



# LECTURE NOTES

ON

ENTREPRENEURSHIP AND MANAGEMENT & SMART  
TECHNOLOGY

Semester: 5<sup>th</sup>

Prepared By

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## SYLLABUS

### TH. 1: ENTREPRENEURSHIP and MANAGEMENT & SMART TECHNOLOGY

(Common to All Branches)

Theory	4 Periods per week	Internal Assessment	20Marks
Total periods	60 periods	End Sem Exam	80Marks
Examination	3 hours	Total marks	100Marks

**Topic wise distribution of periods:**

Sl. No:	Name of the topic	Period
1	Entrepreneurship	10
2	Market survey and Opportunity Identification (Business planning)	08
3	Project report Preparation	04
4	Management Principles	05
5	Functional Areas of Management	10
6	Leadership and Motivation	06
7	Work culture, TQM & Safety	05
8	Legislation	06
9	Smart Technology	06
	TOTAL	60

#### **RATIONALE:**

In the present day scenario, it has become imperative to impart entrepreneurship and management concepts to students, so that a significant percentage of them can be directed towards setting up and managing their own small enterprises. It may be further added that an entrepreneurial mind set with managerial skill helps the student in the job market. The students can also be introduced with Start-up and Smart Technology concept, which shall radically change the working environment in the coming days in the face of Industry 4.0. In this subject, the Students shall be introduced/exposed to different concepts and Terminologies in brief only, so that he/she can have broad idea about different concepts/items taught in this subject. Solving numerical problem on any topic/item is beyond the scope of this subject.

#### **OBJECTIVES:**

**After undergoing this course, the students will be able to:**

- Know about Entrepreneurship, Types of Industries and Start-ups

- Know about various schemes of assistance by entrepreneurial support agencies □  
Conduct market survey
- Prepare project report
- know the management Principles and functional areas of management
- Inculcate leadership qualities to motivate self and others.
- Maintain and be a part of healthy work culture in an organisation.
- Use modern concepts like TQM
- Know the General Safety Rules
- Know about IOT and its Application in SMART Environment.

### **DETAILED CONTENTS:**

#### **1. Entrepreneurship:**

- Concept /Meaning of Entrepreneurship
- Need of Entrepreneurship
- Characteristics, Qualities and Types of entrepreneur, Functions
- Barriers in entrepreneurship
- Entrepreneur's vs. Manager
- Forms of Business Ownership: Sole proprietorship, partnership forms and others
- Types of Industries, Concept of Start-ups
- Entrepreneurial support agencies at National, State, District Level (Sources): DIC, NSIC, OSIC, SIDBI, NABARD, Commercial Banks, KVIC etc.
- Technology Business Incubators (TBI) and Science and Technology Entrepreneur Parks.

#### **2. Market Survey and Opportunity Identification (Business Planning) :**

- Business Planning
- SSI, Ancillary Units, Tiny Units, Service sector Units
- Time schedule Plan, Agencies to be contacted for Project Implementation
- Assessment of Demand and supply and Potential areas of Growth
- Identifying Business Opportunity
- Final Product selection

#### **3. Project report Preparation**

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- Preliminary project report
- Detailed project report, Techno economic Feasibility
- Project Viability

#### **4. Management Principles :**

- Definitions of management
- Principles of Management
- Functions of management (planning, organising, staffing, directing and controlling etc.)
- Level of Management in an Organisation

#### **5. Functional Areas of Management :**

- a) ~~Production management~~

- Functions, Activities
  - Productivity
  - Quality control
  - Production Planning and control
- b) Inventory management
- Need for Inventory management
  - Models/ Techniques of Inventory management
- c) Financial management
- Functions of Financial management
  - Management of working capital
  - Costing (only concept)
  - Break even Analysis
  - Brief idea about Accounting Terminologies: Book keeping, Journal entry, Petty cash book , P&L Accounts, Balance Sheets (only concepts)
- d) Marketing management
- Concept of Marketing and Marketing Management
  - Marketing Techniques (Only concept)
  - Concept of 4P s (Price, Place, Product, Promotion)
- e) Human resource management
- Functions of Personal Management
  - Manpower Planning, Recruitment, Sources of Manpower, Selection process, Method of Testing. Method of Training & Development, Payment of Wages

## **6. Leadership and Motivation :**

- a) Leadership
- Definition and Need/Importance
  - Qualities and functions of a leader
  - Manager Vs Leader
  - Style of Leadership (Automatic, Democratic, Participative)
- b) Motivation
- Definition and characteristics
  - Importance of motivation
  - Factors affecting motivation
  - Theories of motivation (Maslow)
  - Methods of Improving Motivation
  - Importance of Communication in Business
  - Types and Barriers of Communication

## **7. Work Culture, TQM & Safety :**

- Human relationship and Performance in Organisation
- Relations with Peers, Superiors and Subordinates

- TQM concepts: Quality Policy, Quality Management, Quality system
- Accidents and Safety, Cause, preventive measures, General Safety Rules, Personal Protection Equipment (PPE)

#### **8. Legislation :**

- Intellectual Property Right (IPR), Patents, Trademarks, Copyrights
- Features of Factories Act 1948 with Amendment (only salient points)
- Features of Payment of Wages Act 1936 (only salient points)

#### **9. Smart Technology :**

- Concept of IOT, How IOT works
- Components of IOT, Characteristics of IOT, Categories of IOT
- Applications of IOT- Smart Cities, Smart Transportation, Smart Home, Smart Healthcare, Smart Industry, Smart Agriculture, Smart Energy Management etc

#### **RECOMMENDED BOOKS:**

1. Entrepreneurship Development and Management by R.K Singhal, Katson Books., New Delhi
2. Entrepreneurship Development and Management by U Saroj and V Mahendiratta, Abhishek Publications, Chandigarh
3. Entrepreneurship Development and Management by Vasant Desai, Himalaya Pub. House
4. Industrial Engineering and Management by O.P Khanna, Dhanpat Rai and Sons
5. Online Resource on Start-ups and other concepts
6. <https://www.fundable.com/learn/resources/guides/startup>

# CHAPTER 1. ENTREPRENEURSHIP

## ❖ Concept /Meaning of Entrepreneurship:

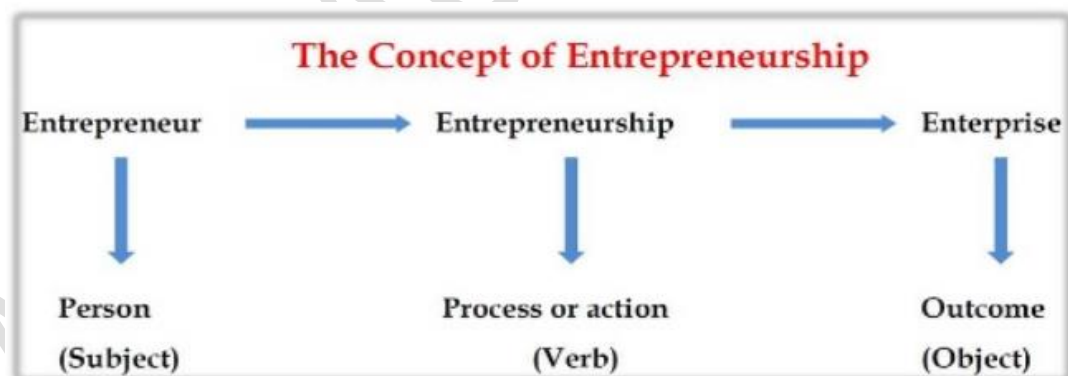
**Entrepreneurship** refers to all those activities which are to be carried out by a person to establish and to run the business enterprises in accordance with the changing social, political and economic environments.

**Entrepreneurship** includes activities relating to the anticipation of the consumers likes and dislikes, feelings and behaviours, tastes and fashions and the introduction of business ventures to meet out all these expectations of the consumers.

**Entrepreneurship** is considered as a 'new product' that would enable businessmen to develop new form of business organization and new business activities catering to the changing needs of the society. The liberalization of cultural rigidities is mainly due to this new product 'entrepreneurship'.

**Entrepreneurship** is the ability of entrepreneurs to assess the risks and establish businesses which are risky but at the same time suits perfectly to the changing scenarios of the economy.

## ❖ Concept of Entrepreneurship:



## ❖ Need of Entrepreneurship:

The followings are the reason that's why we need Entrepreneurship:

- **Life- line of a Nation:** No country can progress without the development of entrepreneurship. Every country is trying to promote its trade so that it is able to share the benefits of development. Therefore, entrepreneurship is the yardstick to measure the level of development of a country.

- **Provides innovation:** Entrepreneurship provides new ideas, imagination and vision to the enterprise. An entrepreneur is an innovator as he tries to find new technology, products and markets. He increases the productivity of various resources. The entrepreneur stands at the centre of the whole process of economic development. He conceives business ideas and puts them into effect, to enhance the process of economic development.
- **Change of growth/ Inclusive growth:** An enterprise operates in a changing environment. The entrepreneur moulds the enterprise in such a changing environment. The latter moulds not only the enterprise, but also alters the environment itself, to ensure the success of the enterprise. In order to meet the challenges of automation and the complexities of advanced technology, there is a need for the development of entrepreneurship.
- **Increased profits:** Profits can be increased in any enterprise, either by increasing the sales revenue or reducing cost. To increase the sales revenue is beyond the control of an enterprise. Entrepreneurship, by reducing costs, increases its profits and provides opportunities for future growth and development.
- **Employment opportunities:** Entrepreneurship and its activities provide the maximum employment potential. Large numbers of persons are employed in entrepreneurial activities in the country. The growths in these activities bring more and more employment opportunities.
- **Social Benefits:** It is not only beneficial to the business enterprise, but to the society at large. It raises the standard of living by providing good quality products and services at the lowest possible cost. It also makes the optimum use of scarce resources and promotes peace and prosperity in the society.

### ❖ **Characteristics, Qualities and Types of entrepreneurs, Functions:**

#### **Definition of 'Entrepreneur':**

An individual who, rather than working as an employee, runs a small business and assumes all the risk and reward of a given business venture, idea, or good or service offered for sale. The entrepreneur is commonly seen as a business leader and innovator of new ideas and business processes.

#### ❖ **Characteristics of entrepreneur:**

- **Facilitating Character-** An entrepreneur must build a team, keep it motivated, and provide an environment for individual growth and career development.
- **Self-Confidence-** Entrepreneurs must have belief in themselves and the ability to achieve their goals.
- **Work with Vision and Mission-** An entrepreneur must be committed to the project with a time horizon of five to seven years. No ninety-day wonders are allowed.

- **High Degree of Endurance-** Success of an entrepreneur demands the ability to work long hours for sustained period of time.
- **Trouble Shooting-** Nature An entrepreneur must have an intense desire to complete task or solve a problem. Creativity is an essential ingredient.
- **Initiative and Enterprising Personality-** An entrepreneur must have initiative, accepting personal responsibility for actions, and above all make good use of resources.
- **Goal Setter-**An entrepreneur must be able to set challenging but realistic goals.
- **Calculated Risk-Taking Ability** An entrepreneur must be a moderate risk-taker and learn from any failures.

### ❖ Qualities of entrepreneur:

Some quality is born, but most can be acquired. Successful entrepreneurs need to have certain qualities. They are as follows:

- **Look out for opportunities:** An entrepreneur should always look out for opportunities. He must be able to **exploit the opportunities**.
- **Strong desire to succeed:** Desire is the greatest impetus for entrepreneurship. Entrepreneurs must have the desire to get better identity, improve status and accumulate wealth. They must have the **desire to achieve greater heights** and succeed in life.
- **Persistent:** On the road of entrepreneurship, entrepreneurs have to face several problems. Establishing enterprises may be time consuming. An entrepreneur has to **tolerate the humiliation and discouraging act** of people around him during initial stages.
- **Inter personal skills:** Entrepreneurs cannot run business on their own. They are dependent on customers, employees, suppliers and government agencies and so on. An entrepreneur has to build his business network or social network in order to succeed in business. An entrepreneur **must make use of professionals** when need arises in running the business. Interpersonal skills should be the first in the quality of entrepreneurs.
- **Problem solving:** Strategy is actually a way of thinking and finding a solution to deal with the problem. Entrepreneurs **must utilize the wisdom** to tackle the arising problems.
- **Courage:** Venture itself is an adventure. An entrepreneur must have the courage, to run enterprises. Business may fetch profit or losses. He must be daring to face losses. He must have the guts to take the risk. **Risk-taking spirit of entrepreneurs** is an important component for running the business.
- **Hard working:** Entrepreneurs have to work hard. Initially an entrepreneur will not be able to get good return for working long hours.
- **Self-confident:** Entrepreneurs must demonstrate extreme self-confidence in order to cope with all the risks of operating their own business. He **must believe his own strengths and abilities**.
- **Responsibility:** An entrepreneur must have a sense of responsibility.



- **Creative:** An entrepreneur has to be creative. He must use innovative ideas to introduce new product, service to meet the customer needs.

### ❖ **Types of entrepreneurs:**

Entrepreneurs are classified as under different heads as given below. This helps the potential entrepreneurs to choose his own nature and style of entrepreneurship.

#### **According to the Type of Business:**

Entrepreneurs are found in various types of business occupations of varying size. We may broadly classify them as follows:

##### **Business Entrepreneur:**

Business entrepreneurs are individuals who conceive an idea for a new product or service and then create a business to materialize their idea into reality. They tap both production and marketing resources in their search to develop a new business opportunity. They may set up a big establishment or a small business unit. Trading entrepreneur is one who undertakes trading activities and is not concerned with the manufacturing work. He identifies potential markets, stimulates demand for his product line and creates a desire and interest among buyers to go in for his product. He is engaged in both domestic and overseas trade.

##### **Industrial Entrepreneur:**

Industrial entrepreneur is essentially a manufacturer who identifies the potential needs of customers and tailors product or service to meet the marketing needs. He is a product oriented man who starts in an industrial unit because of the possibility of making some new product.

##### **Corporate Entrepreneur:**

Corporate entrepreneur is essentially a manufacturer who identifies the potential needs of customers and tailors product or service to meet the marketing needs. He is a product oriented man who starts in an industrial unit because of the possibility of making some new product. Corporate entrepreneur is a person who demonstrates his innovative skill in organising and managing a corporate undertaking. A corporate undertaking is a form of business organisation which is registered under some statute or Act which gives it a separate legal entity.

##### **Agricultural Entrepreneur:**

Agricultural entrepreneurs are those entrepreneurs who undertake such agricultural activities as raising and marketing of crops, fertilizers and other inputs of agriculture.

**According to the use of Technology:**

**Technical Entrepreneur:**

A technical entrepreneur is essentially an entrepreneur of "Craftsman type". He develops a new and improved quality of goods because of his craftsmanship. He concentrates more on production than marketing. He does not care much to generate sales by applying various sales promotional techniques. He demonstrates his innovative capabilities in matters of production of goods and rendering services.

**Non-technical Entrepreneur:**

Non-technical entrepreneurs are those who are not concerned with the technical aspects of the product in which they deal. They are concerned only with developing alternative marketing and distribution strategies to promote their business.

**Professional Entrepreneur:**

Professional entrepreneur is a person who is interested in establishing a business but does not have interest in managing or operating it once it is established.

**According to Motivation:**

Motivation is the force that influences the efforts of the entrepreneur to achieve his objectives. An entrepreneur is motivated to achieve or prove his excellence in job performance. He is also motivated to influence others by demonstrating his power thus satisfying his ego.

**Pure Entrepreneur:**

A pure entrepreneur is an individual who is motivated by psychological and economic rewards. He undertakes an entrepreneurial activity for his personal satisfaction in work, ego or status.

**Induced Entrepreneur:**

Induced entrepreneur is one who is being induced to take up an entrepreneurial task due to the policy measures of the government that provides assistance, incentives, concessions and necessary overhead facilities to start a venture. Most of the entrepreneurs are induced entrepreneurs who enter business due to financial, technical and several other several other provided to them by the state agencies to promote entrepreneurship.

**Motivated Entrepreneur:**

New entrepreneurs are motivated by the desire for self-fulfilment. They come into being because of the possibility of making and marketing some new product for the use of consumers. If the

product is developed to a saleable stage, the entrepreneur is further motivated by reward in terms of profit and enlarged customer network.

#### **Spontaneous Entrepreneur:**

These entrepreneurs start their business out of their natural talents and instinct. They are persons with initiative, boldness and confidence in their ability which motivate them to undertake entrepreneurial activity.

#### **Growth Entrepreneur:**

Growth entrepreneurs are those who necessarily take up a high growth industry. These entrepreneurs choose an industry which has substantial growth prospects.

#### **Super-Growth Entrepreneur:**

Super-growth entrepreneur are those who have shown enormous growth of performance in their venture. The growth performance is identified by the liquidity of funds, profitability and gearing.

#### **According to Stages of Development:**

##### **First-Generation Entrepreneur:**

A first generation entrepreneur is one who starts an industrial unit by means of an innovative skill. He is essentially an innovator, combining different technologies to produce a marketable product or service.

##### **Modern Entrepreneur:**

A modern entrepreneur is one who undertakes those ventures which go well along with the changing demand in the market. They undertake those ventures which suit the current marketing needs.

##### **Classical Entrepreneur:**

A classical entrepreneur is one who is concerned with the customers and marketing needs through the development of a self-supporting venture. He is a stereotype entrepreneur whose aim is to maximize his economic returns at a level consistent with the survival of the firm with or without an element of growth.

##### **Innovating Entrepreneurs:**

Innovating entrepreneurship is characterized by aggressive assemblage of information and analysis of results, deriving from a novel combination of factors. Men/women in this group are generally aggressive in experimentation who exhibit cleverness in putting attractive possibilities into practice. One need not invent but convert even old established products or services, by changing their utility, their value, and their economic characteristics, into something new, attractive and utilitarian. Therein lies the key to their phenomenal success. Such an entrepreneur is one who sees the opportunity for introducing a new technique of production process or a new commodity or a new market or a new service or even reorganization of an existing enterprise.

#### **Imitative Entrepreneurs:**

Imitative entrepreneurship is characterized by readiness to adopt successful innovations by innovating entrepreneurs. They first imitate techniques and technology innovated by others.

#### **Fabian Entrepreneurs:**

These categories of entrepreneurs are basically running their venture on the basis of conventions and customary practices. They don't want to introduce change and not interested in coping with changes in environment. They have all sorts of inhibitions, shyness and lethargic attitude. They are basically risk averse and more cautious in their approach.

#### **Drone Entrepreneurs:**

An entrepreneur, who are reluctant to introduce any changes in their production methods, processes and follow their own traditional style of operations, though they incur losses and lose their market potential, will not take any effort to overcome the problem. Their products and the firm will get natural death and knockout.

#### **Forced Entrepreneurs:**

Sometimes, circumstances made many persons to become entrepreneurs. They do not have any plan, forward looking and business aptitude. To mitigate the situational problem, they are forced to plunge into entrepreneurial venture. Most of them may not be successful in this category due to lack of training and exposure.

### **❖ Functions of an entrepreneur:**

An entrepreneur is expected to perform the following functions.

#### **1. Risk Absorption:**

The entrepreneur assumes all possible risks of business. A business risk also involves the risk due to the possibility of changes in the tastes of consumers, techniques of consumers, techniques of production and new inventions. Such risks are not insurable. If they materialise, the entrepreneur has to bear the loss himself. Thus, Risk-bearing or uncertainty-bearing still remains the most function of an entrepreneur. An entrepreneur tries to reduce the uncertainties by his initiative, skill and good judgment.

### **1. Formulate Strategic Business Decisions:**

The entrepreneur has to decide the nature and type of goods to be produced. He enters the particular industry which offers from the best prospects and produces whatever commodities he thinks will pay him the most employs those methods of production which seem to him the most profitable. He effects suitable changes in the size of the business, its location techniques of production and does everything that is needed for the development of his/her business.

### **2. Execute Managerial Functions:**

The entrepreneur performs the managerial functions those are different from entrepreneurial functions. He formulates production plans, arranges finance, purchased raw material, provides production facilities, organises sales and assumes the task of personnel management. In a large establishment these management functions are delegated to the paid managerial personnel.

### **3. Adopt Innovation Function:**

An important function of an entrepreneur is "Innovation". He conceives the idea for the improvement in the quality of production line. He considers the economic inability and technological feasibility in bringing about improve quality. The introduction of different kinds of Electronic gadgets is an example of such an innovation of new products. Innovation is an ongoing function rather than once for all, or possibly intermittent activity.

#### **❖ Barriers in entrepreneurship:**

##### **➤ Environmental Barriers:**

**(a) Raw material:**Non-availability of raw materials required for production during peak seasons. It leads to increase in price of raw materials due to competition.

**(b) Labour:**

Lack of skilled labour

Lack of committed and loyal employee

Quality and Quality of labour

(c) **Machinery:** Machines are necessary but they are also costly and to rapid change in technology they become obsolete and require replacement which requires cash in hand. It becomes very difficult for small business organisation to keep updating its production process.

(d) **Land and Building:** Acquisition of land and construction of building at a prime location require heavy expenditure. If the land is taken on rent, it becomes a fixed cost and a constant concern for the entrepreneur.

(e) **Infrastructure support:** Adequacy of power, proper roads, water and drainage facilities etc. There is less support from development authorities due to red-tapism and corruption.

➤ **Financial Barriers:**

Availability of funds is a major concern. A delay in source of finance results in delay of starting or running business.

➤ **Personal Barrier:** They are caused by emotional blocks of an individual. They cause a mental obstruction. They are-

(a) **Lack of confidence:** They think they will never find a successful business idea and would be unable to attract necessary resources. Therefore, they dismiss the thought of being self-employed.

(b) **Lack of Dependability on others:** They aim to gain additional expertise through trial and error and experience, rather than seeing further development or personal assistance from others.

(c) **Lack of motivation:** Lose interest and motivation when ideas don't work.

(d) **Lack of Patience:** When desire to achieve success in first attempt or to become rich instantly are confronted with business challenges/problems they lose interest. They give up at during initial losses.

(e) **Inability to Dream:** Sometimes they are short of vision or satisfied with what they have achieved and lose interest in further expansion of business.

(f) **Sense of Pride/Embarrassment:** They are too proud or too embarrassed to take help.

➤ **Social Barrier:**

Socio-cultural norms and values

Degree of approval or disapproval of entrepreneurial behaviour

Caste and religious affiliation

Financial stability and family background

➤ **Political Barrier:**

Government incentives and concessions

Facilitating socio-economic setting

Interest in economic development of society

### ❖ Entrepreneur's vs. Manager:

The terms Entrepreneur and Manager are considered one and the same. But the two terms have different meanings.

The following are some of the **differences** between a **manager** and an **entrepreneur**:

- The main reason for an entrepreneur to start a business enterprise is because he comprehends the venture for his individual satisfaction and has personal stake in it where as a manager provides his services in an enterprise established by someone.
- An entrepreneur and a manager differ in their standing, an entrepreneur is the owner of the organization and he bears all the risk and uncertainties involved in running an organization where as a manager is an employee and does not accept any risk.
- An entrepreneur and a manager differ in their objectives. Entrepreneur's objective is to innovate and create and he acts as a change agent where as a manager's objective is to supervise and create routines. He implements the entrepreneur's plans and ideas.
- An entrepreneur is faced with more income uncertainties as his income is contingent on the performance of the firm where as a manager's compensation is less dependent on the performance of the organization.

### ❖ Forms of Business Ownership: Sole proprietorship, partnership forms and others:

Different forms of business depend upon how they have been started and manage:

The different forms are:

- A. Proprietorship.
- B. Partnership firm.
- C. Joint Hindu family Business.
- D. Co-operative society.
- E. Joint stock Company (i.e. private limited company, public limited company and public sector undertaking.)

#### A. PROPRIETORSHIP:

- When the business is started by a single person is known as sole proprietorship or one man business.
- In this business the proprietor uses his/her own resource (skills, knowledge and manage the business alone).
- So in this, the person receives all the profits and to handle all the risk.

**Basic features:**

- Such a business is owned by a single person.
- The business is controlled by the same person.
- The individual invest his/her own capital in the business and receives all the profits.
- The individual also handle all the risk.

**Advantages:**

- Easy to start.
- All the profits go to the individual.
- Business secrecy that means all the information of the business can't be leaked out.
- Promote decision that means he/she has to take own decision when required.

**Flexibility:**

- Personal contact.
- Easy dissolution means the business can come to an end with the wish of the sole-proprietor.

**Disadvantages:**

- Limited financial resources.
- Uncertain features.
- Unlimited liabilities (difficulties).
- Small business.

**B. PARTNERSHIP FIRM:**

- When a group of person combining together start a business, it may be a partnership business.
- This business in INDIA governed by an act named as “**partnership act 1932, article-4**” in the parliament.



- According to this act, relation between persons who have agreed to share the profit of a business carried on by all or any one acting for all. The business they are carried named as firm.

#### **Basic features:**

- The minimum no. of members in a partnership business is **2** & maximum is **20**. But for banking and financial business the maximum member is **10**.
- *An agreement is assigned between the partners & this must be valid in the eye of law, such agreement in writing is known as **Partnership deed**.*
- The main aim of the partnership business is to earn profit & share it. If the motive of doing business is voluntary, charitable etc, then it is not a business.
- There must be a business, if not, and then there is no partnership.
- Partnership is the result of mutual understanding, faith & confidence among the partners.

#### **Rights of a partner:**

- Right to take active part in the management of the firm.
- Right to express his/her views.
- Right to inspect the books of account.
- Right to share the profit.
- Right to retire.
- Right to get the share on retirement.
- Right to act as an agent of the firm.
- Right to protect his/her interest as a partner.
- Right to obstruct or oppose entry of new partner.

#### **Duties of a partner:**

- To participate in the business of the firm activity.
- Perform his/her duties with honesty & for the common advantage of all the partners.
- Render all the accounts to all the partners.
- Disclose all the facts to all other partners.
- He/she should not make any secrete profit.
- Maintain business secrecy.
- Should not carry on any activities competing with the firm directly or indirectly.
- To obliged the partnership agreement.
- Identify the losses & expenses to other parties were held to other business.

### **Types of partnership firm:**

There are two types of partnership firm.

- i. General partnership.
- ii. Limited partnership.

#### **i. General partnership:**

In this type of partnership the liabilities or responsibilities of all the partners are unlimited. If the properties of the firm are insufficient to meet the business liabilities then the personal properties can be utilised to pay the business liabilities.

It is further classified into 3 types:

##### ➤ **Partnership at will:**

If any of the partners gives a notice to all other partners to dissolve the partnership, the partnership comes to an end. Such a partnership is known as partnership at will.

##### ➤ **Particular Partnership:**

If the partners have entered into a deal to complete a particular task, the partnership is automatically closed down on such task completion and is known as particular partnership.

##### ➤ **Partnership for a specific time:**

If the partnership is an agreement to carry the business for a period of 2 years, 3 years etc. Then after completion of the period the partnership is automatically closed, it is known as partnership for a specific time.

#### **ii. Limited partnership:**

- This type of partnership is usually not found in INDIA.
- In this type of partnership there must be at least one general partner whose liabilities are unlimited & rest of the partners may be limited partners whose liabilities are limited to the extent of their share in partnership. That means the personal properties of that partner cannot be utilised to pay the business liabilities.
- As the limited partners enjoy limited liabilities, they are not allowed to take active part in the business.

## **Kinds of Partner:**

There are six kinds of partner. Such as,

### **i. Active Partner:**

- Active partners not only contribute capital cost but also take active part on the management of the partnership firm.
- The liabilities of such partner are unlimited. His/her personal properties are utilised to pay off business liabilities.
- She/he also enjoys all the rights & duty of a partner.
- Death, retirement etc. of such a partner closes the partnership.

### **ii. Sleeping Partners:**

- This type of partner is also known as dormant partner. He/she contributes capital to the partnership firm, but doesn't take any active part in the management of the firm.

### **iii. Partners in profit only:**

- There are some partners who may be interested only in the profit of a partnership business.
- They are not share losses. Such partners only contribute to the capital but are not allowing taking active part in the management of the partnerships firm.
- As He/she only share profits, then his/her rights are restricted.

### **iv. Nominal partner:**

- Such a partner neither contributes any capital nor takes active part in the management of the partnership firm.
- He/she only lends his/her name to the firm to be used as a partner.

### **v. Partner by Estoppels:**

- Sometimes it may also happen that person may represent himself/herself in such a way that other believes him/her to be a partner. But in actual he/she is a tout or cheat.
- He/she doesn't contribute any capital or take active part in the management of the partnership firm.

### **vi. Minor Partner:**

- A person who has below 18 years of age cannot enter into the partnership with an agreement or contract as per “Indian contract act”.
- People below 18 treated as a minor partner. He/she enter into the partnership only with some contribution to the partnership & don't take any active part in the day to day management of the firm.
- He/she only shares profit & losses and his/her personal properties cannot be utilised for any liabilities in the business.

#### **Advantages of Partnership Firm:**

- **Absence of legal formalities:** There is no need of any permission & licence from any authorities to start a partnership firm. So no legal formalities are required.
- **Higher financial resources:** As more persons can takes active part in a business firm, so business has more financial strength.
- **Bigger size of the business:** As compare to a Sole-Proprietorship business, a Partnership business can start with a big business, more capital, more turn over and more profit etc.
- **Better management:** As there are many partners, so that the varieties of talent are utilised to handle the business properly.
- **Reduce to risk:**As there are many partners, the risk involved is shared among the partners, so there is no high risk in individuals.
- **Good public relation:** As there are many persons, individuals will take personal care to create goodwill and reputation on many matters relating to the business.
- **Easy dissolution:** The dissolution of a partnership firm is very easy. So no legal formalities are required & the firm may be dissolved as per the provisions made in the **partnership deed**.

#### **Disadvantages Partnership Firm:**

- **Unlimited liabilities:** The liabilities of each and every member are unlimited. Whose personal properties are used for any financial liabilities is complicated.
- **Absence of continuity or uncertain future:** A partnership firm cannot continue for an unlimited period of time because if any sudden death or retirement of any partner, the partnership firm is affected.
- **Higher risk:** In this type of business the risk is involved in the personal properties of one partner.
- **Business secrecy:** Sometimes business secrecy is very much important for the existence of a business. If any partner shares any secrecy of the business, the business will be affected.
- **Lack of public confidence:** The public has no confidence over this type of organisation, because one or more partners can retire from the business at any time or a partner may not take any risk regarding to the business.

### C. JOINT HINDU FAMILY BUSINESS:

- A large no. of business in INDIA is carried on by different families & such a business is called a **joint Hindu family business**.
- It operates under **Hindu succession art, 1956**.
- If a business is set up by a person & is carried on by male members on his family after his death, it is a case of joint Hindu family business.
- There are 2 divisions of the Hindu succession art. Such as: **(a). Dayabhaga Law. (b) Mitakshyra Law.**
- **(a). Dayabhaga Law:** Dayabhaga law is applicable only to Bengal families i.e. only male members will authorised to get the property of the family only after the death of the father.
- **(b) Mitakshyra Law:** According to Mitakshyra law (applicable to rest of INDIA) three successive male generations can get the property of the family from the movement of their birth.
- Joint Hindu family business is managed by head of the male members of the family who is known as **Karta**.
- The **Karta** is the manager of the business; he has the sole control over the incomes & expenditures of the business. Other members have no rights to take active part in the management of the business.
- Outer persons can't become a member of a joint Hindu family business.
- After the death of the **Karta**, the senior most people automatically become **Karta**.

### D. CO-OPERATIVE SOCIETY:

- When a group of persons belonging to a particular class or category or group associate themselves & start a business for their mutual profits or benefits. It may be a co-operative society.
- The main aim of the co-operative society is not to earn profits but to render the best possible services to its members.
- Co-operative society is usually started by middle class or lower middle class or weaker section of the society belonging to a particular area to protect their economic interest.
- The main motto of this business is **"all for each & each for all"**.
- In INDIA the co-operative society was registered under the **co-operative society act of 1912**.

### E. JOINT STOCK COMPANY:

- When many people start a business, it may be a joint stock company.
- Joint stock companies are most popular form of business organisation not only in INDIA but also worldwide.

- The sole proprietorship & partnership firm of business organisation would not meet the growing demand of business & industry so that joint stock company business becomes popular

### ❖ **Types of Industries & concept of start-ups:**

#### **INDURSTRIES:**

Industry refers to those economic activities which are responsible for the production of goods or services. That means industry is a place where goods and services are produce. Such industry can further classified into various category depending on the nature of products, amount of investment etc. Such as:

##### **(a) MANUFACTURING INDUSTRIES:**

This type of industries are the factories or mills where raw material are introduced and finished product are found out or for use by any other undertaking factories or mills or final consumption. Here some short of production activities are carried out at a particular place with the use of men & machines.

It is further classified into 4 categories. Such as:

- **Assembling Industry:** This type of industry produce or purchase different components, parts, accessories & assemble them into usable product. For example – TV industries, watch industries or mobile industries.
- **Processing Industry:** This type of industry purchase or procure raw materials & are put into the processes. For Example – Furniture making, Textile industries, paper making & jute mills etc.
- **Analytical Industry:** Under this type of industry, raw materials are introduced at one point & several products come out at the end of different processes. For example – Sugar industries, petroleum refinery etc.
- **Mixed type/Synthetic type Industry:** Under this type of industry, different raw material are combined at different processes or stages & after further processing, finish able product come out at the end of the process. For example – Food processing, Ayurvedic medicines & cosmetic industries etc.

##### **(b) EXTRACTIVE INDUSTRIES:**

This type of industries are engaged in the process of extraction of different materials or commodities from nature, like mining of the ore & minerals, collection of forest products, deep sea fishing, hunting etc.

**(c) GENETIC INDUSTRIES:**

These types of industries are engaged in the process of reproduction or multiplication of the product which involves certain life. It takes time to complete the life cycle for the production process.

For example (**Poultry**) – Which cover the page of egg, hatching the egg, bringing up the chick; allow growing into hen & again laying egg?

**(d) CONSTRUCTION INDUSTRIES:**

In this type industry various infrastructure like road, dam, bridge, canal, fly over, tunnel, building & factories etc. are constructed.

**(e) SERVICE INDUSTRIES:**

This type of industries provides services of various types to the people, to the industries & other organisation. This not produces any goods or commodities but produces or creates services for the needy. For example – Service stations, garage of automobiles, cinema halls, mobile service etc.

**CONCEPT OF START-UPS:**

**A start-up company**, or simply a start-up, is an entrepreneurial venture in its early stages of operations typically aimed at resolving a real life issue with an innovative product or service. These ventures are typically small in nature, new, and funded by either to founding entrepreneur or a group of investors who believe in the founder or company concept.

Most likely a start-up and a small business start from a mere idea, and with founder's own or friends/family money, or a bank loan. Later, a successful start-up receives funding from angel [investors](#), [venture capitalist](#), or [IPO](#). With each funding, an investor receives a part of the company and becomes a co-owner of the start-up.

**Types of Start-up:**

According to **Steve Blank**, there are 6 different types of start-up. Such as:

**1. Lifestyle Start-ups: Self-employed folks**

Lifestyle [entrepreneurs](#) are living their preferred lives while working for no one, but themselves. In Silicon Valley, such professionals are freelance coders or web designers, who love their jobs, because of passion.

## **2. Small Business Start-ups: Feeding the Family**

Small businesses are grocery stores, hairdressers, bakers, travel agents, carpenters, electricians, etc. They are those, who run his/her own business to feed the family.

## **3. Scalable Start-ups: Born to Be Big**

[Google](#), [Uber](#), [Face book](#), [Twitter](#) is just the latest examples of scalable start-ups. From the very beginning, the founders believe that they are going to change the world.

Such start-ups hire the best and the brightest. They always search for a repeatable and scalable business model. When they find it, they start to look for more venture capital to boost their businesses. Often scalable start-ups group together in [innovation clusters](#) (Silicon Valley, Shanghai, New York, Boston, Israel, etc.).

## **4. Buyable Start-ups: Born to be bought**

During the last five years, start-ups that offer Web and mobile app solutions are sold to larger companies. This tendency becomes more and more popular. Their goal is not to build a billion-dollar company, but to be sold to a larger company for pretty cash.

## **5. Large Company Start-ups: Innovate or die**

Large companies have finite life duration. Changes in customer preferences, new technologies, legislation issues, new competitors create pressure, forcing large companies to create new innovative products for new customers in new markets (for example - Google and Android).

## **6. Social Start-ups: Mission - Difference**

They are passionate and driven to make an impact. However, unlike scalable start-ups, their mission is to make the world a better place, not for wealth's sake, but for an idea.



❖ **Entrepreneurial support agencies at National, State, District Level (Sources):** DIC, NSIC, OSIC, SIDBI, NABARD, Commercial Banks, KVIC etc.

- Both the state government & central government Announces the **IPR (Industrial policy resolution)** of the state & country from time to time.
- They provide a lot of incentives & concessions to Entrepreneurs or different types of Industry. But the facilities or incentives provided by the government are flexible and subject to change at any time depending upon the policies of the government.
- Such incentives are as follows:
  - (i) Land at cheaper rate & registration charges also decrease.
  - (ii) Loans at a lower rate of interest & on easy repayment terms.
  - (iii) Soft working capital loans.
  - (iv) Reduce rate of electricity duty.
  - (v) Concessional water taxes.
  - (vi) Lower Royalty.
  - (vii) Tax holidays
  - (viii) Technical support from government organisations for import of plant & machinery, raw-materials & technologies etc.
  - (ix) Single window clearance for all the problems of an entrepreneur or enterprises.
  - (x) The central government has made a provision where by a SSI is exempted to provide security for loans up to 5 lakh rupees.

**ROLE OF DIC (District Industry centre):**

- **The District industry centre** was started by the central government in 1978 with the objective of providing a focal point for promoting MSME in a particular area & to make available to them all necessary services and facilities at one place.
- It provides information about various govt. Schemes, subsidies, grants and assistants available from the other corporations set-up for promotion of industries.
- Act as focal point of the industrialisation of the district.
- Prepares the industrial profiles of the district.
- Statistics & information about existing industrial unit in the district in the large, medium, small as well as co-operative sectors.
- Opportunity of guidance to the entrepreneur.
- Completion of information about local sources of raw-materials & their availability.
- Man power assessment w.r.t skilled & semi-skilled workers.
- Gives SSI registration.

- Advices the entrepreneur on investment.
- Assisted the entrepreneur to produce imported machineries & raw-materials for their industries.
- The industrial guidance bureau functioning in the DIC fascinates the entrepreneurs in getting the requisite, clearances/permissions from respective government department.

#### **ROLE OF NSIC (National Small Industries Corporation):**

- **NSIC** is established in the year 1953 to cater to the needs of the entrepreneur in India. The Head office of these NSIC are situated at New Delhi with four regional offices at New Delhi, Kolkata, Mumbai, and Chennai and eleven branch offices at important cities to help entrepreneurs living in different states and countries. They provide various services mostly promotional in character to small and medium scale industries. The important functions performed by NSIC are grouped as follows:
- *Provided equipments to micro and small scale industries on lease basis.*
- *Provides financial assistance to the industries by the way of hire-purchase scheme for purchase of equipments and machinery, required for setting up new industries.*
- *Assists in the marketing of SSI's products.*
- *Helps in exporting of small scale industries products.*
- *Provides training to worker for better trade practices.*
- *Undertakes the construction of the industrial estates.*
- *Helps in the development and up gradation of the technology and modernization of the old traditional industries by providing wholly new equipments.*
- *They purchase good amount of raw material and sell them at affordable prices to the SSI's.*
- *Sets up small scale industries in other developing countries on the turn-key basis.*
- *Develops prototype equipments and machines to pass on to Small Scale Industries for the commercial production.*

#### **ROLE OF OSIC (Odisha Small Industries Corporation limited):**

- It was established on 3<sup>rd</sup> April 1972 as a wholly owned corporation of government of Odisha.
- It assists & permits the MSME's in the state for their sustained growth & development to gear up the industrialisation process in the state.
- To provide quality raw-materials to MSME's of the state.
- To provide quality building materials to MSME sectors.
- To assist in marketing the products of the MSME sector.
- To act as syndicate leader to MSME as per the IPR of the govt. of Odisha.
- To act as a nodal agency for sub-contract exchange for MSME sector & large industries.

#### **ROLE OF SIDBI (Small industries development bank of INDIA):**

- It provides refinance facilities & short term lending to industries.
- It serves as the principal financial institution in the MSME sector.
- It co-ordinates the functions of institutions engaged in similar activities.
- SIDBI operates under the department of financial services, govt. of INDIA.
- SIDBI is active in the development of micro finance institutions through SIDBI foundation for micro credit & cater to the long term financing needs of the industrial sector.
- SIDBI ventures capital limited (SVCL) for providing venture capital (VC) assistance to MSME's.
- Micro units' development & re-finance agency (MUDRA) for funding the unfunded micro enterprises in the country.

#### **ROLE OF NABARD (National bank for agriculture and rural development):**

- It is an apex institution which has power to deal with all matters concerning policy, planning as well as operations in giving credit for agriculture and other economic activities in the rural areas.
- It is a refinancing agency for those institutions that provide investment and production credit for promoting the several developmental programs for rural development.
- It is improving the absorptive capacity of the credit delivery system in India, including monitoring, formulation of rehabilitation schemes, restructuring of credit institutions, and training of personnel.
- It co-ordinates the rural credit financing activities of all sorts of institutions engaged in developmental work at the field level while maintaining liaison with Government of India, and State Governments, and also RBI and other national level institutions that are concerned with policy formulation.
- It prepares rural credit plans, annually, for all districts in the country.
- It also promotes research in rural banking, and the field of agriculture and rural development.

#### **ROLE OF COMMERCIAL BANK:**

- The BOI provides the following rules such as
- Medium & long term loans.

- Working capital finance.
- Equity financing.
- Management of dedicated forms.
- Loan guarantees.
- Co-financing.
- Investment in corporate boards.
- Business development services.
- Stock brokerage.
- Foreign exchange dealership.
- Insurance brokerage.

#### **ROLE OF KVIC:**

- KVIC is a statutory body established under KVIC Act, 1956. Its main functions include:
- To plan, promote, organize and implement the programmes for development of Khadi and village industries in rural areas.
- Creating and managing reserves of raw materials and supplying them to producers, creating common service facilities for processing of raw material and semi-finished goods.
- To promote sales and marketing of Khadi Products.
- To encourage and promote research in the production techniques and equipments in Khadi Industries.
- To carry out its objectives, KVIC is authorised to establish separate organizations under its banner.
- According to a recent report in Times of India, the spinning, weaving and garment making units and other village industries under the aegis of Khadi and Village Industries Commission have notched up a total turnover of Rs. 50,000 crore. This is possible mainly because of efforts and marketing strategies adopted by KVIC.
- For example, KVIC provides its own nationwide brand to a range of small and obscure firms and allows them to sale their goods through organized retail chain of the commission. It gives them physical retail space to interface with consumers. Small producers are not cheated in sale of their products.
- Further, in recent times, the KVIC has also provided some market sophistication helping the small producers come up with appealing packaging and improved quality.

## ❖ **Technology Business Incubators (TBI) and Science and Technology Entrepreneur Parks.**

### **Technology Business Incubators (TBI):**

- A **technology business incubator (TBI)** is an organisational setup that nurtures technology based and knowledge driven companies by helping them survive during the start-up period in the company's history, which lasts around the initial two to three years.
- Incubators do this by providing an integrated package of work space, shared office services, access to specialized equipment along with value added services like fund raising, legal services, business planning, and technical assistance and networking support.
- The main objective of the technology business incubators is to produce successful business ventures that create jobs and wealth in the region, along with encouraging an attitude of innovation in the country as a whole.
- The primary aspects that this report shall go into are the stages of a start-up, the motivational factors behind establishing incubators by governments & private players, the process followed by them in selecting, nurturing talent as well as providing post incubation support.
- The report will also look at the role that incubators play in the general economy apart from their function of incubating companies, such as educational or public research roles.

### **Science and Technology Entrepreneur Parks (STEP):**

- The Science Parks and similar initiatives help in creating an atmosphere for innovation and entrepreneurship; for active interaction between academic institutions and industries for sharing ideas, knowledge, experience and facilities for the development of new technologies and their rapid transfer to the end user.
- The Science & Technology Entrepreneurs Park (STEP) programme was initiated to provide a re-orientation in the approach to innovation and entrepreneurship involving education, training, research, finance, management and the government.
- A STEP creates the necessary climate for innovation, information exchange, sharing of experience and facilities and opening new avenues for students, teachers, researchers and industrial managers to grow in a trans-disciplinary culture, each understanding and depending

on the other's inputs for starting a successful economic venture. STEPs are hardware intensive with emphasis on common facilities, services and relevant equipments.

The major **objectives of STEP** are to forge linkages among academic and R&D institutions on one hand and the industry on the other and also promote innovative enterprise through S&T persons.

**Objectives:**

- To forge a close linkage between universities, academic and R&D institutions on one hand and industry on the other.
- To promote entrepreneurship among Science and Technology persons, many of whom were otherwise seeking jobs soon after their graduation.
- To provide R&D support to the small-scale industry mostly through interaction with research institutions.
- To promote innovation based enterprises.

**Facilities and Services Provided by STEPs:**

- It offers facilities such as nursery sheds, testing and calibration facilities, precision tool room/central workshop, prototype development, business facilitation, computing, data bank, library and documentation, communication, seminar hall/conference room, common facilities such as phone, fax, photocopying. It offers services like testing and calibration, consultancy.
- Training, technical support services, business facilitation services, database and documentation services, quality assurance services and common utility services.

## **CHAPTER 2. MARKET SURVEY AND OPPORTUNITY IDENTIFICATION (BUSINESS PLANNING):**

### **❖ Business Planning:**

**Business:** It is defined as those economic activities connected with manufacturing assembling, extracting, collecting, purchasing, selling, servicing etc.

#### **Business Planning:**

A business plan is a written document that describes in detail how a business—usually a new one is going to achieve its goals. A business plan lays out a written plan from a marketing, financial and operational viewpoint.

Business plans are important to allow a company to lay out its goals and attract investment. They are also a way for companies to keep themselves on track going forward.

Although they're especially useful for new companies, every company should have a business plan. Ideally, a company would revisit the plan periodically to see if goals have been met or have changed and evolved. Sometimes, a new business plan is prepared for an established business that is moving in a new direction.

#### **Understanding Business Plans:**

A good business plan should outline all the costs and the downfalls of each decision a company makes. Business plans, even among competitors in the same industry, are rarely identical. But they all tend to have the same elements, including an executive summary of the business and a detailed description of the business, its services and/or products. It also states how the business intends to achieve its goals.

The plan should include at least an overview of the industry of which the business will be a part, and how it will distinguish itself from its potential competitors.

**Elements of a Business Plan:** As mentioned above, no two business plans are the same. But they all have the same elements. Below are some of the common and most important parts of a business plan.

**Executive summary:** This section outlines the company and includes the mission statement along with any information about the company's leadership, employees, operations, and location.

**Products and services:** Here, the company can outline the products and services it will offer, and may also include pricing, product lifespan, and benefits to the consumer. Other factors that may go into this section include production and manufacturing processes, any patents the company may have, as well as proprietary technology. Any information about research and development (R&D) can also be included here.

**Market analysis:** A firm needs a good handle of the industry as well as its target market. It will outline the competition and how it factors in the industry, along with its strengths and weaknesses.

**Marketing strategy:** This area describes how the company will attract and keep its customer base and how it intends to reach the consumer. This means a clear distribution channel must be outlined.

**Financial planning:** In order to attract the party reading the business plan, the company should include any financial planning and/or projections. Financial statements, balance sheets, and other financial information may be included for already-established businesses. New businesses may include targets for the first few years of the business and any potential investors.

**Budget:** Any good company needs to have a budget in place. This includes costs related to staffing, development, manufacturing, marketing, and any other expenses related to the business.

### ❖ SSI, Ancillary Units, Tiny Units, Service Sector Units:

#### **Manufacturing Enterprises:**

The enterprises engaged in manufacture or production of goods relating to any industry specified in the first schedule to the industries (Development and Regulation) Act of 1951).

Or,

Employing plant and machinery in the process of value addition to the final product having a distinct name or character or use. The manufacturing enterprise is defined in terms of investment in plant and machinery.

#### **Service Enterprises:**

Enterprises engaged in providing or rendering of services are defined in terms of investment in equipment.

#### **Classification of Micro, Small and Medium Scale Enterprises:**

Enterprises can take the form of company or proprietorship or co-operative or association of persons or Hindu Undivided Family or Partnership etc. The definition is not limited to the number of people employed by the firm nor the electricity consumed as was the case in the past. The micro, small and medium enterprises are categorized based on the investment in plant and machinery, as mentioned below:

#### **Manufacturing Sector**

##### **Enterprises**

#### **Manufacturing Sector Investment in plant & machinery Enterprises**

- |                      |   |
|----------------------|---|
| 1. Micro Enterprises | Does not exceed rupees 25 lakh                              |
| 2. Small Enterprises | More than rupees 25 lakh but does not exceed rupees 5 crore |



- |                       |   |
|-----------------------|---|
| 3. Medium Enterprises | More than rupees 5 crores but does not exceed rupees 10 crore |
|-----------------------|---|

### **For Service Sectors Enterprises**

<b>Service Sector</b>	<b>Investment in Equipment</b>
-----------------------	--------------------------------

#### **Enterprises**

- |   |  |
|---|--|
| 1. Micro Enterprises<br>rupees 10 lakh. | Investment in equipment Micro Enterprises Does not exceed    |
| 2. Small Enterprises                    | More than rupees 10 lakh but does not exceed rupees 2 crore  |
| 3. Medium Enterprises                   | More than rupees 2 crores but does not exceed rupees 5 crore |

### **Small Scale Industries:**

Small scale industries (SSI) are those industries in which manufacturing, providing services, productions are done on a small scale or micro scale. For example, these are the ideas of Small scale industries: Napkins, tissues, chocolates, toothpick, water bottles, small toys, papers, pens. Small scale industries play an important role in social and economic development of India. These industries do a one-time investment in machinery, plants, and industries which could be on an ownership basis, hire purchase or lease basis. But it does not exceed Rs. 1 Crore.

Essentially small scale industries comprise of small enterprises who manufacture goods or services with the help of relatively smaller machines and a few workers and employees. Basically, the enterprise must fall under the guidelines set by the Government of India. At the time being such limits are as follows,

- ✓ For Manufacturing Units for Goods: Investment in plant and machinery must be between 25 lakhs and five crores.
- ✓ For Service Providers: Investment in machinery must be between 10 lakhs and two crores.

In developing countries like India, these small scale industries are the lifeline of the economy. These are generally labour-intensive industries, so they create much employment. They also help with per capita income and resource utilization in the economy. They are a very important sector of the economy from a financial and social point of view.

### **Examples and Ideas of Small Scale Industries:**

- ✓ Bakeries
- ✓ Candles
- ✓ School stationeries
- ✓ Water bottles
- ✓ Leather belt
- ✓ Small toys
- ✓ Paper Bags
- ✓ Xerox and printing
- ✓ T-shirt Printing
- ✓ Photography

- ✓ Beauty parlours

### **Characteristics of Small Scale Industries:**

**Ownership:** Such units are generally under single ownership. So it is a sole proprietorship or sometimes a partnership.

**Management:** Both the management and the control generally is with the owner/owners. So the owner is actively involved with the daily running of the business.

**Limited Reach:** Small scale industries have a restricted area of operations. So they meet local and regional demand.

**Labour Intensive:** These small scale industries tend to use labour and manpower for their production activities. So their dependence on technology is pretty limited.

**Flexibility:** These units are more adaptable to their changing business environment. So in case of sudden changes or unexpected developments, they are flexible enough to adapt and keep carrying on. Large industries do not have this advantage.

**Resources:** They use local and readily available resources. This also helps the economy with better utilization of natural resources and less wastage.

### **Role of Small Scale Industries in the Indian Economy:**

#### **Total Production**

These enterprises account for almost 40% of the total goods and services produced in the Indian economy. They are one of the main reasons for the growth and strengthening of the economy.

#### **Employment**

These small scale industries are a major source of employment in the country. The whole labour force cannot find work in the formal sector of the economy. So these labour-intensive industries provide a livelihood to a large portion of the workforce.

#### **Contribution to Export**

Nearly half of the goods (45-55%) of the goods that are exported from India are produced by these small enterprises. About 35% of direct exports and 15% of the indirect exports are from the small scale industries. So India's export industry majorly relies on these small industries for their growth and development.

#### **Welfare of the Public**

Other than economic reasons, these industries are also important for the social growth and development of our country. These industries are usually started by the lower or middle-class public.

They have an opportunity to earn wealth and employee other people. It helps with income distribution and contributes to social progress.

### **Objectives of small scale industries**

Some of the important objectives are

- ✓ Create employment
- ✓ Improve per capita income of lower income groups and also improve their standard of living
- ✓ They also help backward regions with economic development

### **Medium Scale Industries:**

Medium scale industries (MSI) are those industries in which manufacturing, providing services, productions are done on a small scale. These industries do investment in machinery, plants, and industries which could be on an ownership basis, hire purchase or lease basis. But the investment in plant & machineries is more than rupees 2 crores but does not exceed rupees 5 crore.

And in case of service sector it is more than rupees 2 crores but does not exceed rupees 5 crore.

### **Large Scale Industries:**

Industries which require huge infrastructure and manpower with an influx of capital assets are Large Scale Industries. In India, large-scale industries are the ones with a fixed asset of more than one hundred million rupees or Rs. 10 crores.

The Indian economy relies heavily on such industries for economic growth, generation of foreign currency, and the creation of job opportunities for millions of Indians.

### **Advantages of large scale industries:**

- ✓ They provide an impetus to the industrialization of the country.
- ✓ Large scale industries, usually, produce capital and basic goods (instruments, machines, chemicals, etc.)
- ✓ They are capable of generating funds for the research and development of new technologies.
- ✓ Due to the large scale of operations, they have the potential to lower the cost of goods.
- ✓ Further, they create opportunities for small-scale and cottage industries to evolve and flourish.
- ✓ Also, the employment opportunities created by large scale industries are huge.

### **Large Scale Industries in India**

The term 'large-scale' is generic in nature and includes different types of industries. In India, the following heavy industries fall under the purview of large scale industries:

- ✓ Iron and Steel Industry

- ✓ Textile Industry
- ✓ Automobile Manufacturing Industry
- ✓ Over the last two decades, Information and Technology (IT) industry has evolved and has contributed huge revenues while creating thousands of jobs for Indians. Hence, many economists include it in the large-scale industry sector.
- ✓ Telecom Industry

It is important to note that these industries are either manufacturing units or those which use both indigenous and imported technologies. Here are some more examples:

Fertilizer , Cement , Natural gas , Coal , Metal extraction , Metal processing , Petroleum , Mining , Electrical , Petrochemical , Food processing units , Tourism , Banking , Sugar , Construction , Automobile , Communication equipment , Cement , Chemicals , Earth movers , Consumer durables (like television, refrigerators, etc.) , Engineering products , Vehicle assembly , Beverages , Agricultural processing , Insurance and Finance.

#### **ANCILLARY UNIT:**

An industrial unit which is engaged or is proposed to be engaged in the manufacture or production of parts, components, sub- assemblies, tooling or intermediaries, or the rendering of services and the undertaking supplies or renders or proposes to supply or render not less than 50 percent of its production or services, as the case may be, to one or more other industrial takings and whose investment in fixed assets in plant and machinery whether held on ownership terms or on lease or on hire purchase, does not exceed Rs 75 lacks.

#### **DEVELOPMENT OF ANCILLARY INDUSTRY IN INDIA**

The programme of ancillarisation includes motivation of public and private sector units to offload production of components, parts, sub- assemblies, tools, intermediates, services etc to ancillary units. The programme of ancillary development has specific advantages for both for large as well as small industries and also for the total economy of the country. The large scale units have the advantages in the form of savings in investments, inventories, employment of labour, etc. and getting the items of the desired specifications, while the small scale units have the advantage of getting assured market for their products, availability of technical assistance and improved technology from the parent units. This programme also helps in overall economy of the country.

The strategy for ancillary development was originally outlined with the objective of:

1. Development of employment opportunities coupled with growth of entrepreneurship in different fields and different parts of the country.
2. Increase in productivity of the small scale units.
3. Growth of a low cost economy through reduction in costs brought by appropriate technology followed by ancillary units.
4. Development of a single or multi discipline expertise in different fields to bring about economies of scale.

#### **Tiny Unit:**

A tiny unit is the business enterprise whose investment in plant and machinery is not more than 25 lakhs. Investment limit is 25 lakhs in this type of unit.

### **Difference between Tiny Industry & Ancillary Industry**

#### **Tiny Unit:**

1. It is that type in which machinery and investment of plant is not more than 25 lack.
2. Its investment limit is almost 25 lacks.
3. There is no assistance required.
4. It cannot do its business by itself.
5. It is of large scale.

#### **Ancillary Unit:**

1. It is that type in which its supplies its 50 % production to the parent unit.
2. Its investment limit is almost one crore.
3. There is assistance required from parents by providing technical and financial support.
4. It can do its business by itself.
5. It is of small scale.

#### **Service sector Units:**

- ✓ The Service Sector, also called tertiary sector, is the third of the three traditional economic sectors.
- ✓ The other two are the primary sector, which covers areas such as farming, mining and fishing; and
- ✓ The secondary sector which covers manufacturing and making things. The service sector provides services, rather than producing material commodities.

Activities in the service sector include retail, banks, hotels, real estate, education, health, social work, computer services, recreation, media, communications, electricity, gas and water supply.

#### **The Service Sector in the Three-Part Economy:**

- ✓ The service or tertiary sector is the third piece of a three-part economy. The first economic sector, the primary sector, covers the farming, mining, and agricultural business activities in the economy.
- ✓ The secondary sector covers manufacturing and business activities that facilitate the production of tangible goods from the raw materials produced by the primary sector. The service sector, though classified as the third economic sector, is responsible for the largest portion of the global economy's business activity.

### **Technology in the Service Industry:**

- ✓ Technology, specifically information technology systems, is shaping the way businesses in the service sector operate.
- ✓ Businesses in this sector are rapidly placing more focus on what is becoming known as the knowledge economy, or the ability to surpass competitors by understanding what target customers want and need, and operate in a way that meets those wants and needs quickly with minimal cost.
- ✓ In nearly all industries within the sector, businesses adopt new technology to bolster production, increase speed and efficiency, and cut down on the number of employees required for operation. This cuts down on costs and improves incoming revenue streams.

### **❖ Time schedule plan, Agencies to be contacted for Project Implementation:**

#### **Project Implementation:**

Project implementation (or project execution) is the phase where visions and plans become reality. This is the logical conclusion, after evaluating, deciding, planning, applying for and finding the financial resources of a project.

#### **Objectives of the Implementation Phase:**

The objectives of the implementation phase can be summarized as follow:

- ✓ Putting them into operation.
- ✓ Achieving tangible change and improvements.
- ✓ Ensuring that new infrastructure, new institutions and new resources are sustainable in every aspect.
- ✓ Ensuring that any unforeseen that might arise during this stage are resolved
- ✓ Ensuring transparency with regard to finances.
- ✓ Ensuring that potential benefits are not captured by elites at the expenses of poorer social groups.

#### **Advantages:**

- ✓ Implementation gives the opportunity to see the plans become a reality.
- ✓ Execution of projects allows end-users to have access to better services and living environment.

- ✓ Success stories and experiences can be shared with specialists from other cities and towns, encouraging others to adopt similar approaches, which in turn may improve water resources management in the local area.

#### **Disadvantages:**

- ✓ Evidence of corrupt practices in procurement will undermine the entire process and waste precious resources.
- ✓ Poor financial planning can lead to budget constraints in the midst of implementation.
- ✓ The decision on when a project is complete often causes friction between implementers and the community. Completion for the implementer is quite straightforward. It is defined by contracts, drawings, and statutes. Communities have a more practical approach to completion. Once the project produces the benefits for which they agreed to undertake it they see no reason to spend further time and money on it.

#### **Project Implementation Unit:**

It is a technical project management unit that serves as the technical secretariat for the GPC. PIU reports directly to GPC and is tasked to implement daily tasks, and manage and oversee the project development.

#### **❖ Assessment of Demand and supply and potential areas of Growth:**

Demand forecasting and sales forecasting are important for any marketing planning and control as it serves the basis for comparison over a period of time. Forecasting helps in identifying and solving marketing and sales problems. Further, they are also used for setting performance standards. If the market knows the different tools and their application and is familiar with the market forces, most often, 90 to 95% of the forecast is good.

#### **Common Marketing Terms Used in Market Forecasting:**

##### **1Market:**

Traditionally market was considered as a place/location/area where buyers and sellers come together and exchange goods and services and money transfer takes place between them. In modern era of internet this traditional concept of market does not hold. In today competitive world, market is considered as a set of existing and potential buyers of a product/service.

## **2 Potential markets:**

It consists of all the consumers who show interest in a specific product/service of an organization.

## **3 Available markets:**

This consists of all the consumers who show interest, have sufficient income to purchase the product/service of an organization

## **4 Qualified available market:**

This consist consumers from available markets who fulfil all the qualifications laid down or stipulated by laws or as social norms. For example, sale of tobacco products is banned for consumers below 18 years of age. Thus only those consumers who are above 18 years from available market will be part of qualified available market.

## **5 Target market:**

This is part of qualified available market to which the organization intends to sale their products.

## **6 Penetrated market:**

This consists of consumers who are already purchasing organizations products.

## **7 Market demand:**

It is the total quantity of products or services that is bought by a specified customer group in a specific geographical area in a specified time period in a specified marketing environment under a specified marketing programme.

## **8 Company demand:**



It is share of company in total market demand.

#### **9 Market forecast:**

At a particular point of time, only one level of marketing expenditure will be incurred. The market demand corresponding to this level is referred to as market forecast.

#### **10 Company forecast:**

This is estimated company sales corresponding to a particular marketing expenditure by the company.

#### **11 Market potential:**

This is the maximum limit of market demand which can be achieved in a particular marketing environment corresponding to a particular level of marketing expenditure.

#### **12 Company sales potential:**

It is the maximum limit of company demand in comparison to its competitor with increase in company marketing expenditure.

Characteristics and examples of various demand states are described in **Table - 7.1**

#### **Methods of Estimating Current Demand:**

For estimating current demand, marketing professionals desire to estimate total market potential, area market potential and total industry sales and market shares.

#### **Total market potential:**

This refers to maximum total aggregate sale of all the organizations in an industry for a specified time period, for a specified geographical area and under organizations specific marketing expenditure and environmental conditions.

**Table 7.1 various demand states**

Sl.No.	Demand state	Characteristic	Example
01	Negative	Consumer does not like the product	A strict vegetarian person will

	demand	and even prepared to pay a price to avoid it.	not take non vegetarian food and may even skip the meal and remain hungry.
02	No demand	Consumers are not interested in the product or not aware about the product.	A farmer may not be interested to adopt new farming technique for one or the other reason or might not be aware about the same.
03	Latent demand	A strong need which cannot be satisfied by existing products.	A single dose of drug which cure deadly disease like AIDS or cancer.
04	Declining demand	Reduction in demand of organizations product/service due to less purchase.	All organizations may face such a situation for their products or services.
05	Irregular demand	Variation in demand is observed on a seasonal, monthly, weekly, daily, or hourly basis.	Demand of ice cream.
06	Full demand	Market demand is in accordance with organizations capacity.	Many organizations experience such a demand state. Cooperative dairy plants of Gujarat have full demand.
07	Overfull demand	Demand for organizations product is more than which it can handle.	Some religious places experience more devotees on some particular day then on other days.
08	Unwholesome demand	Demand of products undesirable from societies point of view	Drugs e.g. marijuana

### ❖ Identify Business Opportunity:

#### Business Opportunity:

A business opportunity involves the sale or lease of any product, service, and equipment and so on that will enable the purchaser-licensee to begin a business.

#### The following general criteria of business opportunity:

- ✓ A business opportunity involves the sale or lease of any product, service, and equipment and so on that will enable the purchaser-licensee to begin a business.
- ✓ The licensor or seller of a business opportunity declares that it will secure or assist the buyer in finding a suitable location or provide the product to the purchaser-licensee.
- ✓ The licensor-seller guarantees an income greater than or equal to the price the licensee buyer pays for the product when it's resold and that there's a market present for the product or service.
- ✓ The initial fee paid to the seller to start the business opportunity must be more than \$500.
- ✓ The licensor-seller promises to buy back any product purchased by the licensee-buyer in the event it can't be sold to prospective customers of the business.
- ✓ Any products or services developed by the seller-licensor will be purchased by the licensee-buyer.
- ✓ The licensor-seller of the business opportunity will supply a sales or marketing program for the licensee-buyer that many times will include the use of a trade name or trademark.

These are the most common types of business opportunity ventures:

### **Distributorships:**

A distributorship involves entering into an agreement to offer and sell the product of another, without being entitled to use the manufacturer's trade name as part of the agent's trade name. Depending on the agreement, the distributor may be limited to selling only that company's goods or may have the freedom to market several different product lines or services from various firms.

### **Rack Jobbing:**

This involves selling another company's products through a distribution system of racks in a variety of stores that are serviced by the rack jobber. In a typical rack-jobbing business opportunity, the agent or buyer enters into an agreement with the parent company to market their goods to various stores by means of strategically-located store racks. Under the agreement, the parent company obtains a number of locations in which it places racks on a consignment basis. It's up to the agent to maintain the inventory, move the merchandise around to attract the customer, and do the bookkeeping. The agent presents the store manager with a copy of the inventory control sheet, which indicates how much merchandise was sold, and then the distributor is paid by the store or location that has the rack, less the store's commission.

### **Vending Machine Routes:**

These are very similar to rack jobbing. The investment is usually greater for this type of business opportunity venture since the businessperson must buy the machines as well as the merchandise being sold in them, but here the situation is reversed in terms of the payment procedure. The vending machine operator typically pays the location owner a percentage based on sales. The secret to a

route's success is to get locations in high-traffic areas and as close to one another as possible. If your locations are spread far apart, you waste time and travelling expenses servicing them and such expenses can spell the difference between profit and loss.

### ❖ **Final Product Selection:**

Product selection is the process in which retailer choose the shape or material of the product as per market demand.

#### **Terms included in Product selection:**

- ✓ Material
- ✓ Shape
- ✓ Colour
- ✓ Price

#### **Steps Involved in New Product Selection Process:**

There are three basic stages/steps involved in product/venture selection. These are **idea generation, evaluation, and choice.**

##### **Idea Generation:**

Product ideas or investment opportunities come from different sources such as business/financial newspapers, research institutes, consulting firms, natural resources, universities, competitors etc.

The starting point for idea generation could be a simple analysis of the business's strengths and weakness. Ideas could also be generated through brainstorming, desk research and various types of management consensus procedures.

##### **Evaluation:**

Screening of the product ideas is the first step in evaluation. Such criteria as the potential value of the product, time money and equipment required, fitting of potential product into the business's long-range sales plan and availability of qualified people to handle its marketability need be thoroughly considered.

Each identified **product/investment opportunity** needs to be adequately evaluated. A **prefeasibility study** of the product market, technical and financial aspect is necessary at this stage to have a clear picture of the associated cost and benefits.

A pre-feasibility is a preliminary version of a feasibility study. It is similar to a feasibility study except that it is less detailed. It is usually carried out for large and complex product/project to determine whether to proceed to the more elaborate feasibility study.

**Choice:**

A choice is made of product which has been found to be commercially viable, technically feasible and economically desirable. At this stage, necessary machinery is set in motion.

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## CHAPTER 3.PROJECT REPORT PREPARATION:

### ❖ Preliminary project report:

- The **Project report** is necessary to get registration, licence, permission & loans from financial institution for his/her report.
- Project report is a mirror through which one sees the entire picture of an organisation in advance.
- Project report is of two types. Such as:

(i) **PPR (Preliminary project report).**

(ii) **DPR (Detailed project report).**

(i) **PPR (Preliminary project report):**

**PPR** is a brief summary of a project describing the expected inputs & outputs like finance, man power, materials, machineries, profit & loss etc. of a project before the project is actually implemented.

### Sample of a PPR:

#### 1. Introduction:

(a) Information about Entrepreneur –

Name: ----- Date of Birth-----

Address----- Age-----

-----

-----

Present monthly Income: Rs-----

Educational Qualification-----

Special training, if any-----

Work experience-----

Category: GEN/SC/ST/PH/EX-MAN

(b) Information about proposed project/product –

Product: -----

Location of Project: -----

Type of Organisation: -----

Name of the Firm: -----

2. **Market Potential:**

Under this section the entrepreneur has to mention the area over which his/her product may be sold. He/she has to mention the present demand of the product in the area division wise with quality & value in a tabular manner.

3. **Basis of Presumption:**

Under this section the entrepreneur has to maintain following details:

- a) The average working hour/day or per month or per year-----
- b) When the plant will operate in its full capacity-----
- c) Payback period of loans-----
- d) Percentage of margin money provided by the Promoter-----
- e) Rate of interest/working capital loans-----
- f) Cost/rent of land & building-----

4. **Implementation Schedule:**

Under this section the entrepreneur has to maintain following details:

- a) Preparation of project report, selection of site, registration-----
- b) Section of loans-----
- c) Construction of building, procurement of machinery, equipment & installation-----
- d) Arrangement of utilities like, electricity, water etc-----
- e) Procurement of raw materials, recruitment of labour & staff-----
- f) Commissioning of plant & trial production-----

5. **Production Target:**

Items	Total quantity/year	Sales volume/year	Capacity utilisation
A			
B			
C			
D			
E			

6. **Technical details:**

Under this section the entrepreneur has to maintain following Technical details:

- a) Details of manufacturing process-----
- b) Quality of standard-----
- c) Power requirement-----
- d) Pollution control measures-----
- e) Affluent disposal energy conservation measures-----

## 7. Financial details:

Under this section the entrepreneur has to maintain amount of investment needed on various items to arrive at the total capital required for the project:

### Fixed capital:

#### A. Land and Building:

Sl.No.	Particulars	Area	Value
01	Land	--	--
02	Building	--	--

(For building Rs. 250 per square feet for ACC roof and Rs. 250 per square feet for RCC roof is the present standard of valuation).

#### B. Land and Building:

Sl. No.	Description of Machinery	No. required	Price rate	Total value	Name & address of suppliers

Total value in Rs----- An installation and electrification charges i.e. 10% of the value of plant & machinery Rs..... = Rs.....

#### C. Miscellaneous Fixed Assets:

1. Tools and Tackles: Rs.....
2. Furniture: Rs.....
3. Office equipments: Rs.....
- Total Rs.....
- Total fixed Assets = A+B+C



**D. Preliminary & Preparative Expenses:**

This includes the amount to be spent by the entrepreneur to get registration, licence, permission, security deposits, travelling and allied expenses to get licence, permission, registration etc.

**Working capital:****A. Raw material:**

Sl. No.	Items	Total monthly requirement in quantity	Value in Rs.	Sources
01				
02				
03				
04				

Total raw materials required per month.....Rs.....

**B. Salaries & wages of labour/staff per month:**

Sl. No.	Name of the post	No. of person	Rate per month	Total expenses
01	Manager			
02	Supervisor			
03	Skilled workers			
04	Unskilled workers			
05	Clerk/ Accountant			
06	Sales representatives			
07	Store-keeper			
08	Peons			
09	Watchman			
Total Rs.....				
Total salary & wages p.m. Rs.....				
Add 20% of the total Rs.....				

Grand total RS.....
---------------------

**C. Utilities( per month):**

Sl. No.	Particulars	Monthly requirement in quantity	Monthly expenses in Rs.
01	Electricity		
02	Water		
03	Coal		
04	Oil		
05	LPG		
Total Rs.....			

**D. Other contingent expenses:**

Sl. No.	Other Expenses	Rupees
01	Transportation expenses	
02	Repair & maintenance @1%	
03	Consumable stores	
04	Postage & Stationary	
05	Telephone	
06	Advertising & Publicity	
07	Insurance charges	
08	Rent	
Total working capital = A+B+C+D = Rs.....		

**8. Total Capital Investment/cost of the project:**

- a) Working capital p.m. x3 = Rs.....
- b) Fixed capital = Rs.....
- c) Preliminary expenses = Rs.....
- Total cost of the project = Rs.....

**9. Cost of production per annum:**

- a) Working capital p.m.  $\times 12$  = Rs.....
- b) Depreciation:
- (i) Plant & machinery @ 10% = Rs.....
- (ii) Building @ 5% = Rs.....
- (iii) Miscellaneous fixed assets @ 20% = Rs.....
- Total = Rs.....
- c) Interest per annum on the total investment, say @ 15%: = Rs.....
- Total cost = Rs.....

**10. Turnover per annum:**

Sl.No.	Items	Quantity	Value in rupees
01	A	45 tonnes	
02	B	68 tonnes	
03	C	1 lakh units	
04	D	25000 litres	
Total Rs.....			

**11. Profits before Tax:**

Turnover per annum in rupees – Cost of production per annum = Profits before tax.

[I.e. Sl. No. 10 – Sl. No. 11 (Profit before taxes)]

**12. Breakeven point (BEP):**

$$\text{BEP} = \frac{\text{Total fixed cost}}{\text{Total fixed cost} + \text{profit}} \times 100$$

Where Total fixed cost = Total depreciation+ Total interest+ 40% salary and other contingent expenses and of utilities.

**13. Profitability ratio:**

$$\text{Profitability} = \frac{\text{Profit}}{\text{Turnover}} \times 100$$

**14. Rate of return on investment:**

$$R = \frac{\text{Profit}}{\text{Total investment}} \times 100$$

**Note:** [In addition to the above Performa of a preliminary project report, the entrepreneur is asked to submit the names and addresses of some prominent persons as referee. He/she may mention the list of organisations or persons with whom agreements have been made for purchase, sale, supply, technology tie-up, marketing tie-up etc. He/she also to mention the names and addresses of some prominent persons as referees, After the PPT is found to be satisfactory; the entrepreneur has to prepare a detailed project report (DPR)].

#### **Detailed Project Report (DPR):**

- Detailed project report is nothing but a detailed elaboration of each and every information and estimates mentioned in the preliminary project report.
- While preparing a detailed project report (DPR) the entrepreneur may take the help of experts to do the job.
- Preparation of the DPR requires a lot of time and hence it a voluminous work.
- Details analysis of each and every item is necessary. For example, furniture is one item in the PPR but in the preparation of DPR all the furniture are to be mentioned in details like items, size, specification, use, price, quality, name of supplier, date of supply, date of payment, transportation expenses, installation of such furniture's etc.
- Similarly finance required to be made detailed so far date of requirement, purpose of requirement, amount of requirement, person to whom such payment to be made, source of the fund to make the payment etc.
- Detailed project reports are also available with the consultants and can be purchased by the entrepreneur.
- DPR for different products are also available in the form of book which may be helpful for the entrepreneur to prepare his/her own DPR.

#### **Techno economic Feasibility:**

##### **Introduction:**

Objective of Techno-Economic Feasibility Studies/ Detailed Project Reports is to determine the technical feasibility and financial viability of the project assess the risks associated with the project and enumerate imminent actions that are required to be taken. It helps a client get a detailed evaluation of a project.

##### **Coverage:**

Techno-Economic Feasibility Studies/ Detailed Project Reports cover the following based on the clients requirement:

- **Markets:** It covers estimated future sales revenue of the project based on estimated sales volumes and price.
- **Raw Materials & Fuel:** It estimates the adequacy of the quality and quantity of the raw materials and fuel for the project, make an estimate of its cost.
- **Plant Sitting, Location & Infrastructure:** It assesses the existing infrastructure and actions required to develop the infrastructure necessary to set up the project.
- **Project Technical Concept:** This is core deliverable of the project and covers plant capacity, equipment sizing, storages, plant auxiliaries, system engineering, electrical engineering, civil

engineering, Control & Automation engineering, Quality Control & Assurance, Captive Power Plant and Waste Heat recovery system (WHR) based on the project requirement.

- **Logistics:** Inbound and outbound logistics and logistics planning.
- **Environment:** Applicable Regulatory Framework and Environmental Impact of Project.
- **Implementation Planning.**
- **Human Resources:** Requirement and cost.
- **Investment Cost:** Fund requirement.
- **Operating Cost:** It covers cost of raw material, utilities, overheads, etc.
- **Financial Appraisal:** It covers project profitability, IRR, NPV, payback, etc.
- **Risks & Mitigation.**

### **Methodology:**

Broad methodology of execution involves:

- Data collection
- Data analysis
- Report and Project formulation

### **Benefits:**

It helps a client make an investment decision based on:

- Technical feasibility of the project.
- Financial viability of the project.
- The risks associated with the project.
- Actions required for risk mitigation.

### **Project Viability:**

Every small-business project has stated outcomes that need to be met in order for it to be “viable,” or prudent and profitable. For example, if you decide to launch a new marketing campaign, the project’s viability -- or its positive outcomes -- will be judged on whether the new business the campaign attracts will be worth the time and costs associated with designing and launching the campaign initially. Determining the viability of a project requires an evaluation of a number of different factors, and viability potential will differ from one small business to the next.

Such as cost, time, manpower, quality etc.

**Cost:**A project is not typically considered viable if its value exceeds its costs. Sometimes the cost viability of a project can change over the course of the project’s development or implementation. For example, if you have a particular amount of money designated for a project, and it appears actual costs will exceed the budget; the project is likely to lose its viability. Many factors can impact costs, such as an increase in the cost of supplies or materials or the scope of the project.

**Time:**A project that is not on track from a deadline perspective can lose its viability. For example, if you have a project to design and print invitations for a grand opening event, if time delays result in the invitations going to print the day before the event, the project loses its viability. Invitations issued after an event has taken place are worthless, and continuing to pursue their production wastes time and money. Likewise, delays that result in additional fees -- such as rushed late printing fees -- may also render a project non-viable.

**Manpower:**Losing key members of your staff can cause a project to lose its viability. For example, if you have a graphic designer on staffs who is developing your new logo, and that person quits

without notice, the project may lose its viability, because the manpower anticipated for the role no longer exists. The project has the potential to regain its viability if someone else can take over the task or it can be effectively outsourced to another party.

**Quality:** If the quality of a project is not attainable as anticipated, it can lose its viability. For example, if you own a small construction business and provide an estimate for building a custom home, that estimate is based largely on the current price of home-building materials. If the price goes up suddenly or the same quality of materials is no longer available, the project, as planned, loses its viability. It can regain its viability if materials of equal quality and similar price can be obtained.

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## **CHAPTER-4: MANAGEMENT PRINCIPLE:**

### **➤ MANAGEMENT:**

DEFINITION: Management is the coordination and administration of tasks to achieve a goal. Such administration activities include setting the organization's strategy and coordinating the efforts of staff to accomplish these objectives through the application of available resources.

### **PRINCIPLES OF MANAGEMENT:**

- Division of Work – This principle of management is based on the theory that if workers are given a specialized task to do, they will become skilful and more efficient in it than if they had a broader range of tasks. Therefore, a process where everyone has a specialized role will be an efficient one.
- Authority – This principle looks at the concept of managerial authority. It looks at how authority is necessary in order to ensure that managerial commands are carried out. If managers did not have authority then they would lack the ability to get work carried out. Managers should use their authority responsibly and ethically.
- Discipline – This principle relates to the fact that discipline is needed within an organization for it to run effectively. Organizational rules, philosophies, and structures need to be met. In order to have disciplined workers, managers must build a culture of mutual respect and motivation.
- Unity of command – There should be a clear chain of command in place within an organization. An employee should know exactly whose instructions to follow.
- Unity of direction – Work should be organized in a way that means employees are working in harmony toward a shared objective or goal using a shared method or procedure.
- Subordination individual interests to the collective interests – The interests of the organization as a whole should take precedence over the interests of any individual employee or group of employees. This encourages a team spirit and collective mentality of all for one and one for all.
- Remuneration – In order to motivate and be fair to employees, they should be paid a reasonable rate for the work they carry out. An organization that underpays will struggle to attract quality workers who are motivated.
- Centralization – This principle relates to whether decisions should be made centrally, as in from the top down, or in a more democratic way, from the bottom up. Different decision making processes are appropriate for different types of decisions.
- Scalar chain – This relates to the principle of a clear chain of communication existing between employees and superiors. The chain should be respected, unless speedy communication is vital, in which case the chain may be bypassed if all parties consent.
- Order – This relates to the proper use of resources and their effective deployment in a structured fashion.
- Equity – Managers should behave ethically towards those they manage. Almost every organization in the modern world will have a written set of policies and procedures which will outline exactly what is expected from staff at all levels.
- Stability of tenure of personnel – It is seen as desirable within an organization to have a low staff turnover rate. This is due to the benefits that come with having experienced staff and the time and expense needed to train new ones. There should be a clear and efficient method of filling any staff vacancies that arise.
- Initiative – Employees that have an input as to how to best do their job are likely to feel more motivated and respected. Many organizations place a great deal of emphasis on listening to the concerns of staff.
- Morale – Keeping a high level of morale and team spirit is an essential part of having the most productive organization possible. Happy and motivated employees are far more likely to be productive and less absent.

## **FUNCTIONS OF MANAGEMENT:**

**The functions of management may be classified as:**

1. Forecasting
2. Planning,
3. Organizing,
4. Staffing,
5. Co-ordinating
6. Directing,
7. Motivating
8. Communication and
9. Controlling

### **1. Forecasting:**

Organizational **forecasting** is the process of estimating future events for the purpose of effective planning and decision making. It is one of the most critical organizational **functions** as the **forecast** enables **managers** to anticipate the future and to plan accordingly.

### **2. Planning:**

Planning is concerned with the determination of the objectives to be achieved and the course of action to be followed to achieve them.

Before starting any action, one has to decide how the work will be performed and where and how it has to be performed.

Thus, planning implies decision-making as to what is to be done, how it is to be done, when it is to be done and by whom it is to be done.

Planning helps in achieving the objectives efficiently and effectively. Planning involves selecting of objectives and strategies, policies and programmes and procedures for achieving them.

For any business activity, planning is a prerequisite for doing anything and also to ensure the proper utilisation of the resources of the business concern to achieve the desired goals.

### **3. Organizing:**

**Organising involves the following process:**

- (a) Determining and defining the activities involved in achieving the objectives laid down by the management;



- (b) Grouping the activities in a logical pattern;
- (c) Assigning the activities to specific positions and people; and
- (d) Delegating authority to their positions and people so as to enable them to perform the activities assigned to them.

Organising function helps in increasing the efficiency of the enterprise. Further, by avoiding repetition and duplication of activities, it reduces the operation cost of the enterprise.

#### **4. Staffing:**

Every enterprise is very much concerned with the quality of its people, especially its managers. The staffing function is concerned with this aspect of management. According to Harold Koontz and Cyril O' Donnell, "the managerial function of staffing involves manning the organisational structure through proper and effective selection, appraisal and development of personnel to fill the roles designed into the structure."

#### **Thus, the staffing functions involve:**

- (a) Proper selection of candidates for positions;
- (b) Proper remuneration;
- (c) Proper training and development so as to enable them to discharge their organisational functions effectively; and
- (d) Proper evaluation of personnel.

Staffing function is performed by every manager of the enterprise as he is actively associated with the recruitment, selection, training and appraisal of his subordinates.

#### **5. Coordinating:**

Coordination is the process of synchronising the diverse functions of domains and securing unity of action. It is compared to chariot driven by multiple horses. The charioteer has to drive all the horses in one direction. Similar is the case of an organization.

**Coordination** is the **function of management** which ensures that different departments and groups work in sync. Therefore, there is unity of action among the employees, groups, and departments. It also brings harmony in carrying out the different tasks and activities to achieve the organization's objectives efficiently.

#### **6. Directing:**

Directing is one of the important functions of management and is the art and process of getting things done.

Directing concerns the total manner in which a manager influences the action of his subordinates. It is the final action of a manager in getting others to act after all preparations have been completed.

Directing is concerned with actuating the members of the organisation to work efficiently and effectively for the attainment of organisation goals.

## **7. Motivating:**

The term motivation is derived from the word 'motive' which means a need, or an emotion that prompts an individual into action.

Motivation is the psychological process of creating urge among the subordinates to do certain things or behave in the desired manner. It is a very important function of management. The importance of motivation can be realised from the fact that performance of a worker depends upon his ability and the motivation.

Thus, a manager has to provide some personal incentive to the subordinates to motivate, persuade and inspire them for contributing their best towards the achievement of enterprise objectives.

## **8. Communicating:**

Communication constitutes a very important function of management.

Communication is the means by which the behaviour of the subordinate is modified and change is effected in their actions.

Communication is a two-way process as it involves both information and understanding. It may be written, oral, and gestural. Communication is said to be formal when it follows the formal channels provided in the organisation structure. It is informal communication, when it does not follow the formal channels.

The word 'communication' has been derived from the Latin word 'communis' which means 'common'. Thus, communication means sharing of ideas in common. The essence of communication is getting the receiver and the sender tuned together for a particular message. It refers to the exchange of ideas, feelings, emotions and knowledge and information between two or more persons.

## **9. Controlling:**

Controlling is related to all other management functions. It is concerned with seeing whether the activities have been or being performed in conformity with the plans.

Controlling involves the following sub-functions:

- (a) Determination of standards for measuring work performance.
- (b) Measurement of actual performance.
- (c) Comparing actual performance with the standards.
- (d) Finding variances between the two and reasons for variances.
- (e) Taking corrective actions to ensure attainment of objectives.

### Levels of Management:

The term “**Levels of Management**” refers to a line of demarcation between various managerial positions in an organization. The number of levels in management increases when the size of the business and work force increases and vice versa. The level of management determines a chain of command, the amount of authority & status enjoyed by any managerial position. The levels of management can be classified in three broad categories:

1. **Top level / Administrative level**
2. **Middle level / Executory**
3. **Low level / Supervisory / Operative / First-line managers**

Managers at all these levels perform different functions. The role of managers at all the three levels is discussed below:



### LEVELS OF MANAGEMENT

#### 1. **Top Level of Management**

It consists of board of directors, chief executive or managing director. The top management is the ultimate source of authority and it manages goals and policies for an enterprise. It devotes more time on planning and coordinating functions.

The role of the top management can be summarized as follows -

- a. Top management lays down the objectives and broad policies of the enterprise.
- b. It issues necessary instructions for preparation of department budgets, procedures, schedules etc.
- c. It prepares strategic plans & policies for the enterprise.
- d. It appoints the executive for middle level i.e. departmental managers.
- e. It controls & coordinates the activities of all the departments.
- f. It is also responsible for maintaining a contact with the outside world.

- g. It provides guidance and direction.
- h. The top management is also responsible towards the shareholders for the performance of the enterprise.

## 2. Middle Level of Management

The branch managers and departmental managers constitute middle level. They are responsible to the top management for the functioning of their department. They devote more time to organizational and directional functions. In small organization, there is only one layer of middle level of management but in big enterprises, there may be senior and junior middle level management. Their role can be emphasized as -

- a. They execute the plans of the organization in accordance with the policies and directives of the top management.
- b. They make plans for the sub-units of the organization.
- c. They participate in employment & training of lower level management.
- d. They interpret and explain policies from top level management to lower level.
- e. They are responsible for coordinating the activities within the division or department.
- f. It also sends important reports and other important data to top level management.
- g. They evaluate performance of junior managers.
- h. They are also responsible for inspiring lower level managers towards better performance.

## 3. Lower Level of Management

Lower level is also known as supervisory / operative level of management. It consists of supervisors, foreman, section officers, superintendent etc. According to *R.C. Davis*, "Supervisory management refers to those executives whose work has to be largely with personal oversight and direction of operative employees". In other words, they are concerned with direction and controlling function of management. Their activities include -

- a. Assigning of jobs and tasks to various workers.
- b. They guide and instruct workers for day to day activities.
- c. They are responsible for the quality as well as quantity of production.
- d. They are also entrusted with the responsibility of maintaining good relation in the organization.
- e. They communicate workers problems, suggestions, and recommendatory appeals etc to the higher level and higher level goals and objectives to the workers.
- f. They help to solve the grievances of the workers.
- g. They supervise & guide the sub-ordinates.
- h. They are responsible for providing training to the workers.
- i. They arrange necessary materials, machines, tools etc for getting the things done.
- j. They prepare periodical reports about the performance of the workers.
- k. They ensure discipline in the enterprise.
- l. They motivate workers.
- m. They are the image builders of the enterprise because they are in direct contact with the workers.

## Difference between Management and Administration:



Simply put, **management** can be understood as the skill of getting the work done from others. It is not exactly same as **administration**, which alludes to a process of effectively administering the entire organization. The most important point that differs management from the administration is that the former is concerned with directing or guiding the operations of the organization, whereas the latter stresses on laying down the policies and establishing the objectives of the organization.

Broadly speaking, management takes into account the directing and controlling functions of the organization, whereas administration is related to planning and organizing function.

With the passage of time, the distinction between these two terms is getting blurred, as management includes planning, policy formulation, and implementation as well, thus covering the functions of administration. In this article, you will find all the substantial differences between management and administration.

Content: Management Vs Administration

1. [Comparison Chart](#)
2. [Definition](#)
3. [Key Differences](#)
4. [Conclusion](#)

### Comparison Chart:

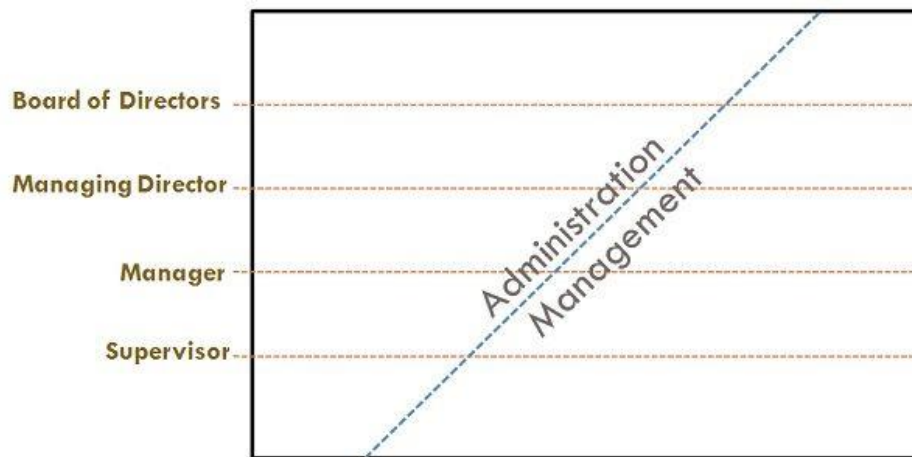
BASIS FOR COMPARISON	MANAGEMENT	ADMINISTRATION
Meaning	An organized way of managing people and things of a business organization is called the Management.	The process of administering an organization by a group of people is known as the Administration.
Authority	Middle and Lower Level	Top level
Role	Executive	Decisive

<b>BASIS FOR COMPARISON</b>	<b>MANAGEMENT</b>	<b>ADMINISTRATION</b>
Concerned with	Policy Implementation	Policy Formulation
Area of operation	It works under administration.	It has full control over the activities of the organization.
Applicable to	Profit making organizations, i.e. business organizations.	Government offices, military, clubs, business enterprises, hospitals, religious and educational organizations.
Decides	Who will do the work? And How will it be done?	What should be done? And When is should be done?
Work	Putting plans and policies into actions.	Formulation of plans, framing policies and setting objectives
Focus on	Managing work	Making best possible allocation of limited resources.
Key person	Manager	Administrator
Represents	Employees, who work for remuneration	Owners, who get a return on the capital invested by them.
Function	Executive and Governing	Legislative and Determinative

### **Definition of Management:**

Management is defined as an act of managing people and their work, for achieving a common goal by using the organization's resources. It creates an environment under which the manager and his subordinates can work together for the attainment of group objective. It is a group of people who use their skills and talent in running the complete system of the organization. It is an activity, a function, a process, a discipline and much more.

Planning, organizing, leading, motivating, controlling, coordination and decision making are the major activities performed by the management. Management brings together 5M's of the organization, i.e. Men, Material, Machines, Methods, and Money. It is a result oriented activity, which focuses on achieving the desired output.



### **Difference between Management and Administration:**

#### **Definition of Administration:**

The administration is a systematic process of administering the management of a business organization, an educational institution like school or college, government office or any nonprofit organization. The main function of administration is the formation of plans, policies, and procedures, setting up of goals and objectives, enforcing rules and regulations, etc.

Administration lays down the fundamental framework of an organization, within which the management of the organization functions.

The nature of administration is bureaucratic. It is a broader term as it involves forecasting, planning, organizing and decision-making functions at the highest level of the enterprise. Administration represents the top layer of the management hierarchy of the organization. These top level authorities are the either owners or business partners who invest their capital in starting the business. They get their returns in the form of profits or as a dividend.

#### **Key Differences between Management and Administration:**

The major differences between management and administration are given below:

1. Management is a systematic way of managing people and things within the organization. The administration is defined as an act of administering the whole organization by a group of people.
2. Management is an activity of business and functional level, whereas Administration is a high-level activity.
3. While management focuses on policy implementation, policy formulation is performed by the administration.

4. Functions of administration include legislation and determination. Conversely, functions of management are executive and governing.
5. Administration takes all the important decisions of the organization while management makes decisions under the boundaries set by the administration.
6. A group of persons, who are employees of the organization is collectively known as management. On the other hand, administration represents the owners of the organization.
7. Management can be seen in the profit making organization like business enterprises. Conversely, the Administration is found in government and military offices, clubs, hospitals, religious organizations and all the non-profit making enterprises.
8. Management is all about plans and actions, but the administration is concerned with framing policies and setting objectives.
9. Management plays an executive role in the organization. Unlike administration, whose role is decisive in nature.
10. The manager looks after the management of the organization, whereas administrator is responsible for the administration of the organization.
11. Management focuses on managing people and their work. On the other hand, administration focuses on making the best possible utilization of the organization's resources.

#### **Conclusion:**

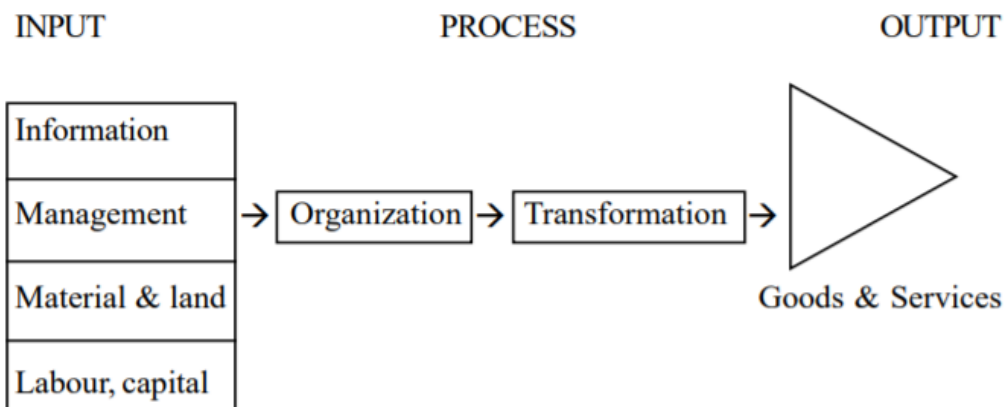
Theoretically, it can be said that both are different terms, but practically, you will find that the terms are more or less same. You would have noticed that a manager performs both administrative and functional activities. Although the managers who are working on the topmost level are said to be the part of administration whereas the managers working on the middle or lower level represents management. So, we can say that administration is above management.



## CHAPTER 5.FUNCTIONAL AREAS OF MANAGEMENT:

### a) PRODUCTION MANAGEMENT:

- Production is nothing but the conversion of raw materials into finished products.
- **Production Management** can be defined as the management of the conversion process, which converts land, labour, capital, and management inputs into desired outputs of goods and services. It is also concerned with the design and the operation of systems for manufacture, transport, supply or service.
- It is that branch of management which looks after all the activities relating to the manufacturing of goods & services of an organisation.
- In any manufacturing system, the job of a Production Manager is to manage the process of converting inputs into the desired outputs.
- It is concerned with the production of goods and services, and involves the responsibility of ensuring that business operations are efficient and effective.
- It is also the management of resources, the distribution of goods and services to consumers.



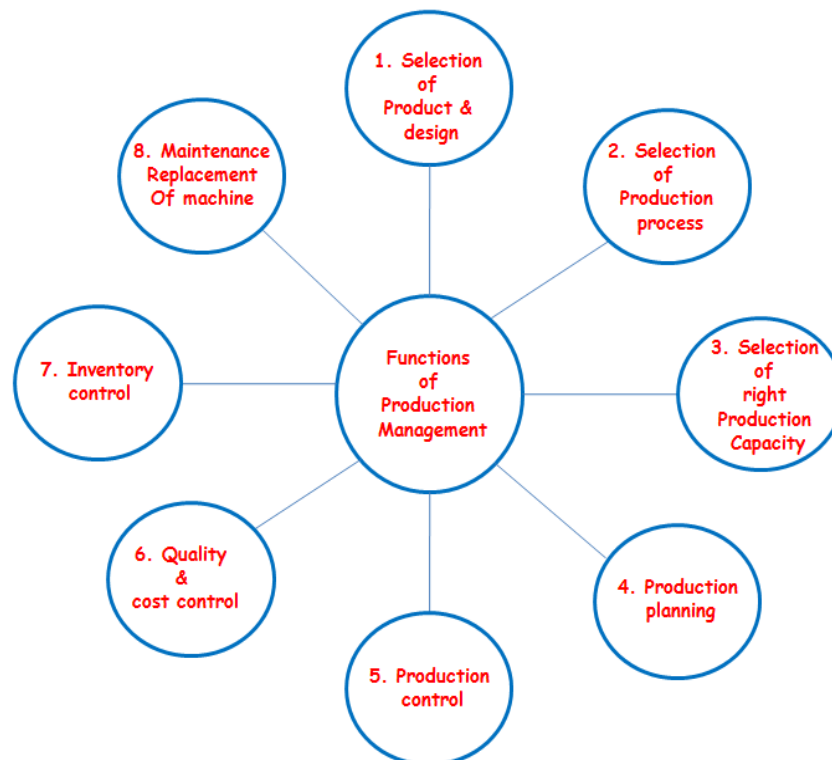
#### ❖ Functions, Activities of Production management:

##### ➤ Activities of production management:

The main activities of production management can be classified as,

- i) Procurement of input resources namely material, land, labour, equipment and capital.
- ii) Product design and development to determine the production process for transforming the input factors into the output of goods and services.
- iii) Supervision and control of the transformation process for the efficient production of goods and services.

➤ **Functions of production management:**



The functions of production management are as follows:

**1. Selection of Product and Design:**

Production management first selects the right product for production. Then it selects the right design for the product. Care must be taken while selecting the product and design because the survival and success of the company depend on it. The product must be selected only after detailed evaluation of all the other alternative products. After selecting the right product, the right design must be selected. The design must be according to the customers' requirements. It must give the customers maximum value at the lowest cost. So, production management must use techniques such as value engineering and value analysis.

**2. Selection of Production process:**

Production management must select the right production process. They must decide about the type of technology, machines, material handling system, etc.

**3. Selection of right production capacity:**

Production management must select the right production capacity to match the demand for the product. This is because more or less capacity will create problems. The production manager must plan the capacity for both short and long term's production. He must use break-even analysis for capacity planning.

**4. Production Planning:**

Production management includes production planning. Here, the production manager decides about the routing and scheduling.

**Routing** means deciding the path of work and the sequence of operations. The main objective of routing is to find out the best and most economical sequence of operations to be followed in the manufacturing process. Routing ensures a smooth flow of work.

**Scheduling** means to decide when to start and when to complete a particular production activity.

**5. Production control:**

Production management also includes production control. The manager has to monitor and control the production. He has to find out whether the actual production is done as per plans or not. He has to compare actual production with the plans and finds out the deviations. He then takes necessary steps to correct these deviations.

**6. Quality & Cost control:**

Production management also includes quality and cost control. Quality and Cost Control are given a lot of importance in today's competitive world. Customers all over the world want good-quality products at cheapest prices. To satisfy this demand of consumers, the production manager must continuously improve the quality of his products. Along with this, he must also take essential steps to reduce the cost of his products.

**7. Inventory control:**

Production management also includes inventory control. The production manager must monitor the level of inventories. There must be neither over stocking nor under stocking of inventories.

If there is an **overstocking**, then the working capital will be blocked, and the materials may be spoiled, wasted or misused.

If there is an **under stocking**, then production will not take place as per schedule, and deliveries will be affected.

**8. Maintenance Replacement of Machine:**

Production management ensures proper maintenance and replacement of machines and equipments. The production manager must have an efficient system for continuous inspection (routine checks), cleaning, oiling, maintenance and replacement of machines, equipments, spare parts, etc. This prevents breakdown of machines and avoids production halts.

❖ **Productivity:**

- **Productivity** is a relationship between the output (product/service) and input (resources consumed in providing them) of a business system. The ratio of aggregate output to the aggregate input is called productivity.

$$\text{Productivity} = \text{output/Input}$$

- For survival of any organization, this productivity ratio must be at least 1. If it is more than 1, the organization is in a comfortable position. The ratio of output produced to the input resources utilized in the production.

**Importance of Productivity:**

- It helps to cut down cost per unit and thereby improve the profits.

- Gains from productivity can be transferred to the consumers in form of lower priced Products or better quality products.
- These gains can also be shared with workers or employees by paying them at higher rate.
- A more productive entrepreneur can have better chances to exploit expert opportunities.
- It would generate more employment opportunity.
- Overall productivity reflects the efficiency of production system.
- More output is produced with same or less input.
- The same output is produced with lesser input.
- More output is produced with more input.
- The proportional increase in output being more than the proportional increase in input.

#### ❖ **Quality control:**

- **Quality Control (QC)** may be defined as a system that is used to maintain a desired level of quality in a product or service. It is a systematic control of various factors that affect the quality of the product. It depends on materials, tools, machines, type of labour, working conditions etc. QC is a broad term, it involves inspection at particular stage but mere inspection does not mean QC. As opposed to inspection, in quality control activity emphasis is placed on the quality future production. Quality control aims at prevention of defects at the source, relies on effective feedback system and corrective action procedure. Quality control uses inspection as a valuable tool.

#### **Types of Quality control:**

QC is not a function of any single department or a person. It is the primary responsibility of any supervisor to turn out work of acceptable quality. Quality control can be divided into three main sub-areas, those are:

##### **1. Off-line quality control:**

Its procedure deal with measures to select and choose controllable product and process parameters in such a way that the deviation between the product or process output and the standard will be minimized, Much of this task is accomplished through product and process design.

##### **Example:**

Taguchi method, principles of experimental design etc.

##### **2. Statistical process control:**

SPC involves comparing the output of a process or a service with a standard and taking remedial actions in case of a discrepancy between the two. It also involves determining whether a process can produce a product that meets desired specification or requirements. On-line SPC means that information is gathered about the product, process, or service while it is functional. The corrective action is taken in that operational phase. This is real-time basis.

##### **3. Acceptance sampling plans:**

A plan that determines the number of items to sample and the acceptance criteria of the lot, based on meeting certain stipulated conditions (such as the risk of rejecting a good lot or accepting a bad lot) is known as an acceptance sampling plan.

### Step in Quality control:

- ✓ Formulate quality policy.
- ✓ Set the standards or specifications on the basis of customer's preference, cost and profit.
- ✓ Select inspection plan and set up procedure for checking.
- ✓ Detect deviations from set standards of specifications.
- ✓ Take corrective actions or necessary changes to achieve standards.
- ✓ Decide on salvage method *i.e.*, to decide how the defective parts are disposed of, entire scrap or rework.
- ✓ Coordination of quality problems.
- ✓ Developing quality consciousness both within and outside the organization.
- ✓ Developing procedures for good vendor-vendee relations.

### Objectives of Quality control:

Following are the objectives of Quality control,

- ✓ To improve the companies income by making the production more acceptable to the customers, *i.e.*, by providing long life, greater usefulness, maintainability etc.
- ✓ To reduce companies cost through reduction of losses due to defects.
- ✓ To achieve interchange ability of manufacture in large scale production.
- ✓ To produce optimal quality at reduced price.
- ✓ To ensure satisfaction of customers with productions or services or high quality level, to build customer goodwill, confidence and reputation of manufacturer.
- ✓ To make inspection prompt to ensure quality control.
- ✓ To check the variation during manufacturing.

### Benefits of Quality control:

- ✓ Improving the quality of products and services.
- ✓ Increasing the productivity of manufacturing processes, commercial business, and corporations.
- ✓ Determining and improving the marketability of products and services.
- ✓ Reducing consumer prices of products and services.
- ✓ Improving and/or assuring on time deliveries and availability.
- ✓ Assisting in the management of an enterprise.
- ✓ Reducing manufacturing and corporate costs.

### ❖ Production, planning & control:

#### Production:

- ✓ **Production** is nothing but the conversion of raw materials into finished goods or products.
- ✓ It is the organised activities of an organisation through which raw materials with the help of other inputs are transferred into finished goods.

#### Planning:

- ✓ **Planning** is nothing but forecasting & deciding in advance a future course of action
- ✓ Planning is essential to carry out certain activities in the best possible manner.
- ✓ It involves selection of the desired course of action to achieve the goal of the enterprise.

#### Control:

- ✓ **Controlling** involves checking & ensuring that the plans are carried on as per expectation.

- ✓ Control also includes checking & ensuring that the actual performance doesn't deviate from the standard set earlier.

#### **Production control:**

- ✓ **Production control** guides the flow of production, so that, products of desired quality are produced at the appropriate time in the most economical manner.
- ✓ The main aim of production control is to facilitate the flow of manufacturing activities as carried on as per plans.

#### **Importance of Production, planning & control:**

- ✓ Production, planning & control programme helps to increase productivity by means of planning production & controlling production.
- ✓ At each & every stage to ensure speedy, economical & efficient use of all available resources.
- ✓ An efficient production planning & control technique helps to reduce the idleness of men, machines, materials & money. It also minimises the cost of converting the raw materials into finished goods.
- ✓ PP&C programme arranges the production process in such sequences that production target is achieved in time.
- ✓ PP&C is an important tool in the hands of management in case of continuous industries, where production is continuous & units produced are identical in nature. But where various goods are manufactured, it is difficult to maintain the PP&C activities.
- ✓ PP&C programme is highly essential for cost control purposes. A well organised PP&C mechanism ensures optimum utilisation of men, machines, materials & money, so they work at their full capacity.
- ✓ PP&C programme helps in regulating production & maintaining quality.
- ✓ PP&C programme brings many benefits to many persons. The manufacturers achieve increased production, higher productivity, delivery of goods to customers in time, low cost of production & higher profits, so the payment of the employees timely increases.

#### **Steps in Production, Planning & Control:**

The following steps are involved for implementation of the PP&C programme.

- ✓ **Planning:** It is the 1<sup>st</sup> step in PP&C programme. Under this, the management has to prepare a board plan for the production activities of the organisation.
- ✓ **Routing:** Routing determines the way of exact route through which all the raw materials will flow from one process to another until its completion as finished products. It is deciding in advance the path over which the work will flow one stage to another.
- ✓ **Scheduling:** After the exact route decided, the next step is to make a schedule i.e. a list or time table for the production activities. Scheduling involves fixation of time & date for starting & completion of each operation & the entire operations.
- ✓ **Loading:** It is associated with the quantity of works assigned to a machine or worker to be done or performed by that machine or individual. Loading of works to different machines,

processes, sections, departments & duties as per the capacities of the department or machine or individual.

- ✓ **Dispatching:** Dispatching involves the actual initiation of work to carry on the production & ensure that the target in scheduling is achieved well in time. Dispatching involves actual execution of the plans in the manner prescribed & route decided. It also involves issue of necessary materials to different individuals, processes & sections.
- ✓ **Follow-up:** It involves checking the progress of the work & see whether the work is being perform as per plans. Follow up ensures that the raw materials & equipments etc reach the shops in time as per schedule.
- ✓ **Inspection:** Inspection is the last stage of PP&C programme. It involves checking the quality of goods produce & ensures that they confirm to the standard. Inspection also includes the appointment of the inspections at various points where the chances of deviation are very high.

## **b) INVENTORY MANAGEMENT:**

### **❖ Need for Inventory Management:**

#### **Inventory Control:**

Inventory refers to the stock of materials which are meant for normal consumption or use. In an organisation, inventory includes; stock of raw materials, purchase parts, share parts, tools, equipments, stationary & miscellaneous supplies.

#### **Needs for Inventory management:**

- ✓ To carry on uninterrupted production activities.
- ✓ To keep customers commitments.
- ✓ To take advantage of bulk purchase & price fluctuation, better terms & condition.
- ✓ To meet the current & new demand of the people in time.
- ✓ To beat the uncertainties on the availability of material.
- ✓ To maintain productivity, efficiency & effective utilisation of the available resources.
- ✓ Inventory of finished goods & work in progress are also meant to be maintained to keep the men & machineries working & for meeting seasonal demand.
- ✓ To achieve economy is the performance of activities.
- ✓ For better management of the entire organisation.

### **❖ Models/Techniques of Inventory management:**

Different types of materials are required by an organisation from time to time. When which materials in what quantity shall be required cannot be easily known much in advance. So when the need arises the material may not be available easily or there may be delay in setting the materials due to which production activities may come to a halt. So techniques followed to maintain the inventory control, so the techniques are:

- ✓ Maintain the materials for future and current requirement.
- ✓ To procure the materials when the price is cheap, quality is good & terms and condition are better.
- ✓ Collection of such materials in small quantity & frequency may be costly affair, so it is essential for almost all the organisation to maintain adequate stock of different materials which are usually needed time to time.
- ✓ Similarly an organisation has to maintain stock of finished goods so as to meet the immediate demand & expected demand of the customers, because goods cannot be immediately manufacture & transported to the customers, when demand will arise.
- ✓ So a manufacture have to keep the products ready in advance for which he/she has to maintain adequate stocks of finished goods are different points as per the convenience of the customers as well as at the production point.

### c) FINANCIAL MANAGEMENT:

#### ❖ Functions of Financial Management:

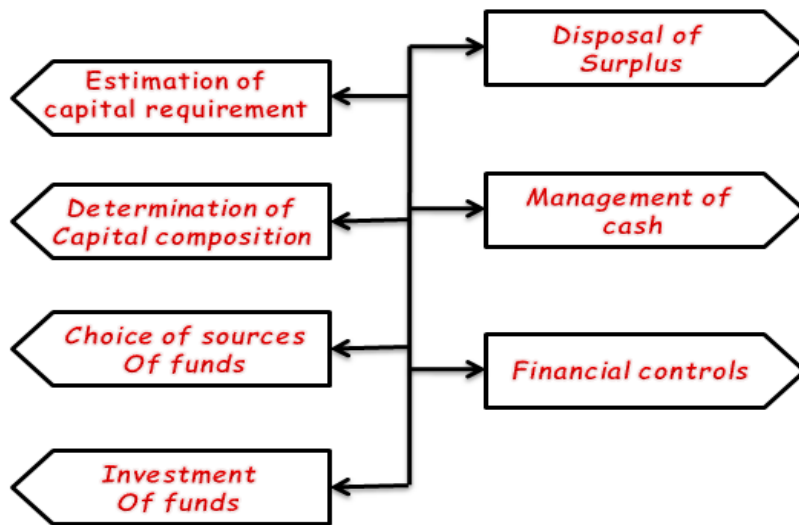
**Financial management** is that branch of management which looks after the finance function of an organisation.

It is the custodian of funds of an organisation. In a business organisation there is a regular in flow & out flow of finance for which there is the need of regulating these activities effectively & efficiently so that there is more inflow than the outflow.

- Major functions of **financial management** are:



## Major functions of Financial Management



### Estimation of Capital requirements:

A finance manager has to make estimation with regards to capital requirements of the company. This will depend upon expected costs and profits and future programmes and policies of a concern. Estimations have to be made in an adequate manner which increases earning capacity of enterprise.

### Determination of Capital composition:

Once the estimation has been made, the capital structure have to be decided, this involves short- term and long- term debt equity analysis. This will depend upon the proportion of equity capital a company is possessing and additional funds which have to be raised from outside parties.

### Choice of sources of funds:

For additional funds to be procured, a company has many choices like-

- Issue of shares and debentures
- Loans to be taken from banks and financial institutions
- Public deposits to be drawn like in form of bonds.

### Investment of funds:

The finance manager has to decide to allocate funds into profitable ventures so that there is safety on investment and regular returns is possible.

### Disposal of surplus:

The net profits decisions have to be made by the finance manager. This can be done in two ways:

- a. Dividend declaration - It includes identifying the rate of dividends and other benefits like bonus.
- b. Retained profits - The volume has to be decided which will depend upon expansional, innovational, diversification plans of the company.

### **Management of cash:**

Finance manager has to make decisions with regards to cash management. Cash is required for many purposes like payment of wages and salaries, payment of electricity and water bills, payment to creditors, meeting current liabilities, maintenance of enough stock, purchase of raw materials, etc.

### **Financial controls:**

The finance manager has not only to plan, procure and utilize the funds but he also has to exercise control over finances. This can be done through many techniques like ratio analysis, financial forecasting, cost and profit control, etc.

### **Finance function:**

Finance functions of an organisation are usually managed by a separate department called finance department needed by the finance manager.

### **❖ Management of Working capital:**

### **Capital:**

- ✓ The term capital refers to the amount of money invested in a business.
- ✓ The amount of money invested in land, buildings, machineries, plants, equipments, tools, furniture's, raw-materials, salaries, wages & rent etc. combined together is the capital of business.
- ✓ The capital may be contributed by the entrepreneur or the owner of the business or he/she might have borrowed from various sources.

### **Sources of capital:**

- ✓ Owner's fund
- ✓ Loan & advances from banks & financial institutions
- ✓ Borrowing from friends & relatives
- ✓ Investment by outsider
- ✓ Issue of shares in case of companies
- ✓ Fixed deposits accepted by the business by public

### **Types of capital:**

There are mainly two types of capitals.

- i. Fixed capital
- ii. Working capital

### Fixed capital:

- ✓ It is the amount of money invested in fixed assets like land, buildings, plant, machineries, equipment, furniture & tools etc to create physical infrastructure to carry on business.
- ✓ It is that portion of total capital which is meant for the long term needs of the organisation.
- ✓ Fixed capital & requirement to finance fixed assets & is helpful to generate revenue for the business.
- ✓ Fixed capital is also known as block capital because for a long period of time capital invested for fixed assets are blocked.
- ✓ Usually, a manufacturing company requires huge fixed capital rather than working capital where as a trading concern requires less fixed capital rather than working capital.
- ✓ For example – Iron, steel, sugar, aluminium etc are the manufacturing industries.

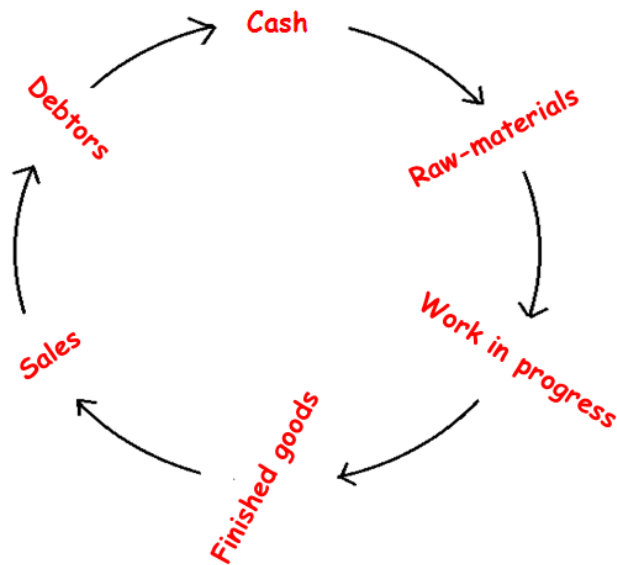
### Working capital:

- ✓ The amount of money invested by the business in the current assets and to meet day to day expenses is known as working capital.
- ✓ Current assets are these assets which change their form & are converted into cash at least once in a year.
- ✓ Investment made by the business in raw-materials, wages, salaries, electricity charges, advertising, insurance premium, telephone charges & all other expenses to run the business on a day to day basis is known as working capital.
- ✓ Fixed capital creates an infrastructure for carrying on business, but working capital is needed to meet the day to day expenses to run the business.
- ✓ Requirement of working capital is more in case of trading business rather than manufacturing business.

### Components of working capital & working capital cycle:

Working capital is needed as the production is a continuous process. It is also needed because cash is not converted into cash instantly.

- ✓ When the cash is put in the business in the form of working capital, it will go through various processes or stages & will take a long time to be converted into cash once again.
- ✓ Hence the process of converting cash into cash once again is known as **working capital cycle or operating cycle**.
- ✓ The component of working capital & working capital cycle is shown in below figure.



**Working capital cycle or operating cycle**

- ✓ So the cash invested as working capital doesn't stay as each but is converted into raw-materials, then raw-materials converted into work-in-progress then work-in-progress is converted into finished goods then finished goods converted into sales and then sales converted into debtors & finally debtors converted into cash.
- ✓ The process takes a long time & the time taken to convert cash into cash is known as length of the operating cycle.
- ✓ If length of the operating cycle is more, then working capital is more & if the length of the operating cycle is less then working capital is less.

#### ❖ Costing (only concept):

##### Costing definition:

**“Costing is the classifying, recording and appropriate allocation of expenditure for the determination of the costs of products or services, and for presentation of suitably arranged data for the purposes of control, and guidance of management.”**

##### Aims of Costing:

- ✓ To determine the exact cost of each article.
- ✓ To determine the cost incurred during each operation to keep control over worker's wages.
- ✓ To provide information to ascertain the selling price of the product.
- ✓ To supply information for detection of wastage.
- ✓ It helps in reducing the total cost of manufacture.
- ✓ It suggests changes in design when the cost is higher.
- ✓ To help in formulating the policies for charging the prices of the product.
- ✓ To facilitate preparation of estimate for submitting the rates in tenders or quotations.
- ✓ To compare the actual cost with the estimated cost of the component.

- ❖ **Brief idea about Accounting terminologies (Book keeping, journal entry, petty cash book, P&L Accounts, Balance sheet):**

#### **Double entry system of book keeping:**

- ✓ To ensure the good financial management, all the financial events & transactions must be recorded. So the maintenance of records of the financial transaction is known as **book keeping**.
- ✓ Book means record & keeping is maintaining. So, book keeping means record keeping or record maintaining.
- ✓ Every business has to maintain record of its financial activities to know the profits generated by the business from its main activities & from various other activities related to business or not related to the business.
- ✓ Book keeping is the maintenance of account in a systematic manner.
- ✓ Usually, almost all the business organisation now a day's maintaining accounts under double entry system of book keeping.
- ✓ Under this system each and every business transaction is recorded twice.
- ✓ Under the double entry system of book keeping, a business usually maintain a no. of accounts such as cash A/C, salary A/C, rent A/C, interest A/C, raw-material A/C, finished good A/C, maintenance A/C & bank A/C etc.

#### **Account:**

- ✓ Almost all business organisations maintain their financial records under double entry system.
- ✓ To fascinate the maintenance of accounts under double entry system of book keeping, all the accounts have two sides each.
- ✓ The left side of an A/C is known as **debit side** or shortly named **Dr. Side** & right side of the A/C is known as **credit side** or shortly named as **Cr. Side**.
- ✓ All the accounts are divided vertically into 2 sides from the middle of the A/C. So an A/C has many columns on both sides. Such as date, column, particular column, the journal folio column & amount column.

Dr. Side					Cr. side			
Date	Particular	J.F.	Amt.		Date	Particular	J.F.	Amt.

**[Specimen of A/C]**

## Types of Account:

As per double entry system of book keeping, all the A/C maintains by a business is divided into 3 categories.

- a) Real Account
- b) Personal Account
- c) Nominal Account

a) **Real Account:** →  $\left[ \begin{array}{l} \text{Debit} \rightarrow \text{what comes in} \\ \text{Credit} \rightarrow \text{what goes out} \end{array} \right.$

- ✓ It refers to all the real things which are visible and tangible, such as cash, machineries, buildings, furniture, materials, finished goods & tools and equipments etc.
- ✓ As we know, a business transaction is recorded twice under double entry system of book keeping i.e. once on the debit side of one account & once on the credit side of another account.
- ✓ In real account, if anything purchase or anything comes into business will record under debit side & if anything out from the business will record under credit side.
- ✓ **For example** – if machinery purchased of Rs. 10,000, then purchase of machine for cash shall be recorded, on debit side of machinery account & the cash should be recorded on the credit side of cash account.

b) **Personal Account:** →  $\left[ \begin{array}{l} \text{Debit} \rightarrow \text{the Reciever} \\ \text{Credit} \rightarrow \text{the giver} \end{array} \right.$

- ✓ It refers to all the account of different individuals or persons as well as all artificial persons like companies, banks, corporate bodies (LIC) etc with whom the business has credit purchases including loans or borrowings.
- ✓ **For example** – If anyone is receiving anything, it will be recorded on debit side of his/her account & if someone is giving anything it will recorded on the credit side of his/her account.

c) **Nominal Account:** →  $\left[ \begin{array}{l} \text{Debit} \rightarrow \text{all expenses and losses} \\ \text{Credit} \rightarrow \text{all incomes and gains} \end{array} \right.$

- ✓ It refers to all the account related to different incomes & expenses, losses & gains. These items are not visible & tangible like rent, interest, salary & commission etc.
- ✓ All the expenses & losses are written on debit side of the expense account & all the gains and incomes are written on the credit side of that account.

**Journal:**

- ✓ Whenever a transaction takes place, it has to be recorded in the journal first, which is known as the book of primary entry.
- ✓ Hence all the transaction is recorded in the journal & for that all the entries made in the journal are known as journal entry.
- ✓ The above rules of debit & credit are known as the rule of journalism.
- ✓ For example – rent paid Rs. 500. Here 2 accounts are involved that are rent account & cash account. As cash account is a real account then all the expenses could be written in credit side where as in rent account the expenses could be written in debit side.
- ✓ So the
 

Rent A/C	Dr.....	Rs 500
To cash A/C	Cr.....	Rs 500

Date	Particular	L.F.	Debit amount	Credit amount
28/10/2020	Rent account Dr...	01	500	--
	To cash account Cr...	03	--	500

**[Specimen of a Journal]**

**Ledger:**

- ✓ At the end of the day all the entries in the journals are transferred to the respective account i.e. the Ledger.
- ✓ The transfer of entries from journal to ledger or different account is known as **posting**.
- ✓ For example – All the cash entries are transferred to the cash account i.e. all the debits shall be transferred to the debit side & all the credits are transferred to the credit sides of the respective account. So at the end of the year every account maintained by the business will have entries.
- ✓ Some of the account will have entries only on debit side of the account, some only on the credit side & some on both the Dr. Side and Cr. Side.
- ✓ So at the end of the every financial year all the accounts are balanced or closed, that means, the totals of the debit side and the credit sides are found out.
- ✓ The difference between the totals both the sides of an account are found out which is known as the closing balance of that account.
- ✓ If the total of the debit side is more than the total of credit side, the difference is known as debit balance and is written in credit side to make the totals of both sides equal.

- ✓ On the other hand, if the total of credit side is more than the total of debit side, the difference is known as credit balance and is written in debit side to make the totals of both sides equal.

CASH ACCOUNT								
Dr. Side					Cr. side			
Date	Particular	J.F.	Amt.		Date	Particular	J.F.	Amt.
28/08/18	To goods A/C		10,000			By salary account		12,000
29/08/18	To bank A/C		5,000			By interest A/C		600
30/08/18	To rent A/C		1,000			By stationary A/C		500
31/08/18	To machinery A/C		5,000			By postage A/C		100
01/09/18						By closing bal.		7,800
			<b>21,000</b>					<b>21,000</b>

[Specimen of a Ledger]

#### Cash book:

- ✓ In a business cash transactions are very frequent & takes place unlimited no. of times, so it is necessary to mix such cash transactions with all other transaction as it will complicate and dominate the entire accounting activity.
- ✓ Hence for sake of convenience, a separate cash book is maintained to record all the cash transaction. It is just like the cash account.
- ✓ The cash book is a register which contains two sides vertically from the middle of the register.
- ✓ The left side is the debit side called as receipt side & right side is the credit side called as payment side.
- ✓ The cash book is balanced everyday to know the cash balance or the closing balance of the cash.
- ✓ The difference between the totals of both the sides is the cash balance in hand.
- ✓ The total of the debit side is always more than the total of the credit side, resulting in excess of receives over the payment.
- ✓ Hence cash book always shows a debit balance & never shows any credit balance.
- ✓ If the total of debit side is equal to the total of the credit side, it means there is no cash balance in the business.

CASH ACCOUNT
--------------



Dr. Side					Cr. side			
Date	Particular	J.F.	Amt.		Date	Particular	J.F.	Amt.
01/04/ 05	To sales A/C		300			By wage account		135
	To bank A/C		600			By postage A/C		540
	To S. M. A/C		400			By stationary A/C		450
	To M.S paint A/C		80			By purchase A/C		100
						By carriage A/C		155
						By balance C/d		105
			1380					1380
02/04/ 05	To balance b/d		105					

### [Specimen of a Cash book]

#### Different types of Cash book:

There are two types of cash book, such as,

- Petty cash book
- Subsidiary cash book

#### a) Petty cash book:

- ✓ In a business there may be a small transaction as well as a big transaction so far value is concerned. That means, there may be a transaction of Rs. 1 crore at the same time there may be another transaction of Rs. 1.50.
- ✓ There may be the purchase of post card as well as a machine of crores. So if all the small & big transaction is put together in one cash book, it will be inconvenient & the cash book will very much lengthy.
- ✓ Hence it is better to separate small transaction from big transaction. That is why, all the small or petty cash transaction are separately recorded in another cash book called **petty cash book**.
- ✓ So in petty cash book below Rs. 100 of transactions are recorded.
- ✓ There are different methods of maintaining petty cash book or transaction. That are

#### i) Ordinary system of petty cash book or simple petty cash book:

Under this method, the petty cashier receives some amount of money from the cashier & goes on spending the amount. The amount received is recorded on the debit side of petty cash book and the amount of expenditure is recorded on the credit side of the petty cash book.

#### ii) Imprest system of petty cash book:

Under this system, the petty cashier is given a definite amount of money at the beginning of the month or week or year. The amount given to the petty cashier is called float. The float account is fixed depending on the past experience which may be sufficient to meet petty cash transactions.

#### iii) Analytical Petty cash book:

Under this system, the petty cash books have many columns i.e. separate column for each head of expenses. It provides separate amount columns for each head of petty expenses.

**b) Subsidiary cash book:**

**The following are the subsidiary books:**

**i) Sales book/sales day book/sales journal:**

For all credit sale a separate book is prepare & i.e. known as sales book. As the credit sale transaction are quite large in number & are very frequent, it is recorded in these separate books.

**ii) Purchase Day book:**

A business makes lots of credit purchases from different persons & the no of such credit purchase transactions are quite large and are at frequent intervals, so all the credit purchases are recorded in a separate book named as purchase day book.

**iii) Purchase return book:**

A firm purchases a no of items from different suppliers on credit basis sometimes some materials are return due to many reasons. Such returns of materials have to be recorded in another register called purchase return book. Goods & materials are returned due to improper quality, improper material, not according to order or due to excess supply etc.

**iv) Sales return book:**

Many times the goods supplied to consumers on credit basis are returned by them due to excess supply, not as per order, inferior in quality and non delivery in time etc. Such return of items or goods is recorded in a separate register called sales return book.

**TRIAL Balance:**

- ✓ TRIAL balances are prepared before the preparation of final account & after all the accounts are closed.
- ✓ TRIAL balance is not an account; it is a statement which contains the summery of all the account.
- ✓ All the closing balances of different account are put together into this statement. It has 2 sides, left side is the debit side & right side is the credit side.

**Components of Final account:**

The components of final account are as follows;

- a) Treading A/C or Manufacturing A/C:**
- b) Profit & loss A/C**
- c) Balance sheet**

**a) Treading A/C or Manufacturing A/C:**

- ✓ It is the first statement of final account, from the information provided by the TRIAL balance; one can prepare treading A/C, profit & loss A/C & balance sheet.

- ✓ Like other account, the trading account has two sides, the left side is the debit side & the right side is the credit side. On the debit side all the expenses relating trading or manufacturing are recorded. And on the credit side all the incomes from the operation i.e. sales are recorded.
- ✓ The items recorded on the debit side are; raw materials consume, manufacturing wages or trading wages, power & fuel, royalty, patent charges & any other trading & manufacturing expenses.
- ✓ On the credit side, the items recorded are; sales, closing stock & any other incomes from operation etc.
- ✓ If the total of the credit side is more than the total of the debit side, the difference is known as “**gross profit**”, which is recorded on the debit side of the trading account. On the other hand, if total of the debit side is more than the total of the credit side, then the difference is known as “**gross loss**”, which is recorded on the credit side of the trading account.
- ✓ Gross profit or the gross loss of the trading account is transferred to the profit & loss account.

**b) Profit & loss A/C:**

- ✓ Profit & loss account is prepared from the information provided by the trial balance. It can be prepared only after the preparation of trading account. Like the trading account, profit & loss account has two sides; the left side is the debit side & the right side is the credit side. The gross profit or gross loss of the trading account is transferred to the profit & loss account.
- ✓ If there is a gross profit, it is written in the credit side of the profit & loss account; on the other hand, if there is a gross loss, it is written in the debit side of the profit & loss account.
- ✓ In the profit & loss account all the incomes & expenses related to the particular financial year shall be shown.
- ✓ The item written on the debit side of the profit & loss account are gross loss (if any), salary, rent, interest paid, advertisement, stationary, postage charges paid etc.
- ✓ The items written on the credit side of the profit & loss account are gross profit (if any), interest received & receivable, commission received & receivable & any other incomes related to the business.
- ✓ The net profit is transferred to the balance sheet & added to the capital or is shown separately in the liabilities side.

**c) Balance sheet:**

- ✓ It is prepared from the information provided by the TRIAL balance & the profit & loss account. Balance sheet is usually prepared at the end of the financial year, only after the preparation of trading, profit & loss account. Balance sheet can also be prepared quarterly or half-quarterly, but it is not prepare for a particular day. Balance sheet reflects on exact financial position on a particular day. Balance sheet is a statement and not an account.
- ✓ It is the statement of all the assets & liabilities held on the business on that particular day on which the balance sheet is prepared. It also reflects how much belongs to the business, how much to the owners & how much to the outsiders on that particular day.
- ✓ Balance sheet has 2 sides, the left side is the liabilities side & the right side is asset side. On the asset side, all the assets & property belonging to the firm are shown in order of their liability side, all the capital & other liabilities are shown in order of their payment in descending order.
- ✓ The totals of both the sides of balancing must be equal; if not so the balance sheet is supposed to be wrong & is not acceptable.

❖ **Break even Analysis:**

Maintenance of the account helps us to know the profit & loss of an organisation.

- ✓ At the end of a specific period of time but while the business is running, we are not able to know whether the business is running at profit or loss.
- ✓ The break even analysis will be helpful to the management to know whether the business is running on profit or loss.
- ✓ It also helpful to forecast the profits at various level of production.
- ✓ For the purpose of calculating break-even analysis, it is essential to classify the cost.
- ✓ For the purpose of break-even analysis, cost is divided into 2 categories. Such as;

- a) **Fixed cost**
- b) **Variable cost**

**a) Fixed cost:**

- ✓ Fixed cost are those expenses which remain fixed in total, and don't increase & decrease with increase or decrease in production.
- ✓ For example; rent, infrastructure, general manager salaries, watchman & sweeper salary etc.

**b) Variable cost:**

- ✓ Variable costs are the cost or expenses which vary and not remain fixed. It varies in total in direct production to the volume of the output. If there is no production variable cost will be nil.
- ✓ If there is one unit of production variable cost will be for ex. Rs 10. If there are 100 units of production variable cost will be Rs 1000 as per the example.
- ✓ Examples of variable cost are; cost of raw materials, manufacturing wages, excise duty etc.

**Break-even point:**

Break-even point is the point where the total cost is equal to the total revenue. It is also known as the point of no profit & no loss. At this point the total expenses are equal to the total incomes.

**Mathematical calculation of BEP:**

**Abbreviation used;**

- ✓ BEP – Break-even point
- ✓ FC – Fixed cost
- ✓ SP – Selling price
- ✓ MC – Marginal cost
- ✓ VC – Variable cost
- ✓ P – Total profit

**Formula:**

$$\text{➤ } BEP = \frac{\text{Total fixed cost}}{\text{Selling price per unit} - \text{marginal cost per unit}}$$

$$\text{➤ } BEP = \frac{\text{Total fixed cost}}{\text{Contribution per unit}}$$

$$\text{➤ } BEP = \frac{FC \times S}{\text{Contribution}} = \frac{FC \times S}{FC + P}$$

$$\text{➤ } BEP = \frac{FC \times S}{S - V} (\because \text{contribution} = S - V)$$

$$\text{➤ } BEP = \frac{FC}{P/V \text{ ratio}} (\because \frac{P}{V} \text{ ratio} = \frac{\text{contribution}}{\text{sale}})$$

- Contribution = Fixed cost + profit
- Contribution = S - Vc
- Marginal cost per unit = cost of manufacturing of marginal unit or cost of manufacturing an additional unit.
- Margin of safety = Profit / p/v ratio = (Actual sale - break even sale).

#### Problem-1:

From the following information find out the Break-even point of a manufacturing concern:

Fixed cost = Rs. 1, 20,000

Selling price Rs. 18 per unit

Variable cost Rs. 12 per unit

#### Solution:

$$BEP = \frac{FC \times S}{S - V}$$

Contribution per unit = Selling price per unit - Variable cost per unit

$$= \text{Rs. } 18 - \text{Rs. } 12$$

$$= \text{Rs. } 6$$

Hence,

$$BEP = \frac{FC \times S}{S - V} = \frac{120000 \times 18}{6} = 3,60,000$$

#### Problem-2:

Calculate the BEP from the data provided below;

Fixed cost = Rs. 60,000, Profit = Rs. 15,000, Variable cost = Rs. 25,000, Sales = Rs. 1, 00,000.

#### Solution:

We know that,  $BEP = \frac{F.C \times S}{F.C + P}$

$$BEP = \frac{60000 \times 100000}{60000 + 15000} = 80000$$

**Problem-3:**

Find out the break-even production from the following information.

Fixed cost = Rs. 60,000

Selling price = Rs. 10 per unit and

Marginal cost per unit = Rs.6

**Solution:**

We know that,  $BEP = \frac{\text{Total fixed cost}}{\text{Selling price per unit} - \text{Marginal cost per unit}}$

Or,  $BEP = \frac{60000}{10 - 6} = 15,000 \text{ units}$

**Problem-4:**

Calculate the Break-even point from the following data.

Contribution per unit = Rs.6, Selling price per unit = Rs. 15 (Ans – 2, 50,000)

**Problem-5:**

A manufacturing organisation has provided the following information:

Total fixed cost = Rs. 1, 80,000

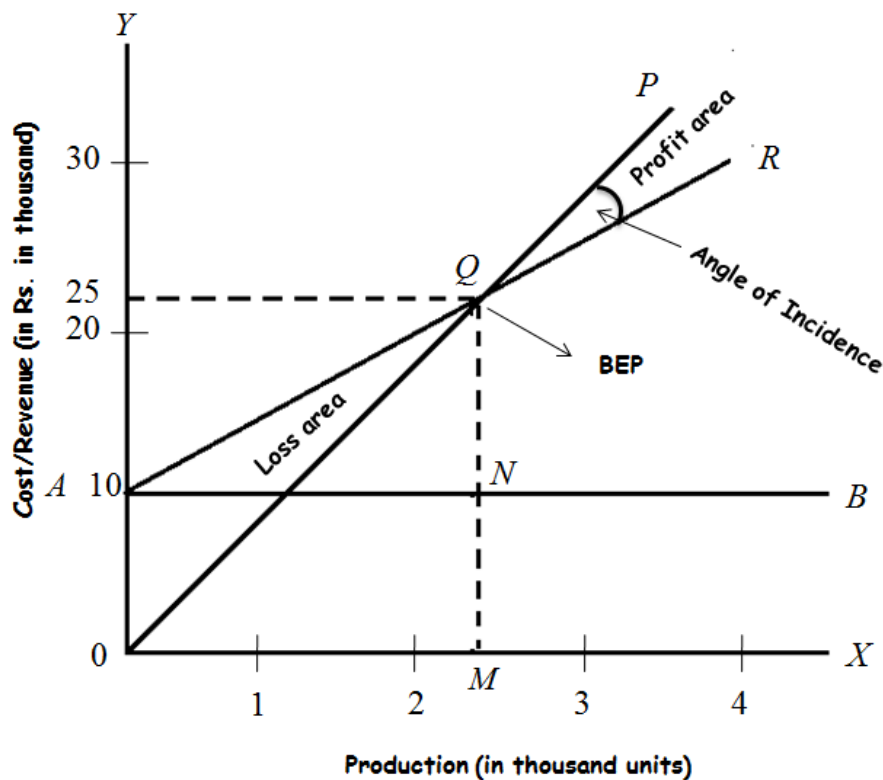
Selling price per unit = Rs. 40

Contribution per unit = Rs.25

So calculate the followings:

- i) P/V ratio
- ii) Break-even point
- iii) Sales to earn a profit of Rs. 1,20,000

**Graphical representation of Break-even point:**



- ✓ In the above diagram OX represent production unit & OY represent cost or revenue in thousand rupees.
- ✓ AB line represent the fixed curve which is a horizontal line, because fixed cost always remains constant at all the levels of output.
- ✓ AR represents the total cost curve which move upwards to the right that is as production increases total cost also increases.
- ✓ Total cost is equal to fixed cost + variable cost. OP represents the total sales or revenue lines.
- ✓ The OP curve crosses the AR curve at point Q, at the point Q, both sales and cost are same, that is total sale at that point is QM and total cost at that point is also QM, so at that point production is OM that is 2, 500 units and cost is Rs. 25, 000 and sales or revenue is also 25, 000 which indicate there is neither any profit nor loss.
- ✓ The area at the right of the break-even point represents the profit area and left of the break-even point is loss area.
- ✓ The angle created at the right side of the break-even point is known as angle of incidence.

## d) MARKETING MANAGEMENT:

### ❖ Concept of Marketing and Marketing management:

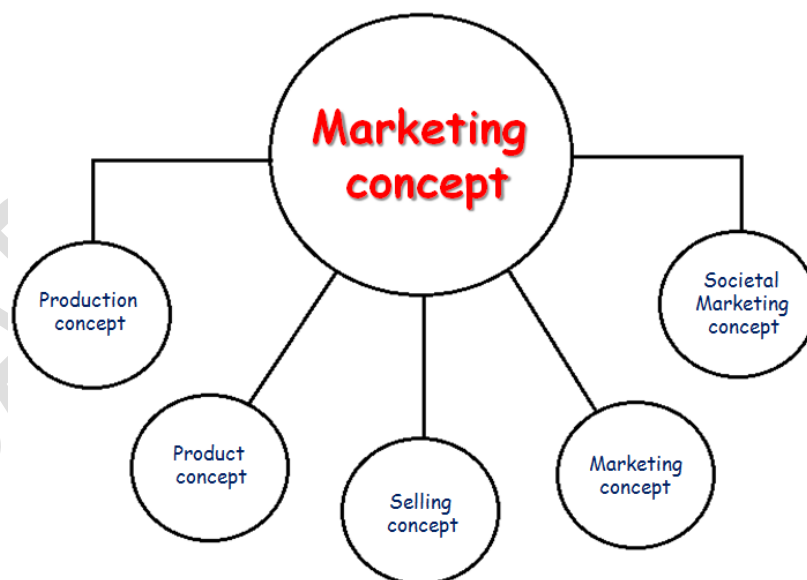
#### Marketing:

- ✓ Marketing is concerned with creation of demand & needs in the mind of the people to buy a product.
- ✓ Marketing creates customers & market to achieve sales.
- ✓ Market is a place where buyers & sellers often meet together to decide the term & conditions of purchase & sale.

#### Concepts of marketing & marketing management:

There are 5 marketing concepts that organizations adopt and execute. These are;

- (1) Production concept,
- (2) Product concept,
- (3) Selling concept,
- (4) Marketing concept, and
- (5) Societal marketing concept.



#### (1). Production concept:

**The idea of production concept – “Consumers will favour products that are available and highly affordable.”** This concept is one of the oldest Marketing management orientations that guide sellers.

The production concept is found to be applicable if two situations prevail, that are;



- a) One, when the demand for a product exceeds the supply. Under such situations, consumers will basically be interested in owning the product, not the quality or features of it. Thus, producers will be interested in increasing their outputs.
- b) Two, if the production costs are very high, that discourages consumers from buying the product. Here, the company puts all of its efforts into building production volume and improving technology to bring down costs.

**For example**, you see, in Amazon or market or retail stores, the market are flooded with cheap products from China. Everything from the cheap plastic product from China is on your cart.

The best example of the production concept is Vivo or Oppo, the Chinese Smartphone brand. Their phones are available in almost every corner of the Asian market. You can walk into any phone shop in Asia and walk out the latest and greatest smart phones from Vivo or Oppo.

## **(2). Product concept:**

**The product concept holds that consumers will favour products that offer the most quality, performance, and innovative features.** Here, Marketing strategies are focused on making continuous product improvements.

The product concept assumes that consumers will favour those products that are superior in quality, performance, innovative features, designs, and so on.

**For example**, suppose a company makes the best quality Floppy disk. But a customer does need a floppy disk?

She or he needs something that can be used to store the data. It can be achieved by a USB Flash drive, SD memory cards, portable hard disks, etc. So that the company should not look to make the best floppy disk, they should focus on meeting the customer's data storage needs.

When you think of high-quality products, Apple will be one of the top ones. Their products are so good that they set industry trends and standards.

## **(3). Selling concept:**

**The selling concept holds the idea- "consumers will not buy enough of the firm's products unless it undertakes a large-scale selling and promotion effort."**

Here the management focuses on creating sales transactions rather than on building long-term, profitable customer relationships.

In other words, the aim is to sell what the company makes rather than making what the market wants. Such an aggressive selling program carries very high risks.

In selling concept, the marketer assumes that customers will be coaxed into buying the product will like it; if they don't like it, they will possibly forget their disappointment and buy it again later. This is usually a very poor and costly assumption.

**For example**, every saw an ad online or TV commercial that you almost can't escape and hide from? The Selling Concept is in play.

Almost all companies eventually fall into this concept. "Mountain Dew" ads are hard to miss. If people like Mountain Dew or not, that is debatable, but you can see that PepsiCo is pushing it hard using ads.

Almost all soft drinks and soda drinks follow the selling concept. These drinks have no health benefits (actually harm your health more); you can easily replace them with water (the most available substances on the earth).

And the soft drink companies know it, and they run ads 24x7, spending millions.

#### **(4). Marketing concept:**

**Here marketing management** takes a “**customer first**” approach. Under the marketing concept, customer focus and value are the routes to achieve sales and profits.

The marketing concept is a customer-centered “sense and responds” philosophy. The job is not to find the right customers for your product but to find your customers’ right products.

The marketing concept and the selling concepts are two extreme concepts and different from each other.

The marketing concept is based on main four pillars, such as; **Market focus, Customer orientation, Coordinating marketing and Profitability.**

**For example**, Restaurants and start-ups do follow the marketing concept. They try to understand the consumer and deliver the best product or service, which is better for the competition.

‘Dollar shave club’ is the best example. They changed the Men’s grooming market. They have understood that people are not happy with their previous grooming products and their prices.

Where other company’s grooming products will cost hundreds to buy for just one month, ‘Dollar shave club’ charges a couple of bucks a month with higher quality products and home delivery convenience.

#### **(5). Societal Marketing concept:**

**The societal marketing concept holds “marketing strategy should deliver value to customers in a way that maintains or improves both the consumer’s and society’s well-being.”**

It calls for sustainable marketing, socially and environmentally responsible marketing that meets consumers’ and businesses’ present needs while also preserving or enhancing future generations’ ability to meet their needs.

The Societal Marketing Concept have the basic goal is to keep its customers happy and make profits through serving and satisfying customers.

**For example**, large companies sometimes launch programs or products that benefit society; it is hard to find a company that is fully committed socially.

We can see **Adidas** doing great as they continue to launch good products which benefits the customers as well as environment friendly. **Tesla** promises a big push for green energy with electric cars and solar roof panels/tiles.

#### **❖ Marketing Techniques (only concepts ):**

These are methods for targeting promising markets, building your brand and generating and nurturing leads to drive faster growth and higher profits.

Marketing when you don’t have a big budget can be a challenge, but there’s plenty a small business owner can do to attract and maintain a customer base. The rise in digital marketing has

made it all the easier for the small business owner to find a way to create a presence and attract an informed buyer.

The important marketing techniques are as follows;

**1) Flyers:**

- ✓ This is the cheap advertising methods.
- ✓ Where you want to start your business, distribute flyers to all the mailboxes within reach.
- ✓ Your flyer should be brief and to the point, highlighting the services you offer or products you sell and providing contact information.
- ✓ Offering a free appraisal, coupon, or discount to customers.

**2) Posters:**

- ✓ Most supermarkets, public spaces, and malls offer free bulletin board space for announcements and advertisements.
- ✓ This is a hit-or-miss method, but you should try to make your poster reasonably visible and have removable tabs that the customers can present for a discount.

**3) Value Additions:**

- ✓ This is one of the most powerful selling points for any product or service.
- ✓ On the surface, value additions are very similar to coupons and free appraisals, but they are aimed at increasing customer satisfaction and widening the gap between you and the competition.
- ✓ Common value additions include guarantees, discounts for repeat customers, point cards, and referral rewards. Often the deciding factor for a person picking between one of two similar shops is which shop has a point card or preferred customer card.

**4) Referral Networks:**

- ✓ This includes business-to-business referrals. If you have ever found yourself saying, "We don't do/sell that here, but X down the street does," you should make certain that you are getting a referral in return.
- ✓ A lawyer refers people to an accountant, an accountant refers people to a broker, a financial planner refers people to a real estate agent. In each of these situations, the person stakes their professional reputation on the referral.

**5) Follow-ups:**

- ✓ Follow-up questionnaires are one of the best sources of feedback on how your ad campaign is going.
- ✓ Why did the customer choose your business?
- ✓ Where did they hear about it?
- ✓ Which other companies had they considered?
- ✓ What was the customer most satisfied with?
- ✓ What was the least satisfying?

**6) Cold calls:**

- ✓ Cold calling happens over the phone or door to door campaign.
- ✓ It forces you to sell your business.
- ✓ If people can't buy you, then cold calls or face to face marketing helps in marketing your business.

**7) The social media:**

- ✓ Now a days, social media or internet is an important method to building a successful business.

- ✓ You need a point of access for everyone that, every person when decide for buying something, he/she must go through the Google first.
- ✓ You also need a social media presence (Face book page, Instagram and Twitter accounts) combined with a content management system (CMS) with good search engine optimization (SEO).

#### ❖ **Concept of 4Ps (price, place, product, promotion):**

- ✓ The **4P's or Marketing mix** refers to the set of actions, or tactics, that a company uses to promote its brand or product in the market.
- ✓ The 4P's make up a typical marketing mix that are **price, product, promotion and place**.

##### **Price:**

- ✓ It refers to the value that is put for a product.
- ✓ It depends on costs of production, segment targeted, ability of the market to pay, supply - demand and a host of other direct and indirect factors.
- ✓ There can be several types of pricing strategies, each tied in with an overall business plan.
- ✓ Pricing can also be used a demarcation, to differentiate and enhance the image of a product.

##### **Product:**

- ✓ It refers to the item actually being sold.
- ✓ The product must deliver a minimum level of performance; otherwise even the best work on the other elements of the marketing mix won't do any good.

##### **Place:**

- ✓ It refers to the point of sale.
- ✓ In every industry, catching the eye of the consumer and making it easy for her to buy it is the main aim of a good distribution or 'place' strategy.
- ✓ Retailers pay a premium for the right location. In fact, the mantra of a successful retail business is 'location, location, location'.

##### **Promotion:**

- ✓ This refers to all the activities undertaken to make the product or service known to the user and trade.
- ✓ This can include advertising, word of mouth, press reports, incentives, commissions and awards to the trade.
- ✓ It can also include consumer schemes, direct marketing, contests and prizes.

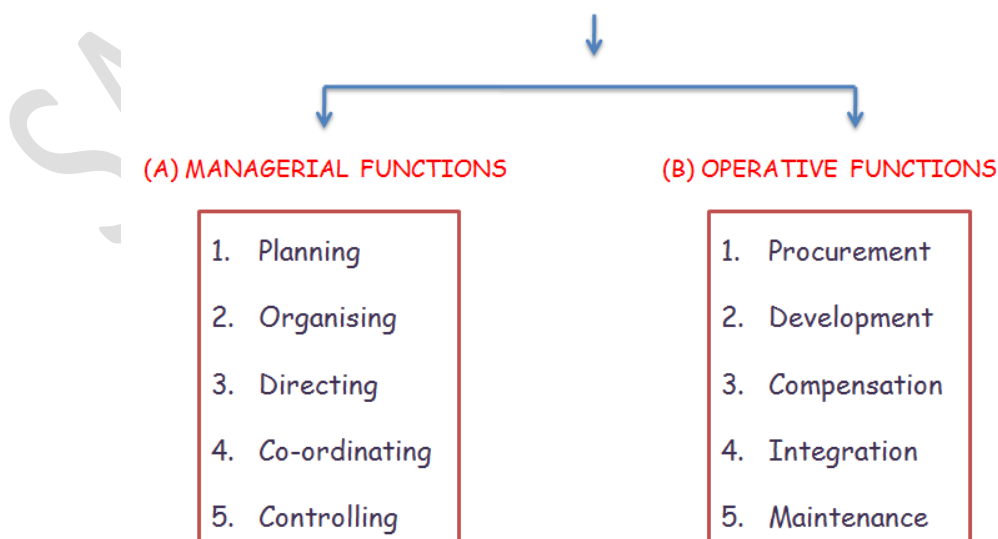


#### e) HUMAN RESOURCE MANAGEMENT:

##### ❖ Functions of Personal management:

There are two categories of functions which the personal manager is expected to perform. These are

- (A). Managerial Functions
- (B). Advisory or Operative Functions



## **(A). Managerial Functions:**

Management aims at getting things done by others. Managerial functions deal with planning, organizing, directing, coordinating and controlling the activities of employees in an enterprise.

The functions are given below as follows;

### **1. Planning:**

- ✓ Planning involves thinking in advance.
- ✓ It is the determination of strategies, programmes, policies, procedures to accomplish organizational objectives.
- ✓ Planning is a difficult task which involves ability to think, to predict, to analyze, and to come to decisions.
- ✓ In the context of personnel management, it requires the determination of human resource needs, deciding the sources of procuring them, determining training needs of personnel, selecting motivators for getting good performance from employees etc.

### **2. Organising:**

- ✓ Organization is a process of allocating the task among its members for achieving organizational objectives.
- ✓ This is done by designing the structure or relationship among jobs, personnel and physical factors.
- ✓ For achieving enterprise goals a number of plans, policies and programmes are decided upon.
- ✓ Organization is a channel for implementing them and achieving good results.
- ✓ The assignment of tasks and fixing of responsibilities will be the function of personnel management.
- ✓ It decides who should do what. Who is responsible to whom? These decisions will help in smooth working of the organization. Everybody will be assigned the task according to his capacity and calibre.

### **3. Directing:**

- ✓ It is the basic function of managerial personnel.
- ✓ Directing means telling people to do a particular work.
- ✓ It does not mean only issuing orders to employees but also ensures that they perform as per the directions.
- ✓ The employees are also given instructions for carrying out their task.
- ✓ The orders and instructions should be clear and precise so that these are obeyed properly.

### **4. Co-ordinating:**

- ✓ Organizational objectives will be achieved only if group activities in the enterprise are coordinated effectively.
- ✓ There may be a problem of each group or department trying to pursue its own goals without bothering about overall objectives.

- ✓ A coordinated approach will help in achieving common goals.

#### **5. Controlling:**

- ✓ Controlling is the act of checking, regulating and verifying whether everything occurs as per the standards set and plans adopted.
- ✓ The performance of persons is regularly reviewed to find out whether it is going according to the standards or not.
- ✓ In case, performance is low then steps are taken to improve it in future.
- ✓ Controlling function involves reviewing performance and taking corrective measures.

#### **(B). Advisory or Operative Functions:**

These functions are related to the procuring, developing, compensating, integrating and maintaining a work-force for attaining organizational goals. These functions are also known as service functions.

The functions are given below as follows;

##### **1. Procurement:**

- ✓ This function relates to the procuring of sufficient and appropriate number of persons for carrying out business work.
- ✓ The needs of the organization should be assessed to find out the requirements of persons.
- ✓ Besides number, the procurement of suitable persons is also essential.
- ✓ For this purpose, the requirements of various jobs should be studied for fixing the educational and technical experience of persons expected to man those jobs.
- ✓ Only the right type of persons will be able to give satisfactory results.

##### **2. Development:**

- ✓ The development function is concerned with the development of employees by increasing their skill and proficiency in work.
- ✓ The persons are given proper training through various methods so that their performance is better in undertaking the jobs.
- ✓ Proper job description will enable the employees to know their weak points in performing various jobs.
- ✓ Training programmes are made suitable to cover up deficiencies in workers' performance.

##### **3. Compensation:**

- ✓ It is concerned with securing adequate and equitable remuneration to persons working in the organization.

- ✓ Job analysis will enable in fixing the remuneration for various jobs.
- ✓ The needs of the jobs and qualifications of persons who will take up those jobs should be taken into consideration while fixing remuneration.
- ✓ If the employees are paid less than they should have got, they may leave the job at an earliest opportunity.
- ✓ So compensation should be fixed in such a way that it is able to attract and retain suitable persons in the organization.

#### **4. Integration:**

- ✓ It involves infusing among employees a sense of belonging to the enterprise.
- ✓ The employees should identify their personal interest with that of the organization.
- ✓ They should have a feeling that everything good of the enterprise will also be in their interest.
- ✓ There should be proper communication channel at all levels.
- ✓ The grievances of employees should be redressed at the earliest. This will help in creating good industrial relations and will integrate them.

#### **5. Maintenance:**

- ✓ This function deals with sustaining and improving conditions that have been established.
- ✓ Better conditions of work should be maintained at all times.
- ✓ The employees will feel happy to work under such conditions.
- ✓ These conditions include establishment of health, sanitation and safety standards.
- ✓ Personnel department is put in charge of providing and maintaining healthy and conducive working conditions in the enterprise.

#### **❖ Manpower planning, Recruitment, sources of manpower, Selection process, Method of testing, Method of training & Development, Payment of wages:**

##### **Man power planning:**

- While preparing the DPR, the entrepreneur must have made a detail analysis of the manpower required for his/her project.
- He/she has to make a detail estimate of the quality, quantity and types of manpower required for running his/her project.
- For this reason, he/she has to make a proper job analysis, job description and job satisfaction.
- So the entrepreneur has to forecast the manpower need for his/her project, i.e. how much managerial, how much operational, how much skilled, how much unskilled and how much allied persons are required should be calculated properly.

##### **Requirement:**



- After deciding the manpower planning for the project, the entrepreneur has to plan his/her requirement drive to appoint appropriate manpower for his/her project.
- There is a need of to search prospective candidates for different posts created in the Industry.
- It is the duty of the management to select the right person for the right job with qualification, experience, skill and knowledge.
- So almost in all organisations have a separate department called personnel department to perform the function of recruitment and related activities.

### **Sources of Manpower:**

The sources of recruitment may be broadly divided into two categories, such as **internal sources** and **External sources**.

#### **Internal sources:**

- **Transfer:** Under this system, recruitment is made by transferring employees from one post to another.
- **Promotion:** Under the system, position or post are filled by upgrading persons to higher status by offering them promotions to higher post.
- **Own training centres:** A large number of organisation companies have opened their own training centres where they take trainings on a regular basis to develop skilled manpower as per their own needs or their required.

#### **External sources:**

- **Advertisement:** under this system application are invited from eligible candidates from different post through open advertisement in news paper, magazine, TV, radio, etc.
- **Campus interview:** Now a day's recruiters go to different technical or management institution for the purpose of selecting young fresh talent for this manpower requirement.
- **Walk in interview:** It has become a fashion today for the employees to organise walk in interview at different town and cities to recruit manpower of their organisation.
- **Employment fair/Job mela:** It has also become a fashion today to organise employment fair or job mela at important places for the purpose of recruitment.
- **Employment Consultancy:** This service provides manpower solution is larger in number and provide specialised services to the employees by providing appropriate manpower as per their need.
- **Employment Exchange:** It is a very old source of recruitment of manpower. Govt. employment exchange is there throughout the country and employers take advantages of this source.

### **Selection Process:**

#### **Selection:**

- Selection means it is the process of choosing an alternative from the alternatives available.
- Selection refers to the process of attracting eligible and suitable candidates for an organisation.
- So selection is the system and recruitment is the sub system.

#### **Selection Process:**

The HR manager/ Personal manager follow the following selection process. Those are as follows:

- i. Inviting applications
- ii. Screening the application received
- iii. Conducting tests, interviews etc.
- iv. Conducting physical and medical fitness examination
- v. Collecting references and checking the antecedents.
- vi. Verifying the certificates.
- vii. Issue of selection letters after final selection.

### **Method of training & Development:**

Training may be organised on the job or off the job. So there are two methods of training.:

- i. On –the –job training.
- ii. Off –the –job training

#### **On-the-job training:-**

The following are the different on the job training method. :-

##### **I. Under studies:-**

- Under this method of training, the trainee is placed under an experienced person as an assistant or sub-ordinate.
- Who is to acquire skill, knowledge, and experience by doing the job under the direct supervision of the experienced?

##### **II. Coaching by experts on the jobs:-**

- Under this method the trainees are taking to the spots where the works are being performed.
- Different expert's trainers of different job train the trainees the art of performing the job.

##### **III. Job rotation:-**

- Under the system the trainees get the opportunities of learning different jobs during their employment.

#### **Off –the- job training:-**

The following are the off-the-job training methods:-

##### **I. Class room training:-**

- Under this type of training process are organised for the employees either inside the organisation or outside the organisation.
- Lectures or instructors act as trainers teach the topic and give adequate to a technical and theoretically about the activities to be performed.

##### **II. Conference :-**

- Under this method of training a small group of trainees are selected and they work together to train themselves.
  - The make open discussion exchanged ideas and experience share the knowledge.
- III. **Written instruction method:-**
- Under this method, written or printed training materials are supply to the training.
  - The training go through the texts and learn the techniques, process, skill, for performing the job.
- IV. **Industrial training:-**
- Under this method the institution or organisation send their students for industrial training for with their knowledge skill and experience will grow.
- V. **Online training :-**
- Now a day with the use of computer and internet the student staying his/her home can acquire skill, talent etc.
  - So they can train him / her in a different skill to perform different activities.
- VI. **Vestibule training:-**
- Under this type of training, training is imparted neither on the job nor off the job.
  - Under this method similarly to the actual working conditions is created and training is imparted to the trainees under such conditions.

**Payment of wages:-**

- Payment or wages of the employees are decided on their skill, technique, education or qualification and experience etc.
- The payment or wages of employees may be decided by perform appraisal.

**Performance appraisal:-**

Performance appraisal is related to the measurement of performance of an individual on the job with a definite objective in comparison to others or standard stabilise.

**Need of performance appraisal:-**

- It is useful to identify the employees need for training and area of training.
- It is needed to determine the salaries or wages if they are based on quality and quantity of works.
- Perform appraisal is needed to indentify the employees eligible for promotions.
- It is useful to indentify the strengths, weaknesses, merits, demerits associated with employees.
- It is useful tool to locate the employees suitable for reward or punishment.

- It helps the management to fix targets, assign additional duties and responsibilities or reduce the work burden on employees etc.
- It serves as a means for self development of the employees because they are able to know their own weakness.
- It creates awareness in the employees because they know that their performance is being monitored. This helps achieve motivation to put their best.
- Performance appraisal is needed to make the workers, supervisors, managers, sub-ordinates and other more vigilant because some of them shall supervise and some of them will be supervised.
- It is needed to decide the transfer of employees from one post to another or from one place another with proper justification to promote and preserve efficiency.
- It helps the management to determine the training policy, wage policy, incentive plans, promotion policy and discipline with in industry.
- Performance appraisal is needed for effective manpower planning.

## **CHAPTER 6. LEADERSHIP and MOTIVATION:**

### **a. Leadership:**

**Leadership** is the art of motivating a group of people to act toward achieving a common goal. In a business setting, this can mean directing workers and colleagues with a strategy to meet the company's needs.

**Leadership** is a process of social influence, which maximizes the efforts of others, towards the achievement of a goal.

### **Need/Importance of Leadership:**

Following points indicate the need/importance of Leadership. Those are

- **Leadership Influence to Work More:**  
Main function of leadership is to influence others. This he does through showing his own interest in the work. He being positive towards the work can automatically make others work with the same interest and zeal?
- **Leadership Provides Guidance and Direction:**  
Main characteristics of leadership are the ability to guide and direct the followers. The leader guides the followers away from the problem areas and leads as well as directs them on right path to do jobs effectively.
- **Leadership Leads the Followers:**  
Some people are not in a position to work independently. They require someone to lead and guide them. They believe that they can do better if they are led by someone. This someone is a leader. The leader, therefore, works him and automatically others follow him.
- **Leadership Discovers New Methods:**  
He has to try to implement organization's policies and programmes designed to achieve objectives. He has to resort to various methods for getting the jobs done by his team. Many times, existing methods may not be capable of providing motivation. In such circumstances the leader has to discover new methods and initiate them for the purpose.
- **Development of Team Spirit:**  
A leader is a person who leads a group. The group members believe in him. The leader, by this, induces, persuades his members to work honestly to give maximum contribution. The leader has to develop team spirit in the group because, without this, work cannot be done effectively.
- **Creation of Confidence:**  
The leader, in order to get the work done properly, has to take his followers in confidence. He has to listen to their problems and difficulties and has to solve them, by giving proper guidance and direction.
- **Excellent Time Management:**  
A leader is further responsible to make maximum and proper use of the available time, as he has to complete the assigned jobs in stipulated time period, he therefore, cannot afford wastage of time on any other job or on any unproductive activity.
- **Builds High Moral among People:**

High moral among the employees is essential for making organization successful. It is the duty or responsibility of a leader to develop and maintain high morale among the employees. Moral denotes the attitude of employees towards organization, its objectives, management and their willingness to offer their honest contribution to the organization.

➤ **Effective Utilization of Resources:**

A leader utilizes human and non-human resources to maximum extent for productive purposes. At the same time he uses both resources efficiently and effectively. It leads to maximum wastages, sometimes there would be elimination of wastages also.

**Quality and Functions of a Leader:**

➤ **Honesty and Integrity:** A leader must be trustworthy, and be known to live their life with honesty and integrity.

A person of honesty and integrity is the same on outside and the inside A leader must have ethical behaviour thus the trust of the follower.

➤ **Personality/Confidence:**

A good leader is confident; in order to lead and set direction, a leader needs to appear confident in person and in leadership roles a leader who conveys confidence towards the proposed objective inspires the best effort from team members.

➤ **Human Skills:** Should know how to treat and talk to his members Give respect, give credit to people when due When people feel they that are being treated fairly, they reward a leader with loyalty and dedication.

➤ **Initiative:** A good leader must always take an initiative He/she must be able to construct and implement his own plans He/she must do the right thing at the right time without being told by others Must have a good imagination and visualization skills Must be able to combine new ideas with old ones and develop new tactics to solve problems.

➤ **Communication skills:** A good leader must be an effective and excellent communicator must be a good speaker and writer, must use simple language to give information, instructions and guidance to his followers.

➤ **Discipline:** A good leader must be a disciplined person must have respect for the rule and regulations of the organization; this is because his followers will follow his example.

➤ **Committed to excellence:**

The good leader not only maintains high standards, but also is proactive in raising the bar in order to achieve excellence in all areas there is no greater motivation than seeing the boss down in the trenches working alongside everyone else, showing that hard work is being done on every level.

### Manager Vs Leader:

The main difference between **leaders** and **managers** is that **leaders** have people follow them while **managers** have people who work for them. A successful business owner needs to be both a strong **leader** and **manager** to get their team on board to follow them towards their vision of success.

### Difference between Leader and Manager:

Sl. No.	Leader	Manager
01	<b>Leaders create a vision:</b> Leaders paint a picture of what they see as possible and inspire and engage their people in turning that vision into reality.	<b>Managers create goals:</b> Managers focus on setting, measuring and achieving goals. They control situations to reach or exceed their objectives.
02	<b>Leaders are change agents:</b> Leaders are proud disrupters. Innovation is their mantra. They embrace change and know that even if things are working, there could be a better way forward.	<b>Managers maintain the status quo:</b> Managers stick with what works, refining systems, structures and processes to make them better.
03	<b>Leaders are unique:</b> Leaders are willing to be themselves. They are self-aware and work actively to build their unique and differentiated personal brand.	<b>Manager's copy:</b> Managers mimic the competencies and behaviours they learn from others and adopt their leadership style rather than defining it.
04	<b>Leaders take risks:</b> Leaders are willing to try new things even if they may fail miserably. They know that failure is often a step on the path to success.	<b>Managers control risk:</b> Managers work to minimize risk. They seek to avoid or control problems rather than embracing them.
05	<b>Leaders are in it for the long haul:</b> Leaders have intentionality. They do what they say they are going to do and stay motivated toward a big, often very distant goal.	<b>Managers think short-term:</b> Managers work on shorter-term goals, seeking more regular acknowledgment or accolades.
06	<b>Leaders build relationships:</b> Leaders focus on people – all the stakeholders they need to influence in order to realize their vision. They know who their stakeholders are and spend most of their time with them.	<b>Managers build systems and processes:</b> Managers focus on the structures necessary to set and achieve goals. They focus on the analytical and ensure systems are in place to attain desired outcomes. They work with individuals and their goals and objectives.

07	<p><b>Leaders coach:</b> Leaders know that people who work for them have the answers or are able to find them. They see their people as competent and are optimistic about their potential.</p>	<p><b>Managers direct:</b> Managers assign tasks and provide guidance on how to accomplish them.</p>
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### Style of Leadership (Automatic, Democratic, Participative):

Some of the major styles of leadership are as follows:

1. Autocratic or Authoritative Style
2. Democratic Style or Participative style

#### 1. Autocratic or Authoritative Style:

Autocratic leadership is a management style wherein one person controls all the decisions and takes very little inputs from other group members. Autocratic leaders make choices or decisions based on their own beliefs and do not involve others for their suggestion or advice. This type of leadership style is only effective in organisations where the nature of work requires quick decision-making. The sole responsibility of the decision and the outcome is with the leader. It is considered to be a flexible leadership style but some would argue that it is outdated now.

#### 2. Democratic Style or Participative style:

Democratic leadership is a type of leadership style in which members of the group take a more participative role in the decision-making process. Researchers have found that this learning style is usually one of the most effective and leads to higher productivity, better contributions from group members, and increased group morale. Employees meet to discuss and resolve issues by giving everyone some opportunity to contribute to decisions.

Some of the primary characteristics of democratic leadership include:

- Group members are encouraged to share ideas and opinions, even though the leader retains the final say over decisions.



- Members of the group feel more engaged in the process.
- Creativity is encouraged and rewarded.

## b. Motivation:

The term **motivation** is derived from the Latin word movers, **meaning** “to move.” **Motivation** can be **defined** as the driving force behind our actions, fuelled by our desire for something. It is that internal strength that gets us to move, and give 100% to whatever goal or end we desire or plan to achieve.

- The person will work hardest to satisfy his motive. Motives are directed towards goals. Different people have different motive or needs.
- The employers or managers have to understand what motivates their subordinates and provide an environment in which they will be motivated and will produce good quality work at the acceptance rate.
- Internal and external factors that stimulate desire and energy in people to be continually interested in and committed to a job.

## Characteristics of Motivation:

On the analysis of definition of motivation, we can drive the following characteristics of motivation:

- **Motivation is a psychological phenomenon**—Motivation is an internal feeling which generates within an individual. Motivator factors are always unconscious but they are to be aroused by managerial actions.
- **Motivation is based on needs**—Needs may be consciously or unconsciously felt. Needs may be (a) fundamental needs such as food, clothes, shelter etc. and (b) ego-satisfaction needs such as self- development, self actualisation. These needs vary with individuals and with the same individual over time.
- **Goals are motivators**—Motivation causes goal-directed behaviour. Feeling of needs by the person causes him to behave in such a way that the tries to satisfy himself. Goal and motives cannot be separated. Therefore it is essential for the management to know employee's goal to push him to work because a man works to achieve the goals. As soon as the goal is achieved, he would be no longer interested in work.
- **Motivation is different from satisfaction**—Motivation implies a drive toward an outcome while satisfaction involves outcomes already experienced satisfaction is the contentment experienced when a want is satisfied.
- **Motivation is a continuous process**—Motivation is an unending process. Wants are innumerable and cannot be satisfied at one time. If one basic need is adequately satisfied for a given individual it loses power as a motivator. But other needs continue to emerge. As satisfaction of needs is an unending process, so the process of motivation is also unending.
- **Motivation is related to person in totality**—Person in totality, not in part, is motivated. A person's basic needs are inter-related because each individual is an integrated organised whole.

## Importance of Motivation:

Following are the importance of motivation in an organization:

- **Greater efficiency:** Motivation enhances the efficiency of the employees and of organization. When employees are motivated, they can perform with commitment and dedication.
- **Reduction in absenteeism and labour turnover:** Motivated employees may not remain absent or leave the organization. They develop a sense of belonging towards the organization and thus improve their overall performance.
- **Team spirit:** Motivation improves team spirit of employees, and this improves the work environment and the overall performance of the employee and the organization.
- **Reduction in wastages and breakages:** Motivated employees take great care in handling machines and other resources. This will reduce wastages and breakages, thus resulting in higher benefits to the organization.
- **Cordial relations:** Motivation enables cordial and healthy relationship in the organization. Motivation helps reduce labour grievances and disputes. It ensures sound relations between the management and the labour. It improves the overall efficiency of the organization.
- **Promotion of innovation:** Motivated employees use their initiative to find out innovative ways in the performance of their operations. Such employees are more creative and help the organization to gain the competitive advantage.
- **Optimum use of resources:** Motivation leads to greater employee involvement and lesser wastages. This leads to optimum utilization of resources.
- **Corporate image:** Motivated employees are more loyal to the organization. They work with a sense of commitment and dedication. This improves the overall performance of the employee, which enables better results for the company. This results in better relations with all the stakeholders.

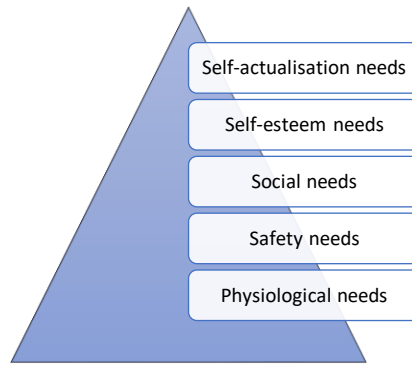
### Factors affecting Motivation:

Following are the factors that affecting motivation in an organization:

- **Relationship between co-workers:** Workplace is all about people working together to achieve a uniform goal, so it's important that all the co-workers respect each other and never show disrespect towards each other.
  - **Leadership role at workplace:** Leader plays a key role in maintaining a conducive work environment. The leader should understand how to deal different employees. It is imperative on the leaders that he should respect the employees and this would make others take a leaf out of his book and this would help in prevailing a culture of mutual respect and honor.
  - **Managing conflict at Workplace:** Whenever people from different background or group of people work together then there are chances that a conflict will arise. So it's important to manage the conflict in a way that it will not affect the environment of the workplace.
  - **Workplace Incentives:** Incentive where are on achieving financial results for the company are important, on the other hand they could very well be on how well on maintains him/herself at workplace and add to the serenity of the organization.
  - **Workplace Culture:** The Organizational Culture dictates the norms and behaviours that people depict while at work. Work culture engulfs everything at work from way people enter the office to the way they leave, the way they dress to the way they eat, it's how one does things at work, they could be official or non-official, but it impact deeply on the organization, and motivation people show.
  - **Workplace Education or Learning:** Learning at business is beneficial to both the person and the organization, on one hand where its adding to the strength of individual, similarly the business is benefiting from the skills, attitudes and behaviour the working is acquiring.

### Theories of Motivation (Maslow):

The Maslow motivation theory is typically represented by 5 steps by



- **Physiological needs:** Such as hunger, thirst and sleep.
- **Safety needs:** Such as security, protection from danger and freedom from pain.
- **Social needs:** Sometimes also referred to as love needs such as friendship, giving and receiving love, engaging in social activities and group membership.
- **Esteem needs:** These include both self-respect and the esteem of others. For example, the desire for self-confidence and achievement and reorganisation and appreciation.
- **Self-actualisation:** This is about the desire to develop and realize your full potential, to become everything you can be.

#### Methods of improving motivation:

The followings are the different methods for improving motivation in an organisation:

- **Recognize great work:** One of the **most important factors** that contribute to employee motivation is how often their hard work is recognized. **70%** of employees say that motivation and morale would improve massively with increased recognition from managers.
- **Set small, measurable goals:** We've all had projects that just drag on and on, and seem to never end. It can be really demoralizing to be stuck in a rut, which is why seeing how you've made visible progress feels so good. It's also a clear indicator that our work is making a difference.
- **Celebrate Results:** Part of what makes setting small and measurable goals so important is that it provides plenty of opportunities to celebrate your team's hard work. This doesn't mean you need to give a standing ovation to every employee who made it to work on time, but it is crucial to let everyone know exactly how (and how much) much each of their contributions move the organization forward.
- **Stay Positive:** A simple shift in bias toward positivity and happiness can have an immediate impact on your work experience and relationships, which are major factors in success, motivation, engagement, and **productivity**.
- **Take Regular breaks:** Sitting all day isn't good for you, and neither is working nonstop. Taking a short break every hour or two can have a positive effect on both your mind and body. Get up, stretch your legs, rest your eyes—and come back to work with a refreshed mind and body.
- **Stay Healthy:** When you're ill, stay at home! It's unlikely that you'll be getting any of your best work done when you can hardly hold your head up, and not taking the time to rest will only prolong your sickness and prevent your body from recovering.

- **See and share the big pictures:** A large part of understanding the purpose behind your work is seeing how it fits into the larger picture. You can help boost motivation in the workplace by ensuring your team understands how each of their efforts impacts the organization, customers, and the community.
- **Encourage Teamwork:** Teamwork is one of the greatest motivators out there. Knowing that your colleagues have your back and are your cheerleaders is an amazing feeling. When your motivation dips, your teammates are right there with you, rooting for you as you complete your next project.

### Importance of Communication in Business:

Business owners like you should focus on communication when running the operations side of your company. After all, selling and delivering products or services without excellent communication can be a huge problem. Regardless of how it's done, below are numerous reasons why you have to emphasize it at work:

- **Builds a good team:** Having team leaders who are good communicators can encourage employees to achieve your common goals. With open communication both oral and written, workers in a team know their responsibilities and when to ask for help for anything. Moreover, communicating professionally and respectfully can develop a robust positive atmosphere at work.
- **Encourages feedback:** With effective communication, people in the workplace feel more confident at talking with each other, giving them the opportunity to express their ideas about the operations to the management. It should remember that feedback is crucial in communication. It can be a two-way process where the top management provides feedback to the employees about their work performance, and the employees also feel good at giving feedback with regards to how well the company's policies are performing.
- **Boost Customer relationships:** Your business won't succeed without customers and communicating with them effectively is also one of the essential ways to create customer loyalty in business. Whether you sell or deliver products and services, you have to listen and understand the needs of your customers and provide them with excellent customer service by answering their questions.
- **Helps enforce rules:** Every company has a set of policies and regulations that should be followed for the entire organization to succeed. Whether it's a specific process to perform a task or the consequences for underperformance, you should always make all these things clear to your workers and you need to develop strong communication skills to do that.

### Types of Barriers of Communication:

The followings are the barrier in communication in a workplace:

- **Lack of Clarity:** Clarity of communication is essential in the workplace. To help deliver a clear message, get to your point quickly, give the listener context, and check for understanding. Don't be condescending, but make sure your listener understood your message.
- **Inconsistency:** Be aware of how you communicate with your individual team members in the course of a day, week, or month. You have several shifts, with part-time and full-time employees coming and going throughout the week. Your late-shift employees need the same level of communication as your daytime employees.
- **Language Differences:** Managers need to do their part to close the communication gap with their employees who have limited English proficiency. For example, managers can learn some key phrases in Spanish, or invest in training to help their ESL employees communicate more effectively in English.
- **Non Verbal Cues:** What you *don't* say is just as important as your spoken words. Make sure your body language is communicating a message of attentiveness, friendliness, and

acceptance. Maintain eye contact when you're speaking and listening and avoid gestures such as furrowing your brow or crossing your arms.

SABYASACHI PATRA

## **CHAPTER 7.WORK CULTURE, TQM & SAFETY:**

### **HUMAN RELATIONSHIP:**

*A human relation is the relationship between human resources of the organization. It incorporates management-employees, employees-employees relationship. It also consists of relationship between the organization's human resource & outsiders (such as clients, suppliers).*

*Human resource is one of the important assets of an organization. Hence, healthy human relations lead to increased productivity and efficiency. It also plays crucial role in growth and success of the organization.*

*The approach of human relations deals with the psychological variables of organizational functioning in order to increase the efficiency of organizations. It is the process of integration of man-to-man and man-to-organizations.*

In the broadest sense, the term 'human relations' refers to the interaction of people in all walks of life—in schools, colleges, homes, business, government and so on. But when we talk of 'human relations in industry', then, in a wider sense, it signifies the relationship that should exist between the human beings engaged in industry.

According to Keith Davis "Human relations deals with motivating people in organizations to develop teamwork which effectively fulfil their objectives and achieves organizational objectives."

### **Importance of human relations in the workplace:**

Relationships between employees and management are of substantial value in any workplace. Human relations are the process of training employees, addressing their needs, fostering a workplace culture and resolving conflicts between different employees or between employees and management. Understanding some of the ways that human relations can impact the costs, competitiveness and long-term economic sustainability of a business helps to underscore their importance.

### **PERFORMANCE IN ORGANIZATION:**

Business owners need employees that are able to get the job done, because employee performance is critical to the overall success of the company. Business leaders need to understand the key benefits of employee performance so that they can develop consistent and objective methods for evaluating employees.

**Successful Employees Achieve Goals:**One of the most important factors in employee performance is to achieve goals. Successful employees meet deadlines, make sales and build the brand via positive customer interactions.

**Create a Positive Work Environment:**When people are doing their jobs effectively, morale in the office gets a boost. Employees, who aren't motivated to get the job done as indicated, can bring down an entire department. It is important to foster a positive, energetic work environment. Cultivate a positive work environment by rewarding high-performing employees with incentives and group recognition during meetings.

**Measure Employee Growth:** Using employee evaluations on a consistent basis helps employees see their growth, so that they can feel good about making progress over time. It also helps them set new goals, keeping the energy in the office high. Rewarding high-performing employees often motivates these employees to exceed their efforts from what it was during the previous period.

**Establish Team Trends:**When your employees are not performing well, it negatively affects productivity and ultimately, the bottom line. Ultimately, good employees are productive, which creates great working environments and increases overall productivity. Evaluations help you establish where you can help employees grow so that they can do even better.

## **RELATIONSHIPS WITH PEERS, SUPERIORS AND SUBORDINATES:**

It is always an experience to interact with the peer, superior and subordinate groups. All the three groups of people give a different feel and learning, when we interact with them. All the three groups are important and very much existent in all areas of life. Whether it is family, office, friends, mentors, teachers, bosses, acquaintances, etc, all of them are typically divided into three categories.

### **Peers:**

The first category will always be peers because we respond and reciprocate to them very easily and very firstly. They are typically the same level as us either in intelligent quotient or status or family structure or in any other way at par with us. We normally tend to be comfortable with them in terms of talking and interacting. One more reason of a person being comfortable with peers is they have similar problems and they empathize very well with each other. For example colleagues in office, friends, cousins, acquaintances, social circles etc.

### **Superiors:**

The second category is superiors. The teachers, mentors, bosses, family, etc generally fall in this category. They are the ones who are higher than us as far as the knowledge or experience or intellect quotient or relationship goes. They expect a certain kind of respectful treatment from us, while we deal with them. We normally tend to take time to interact with them directly; more so, particularly because they also have an expectation barrier to break first with us. They are the ones from whom you learn effortlessly because we know that they know more than us. For example uncles, aunts, bosses, bosses of bosses, mentors, aged consultants, senior positions in any way, etc.

### **Subordinates:**

The third category opens up the scope of being a mentor to others, as well as taking work from them or helping them to cope up. They are lesser either by age, experience, knowledge or relationship and that's why we feel good dealing with them and sometimes even show them off our seniority. They are the ones who need our reciprocation for their growth but still our responses to them are important; if we have to take work from them or they are in our social circles or fall in as a team to achieve targets in professional fronts.

## **TQM (TOTAL QUALITY MANAGEMENT):**

A core definition of total quality management (TQM) describes a management approach to long-term success through customer satisfaction. In a TQM effort, all members of an organization participate in improving processes, products, services, and the culture in which they work.

Total quality management benefits and advantages:

- Strengthened competitive position
- Adaptability to changing or emerging market conditions and to environmental and other government regulations
- Higher productivity
- Enhanced market image
- Elimination of defects and waste
- Reduced costs and better cost management
- Higher profitability
- Improved customer focus and satisfaction
- Increased customer loyalty and retention
- Increased job security
- Improved employee morale
- Enhanced shareholder and stakeholder value
- Improved and innovative processes

### **Industrial Accidents – Causes:**

Industrial accidents take place due to some negligence on the part of employer, some carelessness on the part of employees and some natural disasters.

**According to D Hoffmann and A Stetzer, the following cause industrial accidents:**

- (a) Improperly guarded equipment.
- (b) Defective equipment, machines
- (c) Unsafe Storage: Congestion over loading
- (d) Improper illumination in the workshop
- (e) Fall on stairs, ladders, and walkways
- (f) Congested workplace
- (g) Unsafe work acts such as throwing materials.
- (h) Unsafe procedures in loading, placing or mixing or by lifting improperly.
- (i) People with impaired vision; under the influence of drugs or alcohol, and who exhibit negative behaviour.

### **Industrial Accidents – Losses Due to Industrial Accidents (Direct and Indirect Costs)**

Accidents are enormously costly, cause loss directly or indirectly and the losses are both visible and invisible. The latter are immeasurable and cannot be valued in monetary terms.

**The various losses which a management suffers because of the time lost due to accidents are:**

- (i) Direct Costs, viz., the wages of employees; compensation and the cost of medical aid; the cost incurred on training a new worker; loss due to waste of raw materials; and loss of production and quality arising out of the inexperience and lack of skill of the new employee.
- (ii) Indirect costs, which include the following-
  - (a) The cost which the government has to incur because it has to maintain a larger number of factory inspectors to check accidents; because it has to spend more on the employee's health insurance and other social security benefits; and because the cost of all these is recovered by imposing higher taxes on the people;
  - (b) The cost to the employee of the time he has been without work because of his accident;
  - (c) The cost of the lost time because other employees stop work out of curiosity, out of sympathy with the injured employee, or because they have to assist the injured worker;
  - (d) The cost of time lost by a foreman, a supervisor or other executive while assisting the injured employee, investigating the cause of the accident, arranging for his replacement, selecting and training a new employee, preparing the accident reports, and attending hearings conducted by government or other officials;
  - (e) The cost incurred on the machine or tools that might have been damaged, and or the cost of the spoilage of material when the accident occurred;
  - (f) The loss of profit on the production which the injured employee\* would have been responsible for, including the loss incurred because the machine on which he was working was idle;
  - (g) The cost incurred on account of the wages paid to an employee during the period in which he was idle following his injury and even after his return to work, when his production would be worth much less than it was before he sustained the injury;



(h) The loss following the excitement among, or the weakened morale of, the other employees following the occurrence of the accident and the consequent lower productivity throughout the plant; and

(i) Overhead costs – the expense incurred on light, heat, rent and such other items, which continue to be used while the injured employee is a non-producer.

It is obvious, then, that an accident causes a lot suffering and loss to the employees, the employer, the government, and even to society. It is particularly hard on the employee's family, especially when he is the only bread-winner. Every accident lowers the morale of his fellow-workers.

They become pessimistic and increasingly aware of the hazardous nature of their work, as a result they do not, or cannot put their best efforts to achieve optimum production. Accidents, therefore, increase the over-all cost of production, and adversely affect productivity and morale.

### **Industrial Accidents – Systems for Controlling of Major Accidents Hazards in India**

The worst industrial accident ever, involving the catastrophic release of extremely toxic methyl isocyanate from a pesticide-manufacturing factory, occurred in Bhopal, India, on 3 December 1984, killing more than 2,500 people and affecting the health of several thousand people. The incident drew much attention to the problem of major hazards associated with the operation of certain chemical plants.

In India, a strong need was felt to prevent the recurrence of such accidents by strengthening the country's occupational safety and health system. The Government initiated work to assess the existing safety measures in the chemical industry and to suggest remedial measures. The prevention and control of major accident hazards became a pressing issue.

At the request of the Government of India, the ILO sent a mission to India in April 1985 to identify and advise the government on the early priorities for establishing a system for controlling major accident hazards in the country. The mission, consisting of two experts, carried out a rapid survey of some representative chemical factories in different parts of India, assessed the prevailing situation in the chemical industry, and prepared a report.

#### **The mission made the following recommendations:**

i. A list of hazardous chemicals and flammable gases should be established, each having a specific quantity such that any factory handling any substance above the stated quantity should be a major hazard work black by definition.

ii. An inventory of major hazard works should be obtained for each state.

iii. The list of hazardous chemicals and the inventory of the major hazard works should be maintained in a computerized data bank.

The Ministry of Labour implemented the ILO project on the establishment and initial operation of a system for controlling major accident hazards initially in twelve selected states. The immediate objective of the project was to strengthen the national system for preventing occupational accidents in certain industrial activities.

This was done through identification, analysis, and control of industrial activities involving hazardous chemicals and processes that have the potential to cause major accidents.

#### **The system for controlling major accident hazards in India, as established under the ILO project, consists of the following elements:**

i. Three-tier technical organization on major accident hazards control.

ii. Rules for the control of major accident hazards.

iii. Computerized data bank.

iv. Strengthening of labour institutes and inspectorates of Dock Safety.

v. Strengthening of the inspectorates of factories.

vi. Training strategy.

#### **i. Three-Tier Technical Organization:**

A three-tier technical organization, incorporating the national, regional, and state levels, was set up to control major accident hazards. At the national level, a multidisciplinary advisory division to control major accident hazards, staffed with relevant specialists, was set up in the Central Labour Institute, Mumbai.

At the regional level, cells to control major accident hazards were set up in the three Regional Labour Institutes in Kolkata, Chennai, and Kanpur.

The advisory division and the cells function as resource centres for the control of major accident hazards. They also provide technical advice and guidance on hazardous chemicals to industry; investigate major accidents; inspect major accident hazard works; develop technical guidelines and training material; conduct specialized training programmes on the control of major accident hazards

and on chemical safety to different target groups; and conduct studies and safety audits of hazardous operations.

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**ii. Rules for the Control of Major Accident Hazards:**

Draft regulations on the control of, major accident hazards were first prepared as model rules that were then notified to the states under the Factories Act of 1948.

Through extensive consultations between the Ministry of Labour and the Ministry of Environment and Forests, these regulations were later harmonized with the draft rules prepared by the latter. The Ministry of Environment and Forests included the rules as the 'Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989' under the Environment (Protection) Act of 1986.

These rules to control major industrial accident hazards aim at preventing major accidents in certain industrial activities. In all, eleven authorities have been entrusted with the responsibility of enforcing the provisions in their respective fields.

For example, the Chief Inspectors of Factories were assigned the duty of enforcing the relevant provisions of the rules in factories and the Chief Inspector of Dock Safety assigned the same job in ports. These rules are also being included under their respective workplace-related legislation such as the Factories Act of 1948.

**iii. Computerized Data Bank:**

Computerized data banks, which have appropriate databases on the control of major accident hazards, were established in the Central and the three Regional Labour Institutes. These data banks enable the storage, retrieval, and dissemination of information.

The databases so far created include the inventories of hazardous chemicals; the major accident hazard works/sites and the specialists in the field of major accident hazards control; the CIS database on occupational safety and health; the incidents involving major accident risk; and the details of the specialized training programmes conducted for the control of major accident hazards among the seven target groups within the enforcement authorities and industry.

The databases on the inventories of hazardous chemicals, the major accident hazard sites/works, and the incidents of major risk are updated continuously.

**iv. Strengthening of Labour Institutes and Inspectorates of Dock Safety:**

The Central and the Regional Labour Institutes and the Inspectorates of Dock Safety Have been strengthened by recruiting/deploying officers with qualifications and experience in chemical engineering to advice on chemical safety and the control of major accident hazards.

The technical competence of these officers and other specialists has been developed by providing them with appropriate training, in India and/or abroad, in the control of major accident hazards. This has enabled the institutes and the Inspectorates of Dock Safety to develop technical guidelines and training materials, to carry out joint inspections with Inspectors of Factories, to perform studies and safety audits of hazardous operations, to conduct training programmes for the Inspectors of Factories, Inspectors of Dock Safety, and technical personnel from the industry, and to provide technical advice to the major accident hazard sites/works.

#### **v. Strengthening the Inspectorates of Factories:**

The Inspectorates of Factories of the states that have a considerable number of major accident hazard factories were strengthened with the recruitment of inspectors with chemical engineering qualifications. All the inspectors were trained in the control of major accident hazards abroad and/or in India.

In addition, the inspectors were given specialized in-service training on inspecting major accident hazard sites. The criteria for prioritizing the major accident hazard sites were developed. The development of the technical competence of the inspectors and the provision of necessary instruments to the inspectorates has thus enhanced their ability to execute their tasks.

#### **vi. Training Strategy:**

Keeping in mind the emphasis laid in the project on training, a three-pronged training strategy was developed. The three focal points were to identify the target groups, to develop appropriate training material, and to conduct training programmes.

The target groups needing specialized training in the control of major accident hazards were identified. These included inspectors from the Inspectorates of Factories and Inspectorates of Dock Safety; senior executives; safety officers; workers who are members of safety committees; supervisory trainers from the major accident hazard works and port authorities; and trade union leaders at both the national and regional levels.

Training manuals were developed to provide the background reading material needed by these training programme participants. There are manuals available now on the techniques of inspecting chemical plants and on the control of major accident hazards that are meant for the senior Inspectors of Factories, safety officers, supervisory trainers, and workers who are members of safety committees.

Over 100 specialized training programmes and seminars have been held, with nearly 3,500 participants from various target groups. A notable feature has been the input of several ILO experts on various aspects of the control of major accident hazards in these seminars and training programmes.

### **Industrial Accidents – Safety Measures**

In order to avoid accidents on the job, industrial safety is of utmost important. Accident results in partial or permanent disability or even death of an employee involving good amount of cost and social hazards, therefore, safety is needed for –

1. Preventing partial or permanent disability or death of talented workers.
2. Preventing suffering to employees
3. Minimizing damage to equipment and machinery
4. Increasing efficiency in production
5. Reducing cost of production

#### **Four Levels of Safety Interventions:**

**The four levels of workplace safety interventions are:**

##### **1. Intervention at the Managerial Level:**

**The various components of managerial interventions include:**

- a. Assessing workplace safety aspects and possible threats or hazards.
- b. Drafting safety policy.

- c. Safety policy implementation & follow-up on a regular basis.
- d. Safety Training & drills on a periodic basis.
- e. Legal & statutory compliance
- f. Workload assessment
- g. Equipment and maintenance audit.

## **2. Technological Interventions:**

The technological interventions refer to technology-audit and ensuring that better technologies are used and employed in the organizations that enhance safety aspects.

## **3. Behavioural Interventions:**

Making safety at workplace a way of life rather than a periodic inspection issue is the real challenge. Anything and everything that an employee or a manager does must be in line with the safety practices. Safety should become everyone's agenda rather than being an enforcement issue. Zero tolerance for any unsafe practice or unsafe act, zero procrastination of safety aspects, prioritizing safety over everything are some of the desired behaviour from employees especially from managers.

## **4. Ethical Interventions:**

In this era of competition, market volatility and uncertainty there may be sometimes a tendency to cut-corners when it comes to safety issues. No such steps must be permitted that endangers lives of the employees or of any other member of the society due to operations of an organization.

Seven Basic General Industry Safety Rules:

- 1. Keep work areas clean.** Proper housekeeping alone can go a long way in preventing injuries. Injuries such as slips, trips, falls, lacerations, sprains, strains, etc. can be reduced from [keeping work areas organized and clean](#).
- 2. Use the proper tool for the job.** Avoid the first impulse to use whatever tool (or object) is around you to get a work task done. Using the wrong tool for the job can result in an injury or damage to the tool which can lead to an injury in the future.
- 3. Always wear the proper PPE for the work task.** The lack of PPE, or the use of improper PPE, leads to many injuries in the workplace. PPE is the last line of defense when protecting yourself from the hazards of your work. If you come into contact with a hazard when not wearing the correct PPE the injury will be more severe than if you were wearing it.
- 4. Never work on live equipment.** Working on energized equipment is an unsafe act that can result in serious injuries or fatalities. Always follow proper lock out tag out procedures prior to performing any maintenance or repair work on equipment.
- 5. Make sure chemicals are properly labeled and stored.** OSHA issues many citations regarding the hazard communication every year. Improper labeling and storage can lead to injuries or property loss due to fires, corrosion, etc.
- 6. Communicate hazards to other personnel.** Never assume that a co-worker understands the hazards of a task especially if they are new or new to the task. When work plans or conditions change take the necessary time to inform others of the impacts the changes have on safety.
- 7. Stop work when needed to address hazards.** Always [stop work to take the time](#) to get hazards addressed to make it safe to continue the task. Whether you need to involve other personnel such as a supervisor or you need to take time to get the right tool for the job, always take the time to do so.

## Personal Protective Equipment

[Personal Protective Equipment](#) guidelines allow employees to use any kind of equipment that can protect their bodies from workplace hazards. Personal protective equipment can be used to protect the face, eyes, ears, head, the respiratory system, the legs and other parts of the body. In fact, industrial accident statistics reveal that failure to use proper personal protective equipment is the leading cause of workplace related accidents. Every employee must use personal protective gear whenever an industrial task requires them to do so.

PPE includes the protection of:-

1. Head Protection
2. Eye and Face Protection
3. Hearing Protection
4. Hand and Foot Protection
5. Protective Clothing and Personal Hygiene

## **CHAPTER 8.LEGISLATION:**

### **INTELLECTUAL PROPERTY RIGHTS (IPR):**

Intellectual property is the product of the human intellect including creativity concepts, inventions, industrial models, trademarks, songs, literature, symbols, names, brands,....etc. Intellectual Property Rights do not differ from other property rights. They allow their owner to completely benefit from his/her product which was initially an idea that developed and crystallized. They also entitle him/her to prevent others from using, dealing or tampering with his/her product without prior permission from him/her. He/she can in fact legally sue them and force them to stop and compensate for any damages.

Intellectual property refers to creations of the mind: inventions, literary and artistic works, symbols, names, pictures, models and industrial designs.

Intellectual property is divided into two categories:

- Industrial Property, which includes: inventions (patents), trademarks, industrial designs and models and geographic indications of source.
- Copyright, which includes: literary and artistic works, namely novels, poems, plays, films, musicals, cartoons, paintings, photographs, statues and architectural designs.

Related Rights is a term in copyright law, used to include the rights of performers in their performances, the rights of producers of phonograms in their recordings and the rights of broadcasting organizations in the radio and television programs they air

#### **Trademark:**

A trademark is a sign that individualizes the goods or services of a given enterprise and distinguishes them from those of competitors. To fall under law protection, a trademark must be distinctive, and not deceptive, illegal or immoral.

#### **Copyright:**

Copyright (or author's right) is a legal term used to describe the rights that creators have over their literary and artistic works. Works covered by copyright range from books, music, paintings, sculpture, and films, to computer programs, databases, advertisements, maps, and technical drawings.

#### **Patent:**

Patent is an exclusive right granted by law to an inventor or assignee to prevent others from commercially benefiting from his/her patented invention without permission, for a limited period of time in exchange for detailed public disclosure of patented invention.

### **FEATURES OF FACTORIES ACT 1948 WITH AMENDMENT (Only silent points):**

#### **Trade Name:**

A trade name or business name is a name that uniquely distinguishes a business from others.

**The Factories Act, 1948-** The Factories Act, 1934 were subsequently amended in 1935, 1936, 1937, 1940, 1941, 1944, 1945, 1946, 1947 and major amendment in 1948. During the interim congress regime a five-year plan was drawn to consolidate the la

#### **Objective of the Act:**

- To prevent human beings from working long hours with bodily strain or manual labour.
- To provide the employees to work in healthy and hygienic conditions.
- To safeguard the workers from hazardous works and the prevention of accidents.
- To ensure annual leaves with wages.

- To protect women and children in the course of employment.

#### Importance of the Act:

The Factories in India is the most essential element regarding economic development, also it is the duty of the state to safeguard every economic development, and also it is the duty of the state to safeguard every citizen of India with health and safety conditions which are a most important notable thing for the employees in factories. The factories act aimed to safeguard the interest of workers, precautions and preventions in hazardous works, health and safety in the working zone, to stop their exploitation, cast obligations towards the employers and managers to protect every employee and protection of women and children.

#### Salient features of the Act:

- Working hours of the workers should not exceed 48 hours per week and there must be a weekly holiday.
- For the protection of the health of the workers the Act lays down, there must be prevention and precautions in every factory. There must be restrooms, adequate lighting, ventilators, and temperature to be provided. The workplace should be kept clean and hygiene
- To ensure the safety of the workers, the factories should be fully fenced and children should not be allowed to work in hazardous and confined areas. Also, the state government has to monitor every factory to ensure the safety measures are taken and followed as per the guidelines.

#### IMPORTANT CONCEPTS AND DEFINITIONS:

**(a) Factory:** It means any premises including the precincts thereof:-

- i) wherein ten or more workers are working, or were working on any day of the preceding twelve months and in any part of which a manufacturing process is being carried on with the aid of power, or is ordinarily so carried on, or
- ii) wherein twenty or more workers are working or were working on any day of the preceding twelve months, and in any part of which a manufacturing process is being carried on without the aid of power, or is ordinarily so carried on.

**(b) Worker:** It means a person (employed directly or through any agency including a contractor) with or without the knowledge of the principal employer, whether for remuneration or not in any manufacturing process, or in cleaning any part of the machinery or premises used for a manufacturing process, or in any kind of work incidental to or connected with the manufacturing process, or the subject of manufacturing process (but does not include any member of the armed forces of the Union).

**(a) Manufacturing process:** It means any process for: -

i) Making, altering, repairing, ornamenting, finishing, packing, oiling, washing, cleaning, breaking up, demolishing or otherwise treating or adapting any article or substance with a view to its use, sale, transport, delivery or disposal or

ii) Pumping oil, water, sewage or any other substance or

iii) Generating, transforming or transmitting power or

iv) Composing types for printing, printing by letter press, lithography, photogravure or other similar process or book binding,

v) Constructing, reconstructing, repairing, refitting, finishing or breaking up ships or vessels,

vi) Preserving or storing any article in cold storage.

**(d) Hazardous Process:** It means any process or activity in relation to an industry specified in the First Schedule where, unless special care is taken, raw materials used therein or the intermediate or finished products, by-products, wastes or effluents thereof would cause material impairment of the health of the persons engaged in or connected therewith, or results in the pollution of the general environment, provided that the State Government may, by notification in the Official Gazette, amend the First Schedule by way of addition, omission or variation of any industry specified in the said Schedule.

**(e) Fatal Injury :** It means injury resulting from industrial accident which caused death to the worker.

**(f) Non-Fatal Injury** means injury resulting from industrial accident, which prevented injured worker from attending to work for a period of 48 hours or more immediately following the injuries.

**(g) Adult:** It means a person who has completed his eighteenth year of age.

**(h) Adolescent:** It means a person who has completed his fifteenth year of age but has not completed his eighteenth year.

**(i) Child:** It means a person who has not completed his fifteenth year of age.

**(j) Average Daily Number of Workers Employed :** The average daily number of workers employed is calculated by dividing the aggregate number of attendances on all the working days (that is, man days worked) by the number of working days in the year. Attendance on separate shifts (e.g. night and day shifts) should be counted separately. Days on which the factory was closed for whatever cause and days on which the manufacturing process was not carried on should not be treated as working days. Partial attendance for less than half a shift on a working day should be ignored, while attendance for half a shift or more on such day should be treated as full attendance.

**(k) Mandays Worked:** Mandays Worked means total number of attendances during a calendar year.

**(l) Average Number of Hours Worked per week** -The Average number of hours worked per week means the total actual hours worked by all workers during the year excluding the rest intervals but including overtime worked divided by the product of average number of workers employed daily in the



factory and 52 weeks or Average number of hours worked per week = total number of man hours worked/number of weeks in which production process has taken place.\* average number of workers employed daily. In case the factory has not worked for the whole year, the number of weeks during which the factory worked should be used in place of 52.

## **FEATURES OF PAYMENT OF WAGES ACT 1936 (ONLY SALIENT POINTS):**

### **Wages:**

Wage is monetary compensation or remuneration, personnel expenses, of the labor paid by an employer to the employees in exchange for work done. Wage may be calculated as a fixed amount for each task completed or at an hourly / daily rate / based on an easily measured quantity of work done.

Wages include all remunerations which are expressed in terms of money and **"include"** the following:

- Amount payable under the terms of employment
- Payable under any award / settlement or order of a Court
- Paid as Overtime work or for holidays / leave period
- Payable on account of Termination of employment"

### **Objectives:**

- Regulate payment of wages to specific class of workers employed in industry without any wrongful deductions apart from what is mentioned in the Act
- Define regulations around fixing of wage period, time and mode of payment of wages
- Regulates the rights of the workers covered under this Act

### **Applicability:**

This Act is applicable to all persons employed, whether directly or through contractors, in a factory or certain specified industrial or other establishments.

- The Central Government is responsible for enforcement of the Act in Railways, Mines, Oilfields and air transport services.
- The State Government are responsible for it all other establishment (factories and other establishments)
- The Act does not cover those whose wage is Rs. 24,000/- or more per month

### **Salient Features of the Act:**

#### **A. Obligations of Employers:**

Every employer is responsible for the payment of wages to all the employees that he employs. Additionally, apart from the Employer, all the person so named / person so responsible to the employer / the person so nominated shall also be responsible for such payment.

#### **B. Wage Period:**

Every person responsible for Wage Payment shall fix periods in respect of which such wages shall be payable. No wage-period shall exceed one month.

**C. Time and Mode of Payment of Wages:**

Every establishment having employees in excess of 1,000 person shall pay the wages before the expiry of the 10<sup>th</sup> day. All other employers shall make the Wage payment by the expiry of 07<sup>th</sup> day.

Employers shall make the payment of wages in current currency notes i.e. cash or via Bank transfer.

**D. Deductions from Wages:**

Employers shall ensure that wages are paid to all employees without deduction of any kind except those authorized by or under this Act.

Deduction includes the reduction of wages for the following:

- Fines
- Absence from duty
- Damage to or loss of goods including loss of money where such damage or loss is directly attributable to employee's neglect or default
- Recovery of advances / loans and the interest due in respect thereof
- Adjustment of over-payments of wages
- Payments made by the employed person to the employer or his agent shall also be deemed to be a deduction from wages.

Deductions **does not include** following penalties (provided the rules w.r.t. penalty are in conformity with the requirements as specified by the State Government):

- Withholding of increment or promotion
- Reduction to a lower post
- Suspension

**A. Maintenance of Registers:**

Employers shall maintain Registers and records giving the following details:

- Particulars of persons employed
- Work performed by Employees
- Wages paid to employees and deductions made from their wages

All these Registers are required to be preserved for a period of 03 Years.

**Display of Notice of Abstracts:**

All Employers shall display Notice containing such abstracts of this Act and of the rules made thereunder in English and in the language of the majority of the persons employed in the factory. It includes the following:

- List of acts and omissions approved under Rule 12
- Rates of wages payable to employees (excluding those in supervisor / manager positions).

**A. Penalties for Offences under the Act:**

If Employers fails to maintain registers required under this act or wilfully refuses to furnish such information or return or wilfully furnishes false information shall be punishable with fine up to Rs. 1,500 and may extend to Rs. 7,500.

Additionally, If Employers fails to pay the wages by the date fixed by the authority shall be punishable with an additional fine which may extend to Rs. 750 / Day.

#### **B. Un-disbursed Wages in event of Death of an Employee:**

In case the Wages cannot be paid on account death of an employee or non-availability of details of his / her whereabouts, such amounts is required to be paid to person nominated by him in this behalf. In case employee has not nominated anyone, such amount shall be deposited with the prescribed authority.

The following mentioned are the main deductions that are allowed under the Payment of Wages Act, 1936-

- Fines;
- Deduction for the actual period of absence
- Deduction for the damage or loss of goods expressly entrusted to the employed person;
- Deduction for house accommodation;
- Deduction for the amenities and service supplied by employer with agreement to the employee;
- Deduction for recovery of advances and interest, and adjustment of overpayment;
- Deductions for recovery of loans from any fund constituted for the welfare of labour as agreed between employer and employee;
- Deduction for income tax;
- Deduction on orders of a court or other authority;
- Deduction for subscription and repayment of advance from any Provident Fund;
- Deduction for payments to cooperative societies as agreed between employer and employee;
- Deduction of premium for LIC policy on written authorization of the employed person; or any other investment for Post Office Saving Schemes;

However, as mentioned in section 7 of the Act, the total amount of deductions should not exceed 75% of wages of the employee in any wage period if whole or part of the deductions is meant for the payments to cooperative societies. In other cases it should not exceed 50%.

#### **Provision relating to timely payment of wages to employees?**

As per the provisions under Payment of Wages Act, 1936 wages needs to be paid-

- Before the expiry of the 7th day after the last day of the wage period, where there are less than 1000 workers employed and in rest case on the 10th day;
- In current coin or currency notes and by cheques or by crediting the wages in the employee's bank account after obtaining his written authority;
- On a working day;
- Before the expiry of the second day, to the person whose employment is terminated.
- 

#### **Responsibility of the employer towards payment of wages to employee**

Every employer shall be responsible for the payment of all wages required to be paid under the Payment of Wages Act, 1936 to persons employed by him and in case of persons employed-

- In the case of contractor, a person designated by such contractor who is directly under his charge;
- A person designated by the employer as a person responsible for complying with the provisions of the Act

**A. Penalties can be imposed on employers for contraventions of any provisions of the Act**

- For contravention of Section 5, 7 8, 9, 10, 11, 12 and 13, which mentions timely payment of wages, payment of wages in current coins and currency, fines, deductions for damage/loss or recovery of advances and loans. In such case fine not less than Ra. 1000 which may extent to Rs. 5000. On subsequent conviction fine not less than Rs. 5000 may extend to Rs. 10000.
- For failing to maintain registers, willfully refusing or without lawful excuse neglecting to furnish information or refusing to answer or willfully giving a false answer to any question necessary for obtaining any information required to be furnished under this Act. For such offences, fine shall not be less than Rs. 1000 and may be extended to Rs. 5000. For second or subsequent conviction fine not less than Rs. 5000 and may extend to Rs. 10000.
- For willfully obstructing an Inspector in discharge of his duties and on refusal to produce of any register or other documents fine not less than Rs. 1000 extendable upto Rs. 5000. On subsequent conviction fine not less than Rs. 5000 and may be extended upto Rs. 10000.
- On conviction for any offence and again guilty of contravention of same provision. Failing or neglecting to pay wages to any employee punishment of imprisonment not less than one month which may extend upto six months and fine not less than Rs. 2000 extendable upto Rs. 15000 may be done. Additional fine upto Rs. 100 for each day.

**B. Payment of Minimum Wages in India**

**Are contract workers covered under the Minimum Wages Act?**

The provisions of the Act are applicable to the contract labour if the employment in which they are engaged is duly covered by the Minimum Wages Act, 1948.

**Is probationer entitled for minimum wages in India?**

The probationer although not being a permanent employee performs same work as a regular employee and no such distinction has been made under the Minimum Wages Act, 1948 and thus he is entitled to minimum wages.

**What penalties can be imposed on employers for contraventions of any provisions of the Minimum Wages Act?**

- Offences of employers such as paying his employees less than the minimum wages fixed to his class of work or fails to pay them overtime wages and for work done by them on the day of rest, etc. is punishable under Section 22 of Minimum Wages Act, 1948 by imprisonment upto six months or fine or both.
- Section 22 B provides that cognizance of offence should be taken only when the Authority under Section 20 of the Act sanctions the application and the appropriate Government gives its sanction to file a complaint.
- Section 22 C of the act clarifies who could be held guilty in case the employer happens to be an incorporated body, firm, association of persons, etc.

- Section 22 D deals with the case of payments found due to an employee who is dead or not traceable.

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## CHAPTER 09. SMART TECHNOLOGY:

### Concept of IOT, How IOT works:

- “The Internet of Things (IoT) is a system of interrelated computing devices, mechanical and digital machines, objects, animals or people that are provided with unique identifiers and the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction.”
- For example: It includes an extraordinary number of objects of all shapes and sizes – from [smart microwaves](#), which automatically cook your food for the right length of time, to [self-driving cars](#), whose complex sensors detect objects in their path, to wearable [fitness devices](#) that measure your heart rate and the number of steps you've taken that day, then use that information to suggest exercise plans tailored to you.

### How IOT works:

Devices and objects with built in sensors are connected to an [Internet of Things platform](#), which integrates data from the different devices and applies analytics to share the most valuable information with applications built to address specific needs.

For example, if I own a car manufacturing business, I might want to know which optional components (leather seats or alloy wheels, for example) are the most popular. Using Internet of Things technology, I can:

- Use sensors to detect which areas in a showroom are the most popular, and where customers linger longest.
- Drill down into the available sales data to identify which components are selling fastest.
- Automatically align sales data with supply, so that popular items don't go out of stock.

### Components of IOT, Characteristics of IOT, Categories of IOT:

#### ❖ Components of IOT:

The main components which make the IOT magic work are:

- 1) IOT Sensors.
- 2) Connectivity/Network.
- 3) Cloud.
- 4) Hyper Decision Framework.
- 5) User Interface.

### IOT Sensors:

- These sensors are an important part of the IoT device components. The “things” on the internet of things (IoT) come to life because of sensors. Let's take an IoT service example, where the heating of a machine is being monitored. The heat sensor would display the temperature on an analog or digital screen and someone would be monitoring it physically or on a more advanced level when the heating goes beyond a threshold there would be an alarm raised. This sensor would be able to send a message to a decision engine that has rules built in to take the action. There are many types of such internet of things sensors viz. temperature sensor, humidity sensor, pressure sensor, CO2 sensor, light sensor, occupancy sensor, motion sensor etc.

### Connectivity/Network:

- Now we understand how the sensors communicate with the decision engine. It communicates wirelessly with the decision engines. Various connectivity protocols using radio frequency technology, such as Bluetooth Low Energy BLE, LoRa (Long Range Technology), ZigBee,

SigFox and NBIoT (Narrow Band IoT) etc. Once the receivers have received the data, they can send this information to the decision engines, which are mostly sitting in the cloud Private or Public cloud using on board GPRS, WiFi or LTE.

#### **Cloud:**

- Now that we have been able to send the data to the cloud, let's try and understand what the IoT Cloud is and how it is an integral part to understanding how IOT works. IoT sensors are usually resource constrained and need a destination where they can send the data. An MQTT (MQ Telemetry Transport) protocol is generally used by these IoT sensors to transmit data. MQTT works like a broker that receives and transmits information to whoever subscribes to it on a topic. This MQTT server is generally also called the IoT server. Generally rules are defined on this server so that data can be filtered as it comes in. Some have confusion on why should one need an IoT server? The rate at which the IoT sensors send data, a regular server would not be able to handle the requests.

#### **Hyper decision Framework:**

- IoT sensors have the ability to send the data to the cloud. What we do with that data is very important. In one of our employee monitoring solutions, if an employee accidentally enters a hazard area, the hyper decision framework, immediately sends an alarm and notification to people involved.

#### **User Interface:**

- Lastly there needs to be an interface to this entire system. This may manifest typically as a mobile application and it can also be used as a web based application. This will help to provide the Machine to People interface to the solution. This interface will help the user to interact with the system, like in the case of a home automation the user interface provided will help the user to switch on or off the lights or fan in a specific room. In an industrial application, the shop floor manager can directly control a machine based on the data inputs.

#### **❖ Characteristics of IOT:**

The fundamental characteristics of the IoT are as follows:

**Interconnectivity:**With regard to the IoT, anything can be interconnected with the global information and communication infrastructure.

**Things-related services:** The IoT is capable of providing thing-related services within the constraints of things, such as privacy protection and semantic consistency between physical things and their associated virtual things. In order to provide thing-related services within the constraints of things, both the technologies in physical world and information world will change.

**Heterogeneity:**The devices in the IoT are heterogeneous as based on different hardware platforms and networks. They can interact with other devices or service platforms through different networks.

**Dynamic changes:** The state of devices change dynamically, e.g., sleeping and waking up, connected and/or disconnected as well as the context of devices including location and speed. Moreover, the number of devices can change dynamically.

**Enormous scale:** The number of devices that need to be managed and that communicate with each other will be at least an order of magnitude larger than the devices connected to the current Internet. Even more critical will be the management of the data generated and their interpretation for application purposes. This relates to semantics of data, as well as efficient data handling.

**Safety:**As we gain benefits from the IoT, we must not forget about safety. As both the creators and recipients of the IoT, we must design for safety. This includes the safety of our personal data and the safety of our physical well-being. Securing the endpoints, the networks, and the data moving across all of it means creating a security paradigm that will scale.

**Connectivity:** Connectivity enables network accessibility and compatibility: Accessibility is getting on a network while compatibility provides the common ability to consume and produce data.

#### ❖ **Categories of IOT:**

The followings are the categories of IOT:

##### **Intro:**

This is for posts that have an introductory or general scope. There will be more of these early on, and less as we continue to cover ground.

##### **Sensing:**

This is one of the four [key](#) enabling concepts of the IOT. It deals with how [machines](#) can sense their environment in many ways. You can find here all posts that include the role of sensing and how it works.

##### **Computing:**

This is another of the four key enabling IoT concepts. It includes [the Cloud](#) and [Machine Learning](#)/Artificial Intelligence. Here you will find posts that discuss any of these topics.

##### **Communicating:**

This is yet another of the four key IoT concepts. The IoT doesn't happen without lots of communication, and here you'll find posts that deal with that communication.

##### **[Actuating:](#)**

This is the final IoT concept; it deals with how computers can control other devices. This category includes all posts related to actuation.

##### **[Security:](#)**

Because of the damage that [hackers](#) can do – and have already done, this is an enormously important topic for the IoT. Any posts dealing with security can be found in this category.

##### **Energy:**

Many IoT devices are battery-powered. So it's important for designers to consider how much energy they consume as they [function](#).

##### **[Privacy:](#)**

Keeping data private is also critical for the IoT. Privacy is often lumped in with security, but it's a distinct topic, and so it has its own category.

**[Companies & Products:](#)** Examples of companies that are using or offering IoT solutions, and examples of specific IoT products.

##### **[In the News:](#)**

Items I've pulled from the news that relate to the IoT.

##### **[Review:](#)**

Posts that review what was discussed in the preceding weeks.



## **Applications of IOT - Smart Cities, Smart Transportation, Smart Home, Smart Healthcare, Smart Industry, Smart Agriculture, Smart Energy Management etc:**

### **❖ Smart Cities:**

When cities face issues brought on by population density, a plethora of problems can arise, such as air pollution, freshwater scarcity, mountains of garbage, and an increase in traffic. How can we deal with these challenges? According to [Finextra](#), smart cities can leverage IoT and smart technologies in the following ways:

- **Smart Infrastructure:** Digital technologies are becoming increasingly important for cities to have the conditions for continuous development; buildings and urban infrastructures must be planned more efficiently and sustainably. Cities should also invest in electric cars and self-propelled vehicles to keep CO2 emissions low. In fact, intelligent technologies to achieve an energy-efficient and environmentally friendly infrastructure.
- **Air Quality Management:** Smart cities also are implementing tools that can capture pollution data in real time and forecast emissions. Being able to predict air pollution accurately allows cities to get to the root of their emissions problems and brainstorm strategic ways to limit the amount of air pollution they put out.
- **Traffic Management:** One of the greatest challenges facing large cities is finding ways to optimize traffic. Yet, finding a solution is not impossible. For example, Los Angeles is one of the busiest cities in the world and has implemented an intelligent transport solution to control the traffic flow. Pavement integrated sensors send real-time updates of traffic flow to a central traffic management platform, which analyses the data and automatically adjusts traffic lights to the traffic situation within seconds.
- **Smart Parking:** Cities are also leveraging intelligent parking solutions that identify when a vehicle has left the parking area. Sensors are built into the ground and report the location of free parking spaces via a mobile app the driver downloads.
- **Smart Waste Management:** Waste management solutions help to optimize the efficiency of waste collection and reduce operational costs while better addressing any and all environmental issues associated with inefficient waste collection. In these solutions, the waste container receives a level sensor; when a certain threshold is reached, the management platform of a truck driver receives a notification via their smart phone.

### **❖ Smart Transportation:**

In the transportation and logistics business, the internet of things has numerous opportunities. Vehicles can be tracked for their speed, position, whether they are running or stopped, or at any danger, etc., using IoT. The followings are the applications:

- **Transport Management System:** Public Transport provides many advantages to city-wide travellers. But it was always a challenge to track the vehicle's real-time location and to know

when the vehicle will arrive at a stop. Such problems were eradicated by Industrial IoT in Transportation and provided the Public Transporters real-time tracking solution.

- **Transportation Monitoring System:** If the transportation company gets the vehicle's real-time facts and figures, they can make the most of the business benefits. IoT has steadily and slowly transformed the transport sector and the management of the fleet. The introduced technology improved the cost of maintenance, operating and fuel expenditure, and immediate response to incidents in real-time.
- **Asset management and remote area surveillance:** The biggest challenge with assets that are being used in IoT is monitoring them remotely. Businesses go through a lot of difficulties to find the right assets and figuring how they can be used efficiently. IoT systems gather applicable information from the assets and carry out an insightful analysis of it.
- **Inventory management system:** Smart Inventory Management serves as a stimulant for real-time information across the supply, processing and storage hub, thus decreasing inventory management costs. Such supply chains will combine large amounts of data to gain ways to create an integrated framework for inventory management.
- **Information and Information in Automobiles:** Wi-Fi-based applications have allowed vehicles to have entertainment and telematics functionality. By using automotive telematics, a car owner can have an eye on his vehicle even from a remote location. By means of a smart phone-enabled dashboard, car owners can always be assured of their safety. External sensors and cameras track the condition of the vehicles and send the data to the user on a mobile app.

#### ❖ **Smart Home:**

The home can be called smart when it has a range of smart devices that you can control remotely by setting them the way you like to automatize house maintenance. They can also be united into one network. For example, the lights can turn on at the moment you enter the home (lamps will know it from the sensors) or your vacuum cleaner can start cleaning every day at 11 AM. The following are the applications:

- **Control and Monitoring:** The IoT significantly improves the way you can control and monitor all the processes taking place at your home. The fridge can notify you if your yogurt gets spoiled in two days or can add milk into the shopping list. Every day the IoT application collects data about the way your household works, processes it and shows you the most significant insights.
- **Cost and Energy saving:** With detailed statistics about the work and energy consumption of each smart device, you can easily optimize their usage and adjust your smart home settings in a more cost-saving way. You can also allow your smart home system to do everything on its own. The system will shut down the devices which are not in use and reduce power consumption if there is no one at home.
- **Environment Impact:** Except for cutting down your bills, energy savings help to reduce a negative impact on the environment and live a 'greener' life.
- **Better Security:** The smart home security system is a great tool for protecting your property since it provides total control of everything inside and outside of your house. Security cameras, smart locks, as well as motion, smoke, and other sensors — all these gadgets work together and notify you if something goes wrong. You can check what is going on inside and around your house sitting in the office or lying on the beach halfway around the world.
- **Comfort:** People always wanted to have everything in more comfort and convenient way, and IoT in smart homes, perhaps, is the greatest achievement in this direction. It perfectly copes

with the task of simplifying and improving your life: a lot of processes in your home run autonomously, yet the overall control still remains in your hands. Is not it the future our ancestors dreamed of?

#### ❖ Smart Healthcare:

With the use of this IOT-based healthcare method, there are unparalleled benefits which could improve the quality and efficiency of treatments and accordingly improve the health of the patients. Such as:

- **Simultaneous reporting and monitoring:** Real-time monitoring via connected devices can save lives in event of a medical emergency like heart failure, diabetes, asthma attacks, etc. With real-time monitoring of the condition in place by means of a smart medical device connected to a [smart phone app](#), connected devices can collect medical and other required health data and use the data connection of the smart phone to transfer collected information to a physician.
- **End to end connectivity and affordability:** IoT can automate patient care workflow with the help [healthcare mobility solution](#) and other new technologies, and next-gen healthcare facilities. IoT in healthcare enables interoperability, machine-to-machine communication, information exchange, and data movement that make healthcare service delivery effective.
- **Data assortment and analysis:** Vast amount of data that a healthcare device sends in a very short time owing to their real-time application is hard to store and manage if the access to cloud is unavailable. IoT devices can collect report and analyses the data in real-time and cut the need to store the raw data.
- **Tracking and alert:** On-time alert is critical in event of life-threatening circumstances. Medical IoT devices gather vital data and transfer that data to [doctors for real-time tracking](#), while dropping notifications to people about critical parts via mobile apps and other linked devices.
- **Remote medical assistance:** In event of an emergency, patients can contact a doctor who is many kilometres away with smart mobile apps. [IoT will improve the patient's care in hospital](#). This in turn, will cut on people's expense on healthcare.

#### ❖ Smart Industry:

Manufacturers and industrialists in every sector have a significant opportunity at hand where they can not only monitor but also automate many of complex process involved in manufacturing. While there have been systems which can track progress in the plant but the industrial IoT (IIoT) technology provides far more intricate details to the managers.

- **Digital/connected Factory:** IoT enabled machinery can transmit operational information to the partners like original equipment manufacturers and to field engineers. This will enable operation managers and factory heads to remotely manage the factory units and take advantage of process automation and optimization.

- **Facility management:** The use of IoT sensors in manufacturing equipment enables condition-based maintenance alerts. There are many critical machine tools that are designed to function within certain temperature and vibration ranges. IoT Sensors can actively monitor machines and send an alert when the equipment deviates from its prescribed parameters. By ensuring the prescribed working environment for machinery, manufacturers can conserve energy, reduce costs, eliminate machine downtime and increase operational efficiency.
- **Production flow management:** IoT in manufacturing can enable the monitoring of production lines starting from the refining process down to the packaging of final products. This complete monitoring of the process in (near) real-time provides scope to recommend adjustments in operations for better management of operational cost. Moreover, the close monitoring highlights lags in production thus eliminating wastes and unnecessary work in progress inventory.
- **Inventory management:** IoT applications permit the monitoring of events across a supply chain. Using these systems, the inventory is tracked and traced globally on a line-item level and the users are notified of any significant deviations from the plans. This provides cross-channel visibility into inventories and managers are provided with realistic estimates of the available material, work in progress and estimated the arrival time of new materials.
- **Plant safety and security:** IoT combined big data analysis can improve the overall workers' safety and security in the plant. By monitoring the Key Performance Indicators (KPIs) of health and safety, like the number of injuries and illness rates, near-misses, short- and long-term absences, vehicle incidents and property damage or loss during daily operations. Thus, effective monitoring ensures better safety. Lagging indicators, if any, can be addressed thus ensuring proper redressal health, safety, and environment (HSE) issues.
- **Quality control:** IoT sensors collect aggregate product data and other third-party syndicated data from various stages of a product cycle. This data relates to the composition of raw materials used, temperature and working environment, wastes, the impact of transportation etc. on the final products. Moreover, if used in the final product, the IoT device can provide data about the customer sentiments on using the product. All of these inputs can later be analyzed to identify and correct quality issues.

#### ❖ **Smart Agriculture:**

The applications of IoT in the agriculture industry have helped the farmers to [monitor the water tank levels](#) in real-time which make the irrigation process more efficient. The advancement of IoT technology in agriculture operations has brought the use of sensors in every step of the farming process like how much time and resources a seed takes to become a fully-grown vegetable.

- **Climate conditions:** Climate plays a very critical role for farming. And having improper knowledge about climate heavily deteriorates the quantity and quality of the crop production. But IoT solutions enable you to know the real-time weather conditions. Sensors are placed inside and outside of the agriculture fields. They collect data from the environment which is used to choose the right crops which can grow and sustain in the particular climatic conditions.
- **Precision Farming:** Precision Agriculture/Precision Farming is one of the most famous applications of IoT in Agriculture. It makes the farming practice more precise and controlled by realizing smart farming applications such as livestock monitoring, [vehicle tracking](#), field observation, and inventory monitoring.
- **Smart greenhouse:** To make our greenhouses smart, IoT has enabled weather stations to automatically adjust the climate conditions according to a particular set of instructions.

Adoption of IoT in Greenhouses has eliminated the human intervention, thus making entire process cost-effective and increasing accuracy at the same time. For example, using solar-powered IoT sensors builds modern and inexpensive greenhouses.

- **Data Analytics:** The conventional database system does not have enough storage for the data collected from the IoT sensors. Cloud based data storage and an end-to-end IoT Platform plays an important role in the smart agriculture system. These systems are estimated to play an important role such that better activities can be performed. In the IoT world, sensors are the primary source of collecting data on a large scale. The data is analyzed and transformed to meaningful information using analytics tools.
- **Agricultural Drones:** technological advancements have almost revolutionized the agricultural operations and the introduction of agricultural drones is the trending disruption. The Ground and Aerial drones are used for assessment of crop health, crop monitoring, planting, crop spraying, and field analysis. With proper strategy and planning based on real-time data, drone technology has given a high rise and makeover to the agriculture industry. Drones with thermal or multispectral sensors identify the areas that require changes in irrigation.

#### ❖ **Smart Energy management system:**

IoT Energy Management is a process that includes planning and management of energy consumption patterns in different industries. Internet of things Energy Management is designed to monitor and optimize energy compliance thereby improving better capacity utilization, boosting business productivity, reducing maintenance & man-power, and increasing the reliability of energy assets.

- **Advanced analytics:** IoT solutions based on artificial intelligence and machine learning can get intelligent actionable insights from the business. It provides transparent insights into the critical energy parameters such as power interruption patterns, voltage and frequency trends, etc. Advance analytics adds intelligence to this data making it decision-able, enabling real-time alerting, automate optimization, etc.
- **Real time energy monitoring:** [IoT solutions](#) integrated with machine learning help monitor energy compliance within business procedures to improve efficiency. Application of IoT for energy management helps you with business analytics and energy quality control on your devices to lower costs, boost efficiencies and reduce environmental impact. It also helps in finding out the main causes of inefficiency and improvement areas, thus reducing the wastage of resources.
- **Predictive analysis:** Predictive analysis with the power of artificial intelligence and machine learning enables real-time updates if a machine needs to be repaired or replaced. With the help of machine learning, the IoT network extracts real-time data from sensors and devices to predict the failure of a component of a machine before time. It increases the uptime of devices and reduces maintenance costs.
- **Cost saving:** IoT energy management solution helps organizations to reduce energy spending and operating expenses and minimize man-power. You can predict the consumption pattern and accordingly, spend and plan.
- **Higher energy efficiency:** Data collected by sensors can be used to regulate air-conditioning and lighting levels in real-time. Application of IoT in energy management in the form of smart sensors and detectors reduces overall energy consumption.

**Consumption patterns:** IoT provides reports, data charts, and visualization which help you to comprehend the information easier. These reports help to track operational inefficiencies

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