quality of life.

Both efficiencies are limited by externalities. A corporation or small business can do a great deal to improve its productive efficiency levels and reduce inefficiency. This includes ramping up its level of production, performing preventive maintenance on equipment, reducing factory downtime, tracking key performance indicators (KPIs), reimagining production lines, and incentivizing higher productivity levels among its workforce. However, even when a company streamlines and optimizes in every possible way, it can still be hampered by the production of another product that taps into its same supply chain.

### **Productivity and Efficiency Analysis:**

Productivity / Efficiency indicates Output per Unit of Input.

Some of the indicators are :

- Less Input per Unit of Output
- More Output with same Input
- Much more output with relatively less increased output
- Slightly less output with much less input

Often Raw Material Cost Component, Electricity Cost Component and Steam Cost Component are major Cost Component of Company / Industry.

Management Auditor can look for the following for Improving Productivity / Efficiency of Input per Unit of Output

### **Raw Materials:**

1. Explore the possibility of using superior Raw Materials where decrease in usage will offset the higher procurement price paid.
2. Explore New Vendors for better competitive Rates and Regular Supply of Raw Materials
3. Purchase of Raw Materials should be from the List of Approved Vendors to ensure Quality
4. Avoid Emergency Purchase
5. To maintain Plant & Machinery in Proper Condition to avoid Break Down

### **Electricity:**

1. Existing Plant & Machinery can be replaced by more energy efficient component after carrying proper cost benefit analysis
2. Possibility can be explored to use Variable Frequency Drive on Motors, Blowers etc to adjust load of Machine as per Process Requirements
3. Possibility can be explored to have modification of Plants
4. Plant should run at optimum capacity
5. Suggestions can be invited from Employees on Shop Floors

### **Steam:**

1. Reducing Kettle Hours / Process Cycle Time
2. Reduce Transmission Losses by proper insulation of entire steam distribution system
3. Suggestions can be invited from Employees working on shop floors

Management can suitable regard any good suggestion.

# Utilities and Energy Efficiency Analysis

10.5

**E**nergy efficiency is defined as using lesser energy to provide the same product or service, such as lighting, heating, and transportation. Together with the move to renewable energy sources, increasing energy efficiency is considered to be one of the twin pillars of sustainable energy policy.

Energy-efficiency experts worldwide have identified several areas where the greatest savings in the use of energy can be made, including industry, transport, homes and buildings.

The International Energy Agency (IEA) has stated that improved energy efficiency in industrial processes, transportation, and buildings could lead to a 30% reduction in the world's energy needs by 2050 and help control global emissions of greenhouse gases.

## Utilities and Energy Efficiency Analysis:

Often Utilities Cost form an Important Element of Variable Cost and Total Cost.

Energy efficiency is defined as using lesser energy to provide same product or service.

Utilities are resources used in the process of converting Raw Materials into Finished Products but these resources are not part of the visible unit of the Product.

Management Auditor can look into the following :

1. Energy generated per unit of Fuel consumed or Fuel Consumed per unit of Energy Generated for Electricity Generated, Steam Generated
2. Trend Analysis of Energy Cost as % of Product Cost
3. Possibility of recycling of commonly used materials such as paper, glass, plastics, and aluminium that may result in high reductions in energy use and CO<sub>2</sub> emissions.
4. Better Capacity Utilisation for improving input / output ratio
5. Replacing existing Plant & Machinery with new energy efficient after having carried out proper Cost Benefit Analysis and its Pay Back Period
6. Possibility can be explored to use Variable Frequency Drive on Motors, Blowers etc to adjust load of Machines as per the Process Requirements.
7. Possibility can also be explored to have modification of pumps.
8. Replacing inefficient electric motors with more efficient modern motors.
  - Redesigning piping system to optimise fluid flow
  - Replacing older, oversized, and inefficient pumps with more efficient modern pumps
  - Here huge energy savings can be achieved with minimum pay back period

9. Where electricity is a major cost component, possibility can be explored to put up wind mills and or solar systems.

### **Energy Efficiency in Industry:**

The global energy intensity of industry—measured as the amount of primary energy demand needed to produce one unit of gross domestic product (GDP) – fell by nearly 20% between 2000 and 2016, primarily as a result of energy efficiency policies. The size of these reductions is similar both in the 29 member countries of the IEA and in major emerging economies. Out of the hundreds of opportunities for substantial savings specific to large industries that have been identified by energy-efficiency experts.

Inefficient electric motors are found throughout the global industrial sector. Enormous savings for the industry can be made by replacing older inefficient electric motors with more efficient modern motors, producing savings that exceed the purchase price after just a few weeks of usage, even when the cost of lost production time while replacing the motors is taken into account. These newer industrial motors are easier to operate and more reliable.

The steel industry has saved huge amounts of energy and drastically reduced CO<sub>2</sub> emissions through advance technology/process known as “thin-slab casting” and “direct casting”. Traditionally, steel mills have heated steel twice; first, to melt the metals into thick cast sheets, and then a second time to recast the steel into the particular form desired.

The new, more efficient process involves directly casting the steel from its liquid state into the final form desired, with the bonus of producing both a lighter and stronger steel than with the older process, as well as at lower cost.

Further savings for industries such as paper milling have been achieved through the use of more efficient fluid handling. By redesigning piping systems to optimize fluid flow, and by replacing older, oversized, and inefficient pumps with more efficient, modern pumps, many companies have reduced maintenance and production costs, made huge energy savings, increased productivity, and achieved greater reliability and product quality.

Large amounts of heat are produced by most industrial facilities and this wasted thermal energy can be profitably captured and reused, or sold for heating and cooling nearby buildings. CHP (combined heat and power) systems, also known as cogeneration systems, use the thermal energy produced during electricity production to turn turbines to produce more electricity, effectively using fuel twice and significantly and profitably increasing efficiency in a short period. Studies carried out in the U.S. have shown that fossil fuel use and CO<sub>2</sub> emissions could be reduced by 20 percent if all wasted thermal energy from factories were to be captured and recycled.

Many European cities use district heating and cooling systems, where hot water generated at a single point of supply is piped under the streets and into heat exchangers and absorption chillers for heating and cooling nearby buildings, including large institutions such as universities and hospitals. Finland is one of the world leaders in the use of CHP and district heating and cooling systems. According to the International Energy Agency’s CHP/DHC Collaborative, CHP produces 74% of Finland’s district heating. The system has generated so much electricity that the surplus is sold to other countries in Scandinavia.

The potential savings from the use of new LED lightbulbs to replace older, incandescent bulbs are truly astounding, not only for homeowners and businesses but also for towns and cities through the use of more efficient street lighting. Switching to LED lighting can yield energy savings of over 75%. By 2022, 90% of indoor lighting worldwide is expected to be provided by compact fluorescent lamps (CFLs) and LEDs. In addition, intelligent use of motion sensors to detect when people are present can also be used to achieve further savings and reductions in emissions.

**Efficient Homes and Buildings:**

“Every day,” says Bernie Sanders, “we are paying more for energy than we should due to poor insulation, inefficient lights, appliances, and heating and cooling equipment – money we could save by investing in energy efficiency.”

The use of LED lightbulbs in homes and buildings is only one of many ways for reducing energy costs and CO<sup>2</sup> emissions, and achieve substantial reductions in electricity bills.

**Efficient Transportation:**

Transport was responsible for 28% of global final energy consumption in 2016 and is one of the biggest sources of greenhouse gas emissions, with road transport such as trucks, buses, and cars emitting the most greenhouse gases. The use of improved engine technologies, hybrid cars, and plug-in electric vehicles have already produced gains in savings and reductions in emissions as well as more mileage. Global sales of electric vehicles grew by 40% in 2016, mainly in China and Europe, and there are now more than 2 million electric vehicles worldwide.

Electric vehicles are much more efficient than diesel or gasoline alternatives but are not yet at a scale to have a significant influence on global fuel economy.

Mass transit systems such as bus and light rail networks in urban areas, along with complimentary walking and cycling infrastructures, can sharply reduce both CO<sub>2</sub> emission and subsequent health benefits due to improved air quality for local inhabitants. According to the World Health Organization, “Safe, equitable, and energy-efficient urban transport can help achieve multiple health and sustainability goals.

Several companies in the aviation industry have developed much lighter and stronger materials which, together with more efficient fuel use and aircraft design, have achieved gains in energy efficiency. Yet, despite these advances, the environmental impact of aviation continues to be of great concern.

**Recycling:**

The recycling of commonly used materials such as paper, glass, plastics, and aluminum is another area that results in huge reductions in energy use and CO<sub>2</sub> emissions. According to Stanford University, in the U.S. alone, “the amount of lost energy from throwing away recyclable commodities such as aluminum cans and newspapers is equivalent to the annual output of 15 power plants.

Aluminum is the most efficient recyclable material. It never degrades and can be reused indefinitely with no need to bring new materials into the production cycle. Processing recycled aluminum would reduce the energy used in the production of the metal from bauxite ore, currently one of the most energy-intensive processes in the global economy, by an incredible 95 percent.

However, according to the Container Recycling Institute, sales of canned and bottled beverages in the U.S. have continued to grow over the last few decades but recycling of the containers has stagnated, resulting in higher rates of landfilling, incineration, littering, and other negative environmental impacts.

Glass can be recycled indefinitely. The energy savings from recycling glass are relatively less, as recycled glass still needs to be re-melted at very high temperatures to make new glass products. However, according to a report by the Environmental Protection Agency, creating glass from recycled materials rather than raw materials generates 20 percent less air pollution and 50 percent less water pollution, as well as helps to reduce the size of landfills, preserve natural resources like sand, soda ash, and limestone, and eliminate the costs involved with transporting these heavy materials.

Paper is one of the most recycled materials in the world. Manufacturing recycled paper saves thousands of trees each year in the U.S. alone and uses only 60 percent of the energy required to produce paper from fresh pulp. Emerging research on biodegradable inks and even erasable paper could soon solve the problems faced by manufacturers of producing high-quality, bright white paper due to ink residue.

Every year, more than 100 million tons of plastics are manufactured across the globe, yet only 14% of this amount is recycled. 8 million tons of plastic end up in our seas and oceans each year and some plastic materials can take hundreds of years to break down in a landfill. However, many plastics can be recycled and turned into items such as clothes, containers, bags, carpets, bottles, garden products, car components, furniture, and insulation, to name just a few. Recycling a single plastic bottle can conserve enough energy to light a 10W LED bulb for up to 36 hours! It's easy to see why recycling plastic is so important.

**Barriers to Success:**

1. Fear for high initial Investment.
2. Lack of understanding and clarity over benefit accruals.
3. Less concerned over environmental negative impacts.
4. Mentality to stick to old, 'old is gold'.

# Key Costs and Contribution Analysis

## 10.6

**C**ontribution Analysis is useful in understanding the effect of variable costs on the net income (performance indicator). It helps a company understand the contribution of individual business lines or different products by calculating the contribution margin (contribution/sales) of each in terms of rupees and percentage. To arrive at the contribution margin, direct and variable costs related to the manufacturing process are subtracted from the revenue

Suppose, the contribution of products is 10%, which is lower than other products of a business. If a company is unable to reduce the variable costs of this product, it may eventually decide to drop the product. Moreover, contribution analysis is done to understand the strong and weak points of the business or the product. It also tells how each unit helps in recovering the fixed cost.

During contribution analysis, the managers also consider the effect of internal and external factors.

Formula to calculate Contribution in rupees per unit is  $(\text{Total Revenue} - \text{Variable costs}) / \text{Number of units sold}$ .

For example, a company sells 15,000 units of shirts for a total revenue of ₹ 4,00,000. Cost of goods sold is ₹ 1,50,000, labour expenses of ₹ 1,00,000. The contribution margin per shirt is  $(₹ 4,00,000 - ₹ 1,50,000 - ₹ 1,00,000) / 15,000 = ₹ 10.00$  per shirt.

Contribution Analysis is done largely to support the decision-making process. For better results, a company uses such analysis along with the budgeting process and management accountant functions.

### **Profit-Volume-Chart:**

Not every manager is technical, and therefore, a graph helps them with an easy understanding of the concept. A Profit Volume chart explains the relationship between volume and profit through graphical representation. In the graph, the contribution figure is considered as a variable. Through this graphical representation, managers can understand the profit at a given level.

### **Calculation of Break Even:**

A break-even point is where the business makes no profit or loss. One can calculate the break-even point using a formula =  $\text{Fixed cost} / \text{Contribution per unit}$ .

### **Asses Losses:**

Every business needs to calculate a margin of safety to come up with future strategies. One can easily do so by using contribution analysis. To make it easier for the managers, contribution analysis is expressed in percentage terms. For instance, if the break-even unit is 2,500, it means, the company would be profitable once they sell 2501th unit.

In case, the company has set a target of selling of 5,000 units, then the margin of safety would be  $(5,000 - 2,000)/5,000 \times 100 = 60\%$ .

**Advantages of Contribution Analysis: Ease of Use:**

This metric is relatively easier to use and understand. Thus, it is effective in helping managers to arrive at decisions. Understanding the exact amount of profit that each unit would start generating beyond the break-even point gives the company a better picture of its performance. Contribution analysis alone helps in understanding some of the most critical points in profit.

**Disadvantage:**

In Contribution Analysis, the assumptions can sometimes be far from reality. Assumptions such as constant selling price or linear pricing are some of the shortcomings in this approach.

**Another Approach:**

For non-business entities also this perspective can be used for a political campaign, economic analysis, and more.

# Profitability Analysis

10.7

The overall objective of any business is to maximize profitability. From the first day on, the activities of the business culminate in an attempt to create sustainable and ample profit. Business leaders rely on a variety of tools and analysis to help identify ways to maximize profit and create new ways of generating profit. One tool they rely on is profitability analysis, which assists them in understanding how profitable the business is.

## What Is Profitability Analysis?

Profitability analysis is part of enterprise resource planning (ERP) and helps business leaders to identify ways to optimize profitability as it relates to various projects, plans, or products. It is the process of systematically analyzing profits derived from the various revenue streams of the business.

## Why Is Profitability Analysis Important?

To maximize profits, business leaders first need to understand the drivers behind their profits. This helps to create efficiencies in the processes and activities that generate revenue and/or finding ways to reduce overhead and other costs that impact profitability.

The analysis helps to identify ways to enhance product mixes to maximize profits both in the short and long term. This makes it helpful for budgeting purposes as managers work to create reasonable goals and map how they will achieve them.

One helpful piece of information created when analyzing various products is which products are the most and least profitable. This information is sometimes taken into consideration when business leaders choose to drop or reduce weightage of certain products. Finally, profitability analysis examines the various relationships with customers and vendors.

## Common Methods of Performing Profitability Analysis:

### Profitability Ratios:

Profitability ratios are financial metrics that are used to understand revenue relative to its cost, assets, and equity over time. Some of the more common profitability ratios are operating profit margin, Return on Assets (ROA), and Return on Equity (ROE), Earning Before Interest and Taxes (EBIT) etc.

### Customer cluster wise Profitability Analysis:

Segment, Market and Customer centric Profitability analysis. It provides unique insight into customers' behaviour. This indicates percentage of profit attributable to each customer segment.

### Qualitative Analytics:

This helps to identify trends and business cycles and allows leaders to plan appropriately.

**Product Profitability Management:**

- ⦿ Market performance of each Product.
- ⦿ Contribution from each Product.
- ⦿ Profitability (Product-wise).
- ⦿ Price leadership.
- ⦿ Regulate pricing policies.

**Conduct Product Costing Analysis:**

- ⦿ Specify cost of goods sold (COGS);
- ⦿ Control material consumption costs per unit of finished product;
- ⦿ Determine and control product-wise labour costs;
- ⦿ Element-wise Cost optimization;
- ⦿ Define average sales price per product unit sold;
- ⦿ Regulate product development costs, including staff and IT expenses;
- ⦿ Calculate periodical product-wise profit (or loss).

**Product Rationalization Metrics:**

**Sales-to-Stock Ratio** = (Net Sales/Average Inventory):

The inventory to sales ratio means a company’s investment into inventory in comparison to its sales amount. The sales-to-stock ratio is a method to measure the relationship between stock and sales. By evaluating Stock turnover ratio customer demand, adequacy of supplies, requirement of inventory built-up etc. can be handled suitably.

**Gross Margin** = (Gross Profit /Net Sales):

Calculating Gross Margin of a product or service is a good indication of profitability. In general terms Gross Margin is Gross Profit (total sales revenue minus its COGS, cost of goods sold) divided by Net Sales, expressed as a percentage: this number shows how much a company earns from selling certain product or service, involving the costs it incurs for producing or acquiring this product or service. This measure is used to represent the margin made on every rupee of net sales: the proportion of each rupee from revenue that a company retains as gross profit to service its other business operations and obligations.

**Profitability Analysis:**

Profit is the resultant of revenue, costs and facilities

Management Auditor should see that for improvement of profitability, below mentioned factors must be constantly reviewed.

Profitability Analysis

Sr. No	Particulars	Remarks
1	Sales Revenue	To Increase
2	Raw Material Cost	To Monitor , Control & Reduce
3	Utilities Cost	To Monitor, Control & Reduce
4	Contribution	To Increase
5	Fixed Cost	Optimum Capacity Utilisation
6	Profitability	To Increase

# Working Capital and Liquidity Management Analysis

10.8

**W**orking capital represents the net current assets available for day-to-day operating activities. It is defined as current assets over current liabilities. Successful management of working capital is essential to remain in business.

Working capital management requires great care, e.g. extending the credit period to customers may lead to additional sales, but absence of sufficient cash flow results in further borrowing with consequential interest burden on borrowing.

Working capital management is central to the effective management of a business because:

- ⦿ Current assets comprise the majority of the total assets of some companies.
- ⦿ Shareholder wealth is more closely related to cash generation than accounting profits.
- ⦿ Failure to control working capital, and hence to manage liquidity, is a major cause of the corporate collapse.

## Objectives of working capital management:

One of the two key objectives of working capital management is to ensure liquidity. A business with insufficient working capital will not be in a position to meet financial obligations on time. Late payments may cause reputational risk and downgrading of credit rating. Non-payment (default) can lead to the compulsory liquidation of assets to repay creditors.

A company with a high level of working capital may fail to achieve the return on capital employed (ROCE).

The trade-off is perhaps most obvious with regards to the holding of cash. Although cash provides liquidity it generates little return, even if held in the form of cash equivalents such as treasury bills / Money Market Instruments.

Although an optimal level of working capital may exist it may not be achievable due to factors beyond management's control, such as an unreliable supply chain influencing inventory levels.

However, businesses must at least avoid the extremes:

- ⦿ Over trading: Insufficient working capital to support the level of business activities. This can also be described as under-capitalization and is characterised by a high and rising proportion of short-term finance to long-term finance.
- ⦿ Over-capitalisation: An excessive level of working capital, leading to inefficiency.

## Liquidity ratios:

$$\text{Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}}$$

If the current ratio falls below 1, this may indicate problems in meeting obligations as they fall due. Even if the current ratio is above 1 this does not guarantee liquidity, particularly if inventory is slow-moving. On the other hand, a very high current ratio is not to be encouraged as it may indicate inefficient use of resources (for example, excessive cash balances).

The level of a firm's current ratio is heavily influenced by the nature of its business for example:

- ⊙ Traditional manufacturing industries require significant working capital investment in inventory (comprising raw materials, work in progress, and finished goods) and trade receivables (as their business customers expect to be offered generous credit terms). Therefore, companies operating in such industries may reasonably be expected to have current ratios of 2 or more.
- ⊙ Modern manufacturing companies may use just-in-time management techniques to reduce the level of buffer inventory and hence reduce their current ratios to some extent.
- ⊙ In some industries, a current ratio of less than 1 might be considered acceptable. This is especially true of the retail sector which is often dominated by 'giants' such as Wal-Mart (in the US) and Tesco (in the UK). Such retailers can negotiate long credit periods with suppliers while offering little credit to customers leading to higher trade payables as compared with trade receivables. These retailers are also able to keep their inventory levels to a minimum through efficient supply chain management.

$$\text{Quick (acid test) ratio} = \frac{\text{Quick assets}}{\text{Current liabilities}} = \frac{\text{Current assets} - \text{inventory}}{\text{Current liabilities}}$$

The quick ratio is particularly relevant where inventory is slow-moving.

**Efficiency ratios:**

This shows how quickly inventory is sold; higher turnover reflects faster-moving inventory.

However, working capital ratios are often easier to interpret if they are expressed in 'days' as opposed to 'turnover':

$$\text{Inventory turnover} = \frac{\text{Cost of sales}}{\text{Average inventory}}$$

Inventory days estimate the time taken for inventory to be sold. Everything else being equal, a business would prefer lower inventory days.

$$\text{Inventory days} = \frac{\text{Average inventory}}{\text{Annual cost of sales}} \times 365$$

Receivable's days estimate the time taken for customers to pay. Everything else being equal a business would prefer lower receivables days.

$$\text{Trade payable days} = \frac{\text{Average trade payables}}{\text{Annual credit purchases}} \times 365$$

Payable's days estimate the time taken to pay suppliers. A business would prefer to increase its payables days unless this proves expensive in terms of lost settlement discounts or leads to other problems such as a damaged reputation – a 'good corporate citizen' is expected to pay promptly.

$$\text{Sales to working capital} = \frac{\text{Annual sales}}{\text{Average working capital}}$$

In this ratio working capital is defined as the level of investment in inventory and receivables less payables. In exam questions, you may have to assume that year-end working capital is representative of the average figure over the year.

The sales to working capital ratio indicate how efficiently working capital is being used to generate sales. Everything else being equal the business would prefer this ratio to rise.

### Cash operating cycle:

The cash operating cycle (also known as the working capital cycle or the cash conversion cycle) is the number of days between paying suppliers and receiving cash from sales.

Cash operating cycle = Inventory days + Receivable's days – Payable's days.

In the manufacturing sector inventory days has three components:

- (a) Raw materials days.
- (b) Work-in-progress days (the length of the production process), and
- (c) Finished goods days.

The longer the operating cycle the greater the level of resources tied up in working capital. Although it is desirable to have as short a cycle as possible, there may be external factors that restrict management's ability to achieve this:

- ⊙ Nature of the Business: A supermarket chain may have low inventory days (fresh food), low receivables days (perhaps just one to two days to receive a settlement from credit card companies), and significant payables days (taking credit from farmers). In this case, the operating cycle could be negative (i.e., cash is received from sales before suppliers are paid). On the other hand, a construction company may have a very long operating cycle due to the high levels of work-in-progress.
- ⊙ Industry Norms: If key competitors offer long periods of credit to their customers it may be difficult to reduce receivables days without losing business.
- ⊙ Power of Suppliers: An attempt to delay payments could lead to the supplier demanding 'cash on delivery' in the future (i.e., causing payables days to fall to zero rather than rising).

### Interpretation of Ratios:

For a meaningful evaluation to be made of a firm's working capital management it is necessary to identify:

**Trends:** The change in a ratio over time.

In addition, Management Auditor should also focus on following Ratios:

1. Inventory of Raw Materials in terms on No of Days Consumption
  - Inventory of Raw Material / Consumption of Raw Material Per Day
  - This will insulate both against over stocking / under stocking
2. Inventory of Finished Products in terms of No of Days Production / Sales
  - Inventory of Finished Product / Production or Sales Per Day
  - This will ensure meeting Production / Sales Targets

**External Benchmarks:** Industry average (sector) ratios are commonly published by business schools or consultancies. The following table is provided for reference purposes:

Sector	Sales/Working capital (times)	Inventory days	Receivables days	Payables days	Cash operating cycle days
Aerospace, defence and security	5.5	71	46	45	72
Automotive	15.6	51	30	60	21
Chemicals	5.8	68	48	49	67
Communications	35.7	22	5	106	(79)
Energy, utilities and mining	15.2	28	37	46	19
Engineering and construction	4.7	91	78	90	79
Entertainment and media	11.4	22	89	123	(12)
Forest, paper and packaging	6.3	66	49	54	61
Healthcare	27.8	26	38	60	4
Hospitality and leisure	16.1	35	26	40	21
Industrial manufacturing	5.3	63	64	57	70
Metals	7.0	74	32	49	57
Pharmaceuticals and life sciences	4.9	105	57	66	96
Retail and consumer	10.8	69	26	57	38
Technology	7.2	41	65	60	44
Transportation and logistics	11.5	22	44	36	30
<b>Average</b>	<b>9.0</b>	<b>52</b>	<b>44</b>	<b>57</b>	<b>39</b>

**Example:**

Topple Co has the following forecast figures for its first year of trading:

Sales ₹36,00,000

Purchases expense ₹ 30,00,000

Average receivables ₹3,06,000

Average inventory ₹4,95,000

Average payables ₹2,30,000

Average overdraft ₹5,00,000

Gross profit margin 25%

Industry average data: Inventory days 53

Receivables days 23

Payables days 47

Current ratio 1.43

Assume there are 365 days in the year.

**Required:**

Calculate and comment on Topple Co's cash operating cycle, current ratio, quick ratio, and sales to working capital ratio.

Workings:		Days
Inventory days	$\frac{4,95,000}{27,00,000} \times 365$	67
Receivables days	$\frac{3,06,000}{36,00,000} \times 365$	<u>31</u> 98
Payables days	$\frac{2,30,000}{30,00,000} \times 365$	(28)
Cash operating cycle		<u>70</u>

$$\text{Current ratio} = \frac{4,95,000 + 3,06,000}{2,30,000 + 5,00,000} = 1.10 \text{ times}$$

$$\text{Quick ratio} = \frac{3,06,000}{2,30,000 + 5,00,000} = 0.42 \text{ times}$$

$$\text{Sales to working capital} = \frac{36,00,000}{4,95,000 + 3,06,000 - 2,30,000} = 6.3 \text{ times}$$

The length of the cash operating cycle indicates that there will be 70 days between Topples Co receiving cash from sales and paying cash to suppliers. This is significantly longer than the industry average of 29 days (53 + 23 – 47) and is likely to lead to liquidity problems, as evidenced by the size of the overdraft.

Topples Co expects to take approximately the same credit period from its suppliers as is taken by its customers, whereas the industry norm is to take a significantly longer credit period from suppliers (47 days) than is taken by customers (23 days). Therefore, slow inventory turnover is the main cause of Topples Co's long working capital cycle. This may be inevitable in the first year of trading but it is important that systems are implemented to ensure efficient inventory management. The extent of future reductions in inventory days may be limited by the nature of the business as the industry average is 53 days.

It is perhaps unsurprising that Topples Co's receivables days is also above the industry average as the firm may have been forced to offer generous terms of trade to attract customers away from its more established competitors, in addition, Topples Co may still be in the process of establishing and implementing credit control procedures.

On the other hand, Topples Co is paying its suppliers much more quickly than the industry norm. Although this puts pressure on liquidity, Topples Co may be taking advantage of settlement discounts offered by suppliers or, as a new firm without an established trading history, it may simply not be offered extended credit periods by suppliers.

The above comparisons to sector data must be treated with caution as working capital management may be poor across the sector, leading to benchmarks that Topples Co should not endeavour to replicate. As a long-term target, Topples Co should benchmark its performance against the leader in the sector.

The current ratio indicates that, over the year, there will be ₹1.10 of current assets per ₹1 of current liabilities, which does not compare favourably with the industry average of 1.43 and may not be sufficient as Topples Co's inventory appears to be slow-moving. More relevant, therefore, is the quick ratio which indicates only ₹0.42 of liquid assets per ₹1 of current liabilities, although no industry average data is available to benchmark this figure.

The overdraft would need to be continuously monitored to ensure it remains within an agreed limit, and contingency plans put into place for refinancing. However, if Topples Co is started up with an appropriate level of long-term finance then an overdraft may be avoided entirely.

Each ₹1 invested in working capital is expected to generate ₹6.30 of revenue. Although this may not appear to be a particularly efficient use of resources, the first year's trading may not be representative. Once Topples Co becomes more established it should benchmark its sales to working capital ratio against sector data if available.

# Manpower Analysis

10.9

**M**anpower planning is a very important tool and technique of human resource management. An ideal manpower deployment ratio is one of the major contributor to profitability.

The depth of analysis of manpower would depend upon the proportion of manpower cost to the total cost of a product / service.

Management Auditor should look into following ratios / areas to improve / optimise Human Resources and will add value to the Manpower Analysis.

1. Trend of Training Expenses incurred per Employee.
  - ⊙ This is a good indicator for development of employees
2. Trend of Production achieved per Employee / per Hour  
This serves as a good indicator with respect to the following :
  - ⊙ Effectiveness of Training
  - ⊙ Condition of Plant & Machinery
  - ⊙ Qualification & Experience of Employees
3. Trend of Resignation / Leaving of Employees
  - ⊙ This is a good indicator of Satisfaction and or otherwise of Employees
4. Trend of New Recruitments
  - ⊙ Whether it is due to Fresh Requirements due to New Plants / Expansion or as replacement of Employees Resigning & Leaving the Organisation
5. Ratio of Labour or Direct Labour Productivity  
The definition of the term must be same for for all the units taken for consideration  
So Labour or Direct Labour can be expressed :
  - ⊙ In terms of no of labour / direct labour
  - ⊙ In terms of man hours
  - ⊙ In terms of money i.e. value of wages

**Importance in “Manpower Planning”:**

At the micro-level, it may cover its manpower needs for its various departments and different types of personnel. With the advent industrial usage of robotics, machine learning, automation etc.; development of fresh skill set is required and hence technology driven organisations facing shortages of the right type of human resources. Manpower planning enables to get the right type of personnel in the organisation.

**Manpower Estimation and Its Dimensions:**

For the sake of smooth operational flow, management has to ensure right sizing of manpower. The number, type, qualifications, qualities, skill set etc., of the employees needed must be determined keeping in mind the cost involvement for the same. Many environmental and other factors affect this determination of manpower.

Important factors amongst them are business forecast, development, expansion, and growth of the organisation itself, management philosophy and policy, government policy, product and human skills, competition, etc., Manpower estimation is very important in the human resource or manpower planning process.

It has been made clear that the objectives of an organisation are decided and defined by the top management. The role of the human resource department is to sub-serve the overall objectives by ensuring the availability and optimum utilisation of human resources. Therefore, manpower estimation is required to be done properly which involves the estimation of the quantity and quality of the right type of people or human force.

The basis of the manpower estimation should be the annual budget and also long-term corporate plan. For this purpose, certain techniques such as managerial judgment, ratio-trend analysis, and the Delphi technique can be used.

**The main dimensions of estimation of manpower are as follows:**

- (a) Total number of employees presently available and their types, nature of work, wages, etc.
- (b) A detailed job description for each position of employee working in different departments.
- (c) Age distribution, qualifications, experience, etc., of the employees.
- (d) Estimation of short, medium, and long-term manpower needs.

Manpower estimation can help an organisation to retain the desired employees longer and keep them functioning more efficiently and more productively at a reasonable cost.

Specifically, it can help to achieve the following objectives:

- (i) To make available the human resource in adequate quantity and of the required quality.
- (ii) To reduce recruiting and replacement costs.
- (iii) To reduce labour costs associated with attrition. (iv) To improve employee morale and satisfaction.
- (v) To control unnecessary expansion or rapid expansion or reduction in workforce.
- (vi) To monitor staffing and retention policies.
- (vii) To focus on training resources properly.

Manpower estimation helps an organisation to manage its human resources in a better way and more effectively with dynamic situations. It should be noted that all organisations, especially those which have a high labour turnover must systematically do their short-term, medium-term as well as long-term manpower estimation and human resource planning. Further, to meet the changing conditions, periodical reviews and adjustments are also necessary.

To achieve effective HRP by doing manpower estimation properly, the duties involved and the skills required for performing all the jobs in an organisation, necessary information is required to be collected in respect of various jobs to be performed. Hence, job analysis becomes essential. Job analysis refers, in simple language, to the process of collecting information about a job. The job analysis process results in two sets of data i.e.,

- (a) Job description, and
- (b) Job specification which is then used to carry out job evaluation.

### **Preparing Manpower Inventory:**

“Manpower Inventory involves the classification of characteristics of personnel in an organisation, in addition to counting their number.”

The term ‘inventory’ is often used about counting tangible objects like raw materials, goods in progress, finished products, etc. In manpower inventory, the items are intangible.

It involves cataloguing the characteristics of personnel in the organisation, besides counting their number. Both present and future characteristics of personnel are recorded in the manpower inventory.

### **It involves the following steps:**

- (a) The first step in manpower inventory is to decide who should form a part of it. Generally, inventory is prepared for persons working on important posts- the executives and some persons from the operative staff are covered in it. From operative staff, only those persons are included in inventory who have the potential of taking up higher responsibility posts.
- (b) After determining the persons to be included in manpower inventory, the second step is to collect information about them. Some information may be collected from records while some may be collected through interviews or talks with the concerned persons.

The factual information such as age, experience, education, health, appraisal reports, attitude, etc. will be noted from the records. The brief interviews with persons will help in understanding his caliber, attitude, aspirations, motives, etc.

A summary statement of information is prepared about each person and is kept ready for consultation. The information will help management to find out the suitable persons in the organisation for taking up senior positions in the future. This will also enable management to determine whether persons from outside will be required in the future or not.

- (c) The next step in manpower inventory is to appraise the talent catalog. The present and future capabilities of persons are assessed. Some scale is prepared for appraising the person.

Besides appraisal tests, remarks about persons are also given. The remarks may relate to their talent, decision-making ability, training required, specific limitations, etc. Besides appraisal tests, specific remarks are useful in picking up persons for future positions.

The manpower inventory will enable managers to know the present and future potential of all individuals and their suitability for various jobs.

### **Strategic Processes for Manpower Planning:**

Manpower planning is described as a process. It is a continuous process in the sense that the work of estimating demand for and supply of employees is required to be carried on as long as the organisation carries on its business. The process of manpower planning is one of the most important, crucial, complex, and continuing managerial functions.

It entails consideration of several steps with relevant input before the estimation of manpower requirements can be arrived at and also involves, the identification of the source of supply to meet the requirements, taking into consideration various constraints.

The manpower planning process seeks to ensure that the people with the right fit in the required number are placed at the right time in the organisation.

**Strategies for manpower planning are as follows:**

- (a) Collection, maintenance, and interpretation of relevant information regarding human resources.
- (b) Periodical review of manpower objectives and requirements.
- (c) Development of procedures and techniques to determine the requirements of different types of manpower over some time.
- (d) Development of measures for the utilisation of manpower along with independent validation, if possible.
- (e) Employment of suitable techniques for the effective allocation of work to improve manpower utilisation properly.
- (f) Conducting surveys for determining the factors hampering the contribution of individuals as well as of the groups in the organisation for modifying or removing those handicaps.
- (g) Development and employment of methods of economic assessment of human resources, reflecting its features as an income generator and cost.
- (h) Evaluation of the procurement, promotion, retention, etc., of the effective manpower resources about the forecast of manpower requirements of the organisation.
- (i) Analysis and controlling of organisational processes and structure for encouraging maximum individual and group performance without incurring excessive costs.

These strategies also throw light on the objectives of manpower planning and we can get an idea from these points about the steps involved in manpower planning.

The process of manpower planning begins with the determination and review of the objectives of the organisation. This enables the management to estimate the manpower requirements and internal supply of human resources. The manpower planning consists of a series of activities such as:

- (a) Forecasting of future manpower requirements.
- (b) Making an inventory of present manpower resources and also assessing the extent to which these manpower resources are employed optimally.
- (c) Anticipation of manpower problems by projecting the present resources into the future and making the comparison with the estimation of human requirements to determine their adequacy, both qualitatively and quantitatively.
- (d) Planning for the programs of selection, training, development, utilisation, promotions, etc., to ensure adequate manpower supply in the future.

**Important steps involved in the process of manpower planning:**

- (a) Anticipation of manpower requirements for the organisation.
- (b) Proper planning of job requirements and descriptions.
- (c) Analysis of skills required to determine the nature of manpower needed.
- (d) Selection of adequate and suitable sources of recruitment.

**The Process of Human Resource Planning:** Analysis of organisational plans.

- (a) Demand forecasting- Forecasting of overall human resource requirements by the organisational plans.
- (b) Supply forecasting- Obtaining the data and information about the present inventory of human resources and forecasting of the future changes in the human resource inventory.
- (c) Estimation of net human resources or manpower requirements.
- (d) In case of future surplus, plan for redeployment, retrenchment, and lay-off.
- (e) In case of future deficit, forecasting of the future supply of human resources from all sources concerning plans of other companies.
- (f) Plan for recruitment, development, and internal mobility if future supply is more than or equal to net human resource requirements.
- (g) Plan to modify or adjust the organisational plan if the future supply is expected to be inadequate concerning future net requirements.

The persons who perform manpower planning work have to decide the period for which the plan should be prepared.

**Manpower planning can be done for:**

- (i) Short term such as one year or so.
- (ii) A medium-term which is for more than one year but up to five years.
- (iii) For a long term which is for a period of more than five years, ten years, or up to fifteen years.

It is regarded that manpower planning for a very long period does not serve many purposes. Manpower planning is generally done for a period of five to seven years with a break-up given for each year.

**The following important steps are expected to be completed in Manpower Analysis:**

### **1. Analysis of the objectives of the organisation about human resource planning:**

Objectives of the organisation act as a guideline for estimating the demand for manpower in the future. The objectives should be stated in clear terms so that the work expected to be done for achieving the objectives can become clear to the people involved in manpower planning. Hence, the process of manpower planning should start with analysing the organisational plans into a production plan, technological plan, expansion and diversification plan, marketing and sales plan, etc., and further, each plan should be analysed into sub-units as per requirements.

Analysis of organisational plans helps in estimating the demand for manpower as it gives the idea about the quantum of future work activities. It is to be done to relate future manpower needs to the future organisational needs to maximise the future returns on investment in manpower or human resources.

If the objectives are stated in terms of market share to be obtained or the type of product to be manufactured and the volume in which it is to be manufactured, it becomes possible for the planners to estimate the manpower which will have to be employed in various departments and sections to complete the expected production. Objectives decided in terms of expansion, modernisation, and diversification programmes also enable the planners in preparing a proper manpower plan.

If the organisation is small, manpower planning can be done to cover the entire unit, but, if it is large, manpower planning is done for separate departments or units or by class of employees at each level or a cluster of levels.

### **2. Forecasting future human resource needs (estimating manpower requirements):**

The concept of 'Forecasting future human resource needs' implies estimating the manpower requirements or estimating the need and demand for manpower for the fixed period for which the manpower planning activity is undertaken.

When manpower planning is done, the person in charge has to find out the requirements of human resources to undertake various activities. The human requirements forecast must be both in terms of quantity as well as quality. While doing so, forecasting the supply of manpower is also required to be considered to adjust the demand of human resources with its supply.

While forecasting or estimating manpower requirements, the existing job design and analysis is required to be reviewed thoroughly keeping in mind the future required capabilities, knowledge, skills, etc., of the present employees. If required, various jobs are redesigned considering the organisational and unit-wise plans and programs, the quantum of future work, activities, tasks, etc.

After analysis and estimation of the objectives of the organisation, in the light of expected changes in the process of production, job designs, etc., the requirements of human resources for the existing departments of the organisation as well as for new vacancies are found out.

The demand for the employees depends upon the objectives of the organisation. It becomes necessary to estimate the future demand for the product or products which the organisation is manufacturing. The demand for the product itself is affected by many factors such as the degree of competition faced by the organisation, likes, and dislikes of the customers, state of the economy, policies of the Government in respect of imports and exports, etc.

Once the demand for the product of the organisation is decided, in the light of it, the number of employees needed for manufacturing the required quantity is calculated. Need for employees are also required to be decided by considering the type of technology which the organisation intends to use in its work. Technology changes at a very rapid rate and, therefore, it becomes difficult to know what will be its effect the number of employees which the organisation will need.

Along with the external factors, internal factors like budget constraints, level of production, policies of management regarding new products to be introduced, labour intensive or capital-intensive methods of production to be adopted, future organisational structure planned by the management also affects the demand for the manpower and due consideration of these factors also becomes necessary on the part of persons doing demand forecasting for the manpower.

### **3. Forecasting supply of manpower:**

After completing the second step of demand forecasting, planners doing manpower planning have to forecast the supply of manpower. The first step in supply forecasting is to consider the present manpower available with the organisation. For this purpose, manpower inventory is prepared.

#### **(i) Manpower Inventory:**

Manpower inventory is the data collected about the present employees of the organisation. Information about all the employees is collected concerning the department in which the employee is working, his status or position, age, sex, qualifications, experience, training programs completed, pay-scale, skills possessed, abilities and capabilities, etc. This information is classified in a proper way to enable the planners to understand how many employees are available with the organisation at present.

#### **(ii) Manpower Audit:**

Manpower audit is carried out to find out how the present employees are utilised. The manpower audit points out the information about the performance of the employees and whether the skills and abilities of the present employees are fully utilised or not. It also enables the planners to identify the employees who can be developed for undertaking more responsible jobs in the future. Information about absenteeism of the employees, productivity of the employees also becomes available through manpower audit and this information can be used by the management for improving the performance of the employees.

**(iii) Job Evaluation:**

Every job has to be justified as per requirement of the organisation and the quality of manpower required to handle the responsibility. Succession plan, promotion, suitability of the person for the job etc. or the outcome of specific job evaluation.

**4. Comparing demand forecast with supply forecast:**

The total number of employees needed as calculated by demand forecast is compared with the total supply of manpower expected to be available in the plan period. Such a comparison may show that there is a shortage of manpower or there is excess manpower available with the organisation. The persons doing manpower planning would find out what is the position of manpower in the organisation so that accordingly, necessary plans can be prepared for meeting that situation.

**5. Preparing plans and programs:**

Based on the information available from the 4th step mentioned above, the planners have to prepare a plan and a program. If there is a shortage of manpower, plans are prepared for recruitment and selection of new employees. For this, the sources of recruitment are decided and information available about prospective employees is obtained. Depending upon the type of person to be selected, an adequate selection program is prepared and implemented.

If instead of shortage of manpower, it is found that there is excess manpower available, the arrangement is made to redeploy the surplus employees by providing training to them so, that they can perform the new jobs satisfactorily or schemes like 'golden handshake' are prepared and the equilibrium between the demand for and supply of manpower is achieved.

Plans are also prepared for full utilisation of the human resource available. Transfer of employees, training of employees, and career development plans for the employees are prepared with the objective of making proper and full use of the abilities of the employees and also to help employees get job satisfaction, one of the leading factors of retention.

**6. Execution of the plans and evaluation of the manpower planning:**

The plans prepared for obtaining additional employees or for reducing the excess number of employees are implemented. The effectiveness of the entire manpower planning is evaluated by finding out whether manpower planning has enabled the organisation to achieve the objectives as per expectations. In case the objectives are not satisfactorily realised, manpower plans may be required to be modified or the organisational objectives may be altered.

Thus, in the human resource planning process, there is a forecast of personnel needs i.e., employees needed, assessment of the supply factors through various personnel-related programs. Of course, the HRP process is influenced by the overall organisational goals and objectives as well as the environment of business.

**Manpower Planning Process:**

The process of manpower planning works in a stepwise manner.

**The steps for the same are listed below:**

- (a) **Need identification:** Each department has to identify its targets and get resources allocated accordingly.
- (b) **Succession plan:** Then, a succession plan must be formulated by the personnel managers of each department ensuring that they incorporate additional training programs to alleviate the labour turnover rate of the company.
- (c) **Planning:** Planning is done for recruiting candidates if there is a shortage of staff in the organisation.

- (d) **Redundancy plan:** A redundancy plan must also be developed in case the organisation feels that there are employees in a company not required due to lack of adequate knowledge to handle the job/perform.
- (e) **Approval:** These plans and proposals made by the personnel managers are then sent to the higher management team for approval. If these are approved, then each department seeks to implement them, and depending on the needs of individual departments and cost constraints, these plans are evaluated and managed.

### Techniques Used to Determine the Requirements of Personnel:

The four methods generally used to determine the requirements of personnel are:

- (i) Annual estimate of vacancies;
- (ii) Long-range estimates of vacancies;
- (iii) Fixed minimum manpower specification-wise requirements; and
- (iv) Specific position estimations.

Annually the top management team and the directors must examine their organisation structure and its adequacy for the assigned functions as well as its adaptability for change anticipated shortly. This analysis or audit includes a review of the current vacancies and probable future changes in the organisations' personnel.

For example, adequate forecasts of organisational changes can indicate the number of executive positions which will have to be filled as well as the duties and responsibilities for such positions. From this can be ascertained the nature of training and development required for the existing staff to fit these positions adequately.

A crystallisation of the future job requirements can help the selection of persons who should participate in the management development program. In this way, manpower planning is helpful in both the selection and developmental activities.

### Approaches to HR Demand Forecasting:

There are two approaches to HR demand forecasting- quantitative and qualitative. When concentrating on human resources needs, forecasting is primarily quantitative and, in large organisations, is accomplished by highly-trained specialists.

Quantitative approaches to forecasting can employ sophisticated analytical models, although forecasting may be as informal as having one person who knows the organisation anticipate future HR requirements. Organisational demands will ultimately determine which technique is used. Regardless of the method, however, forecasting should not be neglected, even in relatively small organisations.

#### 1. Quantitative Approaches:

Quantitative approaches to forecasting involve the use of statistical or mathematical techniques; they are the approaches used by theoreticians and professional planners. One example is trend analysis, which forecasts employment requirements based on some organisational index and is one of the most commonly used approaches for projecting HR demand.

Following several steps typically does trend analysis:

First, select an appropriate business factor. This should be the best available predictor of human resources needs. Frequently, sales or value-added is used as a predictor in trend analysis.

Second, plot a historical trend of the business factor about several employees. The ratio of employees to the business factor will provide a labour productivity ratio.

Third, compare the productivity ratio for at least the past five years. Fourth, calculate human resources demand by dividing the business factor by the productivity ratio. Finally, project human resources demand out to the target year.

## 2. Qualitative Approaches:

In contrast to quantitative approaches, qualitative approaches to forecasting are less statistical, attempting to reconcile the interests, abilities, and aspirations of individual employees with the current and future staffing needs of an organisation. In both large and small organisations, HR planners may rely on experts who assist in preparing forecasts to anticipate staffing requirements. For example, expert forecasts – In this method, managers estimate future human resource requirements, their experiences, and judgments to good effect.

Management forecasts are the opinions (judgments) of supervisors, department managers, experts, or others knowledgeable about the organisation's future employment needs. For example, at the Ripe Tomato, a growing family dining chain, each restaurant manager is responsible for employment forecasts.

Another qualitative forecasting method, the Delphi technique, attempts to decrease the subjectivity of forecasts by involving a group of pre-selected individuals and soliciting and summarising the judgments. Thus, a group decision-making process is invoked which in turn, requires a great deal of process orientation to enhance coordination and cooperation for satisfactory forecasts.

This method works best in a situation where dynamic technological changes affect staffing levels. Ideally, HRP should include the use of both quantitative and qualitative approaches. In combination, the two approaches serve to complement each other, thus providing a more complete forecast by bringing together the contributions of both theoreticians and practitioners.

Whatever technique one might utilise, they need to be done systematically.

### HR planners many times go further and analyse the demand based on the following:

- (i) **Workforce analysis** to determine the rate of influx and outflow of employees – It is through this analysis one can calculate the labour turnover rate, absenteeism rate, etc. Qualitative methods go a long way in analysing the internal flow created by promotions, transfers, etc.
- (ii) **Workload analysis**, with which one can calculate the numbers of persons required for various jobs concerning a planned output – This takes into consideration factors such as absenteeism, idle time, etc. Both quantitative and qualitative techniques are utilised for accurate results.
- (iii) **Job analysis:** Job analysis helps in finding out the abilities or skills required to do the jobs efficiently. A detailed study of jobs is usually made to identify the qualifications and experience required for them. Job analysis includes two things – job description and job specification. Job description, thus, is a factual statement of the duties and responsibilities of a specific job. It indicates what is to be done, how it is to be done, and why it is to be done. Job specification provides information on the human attributes in terms of education, skills, aptitudes, and experience necessary to perform a job effectively.

## II. Manpower Supply Forecasting Techniques:

After determining the manpower needs of a company, the manpower planner should think about the supply of manpower to fulfill the needs. There are two types of sources for manpower supply, viz., internal sources and external sources. Let us see each in detail-

### Manpower Supply from Internal Sources:

The manpower supply from internal sources depends on two factors. They are:

1. The extent to which the present employees survive in the organisation; and
2. The rate of internal turnover (i.e., transfer and promotions) of personnel in the organisation.

**(1) Analysis of Retention:**

Before studying this method, we should have a clear understanding of the terms ‘Wastage’ and ‘Labour turnover’. When the employees leave the organisation, it is wastage. A method to measure this wastage is the labour turnover rate. The following formula is generally used to calculate the labour turnover rate.

$$\text{Labour turnover rate} = \frac{\text{No. of leavers in the year}}{\text{Average no. of employees during the year}} \times 100$$

The results obtained by this method are not much helpful for guiding manpower planning. However, the method is useful for comparison between different companies. The calculations by this method do not show how many workers were stable in their positions during the year.

Let us take a hypothetical example. There are two firms A and B. There are 100 positions in both the firms. In firm A, all the 100 employees leave the organisation and new 100 employees are recruited. In firm B, 90 employees remain stable in the organisation, but the remaining 10 positions were left by employees 10 times in the year.

Thus, the number of leavers during the year in both the firms. The average number of employees during the year in both the firms is also 100. Therefore, the labour turnover rate for both firms would be 100 percent. The similarity in the labour turnover rate may misguide us to believe that working conditions in both firms are similar. There are different problems in both the firms, demanding different types of solutions.

The better method to determine labour turnover is the “Stability Index”.

**(2) Stability Index:**

The stability index is useful in finding the proportion of the employees maintained in the organisation during the year. The formula to calculate stability index is as follows-

$$\text{Stability index} = \frac{\text{Employees in service for at least one year}}{\text{Total number of employees}} \times 100$$

Stability index is used along with labour turnover rate. The main limitation of the stability index is that it does not take into account the period of service of the employees who left the firm.

**(3) Cohort Analysis:**

The third method to measure the stability of employees is known as “Cohort Analysis”. Cohort means, “A homogeneous group of employees who joined the organisation during a fixed period”. Cohort analysis involves the drawing of the graphs based on leaving a pattern of the Cohort group. Based on these graphs, the wastage rate or stability rate can be determined.

The main disadvantage of the Cohort analysis is that, if we are dealing with a relatively stable group (i.e., one with a very low wastage rate), the behaviour of the group would have to be followed over a longer period to enable the management to have a meaningful analysis.

The Cohort analysis would be useful, however, if relatively unstable groups, such as apprentices, are to be observed.

**(4) Census Method:**

In Cohort analysis, the stability or instability of a homogeneous group is observed; while in the Census method, a section is selected from the whole labour force and its behaviour is examined for a short period, usually a year. The histograms are drawn to show the length of services of those persons who have left the organisation, i.e., leavers.

The main advantage of the Census method is that we can know about all the employees instead of a particular group. Moreover, every individual in the selected group contributes to the wastage pattern which can be quickly calculated and put to use for testing and forecasting.

Until now we have considered only the external movement of labour. We would now think about the internal movement of labour caused by promotion, transfers, etc.

### **Determining Manpower Gaps:**

The final stage is to balance out the demand and supply gap. The closer the gap the better it is for the company when it goes into recruiting.

A comparison chart can be developed to find what is available and to what extent it can fulfill the demand forecast. This exercise helps us have an idea of the quantitative and qualitative gaps in the workforce. A reconciliation of demand and supply forecasts will give us the number of people to be recruited or made redundant as the case may be. This forms the basis for preparing the manpower plan.

In this process, a company always needs to keep repeating this step as it operates in a changing environment. Changes in product mix, union agreements, and competitive action are some of the important things that need special attention.

The human resource requirements thus identified are translated into a concrete manpower plan, backed up by detailed policies, and other human resources instruments and strategies (for example, recruitment, selection, training, promotion, retirement, replacement, etc.).

### **The manpower plan is further divided into the following resultant operational plans:**

1. Recruitment plan to show how many and what type of people are required and when they are needed;
2. Redeployment plan to help chart out the future movement in terms of training and transfers.
3. Redundancy plan will indicate who is redundant, when and where; the plans for retraining, where this is possible; and plans for a golden handshake, retrenchment, lay-off, etc.
4. Training plan to chart out if training is required. If yes, when and to which level; whether it will be done in-house, done in phases, or included as part of a formal induction program. This includes the cost and benefits analysis of all the options available.
5. Productivity plan will indicate reasons for employee productivity or reducing employees costs through work simplification studies, mechanization, productivity bargaining, incentives, profit-sharing schemes, job redesign, upskilling etc.
6. Retention plan will indicate reasons for employee turnover and show strategies to avoid wastage through compensation policies, changes in work requirements, and improvement in working conditions.
7. Check/reviews points. The success of the entire exercise is dependent upon frequent reviews so that none of the factors are left out and changes are constantly taken care of. The important thing is to demarcate points for periodical checks to incorporate deficiencies and periodic updating of manpower inventory based on training and performance reviews, in the light of changing circumstances.

### **Need for Strategic Manpower Planning:**

#### **1. Predicting Manpower Needs is Crucial:**

The ability to predict manpower needs is crucial for the industry. On the demand side, companies formulate manpower planning strategies based on these forecasts, while, on the supply side, they provide job seekers with a basis to assess the attractiveness of a given sector.

## 2. Economics of Manpower Planning is Even More Crucial:

Manpower forecasts are also important for assisting the government in the policy-making process by serving as pointers to help avoid redundant investments and achieve efficient and balanced growth for the industry. Meanwhile, forecasts based on an inaccurate market analysis can cause imbalances such as – undersupply or oversupply of manpower.

## 3. Economics of Demand and Supply of Manpower Forecasting:

Forecasting errors most often stem from a superficial and partial analysis of a market, which overlooks its structural characteristics, or one that is narrowly focused on the present, or a given industry, without taking into consideration dynamic changes that may occur over time or delayed feedback effects, or linkages the market may have with other related industries.

## 4. Get the Right People:

Static and unilateral analysis, in sum, is the most common culprit for erroneous predictions of supply and demand for manpower. These approaches can yield particularly severely flawed forecasts with cutting-edge industries and emerging industries which, while entertaining complex relationships of interdependence with other industries and experiencing rapidly-growing manpower demand, are characterised by a longer period required developing needed human resources.

### Manpower Planning-Framework:

#### 1. Models of Manpower Planning:

The models of manpower planning deal on a high level of abstraction with employee movements from function to function throughout the organisation. As a consequence, functions, and employees are seen as numbers with no characteristics.

#### 2. Functions in an Organisation Develop Over Time:

Within the organisation, the requirements of functions develop over time. As a result, employees are needed with different competencies. To decrease the level of abstraction we must avoid the pitfall of implementing too much behaviour of employees. It is not possible to model the many interactions and career patterns of employees and the occupation of function in a very detailed manner.

The modelling of “soft” factors such as preference, or dislike of specific functions by employees is, therefore, saved for later research. Our approach is to first cover the “hard” factors of employee characteristics and function requirements, for example, education, age, and experience based on earlier fulfilled functions. To model, verify, and explain these interactions patterns that will occur over time is the first aim.

#### 3. Change in Competencies is Governed by Peter Principle:

The competencies of the employees, which are useful for the organisation, can also decrease by several causes. In the first place, after reorganisation, a shift in the competency demand of the organisation arises. The number of employees stays the same, but the amount of competencies of the employees, which are still valid for the organisation can decrease.

As these competencies are no longer necessary for the organisation, they are not taken into account anymore. Secondly, the employee’s competencies get out of date after some time.

Fighting obsolescence is a joint responsibility of the employee and the organisation. Solutions can be to take courses or to change position in the organisation to gain new experience.

The factors mentioned here do not change the quantity of the employees, but just the set of available competencies. Besides the mentioned processes, three other factors have an influence on the available competencies in an organisation – inflow, outflow, and absence. The inflow of employees creates growth in competencies available for the organisation.

The other two factors decrease the competencies. Insight into the trends of absence (through illness, vacation, and other causes), inflow, and outflow can be gained by analysing historical data and by looking at the developments in the labour market.

These three factors change the obtainable competencies in the organisation by changing the number of employees within the organisation. Of course, there is a difference between inflow in the ‘lowest’ functions in the organisation and horizontal inflow in higher functions.

In the latter case, one can expect the new employees to have a larger set of suitable competencies for the organisation. In organisations with an internal labour market, employees usually only enter the organisation at the bottom in a fixed set of functions. The inflow can be controlled by the organisation, but it of course depends on the status of the labour market for the needed competencies. Outflow and absence can only be influenced indirectly.

However, at the macro level, the competencies, whether regarding existing or new employees, are governed by Peter Principle which articulates – “In time, every post tends to be occupied by an employee who is incompetent to carry out his duties” and adds that “work is accomplished by those employees who have not yet reached their level of incompetence”.

### **Approaches for Developing Manpower Planning:**

#### **1. Planning for the Status Quo:**

Planning involves steps to replace any employees who are either promoted or who leave the firm. An example is management succession planning which seeks to ensure that there is at least one qualified manager to replace any higher-level manager in the organisation.

#### **2. Thumb Rule:**

This is based on the firm’s beliefs about forecasting human resource needs. For example, one firm believes that a ratio of one production supervisor for every 12 workmen is optimal. This firm maintains this 1:12 ratio because it has proved successful in the past. Another thumb rule is based on experience that one person can produce 2000 units of output per day and accordingly 5 employees are needed for 10,000 units as a matter of forecast.

#### **3. Markov Analysis (MA):**

Markov chains are a powerful analysis technique that, used in manpower planning, can help it successfully achieve its goal. Markov chains make it possible to predict the size of manpower per category as well as transitions occurring within a given period in the future (resignation, dismissal, retirement, death, etc.). More importantly yet, with a Markov chain, one can obtain long-term average probabilities or equilibrium probabilities.

However, to predict manpower supply and demand with accuracy using a macroeconomic model, one needs a vast array of data for each of the many variables used. To collect these data, one must first get hold of sufficiently broad-ranging time-series data for each industry. For this reason, a method of this type proves to be inadaptable for emerging sectors undergoing fast-paced growth with only small amounts of statistical data on the industry as a whole and manpower available.

**4. Unit Forecasting:**

This refers to the estimate of supervisors and managers about forecasting Human resource needs for the next year unit-wise – this approach is called the “Bottom-up approach” for forecasting as the selections are made by lower-level management and added together at a higher level of the organisation.

**5. Ratio Trend Analysis:**

The basic principle here is to say if it takes six people, for example, to perform an existing amount of work, it will take twelve people to do twice as much. Organisations measure activity levels in a variety of different ways. The ratio between ‘direct’ and ‘indirect’ in manufacturing is a classic one.

Individual departments in an organisation will also have their rule-of-thumb measures. A sales department, for instance, may have an idea of the number of customer calls a salesperson should make in a week, and, indeed, use this as one criterion for monitoring sales efficiency. If the business plan projects an increase in the number of new customers, this can be translated into a proportionate increase in the sales force.

**6. Delphi Method:**

This method relies on expert opinion in making long-range forecasts-this involves obtaining independent judgments from a panel of experts usually through a questionnaire or interview schedule on certain issues affecting the nature and magnitude of demand for an organisation’s products and services.

**7. Computer Simulation:**

This is one of the most sophisticated methods of forecasting human resource needs. A computer is a mathematical representation of major organisational processes, policies, and human resource movement through organisation-computer simulations are useful in forecasting for human resources by pinpointing any combination of organisational and environmental variables.

**8. Time and Motion Study:**

Here the Industrial Engineer observes records and movement of workman and productivity vis-a-vis time required to conduct specific activities.

**9. Most-Maynard Operation Sequence Technique:**

This method is well accepted in automobile industries where lots of manual activities are involved. It is based on the walking and moving of the workmen to conduct the specific activity.

MOST is an acronym for Maynard Operation Sequence Technique. It was developed at H.B. Maynard and Co. Inc., the USA in the 1970s. It is a revolutionary PMTS System. MOST is an activity-based work measurement system that enables us to calculate the length of time required to perform a task i.e., a system to measure work. This technique is based on fundamental statistical principles and basic work measurement data compiled over many years. MOST concentrates on the movement of objects.

It was noticed that the movement of objects follows certain consistently repeating patterns, such as reach, grasp, move, and position of the object. These patterns were identified and arranged as a sequence of events followed in moving an object. This concept provides the basis for the MOST Sequence models.

**Advantages of Manpower Planning:**

Besides this, the following points also throw light on the advantages and manpower planning:

- (i) Manpower planning involves forecasting manpower requirements in an organisation and helps the management in anticipating personnel shortages and surpluses and also to develop ways to avoid or correct problems before

they become serious. Further, forecasting long-range manpower requirements help forecast the compensation costs involved in that connection.

- (ii) A proper and systematic forecasting of human resource requirements helps an organisation to determine proper sources and methods of recruitment. Further, an organisation can also adopt a proper selection procedure depending upon the needs of the jobs. Proper tests can be designed to select the right candidates for the right jobs. Thus, the importance of manpower planning is immense in recruiting and selecting personnel.
- (iii) From the viewpoint of training and development, the importance of manpower planning is great. Manpower planning ensures the training of employees in an organisation. Training involves imparting knowledge and developing attitudes, skills, social behaviour, etc., of the employees.

Manpower planning identifies the training needs of the personnel of an organisation beforehand so that necessary arrangements and training programs can be chalked out accordingly to give training to the employees.

Training helps the organisation to utilise its human resources to the optimum. Manpower planning is not only important from the viewpoint of an organisation but it also helps the employees of an organisation in developing and in the application of skills, abilities, knowledge which affect their capacity positively as for as efficiency, earnings, etc., are concerned.

- (iv) So far as performance appraisal is concerned, manpower planning plays an important role in that area too. Performance appraisal refers to the identification of strengths and weaknesses of the employees of an organisation relating to their jobs. It is conducted to know whether the existing human resources possess the necessary qualities and qualifications as per the requirements of the jobs.

Manpower planning makes available necessary strategies to correct the weaknesses of the employees by making the proper arrangements for corrective training, retraining, and orientation programmes. All these are interrelated activities.

- (v) Importance of manpower planning is none-the-less in respect of controlling the labour costs. Efforts are made in manpower planning to assure the timely and sufficient supply of labour, thus, avoiding the shortages and surpluses of labour which leads to saving and controlling labour costs.
- (vi) Manpower planning facilitates the career development of employees. Career development refers to the upward movement of the personnel employed in an organisation. Taking into consideration the long-range plans of the organisation, a career path of an employee can be projected along with what is expected from him in terms of competence levels. The employees can then plan their careers accordingly within the organisation. The clarity plays a significant role in enhancing the levels of motivation of employees – a very important role of Manpower Planning.
- (vii) Manpower planning if done properly and systematically, problems of low productivity, absenteeism, inter-departmental conflicts, resistance to change, etc., can be tackled and solved efficiently. The effort leads to higher productivity and efficiency levels, thus stressing the importance of this major function under HR organisation.

Thus, it can be said that manpower analysis helps to increase the prospects of an organisation in managing its resources in a better way and coping more effectively with dynamic situations.

# Other Areas Suggested to be covered in the Report on Performance Analysis

10.10

**P**erformance analysis is an important aspect of managing any business. Who Benefits from Performance Analysis? The benefits from performance analysis methods are far wider-reaching than just an organisation's bottom line.

## **Employees Grow from Performance Analysis:**

Quantifiable goals in workflow allow team members to strive for completion and understand their achievement and points requirement for improvement, if any.

## **Performance Analysis Sets Clear Expectations:**

Performance metrics create transparent expectations by which assessment can be derived.

## **A Better Process Means Better Results:**

If the individual goals of employee workflows are clearly set and performance met the expectation then the business succeeds, and motivated employees can stake out their own in the individual initiatives that lead to the greater objective.

Regular performance evaluation of an organisation, helps to measure the progress towards achievement of goals and provides opportunity of course correction with respect to visible gaps/shortcoming.

A sales manager, executive, or small business owner may use performance analysis to understand how a business has performed relative to projections over a month or a year. A manager may also use performance analysis techniques to measure individual performance for periodic reviews or employee evaluations. For each situation, different metrics and goals are relevant. In individual performance analysis, a manager may only need information on individual and department performance, while for whole business analysis, company and department data are more useful than information on each employee.

A business performance analysis includes company performance metrics and goals. Depending on the scope and focus of the analysis, these may be more or less comprehensive. Here are some specific metrics or goals a company might consider during a performance analysis:

Itemized income from different product lines, regions, or product types.

- ⦿ Return on sales and return on investment.
- ⦿ Profit per employee and sales per employee.
- ⦿ Financial ratios between assets, liabilities and net worth.
- ⦿ Company goals over the next three, five, and 10 years.
- ⦿ Market share and status.

- ⦿ Reviewing and adjusting costs or spending regularly, etc.

Here are some metrics and goals that might be useful for analysing individual performance:

- ⦿ Individual sales metrics.
- ⦿ Projects completed by a deadline.
- ⦿ Contribution to specific projects.

Here are the steps to conduct performance analysis for an entire department or organisation:

**1. Variance analysis:**

Variance is the difference between the projected and the actual performance.

**2. Research variances:**

Finding the 'root cause' for the variance leads to corrective actions to preempt possibility of future expectation gap.

**3. Analyse metrics:**

Understanding non-financial key business metrics can be a helpful tool in researching the causes of variances.

**4. Review competitor performance:**

Data need to be collected from authentic market sources about performance of the competition. Strength, Weakness, Opportunity, Threat (SWOT) analysis to be carried out to understand strength of own brand vis-a-vis others, price effect, entering into new geography etc.

**5. Decide on changes:**

Gaps noticed post analysis of performance, scope for improvement need to be explored. Possibility of multiple alternatives for the same shortcoming also can't be ruled out. Hence, zeroing on the best option for optimum benefits and implementation of the same is the main motto of performance review.

# Management Accounting Tools

## 10.11

**M**anagerial accounting describes the collection, analysis, and reporting of business activities for internal control and introspection purposes. Company accountants who prepare managerial reports and analyses may be the same people who prepare financial data for external sources, or they may be dedicated to the creation of managerial accounting tools.

An accounting tool is a data set that's collected and reported according to accepted accounting principles, accounting tools are many and varied. Perhaps the most commonly known tools are balance sheets and income statements, typically used to report the financial health of a business for banks, shareholders, investors etc.

Typical managerial accounting tools are:

**Break-even analysis:** The break-even point is **the point at which total cost and total revenue are equal**, meaning there is no loss or gain.

**Capital budgeting analysis:** an examination of proposals for acquiring fixed assets and related fund allocation with avenue of financing.

**Constraint analysis:** a tool that examines the primary bottlenecks of a business and how these affect revenues and profits.

**Inventory analysis:** useful for calculating cost of goods sold as well as placing a value on raw materials and unsold products.

**Margin analysis:** a profit analysis typically built around revenue generated by a specific subset of data, such as customer, region, product, or business branch.

**Transaction analysis:** tools that look at specific transactions, such as sales to a particular customer or purchase of certain goods.

**Trend analysis:** tools that look at changes to data over time to permit examination of changes to business conditions, helpful for creating forecasts.

The various tools used at present in management accounting may be classified into the following groups.

### 1. Based on Financial Accounting Information

- ⦿ Analysis of Financial Statements through Ratio Analysis.
- ⦿ Analysis of Financial Statements through comparative statements, trends, graphs, and diagrams.
- ⦿ Fund flow and cash flow analysis.
- ⦿ Return on capital employed techniques.

## 2. Based on Cost Accounting Information

- ⊙ Marginal costing (including cost volume profit analysis).
- ⊙ Direct or incremental Costing and differential costing.
- ⊙ Standard Costing.
- ⊙ Analysis of Cost Variances.

## 3. Based on Mathematics

- ⊙ Operations Research.
- ⊙ Linear Programming.
- ⊙ Network analysis.
- ⊙ Queuing theory and Games Theory.
- ⊙ Simulation Theory.

## 4. Based on Future Information

- ⊙ Budget and Budgeting.
- ⊙ Budgetary Control: Analysis of Budget Variance / Revenue Variance.
- ⊙ Business Forecasting.
- ⊙ Project Appraisal or Evaluation.

## 5. Miscellaneous Tools

- ⊙ Managerial Reporting.
- ⊙ Integrated Auditing.
- ⊙ Financial Planning.
- ⊙ Revaluation Accounting.
- ⊙ Decision-making Accounting.
- ⊙ Management Information System.

### Important tools and techniques used in management accounting

Some of the important tools and techniques are briefly explained below.

#### 1. Financial Planning:

The main objective of any business organisation is the maximization of profits. This objective is achieved by making proper or sound financial planning. Hence, financial planning is considered the best tool for achieving business objectives.

**2. Financial Statement Analysis:**

Profit and Loss account and Balance Sheet are important financial statements. These Statements are analysed for different period to get a comparative view of one or more periods.

**3. Cost Accounting:**

Cost Accounting presents cost data product-wise, process-wise, department-wise, branch-wise, and the like. These cost data are compared with predetermined one. The comparatives help the management in decision making.

**4. Fund Flow Analysis:**

This analysis finds out the movement of funds from one period to another. Moreover, this analysis is very useful to know whether the fund is properly used or not in a year when compared to the previous year. The Working Capital Changes and funds from the operation are also found out through this analysis.

**5. Cash Flow Analysis:**

The movement of cash and the purpose therefor during a period can be observed through Cash Flow Statement. Comparison for different periods also can be done.

**6. Standard Costing:**

Standard Costing is a predetermined cost. It provides a Yard Stick for measuring actual performance. It is used to find the reasons for the deviations if any.

**7. Marginal Costing:**

Marginal Costing Technique is used to fix the selling price, selection of best sales mix, best use of scarce raw materials or resources, to take make or buy decision, acceptance or rejection of bulk order and foreign order and the like. This is based on the fixed cost, variable cost, and contribution.

**8. Budgetary Control:**

Under Budgetary control techniques, future financial needs are estimated and arranged according to an orderly basis.

**9. Revaluation Accounting:**

The fixed assets are revalued as per the accounting guideline to find 'fair value' of the assets.

**10. Decision-making Accounting:**

A business problem can be solved by choosing any one of the best and most profitable alternatives. To select such an alternative, the relevant costs are compared. Thus, accounting information is used to solve the business problem which is arising out of the increasing complexity of the nature of business.

**11. Management Information System:**

The free flow communication within the organisation is essential for the effective functioning of the business. Hence, the management can design the system through which every employee of an organisation can assesses the information used for discharging their duties and taking quality decisions.

**12. Statistical Techniques:**

Number of statistical techniques are used for the specific purposes e.g. correlation analysis, regression analysis, linear programming etc.

### 13. Management Reporting:

Reports are prepared to get an overview of the relevant areas as required by the Management, to assess strength and weaknesses in different areas of operating activities and financial activities. These identifications are highly useful to management for exercising control and decision-making.

### 14. Historical Cost Accounting:

It means that costs are recorded after being incurred. Unless revalued, assets are maintained in Books at historical cost.

### 15. Ratio Analysis:

A ratio is an expression of relative magnitude of two selected numerical values, selection of which to be made with logical correlation, expressing a ratio of Fixed Asset with Bad Debt having no relation while Bad Debt compared with Turnover and observed ratio is meaningful. It paves the way for effective control of business operations by undertaking an appraisal of both the physical and monetary targets.

### To Sum Up:

Management reporting plays an important role in the current business environment. It gives a clear picture to executive teams about the operational aspects and competition role. Major characteristics of a good Internal Management Reporting Environment would be to meet all of the goals set out below:

**Accuracy:** Despite the inherent complexity, management reports need to be accurate. The reports can be drawn from specifically designed ERP Systems with minimum human intervention or manually prepared from extracted data/details.

**Purpose:** The specific purpose of the requirement needs to be fulfilled through the Report. With change in requirement, the Report modification can be thought of.

**Detail:** Requirement of detail must be understood before report generation. Report should not be burdened with unrelated and irrelevant information.

**Balanced scorecard:** The methodology is an analysis technique designed to translate an organisation's mission statement and overall business strategy into specific, quantifiable goals and to monitor the organisation's performance in terms of achieving these goals.

- ⊙ Financial Perspective- Financial Performance.
- ⊙ Customer Perspective- Satisfaction.
- ⊙ Learning and Growth- Knowledge and Innovation.
- ⊙ Internal Business Process- Efficiency.

**Illustration 1.**

A Company introduced a new product EZY with advanced technology in a product market where there is huge competition with many competitors having an individual market share of 5% to 10%. A survey of the present market estimates that demand will increase by 80,000 units per year. The company is presently targeting 50% of the additional market demand as competitors will need at least two years to match its product.

The Product EZY passes through three departments. Direct cost per unit of product at a present rate: Material cost ₹ 65 and Labour Cost ₹ 45. Overheads are absorbed based on normal capacity. The following relevant information is given:

Production Dept	Unit of Measurement	Normal monthly capacity	Monthly Allocated Fixed Overheads (₹)	Full Overhead cost Rate (₹)	Hours consumed by the product
X	Machine Hour	12,500 machine hrs	₹ 50,000	10.50	2
Y	Direct Labour Hour	15,000 labour hrs	₹ 60,000	9.00	1.5
Z	Direct Labour Hour	25,000 labour hrs	₹ 75,000	6.00	3

The company has set a target of Selling and Distribution costs of ₹3,00,000 irrespective of sales volume. The company normally sets a price by adding a mark-up on costs between 30% to 40%.

You are required to suggest the price to take care of competition from the right perspective.

**Solution:**

Department	Normal monthly capacity	Allocated monthly Fixed Overhead (₹)	Fixed Overheads per Hour (₹)	Full overhead cost per hour (₹)	Variable cost per hour (₹)	Fixed overhead per unit (₹)	Variable overhead per unit (₹)
X	12,500	50,000	4.00	10.50	6.50	8.00	13.00
Y	15,000	60,000	4.00	9.00	5.00	6.00	7.50
Z	25,000	75,000	3.00	6.00	3.00	9.00	9.00

50% of the additional demand =  $80,000 \times 0.50 = 40,000$  unit.

Cost of the product:

Direct Material	₹ 65.00
Direct Labour	₹ 45.00
Variable Factory Overheads	₹ 29.50
Fixed Factory Overhead	₹ 23.00
Selling & Distribution Overheads (₹ 3,00,000 ÷ 40,000)	₹ 7.50
Total cost	₹ 170.00

The Selling price will be in the range of ₹ (170 × 1.3) and ₹ (170 × 1.4) i.e., between ₹ 221 and ₹ 238.

**Suggestion:** The company can go for a lower price as it covers the full cost and ensures good profit. Lower price will give better penetration in the market and keep competitors away for the long term to match technology and price.

**Illustration 2.**

ABC Co. has two Department producing small electrical goods. New Technology for the production of X will induce the following cost:

Costs	Department-A	Department-B
Direct Material	₹ 240	₹ 200
Direct Labour Rate / Hours	₹ 120	₹ 100
Direct Labour Hours	2 Hours	3 Hours
Variable OH Per Hour	₹ 50	₹ 30
Fixed Per Hour (Based on 100% Capacity)	₹ 60	₹ 40
Value of Machine on revaluation	₹ 40 Lakhs	₹ 28 Lakhs

New Technology cost = ₹ 25 lakhs, working capital = ₹ 7 lakh

The target volume of production in the 1st year is 2000 units @ 25% capacity

Variable Selling and Distribution Cost is ₹ 3 lakh for 2000 units. Expected return on investment 24%.

Suggest pricing of a new product for a new one or the existing ones at 80% capacity.

**Solution:**

Costs	Department-A	Department-B	Total
Direct Material	240	200	440
Direct Labour	240	300	540
Variable Overheads	100	90	190
Variable Selling & Distribution Cost	-		150
<b>Total (₹)</b>			<b>1320</b>

100% capacity = 8,000 units. 80% capacity = 6400 units

Fixed Costs =  $(60 \times 16,000 + 40 \times 24000) = ₹ 19.20$  lakhs. Capital investment =  $(40 + 28 + 25 + 7) = ₹ 100$  lakhs.

Return on investment required = ₹ 24 lakhs

Return required per unit =  $₹ (19.2 + 24.0) \text{ lakhs} / 6400 = ₹ 675$

Price to be charged per unit =  $(1320 + 675) = ₹ 1995$

**Illustration 3.**

A company is operating at 60% capacity with a turnover of ₹ 86.40 lakhs.

- (i) If the Company works at 100% capacity, the sales-cost relation is: Factory Cost is two-thirds of sales value and Prime Cost is 75% of Factory Cost.
- (ii) Administrative and selling expenses (75% variable) are 20 % of sales value.

(iii) Factory overhead will vary according to operating capacity as given below:

Operating Capacity	60%	80%	100%	120%
Factory Overhead (₹ Lakhs)	19.80	21.60	24.00	30.00

The company has planned to operate at 80% capacity. Moreover, it has received an export order and the execution of the same will involve 40 % of capacity. The prime cost of the order is estimated as ₹ 12.00 lakhs and the shipping expenses involved will be ₹ 2.00 lakhs. Taking the same percentage of profit on the domestic sale, determine the minimum price to be quoted for the export order.

**Solution:**

At 100% capacity.

Sale =  $86.40 \times 100/60 = ₹ 144$  lakhs; Factory Cost =  $1.44 \times 2/3 = ₹ 96$  lakhs; Prime Cost =  $96 \times .75 = ₹ 72$  lakhs; Factory overheads = ₹ 24 lakhs; Selling & Distribution Exp. = ₹ 28.8 lakhs; Variable S/D Exp. = ₹ 21.6 lakhs; Fixed S/D Exp. = ₹ 7.2 lakhs.

Particulars	Operation 80% capacity (₹ Lakhs)	Export order 40% capacity (₹ lakhs)
Prime Cost	57.60	12.00
Factory Overhead (Given)	21.60	8.40
Selling & Distribution Cost Variable	17.28	-
Selling & Distribution Cost Fixed	7.20	2.00
Total Cost of Sales	103.68	22.40
Sales Value (At 80% Capacity): $144 \times 0.80$	115.20	-
Profit	11.52	2.49
Profit %	10% on Sales	10% of Export Sales Value
Export Price to be Quoted		24.89

Let, Sales value =  $x$ , then Profit =  $0.1x$

Then  $0.9x = 22.40$

Hence  $x = ₹ 24.89$

**Illustration 4.**

ABC Co. has planned for an investment of ₹ 800.00 lakh with a 50% Loan from Banks at 10% interest.

Direct Cost for the year ₹ 480.0 lakhs and 50% of which is Material cost. Other expenses are at ₹ 80.0 lakh. The goods will be sold at 150% of the direct cost. The tax rate is assumed at 50%.

Determine:

- (i) Net profit margin
- (ii) Return on Assets
- (iii) Assets turnover
- (iv) Return on owners' equity
- (v) Inventory Turnover

**Solution:**

Particulars	₹ Lakhs / %
Sales: $480 \times 1.5$	720
Direct Cost	480
Gross Profit	240
Operating Exp + interest	120
Profit before Tax	120
Net profit after Tax	60
(i) Net Profit Margin ( $60/720$ )	8.33%
(ii) Return on Assets ( $60/800$ )	7.5%
(iii) Return on Equity ( $60/400$ )	15%
(iv) Asset Turnover ( $720/800$ )	0.9
(v) Inventory Turnover ( $240/720$ ) $\times 100$	33.33%

**Illustration 5.**

ABC Ltd which is manufacturing consumer products has two divisions Assembling and Finishing. The two divisions are operating as cost centers

- (i) Present activities and costs involved in the Assembling division & Finishing division and a year:

**Assembly Division:**

No of sets assembled: 12,000

Manufacturing of parts (including material): ₹ 6.00 lakhs

Parts purchased from the market: ₹ 4.00 lakhs

Another Variable cost: Welding cost- ₹ 5 lakhs and Assembling cost- ₹ 9.00 lakhs

Fixed cost for the unit: ₹ 6 lakhs

25% of the production of the Assembly division is sold in the market for ₹ 300 per set and 75% is transferred to Finishing Division at ₹ 280

**The cost incurred in Finishing Division:**

Painting cost: ₹ 5.00 lakhs; Polishing cost: ₹ 1.00 lakhs; Fixed cost ₹ 4.00 lakhs.

The selling Price per set is ₹ 450.

**Evaluate the following situations:**

- (ii) Division Assembly has proposed for expansion of their division for an enhancement of capacity by 20% for ₹20 lakhs. It is indicated that there will be no change in factory fixed cost in the operation of additional volume of job. Division Assembly proposes to maintain the transfer to the finishing division to the existing level and sell additional sets to market at the present price.
- (iii) Division Finishing has proposed for a transfer of the whole of the output of the Assembly division for ₹280 per unit and the additional units can be sold in the market at the existing price which will involve advertisement expenses to the extent of ₹ 4.00 lakhs and fixed cost in the division will go up by ₹ 1.00 lakhs.

- (iv) Assembly division claims that the transfer rate of ₹ 280 is irrational in a sense of undue favour to the Finishing division at their cost and the Finishing Division is given the advantage of the market price for their products whereas the Assembly division is deprived of that advantage. The Assembly division agreed to transfer the whole of its output to Finishing Division for ₹ 300.

You are required to give your recommendation assuming the opportunity cost of capital is 15%.

**Solution:**

Existing profitability of divisions & company

Particulars	Rupees in Lakhs (₹)
<b>Assembly Division</b>	
Total Sales Value (3,000 × 300 + 9,000 × 280)	34.20
Total Variable Cost for Division (6+4+5+9)	24.00
Contribution	10.20
Fixed Cost	6.00
Profit for Division Assembly	4.20
<b>Finishing Division</b>	
Total Sales Value 9,000 set @ ₹450	40.50
Variable Cost (9,000 × 280) + 6 lakhs	31.20
Contribution	9.30
Fixed Cost	4.00
Profit for Division Finishing	5.30
<b>Total Profit of the Company</b>	<b>9.50</b>

- (i) Evaluation of the proposal: Expansion of assembly division & transfer to Finishing division at existing level.

Particulars	Rupees in Lakhs (₹)
Total Sales Value (5,400 × 300 + 9,000 × 280)	41.40
Total Variable Cost for Division (24 × 1.2)	28.80
Contribution	12.60
Fixed Cost + Opportunity Cost of Capital Invested (6.00 + 20 × 0.15)	9.00
Profit for division Assembly	3.60
<b>Finishing Division</b>	
Total Sales Value 9,000 set @ ₹.450	40.50
Variable Cost (9,000 × 280) + 6 Lakhs	31.20
Contribution	9.30
Fixed Cost	4.00
Profit for division Finishing	5.30
<b>Total Profit of the Company</b>	<b>8.90</b>

- (ii) Evaluation of the proposal: Expansion of assembly division & transfer of whole assembly output to Finishing division for ₹ 280

Particulars	Rupees in Lakhs (₹)
<b>Assembly Division</b>	
Total Sales Value (14,400 × 280)	40.32
Total Variable Cost for Division (24 × 1.2)	28.80
Contribution	11.52
Fixed Cost + Opportunity Cost of Capital Invested (6.00 + 20 × 0.15)	9.00
Profit division Assembly	2.52
<b>Finishing Division</b>	
Total Sales Value 14,400 Set @ ₹450	64.80
Variable Cost (14,400 × 280) + 6 Lakhs	46.32
Contribution	18.48
Fixed Cost + Advertisement Cost (4+4+1)	9.00
Profit for Division Finishing	9.48
<b>Total Profit of the Company</b>	12.00

- (iii) Evaluation of the proposal: Expansion of assembly division & transfer of whole assembly output to Finishing division.

Particulars	Rupees in Lakhs (₹)
Total Sales Value (14,400 × 300)	43.20
Total Variable Cost for Division (24 × 1.2)	28.80
Contribution	14.40
Fixed Cost + Opportunity Cost of Capital Invested (6.00 + 20 × 0.15)	9.00
Profit for Division Assembly	5.40
<b>Finishing Division</b>	
Total Sales Value 14,400 Set @ ₹ 450	64.80
Variable Cost (14,400 × 300) + 6 Lakhs	49.20
Contribution	15.60
Fixed Cost + Advertisement Cost (4 + 4 + 1)	9.00
Profit for Division Finishing	6.60
<b>Total Profit of the Company</b>	12.00

The proposal (iii) i.e., transfer of all units from Assembly to Finishing Division at a transfer price of ₹ 300 is recommended. With the adoption of this price, the profitability of the company as a whole will go up and each division will get its due share of profitability.

## A suggestive list of Key Performance Indicators:

## Annexure-I

Performance area	KPI	Measurement
Financial performance	Turnover	➤ Segmental revenue to total revenue %
		➤ Segmental turnover growth %
		➤ Total turnover growth %
		➤ Growth % in new product sales
		➤ New product sales as % of total sales
		➤ Customer-wise sales
		➤ Top 5 customers, bottom 5 customers' sales
	Margins	➤ Gross margin % on total sales
		➤ Gross margin % on segmental sales
		➤ Gross margin % on new products
		➤ Customer-wise Gross margin %
	Costs	➤ Element-wise cost % to total turnover and segmental
		➤ turnover
		➤ Cost composition – nature-wise, variability structure,
		➤ functional split
	Returns	➤ ROI on product groups
		➤ ROI on geographical segments
		➤ ROI on new products
		➤ ROI on new markets
		➤ ROCE
		➤ Value added to total income
		➤ Earnings per share (EPS)
		➤ Dividend per share (DPS)
		➤ Retention ratio
		➤ Price-Earnings (PE) ratio
	➤ Market price per share	
	Balance sheet	➤ Current ratio, a quick ratio
		➤ Asset turnover (current and fixed assets)
		➤ Growth in assets
		➤ Capital expenditure % to total assets
		➤ Debt-equity ratio
		➤ Debt to total capital employed

Productivity & Efficiency	Material	<ul style="list-style-type: none"> <li>➤ Material cost % to the total cost</li> <li>➤ Material wastage as % of total input</li> <li>➤ Contribution per unit of material used</li> </ul>
	Labour	<ul style="list-style-type: none"> <li>➤ Production per man hour</li> <li>➤ Production per employee</li> <li>➤ Employee cost % to sales</li> <li>➤ Idle hours % to total available hours</li> </ul>
	Machine	<ul style="list-style-type: none"> <li>➤ Production per machine hour</li> <li>➤ Growth in machine capacity utilization</li> <li>➤ Machine downtime ratio</li> <li>➤ Break-down hours</li> </ul>
Manufacturing performance	Operating cycles	<ul style="list-style-type: none"> <li>➤ Material turnover</li> <li>➤ WIP turnover</li> <li>➤ Finished goods turnover</li> </ul>
Customer performance	Complaints	<ul style="list-style-type: none"> <li>➤ % of customer complaints to total orders</li> <li>➤ Response time to resolve a complaint</li> <li>➤ Customer-wise number of complaints</li> <li>➤ Number of complaints repeated</li> </ul>
	Development	<ul style="list-style-type: none"> <li>➤ Business growth % over 3 years</li> </ul>
	Risks	<ul style="list-style-type: none"> <li>➤ Payment defaults</li> <li>➤ Delinquencies</li> <li>➤ Payment delays</li> </ul>
	Retention and satisfaction	<ul style="list-style-type: none"> <li>➤ Customer retained over 3 years</li> <li>➤ Customer satisfaction index</li> <li>➤ On-time order execution %</li> <li>➤ Correct documentation %</li> <li>➤ Customer orders delivered in full %</li> <li>➤ Average time spent on customer relation</li> </ul>
	Overall	<ul style="list-style-type: none"> <li>➤ order-to-cash cycle days</li> </ul>
	Delivery	<ul style="list-style-type: none"> <li>➤ On-time supplies</li> <li>➤ Supply of full quantity</li> </ul>
	Quality	<ul style="list-style-type: none"> <li>➤ % Of rejections</li> </ul>
	Cost	<ul style="list-style-type: none"> <li>➤ Price reductions agreed-cost-effect</li> <li>➤ Price escalations gave-cost-effect</li> </ul>
	Overall	<ul style="list-style-type: none"> <li>➤ Supplier satisfaction index</li> <li>➤ Accuracy of forecasts shared</li> </ul>

## Exercise

### A. Theoretical Questions

#### ⊙ Multiple Choice Questions

1. Which of the following is a kind of information report?
  - (a) Trend reports.
  - (b) Analytical report.
  - (c) Activity reports.
  - (d) All of the above.
  
2. Management reporting can be performed as \_\_\_\_\_.
  - (a) Internal reporting.
  - (b) External reporting.
  - (c) Both (a) & (b).
  - (d) None of the above.
  
3. The backbone of any organisation is \_\_\_\_\_.
  - (a) Information.
  - (b) Employee.
  - (c) Management.
  - (d) Capital.
  
4. Which of these is usually written in a form of a memorandum?
  - (a) Informal reports.
  - (b) Formal reports.
  - (c) Professional reports.
  - (d) Business reports.
  
5. Which of the following is a type of matter that may be covered in a special report?
  - (a) Feasibility study for a project.
  - (b) Cost reduction schemes information.
  - (c) Data on make or buy decision.
  - (d) All of the above.

6. \_\_\_\_\_ are to be presented after making an investigation of the problem which requires to be investigated.
- (a) Memorandum.
  - (b) Special reports.
  - (c) Summary.
  - (d) Special facts.
7. \_\_\_\_\_ is a very important method of presenting information to the management in a pictorial manner and attracts the eye of the recipient more quickly and forcibly.
- (a) Tabular Reports.
  - (b) Descriptive Reporting.
  - (c) Graphic Presentation.
  - (d) All of the above.
8. \_\_\_\_\_ are presented in the form of comparative statements.
- (a) Descriptive Reports.
  - (b) Graphics Presentation.
  - (c) Transactional Analysis.
  - (d) Tabular Reports.
9. Which of the following general principle is required to be followed while reporting?
- I. Report should have a proper title.
  - II. Report should be in good form and should have subheadings and paragraphs.
  - III. Format of the report should be changed frequently.
  - IV. Report should factual.
  - V. Report need not save the time of the management.
- Select the correct answer from the options given below.
- (a) I and III only.
  - (b) II & IV only.
  - (c) II, III, and V only.
  - (d) IV, I, and II only.

10. Collecting comments and suggestions from users to discover ways to continuously improve the data and process can be described as \_\_\_\_\_ .
- (a) Implementation.
  - (b) Exception.
  - (c) Feedback.
  - (d) Order.
11. Which of these reports provides information without any evaluation?
- (a) Informational.
  - (b) Interpretative.
  - (c) Routine.
  - (d) Progress.
12. \_\_\_\_\_ report provides rationed findings.
- (a) Informative.
  - (b) Interpretative.
  - (c) Routine.
  - (d) Progress.
13. Which of these is not mentioned in a progress report?
- (a) Name of the project.
  - (b) Right choice of instruments.
  - (c) Nature of work.
  - (d) Amount of work left.
14. Which of these is not a parameter of a formal report?
- (a) Presentation.
  - (b) Complaint.
  - (c) Information.
  - (d) Request.

15. Which of these reports is written before starting a new project?
- (a) Feasibility report.
  - (b) Periodic report.
  - (c) Trouble report.
  - (d) Progress report.
16. Which of these must never be a basis for a technical report?
- (a) Facts.
  - (b) Tests.
  - (c) Personal prejudices.
  - (d) Experiments.
17. Reports present conclusions based on \_\_\_\_\_ .
- (a) Intuition.
  - (b) Belief.
  - (c) Impression.
  - (d) Investigation.
18. Which of these is not a parameter of a report?
- (a) Ability to acquire additional information.
  - (b) Quality of additional information acquired.
  - (c) Ability to arrive at a subjective evaluation.
  - (d) Ability to provide worthwhile recommendations.
19. The chronological development of information in the body of the report is done according to the \_\_\_\_\_.
- (a) Logical sequence of events.
  - (b) Order in which events occurred.
  - (c) Choice of the writer.
  - (d) Collection of data.
20. Which of these must be avoided in a technical report?
- (a) Facts.
  - (b) Logical conclusion.
  - (c) Objective evaluation.
  - (d) Subjective evaluation.

⊙ [Case Study/Scenario based Question]

**Case Study 1:**

Following data available from productwise profitability statement

Particulars	₹ Per Unit
Sale	100000
Raw Material	50000
Utilities	15000
Packing Material	5000
Employee Cost	5000
Consumable Stores	4000
Repaire Expenses	3000
Depreciation	5000
Insurance	1000
Overheads	2000

**MCQ:**

- What is the variable cost of the product
  - ₹ 50,000 Per Unit of Finished Product
  - ₹ 60,000 Per Unit of Finished Product
  - ₹ 70,000 Per Unit of Finished Product
  - ₹ 80,000 Per Unit of Finished Product
- What is the Fixed cost of the product
  - ₹ 10,000 Per Unit of Finished Product
  - ₹ 20,000 Per Unit of Finished Product
  - ₹ 25,000 Per Unit of Finished Product
  - ₹ 30,000 Per Unit of Finished Product
- What is the Contribution of the product
  - ₹ 10,000 Per Unit of Finished Product
  - ₹ 20,000 Per Unit of Finished Product
  - ₹ 25,000 Per Unit of Finished Product
  - ₹ 30,000 Per Unit of Finished Product
- What is the Profitability of the product
  - ₹ 10,000 Per Unit of Finished Product
  - ₹ 20,000 Per Unit of Finished Product
  - ₹ 25,000 Per Unit of Finished Product
  - ₹ 30,000 Per Unit of Finished Product

5. What is Raw Material Cost as % of Total Cost
- (a) 54.56
  - (b) 55.56
  - (c) 56.56
  - (d) 57.56

**Answer:**

- 1. (c) ₹ 70000 Per Unit of Finished Product
- 2. (b) ₹ 20000 Per Unit of Fixed Cost
- 3. (d) ₹ 30000 Per Unit of Finished Product
- 4. (a) ₹ 10000 Per Unit of Finished Product
- 5. (b) 55.56%

**Case Study 2:**

Following are the Cost Components of a Product A

Raw Material

Utilities

Packing Material

Employee Cost

Consumable Stores

Repaire Expenses

Depreciation

Insurance

Overheads

**MCQ:**

- 1 Which Cost Component is variable in nature?
- (a) Raw Material
  - (b) Employee Cost
  - (c) Consumable Stores
  - (d) Overheads

- 2 Which Cost Component is related to aging of Plant & Machinery?
  - (a) Raw Material
  - (b) Packing Material
  - (c) Consumable Stores
  - (d) Overheads
  
- 3 Concept of OEM (Original Equipment Manufacture ) is related to which Cost Component?
  - (a) Raw Material
  - (b) Utilities
  - (c) Consumable Stores
  - (d) Insurance
  
- 4 Source of Which Cost Component is Fixed Assest Register?
  - (a) Consumable Stores
  - (b) Repairs
  - (c) Depreciation
  - (d) Insurance
  
- 5 Which Cost Element involves Expenses which are of discretionery in nature?
  - (a) Utilities
  - (b) Packing Material
  - (c) Insurance
  - (d) Overheads

**Answer:**

1. (a) Raw Material
2. (c) Consumable Stores
3. (c) Consumable Stores
4. (c) Depreciation
5. (d) Overheads

⊙ **Short Essay Type Questions**

1. What is meant by Performance Analysis?
2. State the objective of preparing the Performance Analysis Report.
3. Discuss the steps suggested for the report on performance analysis?
4. Indicate the contents of the Performance Analysis Report?
5. What do you mean by Management Accounting Tool?
6. Discuss the various management accounting tools which are used to serve different objectives.
7. Write short notes on:
  - (a) Profitability Analysis
  - (b) Key Performance Indicators (KPIs)
  - (c) Utilities and energy efficiency analysis
  - (d) Manpower Analysis

⊙ **Essay Type Questions**

1. What do you mean by accounting reports? What are the different types of reports for internal use? Discuss each of them.
2. What are the special reports? What matters may be covered by the special reports?
3. Describe the reporting needs of different levels of management and how a system of reporting can satisfy it?
4. What are the essentials of a good report? Describe.
5. Explain the different types of reports that are used in an enterprise
6. “Accounting Reports are a matter of necessity for the management and not a matter of convenience” Discuss.
7. Define reporting to different levels of management. What are the different modes of reporting?
8. Explain the objectives of Management Reporting.
9. What is a control report?
10. What are the types of reports, which are required by the middle level of management?

**Answer:**

⊙ **Multiple Choice Questions (MCQ)**

1.	(d) All of the above
2.	(c) Both (a) & (b)
3.	(a) Information
4.	(a) Informal reports.
5.	(d) All of the above.
6.	(b) Special reports.
7.	(c) Graphics Presentation.
8.	(d) Tabular Reports.
9.	(d) IV, I, and II only.
10.	(c) Feedback.
11.	(a) Informational.
12.	(b) Interpretative.
13.	(b) Right choice of instruments.
14.	(b) Complaint.
15.	(a) Feasibility report.
16.	(c) Personal prejudices.
17.	(d) Investigation.
18.	(c) Ability to arrive at a subjective evaluation.
19.	(b) Order in which events occurred
20.	(d) Subjective evaluation.

