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FOR INTERNAL CIRCULATION ONLY

LECTURE NOTES

ON

**ENTREPRENEURSHIP MANAGEMENT AND SMART TECHNOLOGY**

DIPLOMA 5<sup>th</sup> SEMESTER

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## MODULE-I

### ENTREPRENEURSHIP

#### CONCEPT OF ENTREPRENEURSHIP

Entrepreneurship is the ability and readiness to develop, organize and run a business enterprise, along with any of its uncertainties in order to make a profit. The most prominent example of entrepreneurship is the starting of new businesses.

In economics, entrepreneurship connected with land, labour, natural resources and capital can generate a profit. The entrepreneurial vision is defined by discovery and risk-taking and is an indispensable part of a nation's capacity to succeed in an ever-changing and more competitive global marketplace.

#### MEANING OF ENTREPRENEUR

The entrepreneur is defined as someone who has the ability and desire to establish, administer and succeed in a startup venture along with risk entitled to it, to make profits. The best example of entrepreneurship is the starting of a new business venture. The entrepreneurs are often known as a source of new ideas or innovators, and bring new ideas in the market by replacing old with a new invention.

It can be classified into small or home business to multinational companies. In economics, the profits that an entrepreneur makes is with a combination of land, natural resources, labour and capital.

In a nutshell, anyone who has the will and determination to start a new company and deals with all the risks that go with it can become an Entrepreneur.

#### CHARACTERISTICS OF ENTREPRENEURSHIP:

Not all entrepreneurs are successful; there are definite characteristics that make entrepreneurship successful. A few of them are mentioned below:

- **Ability to take a risk-** Starting any new venture involves a considerable amount of failure risk. Therefore, an entrepreneur needs to be courageous and able to evaluate and take risks, which is an essential part of being an entrepreneur.
- **Innovation-** It should be highly innovative to generate new ideas, start a company and earn profits out of it. Change can be the launching of a new product that is new to the market or a process that does the same thing but in a more efficient and economical way.
- **Visionary and Leadership quality-** To be successful, the entrepreneur should have a clear vision of his new venture. However, to turn the idea into reality, a lot of resources and employees are required. Here, leadership quality is paramount because leaders impart and guide their employees towards the right path of success.
- **Open-Minded-** In a business, every circumstance can be an opportunity and used for the benefit of a company. For example, Paytm recognised the gravity of demonetization and acknowledged the need for online transactions would be more, so it utilised the situation and expanded massively during this time.

- **Know your Product-**A company owner should know the product offerings and also be aware of the latest trend in the market. It is essential to know if the available product or service meets the demands of the current market,

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or whether it is time to tweak it a little. Being able to be accountable and then alter as needed is a vital part of entrepreneurship.

## IMPORTANCE OF ENTREPRENEURSHIP:

- **Creation of Employment-** Entrepreneurship generates employment. It provides an entry-level job, required for gaining experience and training for unskilled workers.
- **Innovation-** It is the hub of innovation that provides new product ventures, market, technology and quality of goods, etc., and increase the standard of living of people.
- **Impact on Society and Community Development-** A society becomes greater if the employment base is large and diversified. It brings about changes in society and promotes facilities like higher expenditure on education, better sanitation, fewer slums, a higher level of homeownership. Therefore, entrepreneurship assists the organisation towards a more stable and high quality of community life.
- **Increase Standard of Living-** Entrepreneurship helps to improve the standard of living of a person by increasing the income. The standard of living means, increase in the consumption of various goods and services by a household for a particular period.
- **Supports research and development-** New products and services need to be researched and tested before launching in the market. Therefore, an entrepreneur also dispenses finance for research and development with research institutions and universities. This promotes research, general construction, and development in the economy.

## NEED OF ENTREPRENEURSHIP

The need for entrepreneurship is detailed down in the following section:

### 1. Passion, Perseverance & Persistence

Passion is a strong and uncontrollable emotion that is based on something higher to achieve than what the person is carrying within himself. Perseverance is a mature emotion that comes through experiences gathered and analysed. While persistence is the sail that will row the boat of an entrepreneur through the toughest of climates.

### 2. Big Dreamer

Dreaming big further strengthens an entrepreneur with his ability to dream and see the wide picture. This is the very first step that sets the path to self-discovery.

### 3. Learning

Learning is never to stop irrespective of age and thus arming oneself with education does play a vital role in forming leadership qualities when needed.

### 4. Good Listener

The ability to contribute will only come once we have abundance in ourselves, and this comes by absorbing the words of others. The ability to truly listen to the customers and employees is actually what makes a difference. This very skill leads to a successful venture.

### 5. Financing Partner

Choosing a financing partner who understands the business needs is very much essential. This is as critical as choosing the business which the entrepreneur wants to pursue. Also, a business loan from the right lender will for sure play a pivotal role in realizing the dreams of becoming a successful entrepreneur.

## 4 TYPES OF ENTREPRENEURSHIP

It is classified into the following types:

### ❑ Small Business Entrepreneurship-

These businesses are a hairdresser, grocery store, travel agent, consultant, carpenter, plumber, electrician, etc. These people run or own their own business and hire family members or local employee. For them, the profit would be able to feed their family and not making 100 million business or taking over an industry. They fund their business by taking small business loans or loans from friends and family.

### ❑ Scalable Startup Entrepreneurship-

This start-up entrepreneur starts a business knowing that their vision can change the world. They attract investors who think and encourage people who think out of the box. The research focuses on a scalable business and experimental models, so, they hire the best and the brightest employees. They require more venture capital to fuel and back their project or business.

### ❑ Large Company Entrepreneurship-

These huge companies have defined life-cycle. Most of these companies grow and sustain by offering new and innovative products that revolve around their main products. The change in technology, customer preferences, new competition, etc., build pressure for large companies to create an innovative product and sell it to the new set of customers in the new market. To cope with the rapid technological changes, the existing organisations either buy innovation enterprises or attempt to construct the product internally.

## QUALITIES OF AN ENTREPRENEUR

## **1. Motivation**

Hard-working business owners are incredibly motivated to succeed. Adopting this mindset—and being able to demonstrate your motivation to an employer—is crucial. You need to bring enthusiasm to everything you do at your job. Fortunately, showing you're highly motivated is simple: Show up to work every day with a positive attitude. This is among the top characteristics of entrepreneurship. Employers want to see you're passionate about what you do day in and day out.

## **2. Creativity**

No matter what industry you're in, employers want workers with out-of-the-box ideas. They want to hire people to not only carry out assignments, but to also come up with better ways of doing things.

That's why it's important to be creative—to always be thinking of new ways you can improve your company's workflow, productivity, and bottom line.

## **3. Persuasiveness**

Persuasiveness can make you a better negotiator, which gives you an edge when going after a plum assignment, raise, or promotion.

There will come a time when you need to convince a client, a coworker, or your boss to take certain actions, so you need to be persuasive when presenting your ideas.

## **4. Vision**

Successful entrepreneurs always keep one eye on the big picture, and this ability can make you a better employee. Vision is primarily about strategic planning.

Can you see what direction the industry is going? Can you identify challenges for your company? Can you tackle your day-to-day job responsibilities, while staying focused on long-term goals and initiatives?

## **5. Versatility**

Although you were hired for a specific set of skills, it's important that you can shift as needed. You want to be someone that your boss can go to in a pinch, so be prepared to tackle work that's outside your job description. Among the leading characteristics of entrepreneurship is being an early adopter of new technology and keeping your skills current.

## **6. Risk Tolerance**

Every employer wants to grow their business, and that involves embracing change. Translation: Don't be afraid to take risks when pursuing new clients, for example, or testing a new product. (One caveat: Make sure you have your boss' buy-in.)

## **7. Flexibility**

Like an entrepreneur, you have to be able to adapt to change and solve problems as they arise. A good team player can shift their priorities to help out whenever the team needs assistance. Thus, flexibility means being receptive to other people's needs, opinions, and ideas and being open-minded to feedback from your manager.

## **8. Decisiveness**

Do you exercise sound judgment under pressure? When you're an entrepreneur, you don't have room to procrastinate—and the same is true for employees. You have to be comfortable taking action when needed. This means knowing how to prioritize tasks and make decisions quickly. (It helps to be organized.)

## **9. Collaboration**

Savvy entrepreneurs are not only brilliant leaders, but also great collaborators, so you have to be an effective team player. Unsurprisingly, 86.3% of hiring managers seek job candidates who demonstrate strong teamwork skills, according to the National Association of Colleges and Employers Job Outlook survey.

## **FUNCTIONS OF ENTREPRENEURSHIP:**

There are three types of functions of entrepreneurship:

### **1. Primary functions:**

- Planning
- Decision making
- Organizing
- Innovating
- Managing
- Risk bearing

### **2. Secondary functions:**

- Expansion of the enterprise
- Diversification of production
- Maintaining cordial employer and employee relation
- Coordinating and communicating with third parties
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**Infrastructure support:** There have to be proper roads, adequacy of power, drainage facilities, water, and other such infrastructural supports. But because of red-tapism and increased corruption, things tend to be quite complicated.

### 3. Other important functions:

- ☐ Managing scarce resources
- ☐ Identifying parallel opportunities
- ☐ Dealing with public bureaucracy
- ☐ Building strong customer relations

## BARRIERS IN ENTREPRENEURSHIP:

Following are the different types of barriers that come across the path of entrepreneurship:

- ☐ **Financial barriers:** This is one of the most prominent barriers in the life of an entrepreneur. Such barriers are quite common. Availability of funds is of great significance. If a delay happens in gathering enough funds, then it may further delay the commencement of an enterprise. Also, various business operations need a persistent flow of funds.
- ☐ **Personal barriers:** Personal barriers are caused because of the emotional and psychological blocks of an entrepreneur. Let us have a look at the various types of personal barriers:
- ☐ **Lack of motivation and encouragement:** When an idea does not turn out to be fruitful, these entrepreneurs give up quite easily. Even a minor failure is enough to demotivate them.
- ☐ **Inability to depend on and trust others:** These entrepreneurs often find it difficult to trust others while hiring their expert services. They waste much of their time deciding upon the best service provider and then, too, cannot put their trust completely.
- ☐ **Lack of patience:** If an entrepreneur loses interest because of any hurdle or obstacle, then he does not have enough patience and perseverance to carry on with the entrepreneurship. Even the initial losses are enough to discourage them and shut their enterprises.
- ☐ **Lack of confidence:** These entrepreneurs never have enough confidence. They never trust in themselves. They are somehow convinced that they will never be able to come up with a successful business idea. They are always bothered about their inability to attract enough funding. Hence, they almost give up on their dream of being self-employed and thus do not carry on with entrepreneurship.
- ☐ **Lack of vision:** There should never be any limitation to what you can achieve. Some entrepreneurs, after making short progress, lose their vision and show no more interest in expanding the business.
- ☐ **Sense of embarrassment/pride:** Such entrepreneurs are way too proud or embarrassed to ask for help from someone.
- ☐ **Environmental barriers:**
- ☐ **Machinery:** Machines are extremely significant to carry out multiple operations. However, machinery does come costly. Also, technology keeps changing quite rapidly, and hence, machines tend to get obsolete quite often. Thus an entrepreneur needs to replace them. This process is quite difficult for the entire organization.
- ☐ **Raw material:** The situation can get quite distressful if there is no raw material available during the peak season of the work. This further increases the price of limited raw materials available because of an increased level of competition.
- ☐ **Land and building:** For an enterprise, it is necessary that proper acquisition of land is made. Then, the construction of buildings will also have to be done. However, all these can be quite expensive. When the land is rented, the fixed cost becomes a cause of worry for the entrepreneur. He needs to keep paying the rents whether he is making any profit out of business or not.

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**Labour:** For successful entrepreneurship, there has to be the availability of skilled labor, quality and quantity labor, and committed and loyal employees. Lack of any of these can lead to severe disruptions in the working procedure of the enterprise.

□ **Political barriers:** When there are not enough government concessions, and incentives offered, things start getting difficult for the entrepreneurs. Also, there has to be a proper socio-economic setting to make things happen the way they need to. A politician should also focus on making a society economically developed.

Only then will things smoothen up for the entrepreneurs. □ **Societal**

**barriers:**

1. Caste and religious affiliations often act as hurdles in the way of a business.
2. Financial stability and family backgrounds also have to be kept in mind. These, too, can impact the operations and development of an enterprise.
3. Socio-cultural norms and values often act as barriers for modern-day budding entrepreneurs. These ageold norms hamper the smooth development and progress of business enterprises.



## ENTREPRENEUR V/S MANAGER

Parameters	Entrepreneur	Manager
<b>Meaning</b>	An entrepreneur is a person who builds a new organisation by gathering data (i.e. land, labour and capital) for manufacturing purposes.	By the term 'manager' we mean a person who gets the things done through his assistants, with the purpose of achieving business goals efficiently.
<b>Focuses on</b>	Setting up a business	Running the daily operations
<b>Status in organisation</b>	Owner	Employee
<b>Kind of benefit applicable</b>	Profit earned from running business	Salary earned from managing daily business operations

## FORMS OF BUSINESS OWNERSHIP

1. Sole Proprietorship.
2. Partnership.
3. Company.
4. Cooperative Society.
5. State Enterprise.

### Sole Proprietorship

A sole proprietorship is a for-profit business owned by one person. The owner may operate on his or her own or may employ others. The owner of the business has unlimited liability for the debts incurred by the business.

### Partnership

A partnership is a form of for-profit business owned by two or more people. In most forms of partnerships, each partner has unlimited liability for the debts incurred by the business.

### Company

A company is a limited liability business that has a separate legal personality from its members. The company can be either privately-owned or government-owned, and privately the owned companies can organize either for-profit or not-for-profit.

A privately-owned, for-profit company can either be privately held or publicly held. A for-profit company's shareholders elect a board of directors to direct the corporation and hire its managerial staff. **Cooperative Society**

Often' referred to as a "co-op," a cooperative is a limited-liability business that can be organized forprofit or not-for-profit.

A for-profit cooperative differs from a for-profit corporation in that it has members, as opposed to shareholders, who share decision-making authority.

Cooperatives are typically classified as either consumer cooperatives or worker cooperatives. Cooperatives are fundamental to the ideology of economic democracy.

### **State Enterprise or Government Company**

Generally, an enterprise owned by the state is known as a state-owned enterprise, state enterprise, or government company.

For the expansion of the business, rapid industrialization and development, and to remove individual monopoly and to establish public interest and ownership, the state interferes in the business sector.

## **TYPES OF BUSINESS INDUSTRIES**

There are more than 15 types of business industries in the world right now, and the marketing tutor is going to list as many as possible. Let's give you a knowledge-loaded ride!

### **Transport industry**

Even the industries are further classified according to their role or importance in an economy; the transport industry is one of the largest business industries in the world. The primary objective of the transportation industry is the movement or transportation of goods, humans, and animals. Currently, there are three main modes of transportation

- Air
- Land (railway and road)
- Water

The transport industry is a major part of any economy. The transport industry currently constitutes 17% of the United States GDP, and the USA also holds the record for the largest railway network in the world— 250,000 kilometers.

### **Aerospace industry**

The aerospace or aviation industry is one of the most advanced but relatively less-spread business sectors. Aerospace or aviation basically deals with the production and manufacturing of aircrafts and similar cuttingedge devices that can travel inside and outside the earth's atmospheric area.

The aerospace industry basically serves other private and government bodies such as airlines, the military, NASA, etc. You must be thinking, why is it a relatively less-spread industry? That's because the aviation industry is only spread in almost 50 countries. In other words, 50 countries own one or more aerospace production units/corporations.

The aerospace industry was valued at \$838 billion in 2017.

### **Agriculture industry**

The agriculture industry is certainly one of the oldest business sectors in the history of mankind. As a matter of fact, agriculture is a source of employment for more than 1 billion people on the planet, making it the second-largest global employer.

However, agriculture has seen dramatic growth in the last 50 years or so due to technological advancements such as fertilizers, pesticides, and genetic modification to create hybrid agricultural products.

The history of agriculture goes 10,000 to 15000 years back, and it is still the largest part of many economies in Asia and Africa.

The current worth of the agriculture industry is over \$1.3 trillion.

### **Computer industry**

Computer or commonly known as the IT industry is indeed the most prolific business sector that has seen unparalleled growth in the 21<sup>st</sup> century, and the future seems brighter.

The IT sector includes corporations or enterprises that deal in manufacturing or developing everything related to computers, such as software, applications, operating systems, databases, and anything that is related to computers.

IT is an integral part of almost all other business sectors. Whether it is telecommunication, healthcare, education, data management, or engineering, you cannot keep IT out of them. It won't be wrong to say that computers are an important part of our lives.

The computer industry was valued at \$5 trillion in 2019.

### **Telecommunication industry**

The telecommunication industry, just like the computer industry, is one of the fastest-growing industries of the 21<sup>st</sup> century. The telecommunication sector basically consists of businesses involved in providing communication channels. Major contributors in the telecom sector include internet service providers, satellite companies, and wireless operators.

Common communication channels include text messaging, audio and video calls, digital communication apps, the internet, etc. Apart from that, the telecom sector is deeply integrated with other business sectors, and it won't be wrong to say that it is the backbone of all other business arenas.

The telecommunication industry was valued at \$1.4 trillion in 2017.

### **Education industry**

If we are to make a list of industries that are a part of any economy in the world, the education industry will undoubtedly be among that list. The education industry includes any or all types of educational institutes, ministries, governing bodies, and individuals directly or indirectly connected to the education sector.

Just like other business sectors, the education industry has been revolutionized with the advent of technology. Educational institutes are shifting to digital channels (e-learning), using the internet as a medium of communication.

The education industry is a prime example of globalization as students can study in universities in crossborder or cross-continent universities by enrolling in their online courses or degrees.

The education industry was valued at \$4.4 trillion in 2013.

### **Construction industry**

The **construction sector** includes designing, creating/building, and maintaining the domestic and government-owned infrastructure. It is important to note that construction is a complex process that includes the involvement of other disciplines such as engineering and logistics.

The construction industry has three major subcategories;

- Heavy constructions, e.g., roads, bridges, etc.
- General construction includes commercial and residential **real estate** such as houses, apartments, shopping malls, etc.
- Specialized construction deals with tools and types of equipment necessary for construction purposes.

Although the construction industry dates back hundreds and thousands of years ago, it has been revolutionized by the technological advancements in the 20<sup>th</sup> century.

The construction industry was valued at \$8,452 billion in 2018.

### **Electronics Industry**

The electronics industry is one of the biggest industries that has been growing at an unprecedented rate. Producing, selling, and marketing electronics and electrical **products**, especially consumer electronics, are all part of the electronic industry.

Also, the electronic industry employs a huge number of technicians and electrical engineers who take care of designing, testing, and production of these commercial and domestic electronics.

Currently, the electronic industry primarily focuses on artificial-intelligence-based goods and is working towards the development of smart cars and wireless charging.

What's more, the **electronic sector** has been observing a CAGR (compound annual growth rate) of 5.4% since 2015.

An increase in the demand for consumer electronics is primarily because of the outbreak of the pandemic as employees and students have transitioned to digital working and learning.

## Manufacturing Industry

Industrial and engineering designs are closely linked with the manufacturing sector. On a global scale, the industry processes raw materials into the final products either using machinery or labor force.

These finished goods are subsequently transported and sold to other manufacturers for further processing into more specialized commodities, or they are sold to the retailers directly.

The transportation equipment industry, food industry, paper industry, petroleum industry, and wood industry fall under the umbrella of manufacturing industries.

Plus, the manufacturing sector employs both the educated as well as the labor force of a country. It is one of the major sectors of the economy as it **contributed almost 16% of the GDP** (gross domestic product) globally in 2018.

What's more, globally, the market for manufacturing and process control is predicted to grow at a CAGR of almost 6.3%, from \$86.7 billion to a whopping \$117.5 billion as of 2025.

## Energy Industry

The energy sector is responsible for the production as well as the sale of energy that includes a variety of processes, such as the extraction of the fuel, refining, manufacturing, marketing, and selling.

The renewable energy industry and non-renewable energy are the two parts of the energy sector. The energy industry includes different sectors, such as the electrical power industry, the gas industry, the coal industry, the petroleum industry, and the nuclear power industry.

Such types of business industries play a crucial role in the development of any nation. Also, these energy sources are finite and will be depleted soon in the future. Hence, the industry needs to carry out extensive research for alternative energy resources.

Wind, hydroelectric, and solar energy are a few examples of alternative energy sources. Moreover, developed and developing nations are spending a lot of money to increase the usage of alternative energy sources.

The **global EaaS** (energy as a service) market is expected to expand from \$64.2 billion to \$124.1 billion by 2028, growing at a CAGR of 9.9%.

## Pharmaceutical Industry

It is one of the most highly research-based sectors that discover, develop, market, and distribute drugs. On a global scale, it is one of the most significant industries and relies heavily on constant and innovative research.

The pharmaceutical sector is responsible for developing and manufacturing medications to treat animals and humans. Also, some drugs can address the symptoms of diseases.

What's more, these kinds of firms are highly regulated. Also, did you know that the pharmaceutical market in the US accounts for almost 45% of the pharmaceutical market globally?

Plus, the outbreak of the pandemic has increased the demand for vaccines. Merck & Co, Johnson & Johnson, and Pfizer are some of the best pharmaceutical firms in the world.

Also, the medical device sector that specializes in medical devices, implants, and surgical equipment is another branch of the pharmaceutical sector.

### **Healthcare Industry**

The **healthcare sector** is a conglomeration of various sectors that provide therapeutic, diagnostic, curative, and preventive care.

The primary purpose of this sector is to restore and maintain people's health. Also, it is one of the rapidly expanding and largest industries that takes more than 10% of the GDP.

What's more, this is one of the most promising sectors for entrepreneurs and investors; even the government of every country invests a lot in this specific area.

The sector has multiple disciplines and is run by a team of specialists that put emphasis on the unique needs of each patient.

Both public and private companies provide such services. Also, several voluntary organizations provide services free of cost to the needy population.

Also, there is a prediction that **healthcare spending** might reach over \$10 trillion globally by the end of 2022.

### **Food Industry**

The **food sector** is a conglomeration of numerous businesses that work together and are responsible for supplying food to the population.

For food production, the industry needs a large amount of raw material that it directly gets from the agriculture sector. Hence, we can say that the food industry relies heavily on the agrarian sector.

Also, several food additives and chemicals are added to the food products after processing to keep the taste and preserve them for a long period.

Since people seek "ready-to-go" food items in today's fast-paced digital world, the food sector has expanded exponentially in the last decade.

Also, **globally the food market** has welcomed a revenue of almost \$8.27 trillion in 2021, an increase of over \$500 billion from 2020.

Many companies have sprung up in response to the growing demand for packaged and processed foods, and almost all types of food are now available in packets, from curry to instant noodles and whatnot.

Also, food services, known as food technology and catering, are vital aspects of the food sector.

Also, food technology entails R&D to produce more ready-to-go food.

## **Entertainment Industry**

The entertainment sector is one of the multibillion-dollar businesses. Furthermore, it encompasses a plethora of entertainment sub-sectors. The audience and the entertainer form the core part of this particular sector.

Albeit the entertainment sector has always been a part of human society for ages, the entertainment business we know or see today has recently become commercialized.

Also, the sector has grown at a breakneck speed in the last century. Plus, the entertainment industry contributes significantly to the GDP of any country.

For instance, soccer teams, including Brazil, France, and Belgium, bring in a lot of money (as a part of revenue) for their respective countries.

The sector also employs a large number of people, catering to the need for employment. Also, people's entertainment methods have evolved in recent years.

People don't have to work as hard to get into the spotlight as they once did. Now, people have the opportunity to entertain the audience by putting up videos on YouTube and other related platforms.

Plus, the digital platform has also aided in the industry's exponential growth. Also, the availability of internet video streaming services such as Amazon Prime and Netflix has also altered how people engage with TV shows and movies.

## **Music Industry**

The music industry is one of the vital components of the business world. The industry consists of companies, musicians, lyricists, composers, and producers.

Tech has dramatically changed the music industry; gone are the days when people used to buy DVDs and CDs.

The emergence of the internet has taken over other media platforms. People now can listen to their favorite music online regardless of their location.

With the advent of the Digital Music Industry, people have so many options to choose from; music is now available on several online platforms, including Spotify, Soundcloud, etc.

Also, the digital music market welcomed a revenue of almost \$28.2 billion globally as of 2021.

## **World Wide Web Industry**

It is a type of industry that has dominated all other kinds of industries. The World Wide Web is a collection of resources and documents that can be accessed using their URLs.

People can access such resources and documents using web browsers, including Yahoo, Internet Explorer, Google, etc. The web was Tim Berners-Lee in 1989. However, it took almost a decade for his invention to gain popularity.

The advent of the web has drastically altered the world we live in and has opened the doors for new opportunities in numerous business fields. For instance, from running an online business to interacting with the customers and business partners at every level.

Today, the World Wide Web comprises educational sites, governmental sites, eCommerce stores, entertainment, and whatnot.

### **News Media Industry**

It is one of the most integral industries as it delivers the news to the general public as well as to a particular target audience.

The news media sector encompasses all, from traditional print media (newspapers, etc.) to the internet (podcasts, blogs, online newspapers, etc.) to broadcast news (radio, TV).

Washington Posts and The New York Times are the two most famous newspapers that are available online as well as in paper form. However, social media platforms have taken the media news sector to a whole new level.

Twitter, Facebook, YouTube, etc., are a few social media platforms that provide instant access to the latest happenings.

### **Mining Industry**

The mining sector refers to the process of extracting rich metals, minerals, and other geological resources from the surface of the earth across the globe.

Also, the mining sector attempts to provide materials that can't be produced via agricultural activities or generated reliably in the laboratory.

Extracted metals are also used for jewelry making and commercial purposes. Also, the mining sector takes part in trading and producing such metals.

What's more, each country invests heavily in the exploration of a viable location to extract metals. Albeit work safety has increased over the years, the mining sector causes environmental problems, which, in turn, is a global concern.

### **Hospitality Industry**

The hospitality sector encompasses a wide range of service-related subcategories. Event organizing, food, lodging, transportation, travel, amusement parks, beauty centers, gyms, etc., are all the services that fall under the category of this industry.

Hence, the industry is a highly customer-oriented marketplace and primarily focuses on customer satisfaction.

The industry is unique in that it thrives exclusively on people's "desires" rather than "needs," as the healthcare sector does.



For example, Airbnb is one of the top hospitality online services that is famous for providing the most affordable lodging in any country. The service is available on both the platforms, mobile apps as well as the website.

## DISTRICT INDUSTRIES CENTERS

They are called as DICs in short and are crucial for small businesses. The central government launched it on 1st May 1978. They were set up to provide an integrated administrative framework at the district level as the district industries are located in districts. This integrated organisational framework will help look into the problems of industrialization in a district in a composite manner.

There are some roles and functions of the district industry centre which is beneficial for small businesses. They provide all the necessary services and support to help entrepreneurs set up micro, small, and medium enterprises called MSMEs.

### Need for District Industries Centers

The central government felt the need for the district industries centres when the country's economy started plateauing, and there was a need to revive it. Another reason for setting up these DICs is to shift the focus from agriculture to industries. Industrialization makes a country develop. Superpowers of the world are industrial countries.

Therefore, the centre decided to set up these district industries centres with the defined functions of district industries to accelerate the establishment and provide help to developing industries of a district. As it is a central scheme, it is completely funded by the central government. There are some schemes like district industries centre loan scheme, Prime Minister's employment guarantee program, etc., which are given out by the DICs that help fulfil the goals of establishing district industries centres.

(1) National Bank for Agriculture and Rural Development (NABARD): It was setup in 1982 to promote integrated rural development. Apart from agriculture, it supports small industries, cottage and village industries, and rural artisans. It provides credit and offers counseling and consultancy services and organizes training and development programmes for rural entrepreneurs.

(2) The Rural Small Business Development Centre (RSBDC): It was set up by the world association for small and medium enterprises and is sponsored by NABARD. It provides management and technical support to current and prospective micro and small entrepreneurs in rural areas.

(3) National Small Industries Corporation (NSIC): It was set up in 1955 with a view to promote, aid and foster the growth of small business units in the country. It works on promoting the use of indigenously available raw materials. It helps small businesses in exporting their products and works on developing export worthiness of products. It also provides mentoring and technology development services for small businesses.

(4) Small Industries Development Bank of India (SIDBI): It was set up to provide direct and indirect financial assistance under different schemes. It caters to the credit and finance requirements of especially small-scale enterprises.

(5) The National Commission for Enterprises in the Unorganised Sector (NCEUS): It was constituted in September, 2004 with the objective of improving the efficiency and enhancing the global competitiveness of small-

scale industries. It focuses on addressing the problems faced by small enterprises, particularly in the unorganised/informal sector.

(6) Rural and Women Entrepreneurship Development (RWED): It aims at promoting a conducive business environment and at building institutional and human capacities that will encourage and support the entrepreneurial initiatives of rural people and women.

(7) World Association for Small and Medium Enterprises (WASME): It is an international nongovernmental organisation based in India that addresses the problems of small-and medium-scale enterprises. It has set up an 'International Committee for Rural Industrialisation' with the aim of designing a model for the growth and development of rural industries.

(8) Scheme of Fund for re-generation of Traditional Industries (SFURTI): The Central Government set up this fund to make the traditional industries more productive and competitive and to facilitate their sustainable development. The main objectives of SFURTI are to develop clusters of traditional industries in various parts of the country; build innovative and traditional skills, improve technologies and encourage public-private partnerships, develop market intelligence etc.

(9) The District Industries Centers (DICs): The District Industries Centers Programme was launched on May 1, 1978, with a view to providing an integrated administrative framework at the district level, which would look at the problems of industrialisation in the district, in a composite manner

## NABARD

In the year 1982, CRAFICARD or the Committee to Review Arrangements of Institutional Credit for Agriculture and Rural Development recommended the establishment of a developmental bank and accordingly, NABARD was set up.

It was formed by a special parliamentary act. The chief focus of the organisation was the advancement of rural India by enhancing the flow of credit for the upliftment of agriculture as well as the rural nonagricultural sector.

### Functions of NABARD

The functions of NABARD are described below.

- In order to build an empowered and financially inclusive rural India, NABARD has specific departments that work towards the desired goals. These departments can be collectively categorized into three majors units:
  - Financial
  - Developmental
  - Supervision

The financial support necessary to build rural infrastructure is provided by NABARD.

Preparation of district-level credit plans by NABARD are used to guide and motivate the banking industry to achieve required targets.

NABARD also supervises the Regional Rural Banks (RRBs) and Cooperative Banks along with developing their banking practices and integrating them to the Core Banking Solution (**CBS**) platform.

- NABARD also helps handicraft artisans sell their products by training and providing a marketing platform for them.
- NABARD has partnered with various leading global organisations and institutions affiliated with the World Bank that have played a role in transforming agriculture.
- It offers advisory services and financial assistance provided by these international partners to help in consultation with rural development and other agricultural practices.

## SIDBI

Small Industries Development Bank of India (SIDBI) is an independent financial institution aimed at aiding the growth and development of Micro, Small and Medium Enterprises (MSMEs) which contribute significantly to the national economy in terms of production, employment and exports.

- SIDBI was established with the mission of facilitating and strengthening the flow of credit to Micro, Small and Medium Enterprises and for addressing the developmental and financial gaps in the ecosystem of MSMEs.
- It is a statutory body set up under an act of the Indian Parliament in 1990.

### Functions of SIDBI

- It aims at emerging as a single-window to meet the developmental and financial needs of MSMEs in order to make them globally competitive, strong, vibrant and to protect the institution as a customer-friendly financial body.
- It also aims at enhancing the wealth of shareholders through the modern technology platform.
- It is involved in the promotion and development of the MSME sector.
- It is the principal institution for the development, promotion and financing of the MSME sector and for coordination of functions of the institutions engaged in similar activities.
- SIDBI retained its position in the top 30 Development Banks of the World in the ranking of The Banker, London.
- SIDBI also functions as a Nodal/Implementing Agency to various ministries of the Government of India viz., Ministry of MSME, Ministry of Textiles, Ministry of Commerce and Industry, Ministry of Food Processing and Industry, etc.

### Financial Support of SIDBI to MSMEs

SIDBI provides financial support to MSMEs in the following ways:

1. Indirect financing by way of refinancing the banks, refinancing financial institutions for onward lending to MSMEs.
2. Direct financing by way of service sector financing, receivable financing, risk capital and sustainable financing, etc.

Apart from providing financial assistance, SIDBI focuses on the “credit plus approach” under which it facilitates technology modernisation & upgradation, cluster development, enterprise development, upgrading the skills and support marketing activities.

## TECHNOLOGY BUSINESS INCUBATOR (TBI)

**Technology Business incubator (TBI)** is an entity, which helps technology-based start-up businesses with all the necessary resources/support that the start-up needs to evolve and grow into a mature business. Typically, TBIs provide budding entrepreneurs all necessary infrastructure support, technology/prototype development support, research assistance, help in getting funding, business consulting assistance, marketing assistance and do whatever is necessary to make the start-up a success.

The primary goal of a business incubator is to facilitate economic development by improving survival and growth of new entrepreneurial units. Incubators accelerate the development of young entrepreneurial units from ‘idea stage’ to independent self-sustaining successful business. The phenomenal growth of the incubators has taken place world over in last two decades. The concept has benefited many countries in utilizing technology as a means for their economic development.

In the form of a business centre, the TBI provides incubatees an initial place of operation equipped with supportive environment in which services such as assistance in technology, hands-on management, mentoring, business plan development, exposure to Venture Capital and Institutional Capital and all other operational business/finance related needs involved in starting and growing a technology company.

## SCIENCE & TECHNOLOGY ENTREPRENEURSHIP PARK (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 reorientation 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, telex, 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 .

## MODULE-II

### MARKET SURVEY & OPPORTUNITY IDENTIFICATION(BUSINESS PLANNING)

#### BUSINESS PLANNING

A business plan is the blueprint of the step-by-step procedure that would be followed to convert a business idea into a successful business venture. A business plan first of all identifies an innovative idea, researches the external environment to list the opportunities and threats, identifies internal strengths and weakness, assesses the feasibility of the idea and then allocates resources (production/operation, finance, human resources) in the best possible manner to make the plan successful.

The objectives of a business plan are:

- To give directions to the vision formulated by entrepreneur.
- To objectively evaluate the prospects of business.
- To monitor the progress after implementing the plan.
- To persuade others to join the business.
- To seek loans from financial institutions.
- To visualize the concept in terms of market availability, organizational, operational and financial feasibility.
- To guide the entrepreneur in the actual implementation of the plan.
- To identify the strengths and weakness of the plan.

- To identify challenges in terms of opportunities and threats from the external markets. □ To clarify ideas and identify gaps in management information about their business, competitors and □ the market.
- To identify the resources that would be required to implement the plan.
- To document ownership arrangements, future prospects and projected growths of the business venture.

Business Planning is the first step towards a successful enterprise. Business Planning includes deciding what products or services you would like to offer, the place where you would like to start the business, analysing competition, estimating demand and creating the financial model.

Business planning is an ongoing activity and should be updated whenever internal or external factors change.

### **Preparing a Business Plan:**

A plan, which looks very lucrative/ feasible at the first instance, might actually not be when the details are drawn. Hence documenting the business plan is one of the early steps that an entrepreneur should take.

### **Business Plan Process:**

The successful entrepreneur lays down a step-by-step plan that she/he follows in starting a new business. This business plan acts as a guiding tool to the entrepreneur and is dynamic in nature - it needs continuous review and updating so that the plan remains viable even in changing business situations.

The various steps involved in business planning process are:

### **Preliminary Investigation**

Preliminary Investigation: Before preparing the plan, entrepreneur should:

- Review available business plans (if any).
- Draw key business assumptions on which the plans will be based (e.g. inflation, exchange rates, market growth, competitive pressures, etc.) □ Scan the external environment and internal environment to assess the □ strengths, weakness, opportunities and threats.
- Seek professional advice from a friend/relative or a person who is already into similar business (if any).

### **Advantages of Business Planning:**

1. Business Planning helps the Company to formulate objectives and goals clearly. The company formulates objectives after discussing thoroughly with superiors, colleagues and sub-ordinates. These objectives help the company to achieve stability of business and maximize profits.
2. Business planning helps to avoid piece-meal approach and to have integrative approach.
3. Business planning helps to view the organization in total rather than department-wise.
4. Business plan aims at the long-range plan rather than short-range plan.
5. Business plan integrates the company plan with the national plans and priorities.
6. Business plan takes into consideration the environmental factors. Technological factors influence the business plan significantly. Technology has been upgraded continuously.

The changes in technology are pivotal, resulting in high technology

7. Liberalization, Privatization and Globalization not only brought significant changes in the economy, but they have intensified the competition. Globalization allowed many MNC's to enter and operate in India. This resulted in tough competition between domestic and foreign companies.

8. A good business plan helps an organization to be aware of the changes in political trends and their impact in business at national and international levels. Effective business plan helps the company to achieve its objectives and goals.

10. Effective business plan certainly contributes for the achievement of high rate of profits and increases in earnings per share.

## **SMALL SCALE INDUSTRIES**

Small Scale Industries (SSI) are those industries in which the manufacturing, production and rendering of services are done on a small or micro scale. These industries make a one-time investment in machinery, plant, and equipment, but it does not exceed Rs.10 crore and annual turnover does not exceed Rs.50 crore.

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

Following are the characteristics of Small scale industries in India:

1. Small scale industries generally have a single ownership, which means it either has a sole proprietorship structure or a partnership.
2. The management of the small scale industries rests with the owners and therefore, the owner plays an active role in the day to day functions of the business.
3. Small scale industries are very much labor intensive, hence there is limited use of technology.
4. Small scale industries are flexible and adaptable to a changing business environment, unlike the large industries.
5. Small scale industries work in a restricted area which makes them able to meet local and regional requirements.
6. Small scale industries use resources that are local and readily available, which helps the economy fully utilise the natural resources and bear minimum wastage.

### **Objectives of Small Scale Industries**

The objectives of small scale industries are as follows:

1. To create job opportunities for the population.
2. To help in the development of the rural areas of the economy.
3. To play an active role in reducing the regional imbalances in the nation.
4. To help in improving the standard of living for people in rural areas.
5. To ensure there is equal distribution of wealth and income

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

Following are the roles of small scale industries in the Indian Economy

1. They are the major sources of employment for the people living in rural areas and therefore, play a vital role in generating employment in an economy.
2. Small scale industries account for almost 40% of the total goods and services in India hence, is a very important contributor to the economy.

3. Small scale industries help in promoting the Make in India initiative which helps in increasing demand for local made products.

4. Majority of the export materials are provided to the Indian companies from the small scale industries. It is estimated that around 50% of all the material exported are produced from such industries

## WHAT IS AN 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 lacs.

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

- Development of employment opportunities coupled with growth of entrepreneurship in different fields and different parts of the country.
- Increase in productivity of the small scale units.
- Growth of a low cost economy through reduction in costs brought by appropriate technology followed by ancillary units.
- 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 Rs. 25 lakh. Investment limit is Rs. 25 lakh in this type of unit. No such assistance is there.

## SERVICE SECTOR UNITS

The service sector is the sector of the economy that produces and offers services. According to the trisector macroeconomic theory, there are three major economic sectors – primary, secondary, and tertiary.

## MAJOR ECONOMIC SECTORS

### 1. *Primary Sector*

The primary sector is composed of industries engaged in the business of gathering raw materials. It includes mining companies, lumber companies, and oil drilling companies – along with the agricultural and fishing industries.

### 2. *Secondary Sector*



The secondary sector includes all businesses involved in producing and selling goods – such as auto manufacturers, furniture stores, and clothing retailers.

### 3. *Tertiary Sector*

The tertiary sector is the service sector. It includes industries such as the financial services industry, internet technology (IT), and the healthcare and entertainment industries.

## TIME SCHEDULE PLAN

The time schedule is a contractual document between the client and the contractor which defines the forecast sequence and progress of the work and the contractual start, finish and milestones dates. The time schedule could contain the budget cost of the project which creates the project cash flow and could contain the manpower as well which creates manpower histograms.

## PROJECT IMPLEMENTING AGENCY (PIA) SELECTION PROCESS:

1. **Invitation for Project Proposal:** Expression of Interest is float at DDU-GKY website for invitation of Project Implementing Agency (PIA) to apply for Project under DDU-GKY for providing Skills Development Training to Rural Youths within a stipulated time period.

2. **Initial Screening and Qualitative Appraisal of Project Proposal:** Project Proposal submit by PIA are screened by TSA for approval or rejection at the initial level (Evaluation format of IS as per Notification – 20/2017 of MoRD). After approval at IS, Qualitative Appraisal is conducted for the

PIA by TSA which involves a complete check of documents, evaluation and visit of PIA Headquarter. TSA may approve or reject the PIA proposal based on QA (Evaluation format as per Notification – 20/2017 of MoRD).

3. **Project Approval Committee (PAC):** PAC meeting is held under the Chairmanship of Chief Secretary of the State along with the Co-Chairman, Commissioner & Secretary of R.D Department, State Mission Director, Member Secretary, Chief Executive Officer, MzSRLM and 10 other PAC members (Secretary of Line Department and Director of Rural Development and LE&IT). PAC is conducted after PIA project proposal are approved in IS and QA for final approval of project. Based on presentation and interaction between PAC members and PIA the project proposal of PIA may be approved or rejected.

4. **Commencement of Project:** After approval of PIA project proposal, MoU will be signed and funds will be released to PIA and project will be commenced as per timeline of Notification 53/2017 Of MoRD.

### List of Project Implementing Agencies:

At present, DDU-GKY Mizoram has 10 PIAs at present namely:

1. Apollo Medskills Ltd
2. eCentirc Solutions Pvt. Ltd
3. Eternity Partner LLP
4. Integrated Development Environment and Awareness Society
5. Social Justice & Development India
6. Mission Foundation Movement
7. Big Concepts Foundation Pvt Ltd
8. SynchroServe Global Solutions Pvt.Ltd

9. Himali Educational and Welfare Society
10. Infovalley Eduational & Research Pvt.Ltd

## DEMAND-SUPPLY ANALYSIS?

In a market economy, the level of demand and supply of all goods and services jointly determines the price level and quantity of that good (or service) in the economy.

### When is a Supply Demand Analysis Used?

The law of demand states that (with a few exceptions) as price rises, the quantity demanded of any good or service would be lower.

The law of supply implies that higher the price received by a supplier, the quantity supplied will rise. Thus, demand is often a downward sloping curve in the price-quantity plane, while supply is an upward sloping curve.

## IDENTIFYING BUSINESS OPPORTUNITIES

Business opportunity is a favorable situation for doing business. It is important for an entrepreneur to recognize and exploit those opportunities. There are various approaches to identify right business opportunities, some of them are as follows:

How to select the right opportunity?

- Identify your business and personal goal
- Research your favorite industry
- Identify promising industry segment
- Identify problem areas and brainstorm solutions
- Compare possible solutions with your objectives and opportunities in the market place
- Focus on the most promising opportunities

**How to evaluate an idea to identify viability of Entrepreneurial opportunities: Timmons et.al (1987) in a study observed four anchors of superior opportunities:**

- Viable idea creates significant value to the end user
- It solves a significant problem and meet the unmet need or wants of the customers
- This idea has a strong market and potential to make money
- It is a good fit with the founders and management team of the organization, and in the marketplace, and with the risk and reward balance.

**The process can be broken up into the following stages:**

**1. Exploration:**

New ideas are sought from the sales force, since that is the department which is in constant direct contact with customers.

The analysis of customer needs also takes into account competitors' products and services. New ideas are also generated from the consultants, shareholders, management employees, report on foreign markets and products, trade journals, R&D laboratories, other research, etc. However, technical feasibilities and market potential have to be kept in mind while examining new ideas.

**2. Screening:**

While choosing the most effective ideas, guesswork or hunches are not reliable. To ensure a more scientific and less risky selection process, it is necessary to keep in mind all possible quantitative, as well as, qualitative information. Keeping in mind the organizational objectives and available facilities, the following must points be considered while selecting an idea—

- i. Market potentiality ii. Technical feasibility of the idea iii. Does the idea fall under any intellectual property rights or patent regulations? iv. Raw material supply position—at present and in the future
- v. Do existing production facilities and resource availability remain suitable for commercialization of the new idea?
- vi. The level of investment required vii. Can the company generate this level of required investment from internal sources?
- viii. If borrowing is a must, cost of borrowing is a factor ix. Does profitability projection analysis suggest adequate return on investment?

$$(a) \quad PVI = \frac{CTS \times CCS \times AV \times /L}{TPC}$$

Where,

PVI = Project Value Index

CTS = Chances of Technical Success, calculated on a rating scale, which may be arbitrary, say 0 to 10

CCS = Chances for Commercial Success, on a scale, say 0 to 10

AV = Annual Volume of total sales in units

P = Profit per unit

L = Life of Product (in years)

TPC = Total Project Cost

Profitability projection study can be made using following formulae:

However, a more simple approach, as under, may be considered to arrive at the net probable return per rupee:

$$(b) \quad I = (PN/C)$$

Where,

I = Index of relative worth

P = Overall probability of commercial attainment of goal

N = Estimated net return for an arbitrary five-year period

C = Estimated future cost

In addition, point system and graphs also can supplement the profitability projection analysis of new product.

### 3. **Business Analysis:**

At this stage, technical and economic factors, like manhours, cash flow, inventory holding, etc., are analysed to evaluate commercial feasibility. This will ultimately facilitate the budgeting process.

### 4. **Development:**

A working model is developed at this stage to evaluate the practicability of the new idea, by studying the acceptability of customers to the working model. Most companies use product life cycle model at this stage.

### 5. **Testing:**

Redesigning of the working model into a production prototype and testing the market before bulk production.

### 6. **Commercialization:**

At the final stage of a new product planning, decisions have to be made whether to make or buy components; production methods have to be developed; distribution networks activated and the new product has to integrate with the organization's normal activity, and satisfactory sales volume and profitability have to be achieved.

## MODULE-III

### PROJECT REPORT PREPARATION

#### PROJECT PRELIMINARY REPORT

**Project Preliminary Report** is a formal document that describes specific activities, events, occurrences, or subjects of a project to explain progress of the project up to a certain point in time (but not later than completion time). This document is presented and communicated at project status meetings to explain what goals, deliverables and results are produced and what activities are still in progress. The document serves as the basis for developing the final project report.

A typical preliminary report for projects highlights the following data:

- *Problem/need*: A clear description of the problem or need the project aims to handle.
- *Proposed solution*: a brief description of how to address the problem/need.
- *Work effort*: An analysis summary of work relevant to the project.
- *Status*: current state of project work, including activities completed and unfinished.
- *Evaluation*: an analysis and assessment of project work by specific criteria such as costeffectiveness, feasibility, manageability, performance, others.
- *Schedule*: a timeline with specific milestones and events related to project work.

#### DETAILED PROJECT REPORT

A **detailed project report** is an extensive document that gives intricate details about the proposed business idea. It includes information about the business proposal and different strategies that would be taken into account in order to implement the plan.

A project report is a vital aspect of investing in any business. This document contains essential information on the project that can be carried out feasibly.

A detailed report of the project plan mainly includes data on the project's financial, technical, production, and managerial areas. Even as an entrepreneur obtaining a project report helps you understand the important areas of your business. You can also get financing by getting your project evaluated.

##### Contents of a detailed project report

A **detailed project report** must include the following information:

- Brief information about the project

- Experience and skills of the people involved in the promotion of the project
- Details and practical results of the industrial concerns of the promoters of the project • Project finance and sources of financing
- Government approvals
- Raw material requirement
- Details of the requisite securities to be given to various financial organizations
- Other important details of the proffered project idea include information about management teams for the project, details about the building, plant, machinery, etc

## TECHNO ECONOMIC FEASIBILITY REPORT

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. **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

Project Viability means the likelihood that the Project can be successfully developed and provide the Product and services required for the period stated in the Offer. This assessment is based on a review of the status and plans for key Project activities (e.g. financing, permitting, engineering, procurement, construction, interconnection, start-up and testing, operations, fuel supply, water supply, wastewater discharge, labor agreements, site control, etc.).

## MODULE-IV

### MANAGEMENT PRINCIPLES

#### INTRODUCTION:

“Management is the co-ordination of all the resources through the process of planning, organizing, direction and controlling in order to attain the pre-determined objectives.”

Manager is the dynamic, life-giving element in every business. Without his/her leadership, the “resources of production” remains resources and never become production.

**“Management is the art of getting things done through and with people in formally organized groups.” – Harold Koontz**

“Management is the art of knowing what to do in the best and cheapest way.” – F.W.Taylor

#### NATURE OF MANAGEMENT:

1. **Management is goal oriented:** It is a means to achieve certain goals. Management goals are called group goals or organizational goals.
2. **Management is universal:** The basic principles of management are universal. They apply more or less in every situation. Whenever two or more persons are engaged in working for a common goal, management is necessary.
3. **Management is intangible:** It is an unseen or invisible force. It cannot be seen but its presence can be everywhere in the form of results.
4. **Management is a social process:** It is done by people, through people and for people.
5. **Management is multi-acted discipline:** It contains principles drawn from many social sciences like anthropology, psychology etc.
6. **Management is a continuous process:** It is constantly engaged in moulding of enterprise in the ever changing business environment.
7. **Management is purposeful:** It is the way to achieve certain end results, but without the end results it would be directionless. All the activities of management are goal oriented, the success of management is measured by the extent to which the desired objectives are attained.
8. **Management is group phenomenon:** It involves the use of group effort in the pursuit of common objectives. People join in groups to achieve what they cannot achieve individually.
9. **Management is essentially an executive function:** It deals with the active directions and control of the activities of people to attain predetermined objectives. It is a technique by means of which the objectives of human group are determined, clarified and accomplished.
10. **Management make things happen:** It is the art of getting things done through people. It implies that under given set of constraints or problems, how positive results can emerge, by taking well defined actions.

#### PRINCIPLES OF MANAGEMENT:

1. **Division of work:** It means specialization. Each job and work should be divided into small elements and each element should be assigned to the specialist of the element.
2. **Authority and responsibility:** Fayol stressed that right and power to give orders should be balanced with the responsibility for performing the necessary functions.

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4. **Unity of command:** According to this principle, one sub-ordinate should get orders and instructions regarding his work only from one superior. interest of the individuals and groups. subordinates.
5. **Unity of direction:** Each group of activities having the same objective must have one head and one plan. It will create dedication to the purpose and loyalty.
6. **Subordination of individual interest to general interest:** The interest of organization is above the
7. **Remuneration:** It should be fair and adequate. It should lead to maximum satisfaction and include both types of incentives- financial as well as non- financial.
8. **Centralization:** The relationship between centralization and decentralization authority is a matter of proportion and optimum balance should be maintained a/c to the needs of the organization.
9. **Scalar chain:** It means the hierarchy of authority from the highest executive to the lowest one for the purpose of communication.
10. **Order:** It means the right person on the right job and everything in proper place.
11. **Equity:** Kindness and justice should be exercised by the management in dealing with its
12. **Stability of tenure and personnel:** The management policies should provide a sense of reasonable
13. **Initiative:** Manager must create an environment which encourages their subordinates to take
14. **Espirit de corps:** Cohesiveness and team spirit should be encouraged among employees. It is one

## MANAGEMENT FUNCTIONS:

### 1. PLANNING:-

□

### 2. ORGANISING:- According to Henry Fayol, “To

Organizing as a process involves:



This will create loyalty and devotion among the employees. job security. It helps to develop loyalty

and attachment on the part of employees. initiative and responsibility.

of the chief characteristics of organized activity that a number of people work together in close cooperation for the achievement of common goals.

According to KOONTZ, “Planning is deciding in advance - what to do, when to do & how to do. It bridges the gap from where we are & where we want to be”. A plan is a future course of actions. It includes:

- Determination of objectives
- Forecasting
- Search of alternative course of action Drawing policies & procedures
- Budgeting, etc.

organize a business is to provide it with everything useful or its functioning i.e. raw material, tools, capital and personnel’s”. To organize a business involves determining & providing human and non-human resources to the organizational structure.

- Identification of activities.
  - Classification of grouping of activities.
  - Assignment of duties.
-



- Delegation of authority and creation of responsibility.



- Coordinating authority and responsibility relationships.

### 3. STAFFING:-

According to Koontz & O'Donnell, “ The managerial function of staffing involves manning the organizational structure through proper and effective selection, appraisal and development of personnel to fill the roles designed into the structure.” It includes:

- Proper recruitment and selection of people
- Fixing remuneration
- Selection of suitable persons
- Placement and orientation of employees
- Training and development of employees

### 4. DIRECTING:-

It is that part of managerial function which actuates the organizational methods to work efficiently for achievement of organizational purposes. Directing involves the following sub-functions:

**Supervision-** implies overseeing the work of subordinates by their superiors. It is the act of watching & directing work & workers.

**Motivation-** means inspiring, stimulating or encouraging the sub-ordinates with zeal to work. Positive, negative, monetary, non-monetary incentives may be used for this purpose.

**Leadership-** may be defined as a process by which manager guides and influences the work of subordinates in desired direction.

**Communications-** is the process of passing information, experience, opinion etc from one person to another. It is a bridge of understanding.

### 5. CONTROLLING:-

According to Koontz & O'Donnell “Controlling is the measurement & correction of performance activities of subordinates in order to make sure that the enterprise objectives and plans desired to obtain them as being accomplished”.

Therefore controlling has following steps:

- Establishment of standard performance.
- Measurement of actual performance.

Comparison of actual performance with the standards and finding out deviation if any.



LEVELS OF MANAGEMENT

- Corrective action.
- 

## 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.

### 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 -

- Top management lays down the objectives and broad policies of the enterprise.

- It issues necessary instructions for preparation of department budgets, procedures, schedules etc.



- It prepares strategic plans & policies for the enterprise.
- It appoints the executive for middle level i.e. departmental managers.
- It controls & coordinates the activities of all the departments.
- It is also responsible for maintaining a contact with the outside world.
- It provides guidance and direction.
- 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 -

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

- Assigning of jobs and tasks to various workers.
- They guide and instruct workers for day to day activities.
- They are responsible for the quality as well as quantity of production.
- They are also entrusted with the responsibility of maintaining good relation in the organization.
- They communicate workers problems, suggestions, and recommendatory appeals etc to the higher level and higher level goals and objectives to the workers.
- They help to solve the grievances of the workers.
- They supervise & guide the sub-ordinates.
- They are responsible for providing training to the workers.

- They arrange necessary materials, machines, tools etc for getting the things done.



- They prepare periodical reports about the performance of the workers.
- They ensure discipline in the enterprise.
- They motivate workers.
- They are the image builders of the enterprise because they are in direct contact with the workers.

## MODULE-V

### FUNCTIONAL AREAS OF MANAGEMENT

#### PRODUCTION MANAGEMENT

Production management is called upon to develop and establish relationship between market demand and production capability of an enterprise. It ensures accomplishment of twin organisational objectives of production and satisfaction. Both these objectives can be fulfilled with planning, organising, directing, and controlling and inventory management. Production management is the process of effectively coordinating and controlling the factors of production such as man, machine, material, money and management in order to get satisfaction out of the product.

Production management is the process of transforming the input into output by creating various utility which can add value to those created output. While the input is transferred into output various types of utility are created. Some of the utilities are:

1. **Form Utility:** When the input is changed in size, weight, colour, shape and form while converting into output for the benefit of the customers in the market it has form utility. (Cotton changed into different dress materials).
2. **Place Utility:** When the input is changed from the place of its availability to the place of their use to be converted into output through transportation is known as place utility. (Sugarcane to the factory for sugar production)
3. **Time Utility:** When either the input or the output is preserved for storage purpose in order to be utilised when there is a scarcity of that product to be utilised by the consumers. (Potato & Tomato in cold storage)
4. **Service Utility:** When some utility is created by rendering some service to the customer either directly or indirectly for a definite time period it is called as service utility of the product. (Doctors for the patient, lawyers for the clients, teachers for the students)
5. **Knowledge Utility:** When some information is communicated to the customer by imparting some knowledge about the product through presentation or advertisement. (Advertisement for a product or service)

“It is the ratio between the output of goods and services and the input of resources consumed in the process of production.”

Productivity is the ratio between output of wealth and input of resources used in production processes.

Productivity can be increased by:

- i. Generating more outputs from same level of inputs.
- ii. Producing same level of outputs with reduced level of inputs.
- iii. A combination of both.

## QUALITY CONTROL

Quality control involves testing units and determining if they are within the specifications for the final product. The purpose of the testing is to determine any needs for corrective actions in the manufacturing process. Good quality control helps companies meet consumer demands for better products.

### Why Is QC Needed?

Creating a product is costly, time-consuming, and can be unsafe without controls in place. Additionally, if a company sends defective products out for purchase, it could be held liable for injuries or issues that arise from using its products. Quality control inspectors ensure that defective or unsafe products are identified, and the causes are corrected.

## PRODUCTION PLANNING

Production planning is one part of production planning and control dealing with basic concepts of what to produce, when to produce, how much to produce, etc. It involves taking a long-term view at overall production planning. Therefore, objectives of production planning are as follows:

- To ensure right quantity and quality of raw material, equipment, etc. are available during times of production.
- To ensure capacity utilization is in tune with forecast demand at all the time.

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A well thought production planning ensures that overall production process is streamlined providing following benefits:

- Organization can deliver a product in a timely and regular manner.

- Supplier are informed will in advance for the requirement of raw materials.



- It reduces investment in inventory.
- It reduces overall production cost by driving in efficiency.

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Production planning takes care of two basic strategies' product planning and process planning. Production planning is done at three different time dependent levels i.e. long-range planning dealing with facility planning, capital investment, location planning, etc.; medium-range planning deals with demand forecast and capacity planning and lastly short term planning dealing with day to day operations.

## Production Control

Production control looks to utilize different type of control techniques to achieve optimum performance out of the production system as to achieve overall production planning targets. Therefore, objectives of production control are as follows:

- Regulate inventory management
- Organize the production schedules
- Optimum utilization of resources and production process

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The advantages of robust production control are as follows:

- Ensure a smooth flow of all production processes
- Ensure production cost savings thereby improving the bottom line
- Control wastage of resources
- It maintains standard of quality through the production life cycle.

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Production control cannot be same across all the organization. Production control is dependent upon the following factors:

- Nature of production( job oriented, service oriented, etc.)
  - Nature of operation
  - Size of operation
- 

## INVENTORY MANAGEMENT

Inventory management is the process of ordering, handling, storing, and using a company's noncapitalized assets - AKA its inventory. For some businesses, this involves raw materials and components, while others may only deal with finished stock items ready for sale. Either way, inventory management all comes down to balance - having the right amount of stock, in the right place, at the right time. And this guide will help you achieve just that.

The importance of inventory management



A retail business is useless without its inventory. And so while it may not be the most exciting subject, inventory

management is vitally important to your business's longevity. Good inventory management helps with:

1. Customer experience: Not having enough stock to fulfill orders you've already taken payment for can be a real negative.
2. Improving cash flow: Putting cash into too much inventory at once means it's not available for other things - like payroll or marketing.
3. Avoiding shrinkage: Purchasing too much of the wrong inventory and/or not storing it correctly can lead to it becoming 'dead', spoiled, or stolen.
4. Optimizing fulfillment: Inventory that's put away and stored correctly can be picked, packed and shipped off to customers more quickly and easily.

The forms of inventories existing in a manufacturing enterprise can be classified into three categories:

**(i) Raw Materials:**

These are those goods which have been purchased and stored for future productions. These are the goods which have not yet been committed to production at all.

**(ii) Work-in-Progress:**

These are the goods which have been committed to production but the finished goods have not yet been produced. In other words, work-in-progress inventories refer to 'semi-manufactured products.'

**(iii) Finished Goods:**

These are the goods after production process is complete. Say, these are the final products of the production process ready for sale. In case of wholesaler or retailer, inventories are generally referred to as 'merchandise inventories.' Some firms also maintain the fourth type of inventories called 'supplies.' Examples of supplies are office and plant cleaning materials, oil, fuel, light bulbs and the like.

There are broadly two costs involved in holding inventories:

**(i) Ordering Costs:**

These include costs which are associated with placing of orders to purchase raw materials and components. Clerical and administrative salaries, rent for the space occupied, postage, telegrams, bills, stationery, etc. are the examples of ordering costs. The more the orders, the more will be the ordering costs and vice versa.

(ii) ***Carrying Costs:***

These include costs involved in holding or carrying inventories like insurance charges for covering risks, rent for the

floor space occupied, wages of labourers, wastages, obsolescence, or deterioration, thefts, pilferages, etc. These also include 'opportunity costs.' This simply means had the money blocked in inventories been invested elsewhere in the business, it would have earned a certain return. Hence, the loss of such return may be considered as an 'opportunity costs.'

### **Models of Inventory Management:**

While it is very necessary to maintain the optimum level of inventory, it is not so easy as well. Nonetheless, some models or methods have been developed in the recent past for determining the optimum level of inventories to be maintained in the enterprise.

All models are classified into two major types:

(i) Deterministic Models, and (ii)

Probabilistic Models.

In brief, the deterministic models are built on the assumption that there is no uncertainty associated with demand and replenishment of inventories. On the contrary, the probabilistic models take cognizance of the fact that there is always some degree of uncertainty associated with the demand pattern and lead time of inventories.

Usually, the following three deterministic models are in use:

#### ***1. Economic Ordering Quantity (EOQ) Model: Economic Ordering Quantity (EOQ) Model:***

One of the important decisions to be taken by a firm in inventory management is how much inventory to buy at a time.

2. ABC Analysis: This is also called 'Selective Inventory Control.' The ABC analysis of selective inventory is based on the logic that in any large number, we usually have 'significant few' and 'insignificant many.' This holds true in case of inventories also. A firm maintaining several types of inventories does not need to exercise the same degree of control on all the items.

The firm adopts selective approach to control investments in various types of inventories. This selective approach is called the ABC Analysis. The items with highest value are classified as 'A Items'. The items with relatively low value as 'B Items' and the items least valuable are classified as 'C Items.' Since the ABC analysis concentrates on important items, hence, it is also known as 'Control by Importance and Exception (CIE).'

3. Inventory Turnover Ratio: Inventory can also be managed by using accounting ratios like Inventory Turnover Ratio. Inventory ratio establishes relationship between average inventory and cost of inventory consumed or sold during the particular period.

This is calculated with the help of the following formula:

Cost of Good Consumed or Sold during the year/Average Inventory during the year.

## **DEFINITIONS OF FINANCIAL MANAGEMENT:**

1. According to Weston and Brigham, “Financial Management is an area of financial decision making, harmonising individual motives and enterprise goals”.
2. According to Howard and Upon, “ Financial Management is the application of the planning and controlling functions to the finance function”.
3. According to Ezra Solomon and Pringle John, “Financial Management is concerned with the effective use of an economic resource namely capital fund”.
4. A formal definition of finance would be determining acquisition, allocation, understanding and utilisation of financial resources usually in the aim of achieving of some particular goals of objective.

## FUNCTIONS OF FINANCIAL MANAGEMENT

There are two approaches to identify the functions that must be performed by financial management. One classification system links the functions with the twin goals of liquidity and profitability. The second classification method focuses on what is being a managed asset or funds.

1) Liquidity Functions: In seeking sufficient liquidity to carry out the firm’s activities, the financial manager performs tasks such as the following:

- The day-to-day operations require the firm to be able to pay its bills properly.
- This is largely a matter of matching cash inflows against cash outflows.
- The firm must be able to forecast the sources and timing of inflows from customers and use them to pay creditors and suppliers.

2) Raising Fund: The firm receives financing from a variety of sources. At different times some sources will be more desirable than others. The possible source may not at a given time, have sufficient funds available to meet firm’s need.

The financial manager must identify the amount of funds available from each source and the periods when they will be needed. Then the manager must take steps to ensure that the funds will actually be available and committed to the firm.

3) Managing the Flow of Internal Funds: A large firm has a number of bank accounts for various operating division. The money that flows among these internal accounts should be carefully monitored. Frequently, a firm has excess

cash in one bank account when it has a need for cash elsewhere. By continuously checking on the cash balances in the head quarters and each operating division's accounts, the manager can achieve a high degree of liquidity with minimum external borrowing.

- 4) Profitability Functions: In seeking profits for the firm the financial manager provides specific inputs into the decision

making process, based on the financial training and actions.

## MANAGEMENT OF WORKING CAPITAL

Working capital management is a business strategy designed to ensure that a company operates efficiently by monitoring and using its current assets and liabilities to their most effective use.

The efficiency of working capital management can be quantified using ratio analysis.

### Working Capital Management Ratios

Three ratios that are important in working capital management are the working capital ratio (or current ratio), the collection ratio, and the inventory turnover ratio.

#### Current Ratio (Working Capital Ratio)

The working capital ratio or current ratio is calculated as current assets divided by current liabilities. It is a key indicator of a company's financial health as it demonstrates its ability to meet its short-term financial obligations.

Although numbers vary by industry, a working capital ratio below 1.0 generally indicates that a company is having trouble meeting its short-term obligations. That is, the company's debts due in the upcoming year would not be covered by its liquid assets. In this case, the company may have to resort to selling off assets, securing long-term debt, or using other financing options to cover its short-term debt obligations.

Working capital ratios of 1.2 to 2.0 are considered desirable, but a ratio higher than 2.0 may suggest that the company is not effectively using its assets to increase revenues.<sup>1</sup> A high ratio may indicate that the company is not managing its working capital efficiently.

#### Collection Ratio (Days Sales Outstanding)

The collection ratio, also known as days sales outstanding (DSO), is a measure of how efficiently a company manages its accounts receivable. The collection ratio is calculated as the product of the number of days in an accounting period multiplied by the average amount of outstanding accounts receivable divided by the total amount of net credit sales during the accounting period.

The collection ratio calculation provides the average number of days it takes a company to receive payment after a sales transaction on credit. If a company's billing department is effective at collections attempts and customers pay their bills on time, the collection ratio will be lower. The lower a company's collection ratio, the more quickly it turns receivables into cash.

#### Inventory Turnover Ratio

Another important element of working capital management is inventory management. To operate with maximum efficiency and maintain a comfortably high level of working capital, a company must keep sufficient inventory on hand to meet customers' needs while avoiding unnecessary inventory that ties up working capital.



Companies typically measure how efficiently that balance is maintained by monitoring the inventory turnover ratio.

The inventory turnover ratio, calculated as cost of goods sold divided by average balance sheet inventory, reveals how rapidly a company's inventory is being used in sales and replaced. A relatively low ratio compared to industry peers indicates a risk that inventory levels are excessively high, while a relatively high ratio may indicate inadequate inventory levels.

### Cost concept

The cost concept is a concept of accounting which states that the value of an asset will be calculated on the basis of historical cost or acquisition cost. Such as an asset purchased at 25 lac in 1999 and same cost will be shown in 2022 financial statement in all future years.

**The cost concept is an accounting principle that records assets at their respective cash amounts at the time the asset was purchased or acquired.** The amount of the asset that is recorded may not be increased for improvements in market value or inflation, nor can it be updated to reflect any depreciation.

## BREAK EVEN ANALYSIS

A break-even analysis is an economic tool that is used to determine the cost structure of a company or the number of units that need to be sold to cover the cost. Break-even is a circumstance where a company neither makes a profit nor loss but recovers all the money spent.

The break-even analysis is used to examine the relation between the fixed cost, variable cost, and revenue. Usually, an organisation with a low fixed cost will have a low break-even point of sale.

### Importance of Break-Even Analysis

- **Manages the size of units to be sold:** With the help of break-even analysis, the company or the owner comes to know how many units need to be sold to cover the cost. The variable cost and the selling price of an individual product and the total cost are required to evaluate the break-even analysis.
- **Budgeting and setting targets:** Since the company or the owner knows at which point a company can break-even, it is easy for them to fix a goal and set a budget for the firm accordingly. This analysis can also be practised in establishing a realistic target for a company.
- **Manage the margin of safety:** In a financial breakdown, the sales of a company tend to decrease. The break-even analysis helps the company to decide the least number of sales required to make profits. With the margin of safety reports, the management can execute a high business decision.
- **Monitors and controls cost:** Companies' profit margin can be affected by the fixed and variable cost. Therefore, with break-even analysis, the management can detect if any effects are changing the cost.
- **Helps to design pricing strategy:** The break-even point can be affected if there is any change in the pricing of a product. For example, if the selling price is raised, then the quantity of the product to be sold to break-even will be reduced. Similarly, if the selling price is reduced, then a company needs to sell extra to break-even.

## BOOK KEEPING

Petty Cash Book is used for recording payment of petty expenses, which are of smaller denominations like postage, stationery, conveyance, refreshment, etc. Person who maintains petty cash book is known as petty cashier and these small expenses are termed as petty expenses.

It is prepared by two methods:

1. **Ordinary system:** In this case, a fixed sum of money is paid to petty cashier for the payment of petty expenses and after spending the whole amount, the account is submitted by the petty cashier to the main cashier.
2. **Imprest system:** In this case, a fixed sum of the money is given to the petty cashier in the beginning of a period and at the end of the period the amount spent by him is reimbursed, so that he has a fixed amount in the beginning of every new period.

Bookkeeping is the process of recording your company's financial transactions into organized accounts on a daily

basi



It can also refer to the different recording techniques businesses can use. Bookkeeping is an essential part of your accounting process for a few reasons. When you keep transaction records updated, you can generate accurate financial reports that help measure business performance. Detailed records will also be handy in the event of a tax audit.

## JOURNAL ENTRY

A journal entry records a business transaction in the accounting system for an organization. Journal entries form the building blocks of the double-entry accounting method that has been used for centuries to keep financial records. They make it possible to track what a business has used its resources for, and where those resources came from.

The double-entry accounting method requires every transaction to be recorded in at least two accounts. For example, when a business buys supplies with cash, that transaction will show up in the supplies account and the cash account. Before we get ahead of ourselves, let's start with the basics.

## PETTY CASH BOOK MARKETING MANAGEMENT

Marketing concept is a set of strategies that the firms adopt where they analyse the needs of their customers and implement strategies to fulfil those needs which will result in an increase in sales, profit maximisation and also beat the existing competition.

### Types of Marketing Concept

Five types of marketing concepts are as follows:

1. Production Concept
2. Product Concept
3. Selling concept
4. Marketing concept
5. Societal marketing concept

#### Production Concept

This concept was based on the assumption that customers are primarily interested in products which are accessible and affordable. This concept was introduced at a time when business was focused mainly on production. It says that a business will be able to lower costs by producing more quantity or mass production of goods.

Solely focusing on producing goods may lead to the firm deviating from its objective.

### Product Concept

The product concept is based on the assumption that customers will be more inclined towards products that are offering more quality, innovative features and top-level performance.

In this type of marketing concept, a business focuses on creating high-quality products and refining it every time in order to develop a better and improved product.



### Selling Concept

While the previous two concepts focused on production, the selling concept is focused on selling. It believes that customers will be buying products only when the product is aggressively marketed by the company. It does not focus on building relationships with customers, and ensuring customer satisfaction is also not deemed necessary.

### Marketing Concept

A marketing concept places the centre of focus on the customer. All the activities that are undertaken by an organisation are done keeping the customer in mind. The organisations are more concerned about creating value propositions for the customers, which will differentiate them from the competition.

### Societal Marketing Concept

This is the fifth and most advanced form of the marketing concept. Here the focus is on needs and wants of the customer as well as ensuring the safety of the customer and society first. It believes in giving back to society and making the world a better place for all human beings.

### **Best Marketing Techniques** □

Brand Storytelling.

- Digital PR.
- The Surround Sound Method.
- Brand Extensions.
- Podcasting.
- Video Marketing.
- Community Building.
- Contextual Marketing
- Online video

□ Develop a signature piece of content

## CONCEPT OF 4P's

The four Ps are the key considerations that must be thoughtfully reviewed and wisely implemented in order to successfully market a product or service. They are product, price, place, and promotion.

### 1. Product

Creating a marketing campaign starts with an understanding of the product itself. Who needs it, and why? What does it do that no competitor's product can do? Perhaps it's a new thing altogether and is so compelling in its design or function that consumers will have to have it when they see it.

The job of the marketer is to define the product and its qualities and introduce it to the consumer.

Defining the product also is key to its distribution. Marketers need to understand the life cycle of a product, and business executives need to have a plan for dealing with products at every stage of the life cycle.

The type of product also dictates in part how much it will cost, where it should be placed, and how it should be promoted.

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Many of the most successful products have been the first in their category. For example, Apple was the first to create a touchscreen smartphone that could play music, browse the internet, and make phone calls. Apple reported total sales of the iPhone for FY 2022 at \$205.4 billion.<sup>3</sup> In 2021, it hit the milestone of 2 billion iPhones sold.<sup>4</sup>

## 2. Price

Price is the amount that consumers will be willing to pay for a product. Marketers must link the price to the product's real and perceived value, while also considering supply costs, seasonal discounts, competitors' prices, and retail markup.

In some cases, business decision-makers may raise the price of a product to give it the appearance of luxury or exclusivity. Or, they may lower the price so more consumers will try it.

Marketers also need to determine when and if discounting is appropriate. A discount can draw in more customers, but it can also give the impression that the product is less desirable than it was.

UNIQLO, headquartered in Japan, is a global manufacturer of casual wear. Like its competitors Gap and Zara, UNIQLO creates low-priced, fashion-forward garments for younger buyers.

What makes UNIQLO unique is that its products are innovative and high-quality. It accomplishes this by purchasing fabric in large volumes, continually seeking the highest-quality and lowest-cost materials in the world. The company also directly negotiates with its manufacturers and has built strategic partnerships with innovative Japanese manufacturers.

UNIQLO also outsources its production to partner factories. That gives it the flexibility to change production



as its needs change.

Finally, the company employs a team of skilled textile artisans that it sends to its partner factories all over the world for quality control. Production managers visit factories once a week to resolve quality problems.<sup>5</sup>

### 3. Place

Place is the consideration of where the product should be available—in brick-and-mortar stores and online—and how it will be displayed.

The decision is key: The makers of a luxury cosmetic product would want to be displayed in Sephora and Neiman Marcus, not in Walmart or Family Dollar. The goal of business executives is always to get their products in front of the consumers who are the most likely to buy them.

That means placing a product only in certain stores and getting it displayed to the best advantage.

The term placement also refers to advertising the product in the right media to get the attention of target consumers.

For example, the 1995 movie *GoldenEye* was the 17th installment in the James Bond movie franchise and the first that did not feature an Aston Martin car. Instead, Bond actor Pierce Brosnan got into a BMW Z3. Although the Z3 was not released until months after the film had left theaters, BMW received 9,000 orders for the car the month after the movie opened.

### 4. Promotion

The goal of promotion is to communicate to consumers that they need this product and that it is priced appropriately. Promotion encompasses advertising, public relations, and the overall media strategy for introducing a product.

Marketers tend to tie together promotion and placement elements to reach their core audiences. For example, In the digital age, the "place" and "promotion" factors are as much online as offline. Specifically, where a product appears on a company's web page or social media, as well as which types of search functions will trigger targeted ads for the product.

## HUMAN RESOURCE MANAGEMENT

**Personnel management** can be defined as obtaining, using and maintaining a satisfied workforce. It is a significant part of management concerned with employees at work and with their relationship within the organization.

### Nature of Personnel Management

1. Personnel management includes the function of employment, development and compensation- These functions are performed primarily by the personnel management in consultation with other departments.
2. Personnel management is an extension to general management. It is concerned with promoting and stimulating competent work force to make their fullest contribution to the concern.
3. Personnel management exist to advice and assist the line managers in personnel matters. Therefore, personnel department is a staff department of an organization.

4. Personnel management lays emphasize on action rather than making lengthy schedules, plans, work methods. The problems and grievances of people at work can be solved more effectively through rationale personnel policies.
5. It is based on human orientation. It tries to help the workers to develop their potential fully to the concern.
6. It also motivates the employees through it's effective incentive plans so that the employees provide fullest co-operation.
7. Personnel management deals with human resources of a concern. In context to human resources, it manages both individual as well as blue- collar workers.

### Functions of Personnel Management

Follwoing are the four functions of Personnel Management:

#### 1) Manpower

Planning:

Manpower Planning which is also called as Human Resource Planning consists of putting right number of people, right kind of people at the right place, right time, doing the right things for which they are suited for the achievement of goals of the organization. 2) Recruitment:

**Internal Recruitment** - is a recruitment which takes place within the concern or organization. Internal sources of recruitment are readily available to an organization. Internal sources are primarily three - Transfers, promotions and Re-employment of ex-employees. Internal recruitment may lead to increase in employee's productivity as their motivation level increases. It also saves time, money and efforts. But a drawback of internal recruitment is that it refrains the organization from new blood. Also, not all the manpower requirements can be met through internal recruitment. Hiring from outside has to be done.

Internal sources are primarily 3

- a. **Transfers** b. **Promotions (through Internal Job Postings)** and
- c. **Re-employment of ex-employees** - Re-employment of ex-employees is one of the internal sources of recruitment in which employees can be invited and appointed to fill vacancies in the concern. There are situations when ex-employees provide unsolicited applications also.

**External Recruitment** - External sources of recruitment have to be solicited from outside the organization. External sources are external to a concern. But it involves lot of time and money. The external sources of recruitment include - Employment at factory gate, advertisements, employment exchanges, employment agencies, educational institutes, labour contractors, recommendations etc.

- d. **Employment at Factory Level** - This a source of external recruitment in which the applications for vacancies are presented on bulletin boards outside the Factory or at the Gate. This kind of recruitment is applicable generally where factory workers are to be appointed. There are people who keep on soliciting jobs from one place to another. These applicants are called as unsolicited applicants. These types of workers apply on their own for their job. For this kind of recruitment workers have a tendency to shift from one factory to another and therefore they are called as "badli" workers.

- e. **Advertisement** - It is an external source which has got an important place in recruitment procedure. The biggest advantage of advertisement is that it covers a wide area of market and scattered applicants can get information from advertisements. Medium used is Newspapers and Television.
- f. **Employment Exchanges** - There are certain Employment exchanges which are run by government. Most of the government undertakings and concerns employ people through such exchanges. Nowadays recruitment in government agencies has become compulsory through employment exchange.
- g. **Employment Agencies** - There are certain professional organizations which look towards recruitment and employment of people, i.e. these private agencies run by private individuals supply required manpower to needy concerns.
- h. **Educational Institutions** - There are certain professional Institutions which serves as an external source for recruiting fresh graduates from these institutes. This kind of recruitment done through such educational institutions, is called as Campus Recruitment. They have special recruitment cells which helps in providing jobs to fresh candidates.
- i. **Recommendations** - There are certain people who have experience in a particular area. They enjoy goodwill and a stand in the company. There are certain vacancies which are filled by recommendations of such people. The biggest drawback of this source is that the company has to rely totally on such people which can later on prove to be inefficient.
- j. **Labour Contractors** - These are the specialist people who supply manpower to the Factory or Manufacturing plants. Through these contractors, workers are appointed on contract basis, i.e. for a particular time period. Under conditions when these contractors leave the organization, such people who are appointed have to also leave the concern.

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3) **Selection:** Employee Selection is the process of putting right men on right job. It is a procedure of matching organizational requirements with the skills and qualifications of people. Effective selection can be done only when there is effective matching

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4) **Training and Development:**

Training of employees takes place after orientation takes place. Training is the process of enhancing the skills, capabilities and knowledge of employees for doing a particular job. Training process moulds the thinking of employees and leads to quality performance of employees. It is continuous and never ending in nature.

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## EMPLOYEE SELECTION PROCESS

Employee Selection is the process of putting right men on right job. It is a procedure of matching organizational requirements with the skills and qualifications of people. Effective selection can be done only when there is effective matching.

By selecting best candidate for the required job, the organization will get quality performance of employees. Moreover, organization will face less of absenteeism and employee turnover problems.



*By selecting right candidate for the required job, organization will also save time and money. Proper screening of candidates takes place during selection procedure. All the potential candidates who apply for the given job are tested.*

But selection must be differentiated from recruitment, though these are two phases of employment process. Recruitment is considered to be a positive process as it motivates more of candidates to apply for the job. It creates a pool of applicants. It is just sourcing of data.

While **selection is a negative process** as the inappropriate candidates are rejected here. Recruitment precedes selection in staffing process. Selection involves choosing the best candidate with best abilities, skills and knowledge for the required job.

The **Employee selection Process** takes place in following order-

1. **Preliminary Interviews-** It is used to eliminate those candidates who do not meet the minimum eligibility criteria laid down by the organization. The skills, academic and family background, competencies and interests of the candidate are examined during preliminary interview. Preliminary interviews are less formalized and planned than the final interviews. The candidates are given a brief up about the company and the job profile; and it is also examined how much the candidate knows about the company. Preliminary interviews are also called screening interviews.
2. **Application blanks-** The candidates who clear the preliminary interview are required to fill application blank. It contains data record of the candidates such as details about age, qualifications, reason for leaving previous job, experience, etc.
3. **Written Tests-** Various written tests conducted during selection procedure are aptitude test, intelligence test, reasoning test, personality test, etc. These tests are used to objectively assess the potential candidate. They should not be biased.
4. **Employment Interviews-** It is a one to one interaction between the interviewer and the potential candidate. It is used to find whether the candidate is best suited for the required job or not. But such interviews consume time and money both. Moreover the competencies of the candidate cannot be judged. Such interviews may be biased at times. Such interviews should be conducted properly. No distractions should be there in room. There should be an honest communication between candidate and interviewer.
5. **Medical examination-** Medical tests are conducted to ensure physical fitness of the potential employee. It will decrease chances of employee absenteeism.
6. **Appointment Letter-** A reference check is made about the candidate selected and then finally he is appointed by giving a formal appointment letter.

## MODULE-VI

### LEADERSHIP AND MOTIVATION

#### LEADERSHIP

Leadership in business is the capacity of a company's management to set and achieve challenging goals, take fast and decisive action when needed, outperform the competition, and inspire others to perform at the highest level they can. Individuals with strong leadership skills in the business world often rise to executive positions such as CEO (chief executive officer), COO (chief operating officer), CFO (chief financial officer), president, and chair.

## Importance of Leadership

Here are some reasons that highlight the importance of leadership:

### 1. **Changemakers**

The role of leadership is evolving. Leaders were previously perceived as bosses or managers who follow the reward and punishment system. However, they are now seen as individuals who propagate change in an organization or team. They are unselfish individuals who use skills like intuitiveness, analytics, and others to get akin to the latest market trends that accommodate the organization's goals and objectives and bring innovation to business processes and the tasks performed by the workforce to mitigate mundanity and introduce creativity.

### 2. **Goal-oriented**

Experts consider leaders as the bridge between the employer and the employees. Moreover, they believe that effective leadership establishes a personal connection with their fellow employees to set a goal or objective that vicariously fulfils the needs and requirements of the workforce and the company. It drives and motivates employees to achieve business goals with limited resources.

### 3. **Conflict resolvers**

Although leaders may not be influential individuals in an organization, they are good at solving conflicts between different business parties. It is because they have a deep understanding of human behaviour and cognition, which helps them understand the perspective of others and come up with a solution easily.

### 4. **Instigates a positive work environment**

To retain employees, many companies employ leaders who are intuitive and good communicators. The main reason is that talented and skilled leaders instigate a positive work environment, increasing job satisfaction and motivation among the employees.

### 5. **Leads to organizational development**

It is believed that good leaders lead organizational development and growth in any business environment. They have appropriate skill sets that increase the efficiency and productivity of many business processes, inciting organizational growth and development.

The growing importance of intelligent leadership models has encouraged business organizations to employ leaders with various skills that offer a competitive advantage and increase business efficiency and productivity. Now that you are aware of the reasons that make the inclusion of leadership in business important, let's delve deep into understanding the different roles played by leaders in an organization.

## Role of Leadership in An Organization?

The complex business environment requires leaders to perform a variety of roles in an organization. Here are some of the roles played by a leader in an organization:

### • **Visionary**

As visionary leaders put to use skills like active listening and communication to offer innovative ideas and processes to integrate change and novelty into different business functions. Furthermore, they work with the team to turn the company's vision into reality.

- Architect**

As architects, leaders act as a reckoning force that plans and executes business objectives and goals with employee assistance. They play the role of a designer in business planning and forecasting the future trajectory of the business.
- Coach**

As a coach, leaders manage the employees; they listen to their grievances and work closely with them to guide them into achieving their goals.
- Catalyst**

As a catalyst, leaders perform four important functions – remove roadblocks that hinder the project results, develop connections across the organization, connect the employee's vision to that of the company, and instigate a positive working environment in the company.

## LEADER V/S MANAGER

LEADER	MANAGER
Leaders have missions to accomplish	Managers are goal-oriented
Leaders challenge the status quo	Managers maintain or try to achieve the status quo
Leaders are unique	Managers mimic their competitors
Leaders take risk	Managers avoid taking risk
Leaders are willing to learn and grow personally	Managers perfect existing, proven skills
Leaders build relationships	Managers focus on goals and objectives
Leaders coach people to become a better version of themselves	Managers direct people to achieve the company goal
Results of leadership are intangible	Results of management is measurable
Leadership is qualitative	Management is quantitative
Leaders have fans	Managers have employees

## STYLES OF LEADERSHIP

### *Democratic Leadership*

This is as clear as its name. In democratic leadership, the leaders make or break decisions democratically, based on their team's opinion and feedback. Although it is the leader who makes the final call, every opinion counts. This is easily one of the most effective leadership styles since it allows employees to have a voice.

### *Autocratic Leadership*

This is exactly the opposite of democratic leadership wherein the opinions of employees are not considered. Leaders with this style expect others to adhere to the decisions they take, which is not a sustainable approach in the long term.

### ***Laissez-faire Leadership***

Laissez-faire means “let them do”. This style is the least intrusive and leaders with this approach ensure that the authority lies with the employees. While this leadership style can empower, it may also limit development, therefore, must be kept in check.

### ***Strategic Leadership***

Strategic leadership acts as a bridge between the senior team and the employees. Leaders adopting this style ensure that both executive interests and working conditions for the team are stable when a decision is made.

### ***Transformational Leadership***

This kind of leadership always aims at transforming and improving functions and capabilities. There may be tasks and schedules assigned and leaders following this style may ask employees to push their boundaries constantly. Most growth-minded companies tend to adopt this kind of a leadership style.

### ***Transactional Leadership***

This is a very common leadership style today based on the action-and-reward concept. For instance, an employee or team may receive an incentive or bonus for achieving a target set by the company.

### ***Coach-Style Leadership***

This leadership style focuses on larger growth while encouraging individual team members to focus on their strengths and talent. Though this is similar to strategic and democratic leadership styles, the focus here is more on the individual.

### ***Bureaucratic Leadership***

This kind of leadership style goes by the books. Although leaders with this approach do listen to employees and their opinions, they may negate or reject it, in case they go against the company’s ethos or policy.

## **MOTIVATION**

Motivation is the word derived from the word ‘**motive**’ which means needs, desires, wants or drives within the individual. It is the process of stimulating people to actions to accomplish the goals.

In the work goal context the psychological factors stimulating the people’s behaviour can be -

- desire for

- money ○ success ○
- recognition ○
- job-satisfaction
- team work, etc

One of the most important functions of management is to create willingness amongst the employees to perform in the best of their abilities. Therefore the role of a leader is to arouse interest in performance of employees in their jobs. The process of motivation consists of three stages:-

1. A felt need or drive.
  2. A stimulus in which needs have to be aroused.
- 
3. When needs are satisfied, the satisfaction or accomplishment of goals.

### **Importance of Motivation**

1. Motivation helps to change from negative attitude to positive attitude. Without motivation the employees try to perform minimum activities in the organization. But the motivation fills in the desire to perform to their maximum level. All the resources of the organization are of no use unless and until the employees use these resources. The motivated employees make best use of the resources.
2. Motivation improves performance level of employees. The motivation improves the efficiency level of employees which means the employees start performing the job to the best of their ability with minimum wastage of time and resources because motivated employees always go for best utilization of resources. The motivation bridges the gap between the ability to work and willingness always improves efficiency.
3. Help in achieving the organizational goals. The motivated employees always try to achieve the organizational goal and contribute their best efforts for the realization of organizational goal as they know with the achievement of organizational goal only they can achieve their personal goal. All the employees contribute their efforts in one direction of accomplishment of goal.
4. Motivation creates supportive work environment. In motivation the relations between superior and subordinates are always improved. When the employees get their need satisfied or get the recognition and respect in the organization then they always offer a supportive hand to superiors. There is more cooperation and co-ordination in the organization and all the employees work with the team spirit.
5. Motivation helps the managers to introduce changes. The motivated employees show less resistance in accepting the changes according to changes in the business environment because they know if the changes are not implemented in the organization, not only the organization will lose by this but the employees also will find it difficult to get their needs fulfilled. Motivated employees are always supportive and co-operative in accepting changes in the organization.
6. Reduction in Employee Turnover. The motivation creates confidence in the employees to get their need satisfied in the organization itself. They always select the alternative to remain in the organization and increase their earning rather than leaving the organization and increasing their earnings. With motivation employee turnovers are less because the satisfied employees never leave the job.

### **Four factors of motivation:**

1. **Leadership style.** Management style deeply impacts motivation. Think about bosses that empowered you. You were likely motivated to work harder for them than for managers that you did not align with. If you are a manager, are you getting feedback on your leadership style and if it is

working for your team? How are you empowering your staff? Employees want to be better for a strong manager and support the team as a whole.

2. **The reward system.** As a manager, ensure you have a clear evaluation system in place that motivates employees. They need to know their job description, what is required of them each day, when they will be reviewed etc.
3. **The organizational climate.** Otherwise known as workplace culture. It is so important to cultivate a team that supports one another, trusts each other, and leaves employees feeling committed.
4. **The structure of work.** Is the work rewarding? Why are we doing what we are doing? Are you able to be flexible? Autonomous?

## THEORY OF MOTIVATION

Maslow's hierarchy of needs is a theory of motivation which states that five categories of human needs dictate an individual's behavior. Those needs are physiological needs, safety needs, love and belonging needs, esteem needs, and self-actualization needs.

Maslow's theory presents his hierarchy of needs in a pyramid shape, with basic needs

at the bottom of the pyramid and more highlevel, intangible needs at the top. A person can only move on to addressing the higher-level needs when their basic needs are adequately fulfilled.



1. **Physiological needs:** The first of the id-driven lower needs on Maslow's hierarchy are physiological needs. These most basic human survival needs include food and water, sufficient rest, clothing and shelter, overall health, and reproduction. Maslow states that these basic physiological needs must be addressed before humans move on to the next level of fulfillment.
2. **Safety needs:** Next among the lower-level needs is safety. Safety needs include protection from violence and theft, emotional stability and well-being, health security, and financial security.
3. **Love and belonging needs:** The social needs on the third level of Maslow's hierarchy relate to human interaction and are the last of the so-called lower needs. Among these needs are friendships and family bonds—both with biological family (parents, siblings, children) and chosen family (spouses and partners). Physical and emotional intimacy ranging from sexual relationships to intimate emotional bonds are important to achieving a feeling of elevated kinship. Additionally, membership in social groups contributes to meeting this need, from belonging to a team of coworkers to forging an identity in a union, club, or group of hobbyists.
4. **Esteem needs:** The higher needs, beginning with esteem, are ego-driven needs. The primary elements of esteem are self-respect (the belief that you are valuable and deserving of dignity) and self-esteem (confidence in your potential for personal growth and accomplishments). Maslow specifically notes that self-esteem can be broken into two types: esteem which is based on respect and acknowledgment from others, and esteem which is based on your own self-assessment. Selfconfidence and independence stem from this latter type of self-esteem.
5. **Self-actualization needs:** Self-actualization describes the fulfillment of your full potential as a person. Sometimes called self-fulfillment needs, self-actualization needs occupy the highest spot on Maslow's pyramid. Self-actualization needs include education, skill development—the refining of talents in areas such as music, athletics, design, cooking, and gardening—caring for others, and broader goals like learning a new language, traveling to new places, and winning awards.

#### Six motivational techniques for managers

##### *1: Communicate*

It is said that good communication is the number one factor in any good relationship. A leader must always be approachable and accessible. In other words, keep the door open. Spending time with employees on a one to one basis will put them at ease and alleviate uncertainty. It will also give the manager keen insight into what motivates each of his employees.

##### *2: Socialize*

A manager should make time for his employees to spend time together socializing during work hours. Treat your team to refreshments after a meeting or go all out and provide a meal for them. Cater it or cook it up yourself. A brunch or sandwiches will let the team know they are appreciated. This is also a teambuilding exercise as they will have the opportunity to spend time together 'outside' of work.

##### *3: Reward*

Award programs have been around for years and are a great way to recognize employees for achieving a goal or objective. Choose an award that is appropriate to the achievement. It might be something casual, like an envelope with movie tickets. Or you may want to go all out and present something like a nice artglass award for a bigger reward. Either way, the reward should be conveyed with a genuine sense of appreciation. *4: Challenge*

Everyone wants to improve themselves. Take advantage of this human trait by providing employees with challenges and goals they can achieve. Instead of facing new challenges alone, use the opportunity to put them on members of the team. Are there projects sitting idly on the shelf? Hand them over to a staff member to head up and get moving again. Have too much on your own plate? Look for an opportunity to hand some of the workload off to one of your top performers.

#### *5: Time Off*

Few things are appreciated more than a little paid time off. If an individual or team had gone above and beyond on a project, let them take an afternoon off. Or go the extra mile in showing your appreciation by taking an employee to lunch and then giving them the rest of the day off.

#### *6: Train and Mentor*

Motivate employees by providing them with additional training, even if doing so makes them all the more attractive to other employers. Employees in companies where additional training or educational opportunities exist are more likely to stay motivated, even if they don't take immediate advantage of the opportunities. The same is true of organizations that take the time to set up mentoring programs.

## **IMPORTANCE OF COMMUNICATION IN BUSINESS**

Communication in business is important to convey clear, strong messages about strategy, customer service and branding. A business building a brand reflects a consistent message tailored to its audience.

Internal communication builds rapport among employees and managers and encourages teamwork and collaboration.

1. Efficient and Smooth Running of an Enterprise
2. Basis of Decision Making
3. Proper Planning and Coordination
4. For Higher Productivity at Minimum Cost
5. Morale Building
6. Democratic Management
7. Binds People Together



8. Creates Mutual Trust and Confidence
9. An Aid to Managerial Performance
10. Helps in Smooth Working
11. Increase Managerial Efficiency
12. Maintaining Industrial Peace
13. Aid to Leadership
14. Aid to Job Satisfaction
15. Saving of Time
16. Aid to Public Relation

## **BARRIERS OF COMMUNICATION**

### **i. Linguistic Barriers**

The language barrier is one of the main barriers that limit effective communication. Language is the most commonly employed tool of communication. The fact that each major region has its own language is one of the Barriers to effective communication. Sometimes even a thick dialect may render the communication ineffective.

### **ii. Psychological Barriers**

There are various mental and psychological issues that may be barriers to effective communication. Some people have stage fear, speech disorders, phobia, depression etc. All of these conditions are very difficult to manage sometimes and will most certainly limit the ease of communication.

### **iii. Emotional Barriers**

The emotional IQ of a person determines the ease and comfort with which they can communicate. A person who is emotionally mature will be able to communicate effectively. On the other hand, people who let their emotions take over will face certain difficulties.

### **iv. Physical Barriers to Communication**

They are the most obvious barriers to effective communication. These barriers are mostly easily removable in principle at least. They include barriers like noise, closed doors, faulty equipment used for communication, closed cabins, etc. Sometimes, in a large office, the physical separation between various employees combined with faulty equipment may result in severe barriers to effective communication.

### **v. Cultural Barriers of Communication**

As the world is getting more and more globalized, any large office may have people from several parts of the world. Different cultures have a different meaning for several basic values of society. Dressing,

Religions or lack of them, food, drinks, pets, and the general behaviour will change drastically from one culture to another.

**vi. Organisational Structure Barriers**

As we saw there are many methods of communication at an organizational level. Each of these methods has its own problems and constraints that may become barriers to effective communication. Most of these barriers arise because of misinformation or lack of appropriate transparency available to the employees. **vii.**

**Attitude Barriers**

Certain people like to be left alone. They are the introverts or just people who are not very social. Others like to be social or sometimes extra clingy! Both these cases could become a barrier to communication. Some people have attitude issues, like huge ego and inconsiderate behaviours.

**viii. Perception Barriers**

Different people perceive the same things differently. This is a fact which we must consider during the communication process. Knowledge of the perception levels of the audience is crucial to effective communication. All the messages or communicate must be easy and clear. There shouldn't be any room for a diversified interpretational set.

**ix. Physiological Barriers**

Certain disorders or diseases or other limitations could also prevent effective communication between the various channels of an organization. The shrillness of voice, dyslexia, etc are some examples of physiological barriers to effective communication. However, these are not crucial because they can easily be compensated and removed.

**x. Technological Barriers & Socio-religious Barriers**

Other barriers include the technological barriers. The technology is developing fast and as a result, it becomes difficult to keep up with the newest developments. Hence sometimes the technological advance may become a barrier. In addition to this, the cost of technology is sometimes very high.

## **MODULE-VII**

### **WORK CULTURE, TQM & SAFETY**

#### **HUMAN RELATIONSHIP AND PERFORMANCE IN MANAGEMENT**

Human relations are the study of the ways in which people relate to each other in group situations, especially work, and how communication skills and sensitivity to other people's feelings can be improved. According to Keith Davis 'human relations deals with motivating people in organizations to develop teamwork which effectively fulfills their objectives and achieves organizational objectives'.

In the words of Scott, 'human relations is a process of an effective motivation of individuals in a given situation in order to achieve a balance of objectives which will yield greater human satisfaction and help accomplish company goals'.

#### **Factors Affecting Human Relations:**

##### **Human relations in the organization are determined by:**

- (i) Individual: The individual is an important part of the organization and each individual is unique. While motivating the employees, management should give due consideration to their economic, social and psychological needs.
- (ii) Work group: The work group is the centre of focus of human relations approach. It has an important role in determining the attitudes and performance of individual workers.
- (iii) Leader: The leader must ensure complete and effective utilization of all organizational resources to achieve organizational goals. They must be able to adjust to various personalities and situations.

- (iv) **Work environment:** It is important to create a positive work environment where organizational goals are achieved through satisfaction of employees. In general, when employees' needs are satisfied, the work environment is termed positive.

## RELATION BETWEEN PEERS, SUPERIORS AND SUBORDINATES

**The relationship between** supervisor and subordinates at the workplace should be clearly defined. The primary responsibility of the supervisor is to create and maintain a good working relationship between each employee.

Specific protocols should be established to maintain good relations between workers and supervisors. It is necessary to be mentally prepared to adopt the policies of the company and to behave with the supervisor with respect. For this the following factors must be taken into account

(i) **Trust** – When a work is given to a subordinate, the supervisor should trust him and he should trust the supervisor. The supervisor should behave with his subordinates in a non-discriminatory, reliable and ethical manner, so that a relationship full of trust can be established between them.

(ii) **Communication** - The cordial relationship between the supervisor and the subordinate plays an important role in communication. The communication between the two should be clear and should be continuous. Both should have no hesitation in expressing their views for fear of the possibility of getting a reaction. Both should be mentally prepared to criticize or listen to each other and justified.

It is very important to get the executive cooperation of your subordinate to achieve the company or family and to outline the future. To achieve these objectives, it is necessary to express the desire to acquire new skills. Supervisor himself should be enthusiastic and positive thinking.

(iii) **Clarification of Roles** The relationship between a supervisor and a subordinate depends on their relative positions in the company. A supervisor should lead his subordinate employee as it is his professional right and responsibility.

Similarly the subordinates should also understand their role and should be prepared to follow the instructions given whether they personally agree with them or not. But it also does not mean that he should not inform the supervisor about his thoughts. Keeping their views in view, the supervisor has the right to take the final decision.

(iv) **Boundaries** — A boundary should be fixed in the relationship between the supervisor and the subordinate. This limit should be completely professional. Although the company may or may not have any special protocol regarding relations with the employees, there should not be excessive joking or openness with the subordinate and there must be a formality in the behavior.

This does not lead to allegations of biased behavior on the supervisor. It also does not lead to the allegation of harassment on the basis of gender. The supervisor should not have so much personal attachment with his subordinates that his decisions get affected.

## TOTAL QUALITY MANAGEMENT

Total Quality Management (TQM) is a management technique based on the idea that all “employees continuously improve their ability to provide on-demand products and services that customers will find of particular value.”

### Key Principles of TQM

Total quality management has a number of key principles which—when implemented together—can move any organization towards business excellence.

### **a. Customer focus**

Central to all successful TQM systems is an understanding that quality is determined by the customer. No matter what measures you introduce to improve the quality of your products and services, the only way of knowing if they have been successful is customer feedback, whether in the form of reviews, return rates, or satisfaction surveys.

### **b. Employee involvement**

Every person in an organization—from entry-level workers to management—has a responsibility for the quality of products and services. However, employees can only be invested if they feel empowered to make their own decisions, something that depends on management creating the right workplace environment.

### **c. Centred on process**

A TQM system will fail without a clear focus on processes and process-led thinking. A process fault is ultimately the cause of most problems, which is why effective monitoring of every single step is an essential part of assessing, maintaining and improving quality.

### **d. Integrated system**

An organization should have an integrated system that allows for effective total quality management. This may be a bespoke system, or one based on a quality standard such as **ISO 9001**, but it should be understood and applied across all functions and departments.

### **e. Strategic & systematic approach**

Critical to quality management is the existence of a strategic plan that outlines how an organization intends to achieve its mission and business goals. It goes without saying that quality should be a core component of such a plan.

### **f. Decision-making based on facts**

Business performance can only be assessed using the available facts, such as sales data, revenue figures, and customer retention rates. The opinions of customers, employers and suppliers should never be used to inform decisions.

### **g. Communication**

Effective communication is essential when an organization is implementing significant changes for the sake of business improvement. Every member of staff should be made aware of the strategy, the timescales involved, and the reasons for implementing it.

### **h. Continuous improvement**

Applying the principles of **DMAIC** and **Lean Six Sigma** will instill an organization with a culture of **continuous improvement**, driving all employees to constantly seek new ways to be more competitive and deliver high-quality products for all stakeholders.

## QUALITY POLICY:

A Quality Policy is typically **a brief statement that aligns with an organization's purpose, mission, and strategic direction**. It provides a framework for quality objectives and includes a commitment to meet applicable requirements (ISO 9001, customer, statutory, or regulatory) as well as to continually improve.

## QUALITY MANAGEMENT:

Quality management is **the act of overseeing all activities and tasks needed to maintain a desired level of excellence**. Quality management includes the determination of a quality policy, creating and implementing quality planning and assurance, and quality control and quality improvement.

## QUALITY SYSTEM:

A quality system is **a structure for managing the quality of the output of a manufacturer**. We have a very stringent quality system for inspecting items and delivering the best products. A good quality system prevents errors from occurring rather than correcting them after they have happened.

## PERSONAL PROTECTIVE EQUIPMENT

Personal protective equipment, commonly referred to as "PPE", is equipment worn to minimize exposure to hazards that cause serious workplace injuries and illnesses. These injuries and illnesses may result from contact with chemical, radiological, physical, electrical, mechanical, or other workplace hazards. Personal protective equipment may include items such as gloves, safety glasses and shoes, earplugs or muffs, hard hats, respirators, or coveralls, vests and full body suits.

What can be done to ensure proper use of personal protective equipment?

All personal protective equipment should be safely designed and constructed, and should be maintained in a clean and reliable fashion. It should fit comfortably, encouraging worker use. If the personal protective equipment does not fit properly, it can make the difference between being safely covered or dangerously exposed. When engineering, work practice, and administrative controls are not feasible or do not provide sufficient protection, employers must provide personal protective equipment to their workers and ensure its proper use. Employers are also required to train each worker required to use personal protective equipment to know:

- When it is necessary
- What kind is necessary
- How to properly put it on, adjust, wear and take it off
- The limitations of the equipment
- Proper care, maintenance, useful life, and disposal of the equipment

If PPE is to be used, a PPE program should be implemented. This program should address the hazards present; the selection, maintenance, and use of PPE; the training of employees; and monitoring of the program to ensure its ongoing effectiveness.

## MODULE-VIII LEGISLATION

### INTELLECTUAL PROPERTY RIGHTS

Intellectual property rights (IPR) refers to the legal rights given to the inventor or creator to protect his invention or creation for a certain period of time.[1] These legal rights confer an exclusive right to the inventor/creator or his assignee to fully utilize his invention/creation for a given period of time.

right, the patent owner makes technical information about the invention publicly available in the published patent document.

### TRADEMARK

A trademark is a sign capable of distinguishing the goods or services of one enterprise from those of other enterprises. Trademarks date back to ancient times when artisans used to put their signature or "mark" on their products.

### PATENTS

A patent is an exclusive right granted for an invention. Generally speaking, a patent provides the patent owner with the right to decide how - or whether - the invention can be used by others. In exchange for this

### COPYRIGHT

Copyright 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.

### SALIENT FEATURES OF FACTORIES ACT, 1948

The important features of the 1948 Act are as follows:

- The word “factory” has been expanded by the Factories (Amendment) Act of 1976 to include contract labour when determining whether a factory has a maximum of 10 or 20 employees.
- The Act increased the minimum age for children to work in workplaces from 12 to 14 and reduced their daily working hours from 5 to 4 and a half.
- The Act forbids women and children from working in factories from 7 p.m. to 6 a.m.
- The difference between a seasonal and non-seasonal factory has been abolished by the Act.
- The Act, which has provisions for factory registration and licencing.

- The state government is required to make sure that all factories are registered and also have valid licences that are renewed from time to time.
- The Act gives state governments the authority to enact rules and regulations that ask for management and employee association for the benefit of employees.
- The state government has the authority to apply the Act's requirements to any establishment, regardless of the number of employees inside and regardless of whether the establishment engages in manufacturing operations.
- In *Rabindra Agarwal v. State of Jharkhand* (2010), the Jharkhand High Court held that the Factories Act, special legislation would prevail over the Indian Penal Code

## FEATURES OF PAYMENT OF WAGES ACT 1936

### 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.



## MODULE-IX SMART TECHNOLOGY

### INTERNET OF THINGS

The Internet of Things (IoT) describes the network of physical objects—“things”—that are embedded with sensors, software, and other technologies for the purpose of connecting and exchanging data with other devices and systems over the internet. These devices range from ordinary household objects to sophisticated industrial tools. With more than 7 billion connected IoT devices today, experts are expecting this number to grow to 10 billion by 2020 and 22 billion by 2025.

### HOW DOES IOT WORK?

An IoT ecosystem consists of web-enabled smart devices that use embedded systems, such as processors, sensors and communication hardware, to collect, send and act on data they acquire from their environments. IoT devices share the sensor data they collect by connecting to an IoT gateway or other edge device where data is either sent to the cloud to be analyzed or analyzed locally. Sometimes, these devices communicate with other related devices and act on the information they get from one another. The devices do most of the work without human intervention, although people can interact with the devices -- for instance, to set them up, give them instructions or access the data.

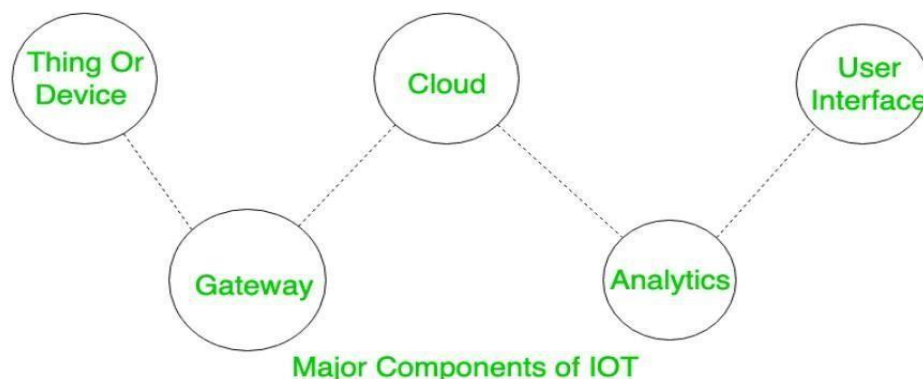
The connectivity, networking and communication protocols used with these web-enabled devices largely depend on the specific IoT applications deployed.

IoT can also make use of artificial intelligence (AI) and machine learning to aid in making data collecting processes easier and more dynamic.

### COMPONENTS OF IOT

#### Major Components of IOT:

These are explained as following below.



### 1. Things or Device

These are fitted with sensors and actuators. Sensors collect data from the environment and give to gateway where as actuators performs the action (as directed after processing of data).

### 2. Gateway

The sensors give data to Gateway and here some kind of pre-processing of data is even done. It also acts as a level of security for the network and for the transmitted data.

### 3. Cloud

The data after being collected is uploaded to cloud. Cloud in simple terms is basically a set of servers connected to internet 24\*7.

### 4. Analytics

The data after being received in the cloud processing is done . Various algorithms are applied here for proper analysis of data (techniques like Machine Learning etc are even applied).

### 5. User Interface

User end application where user can monitor or control the data.

## CHARACTERISTICS OF THE INTERNET OF THINGS :

#### a. Connectivity –

Connectivity is an important requirement of the IoT infrastructure. Things of IoT should be connected to the IoT infrastructure. Anyone, anywhere, anytime can connect, this should be guaranteed at all times. For example, connection between people through internet devices like mobile phones ,and other gadgets, also connection between Internet devices such as routers, gateways, sensors, etc.

#### b. Intelligence and Identity –

The extraction of knowledge from the generated data is very important. For example, a sensor generates data, but that data will only be useful if it is interpreted properly. Each IoT device has a unique identity. This identification is helpful in tracking the equipment and at times for querying its status.

#### c. Scalability –

The number of elements connected to the IoT zone is increasing day by day. Hence, an IoT setup should be capable of handling the massive expansion. The data generated as an outcome is enormous, and it should be handled appropriately.

#### d. Dynamic and Self-Adapting (Complexity) –

IoT devices should dynamically adapt themselves to the changing contexts and scenarios. Assume a camera meant for the surveillance. It should be adaptable to work in different conditions and different light situations (morning, afternoon, night).

#### e. Architecture –

IoT architecture cannot be homogeneous in nature. It should be hybrid, supporting different manufacturers 'products to function in the IoT network. IoT is not owned by anyone engineering branch. IoT is a reality when multiple domains come together.

#### f. Safety –

There is a danger of the sensitive personal details of the users getting compromised when all his/her devices are connected to the internet. This can cause a loss to the user. Hence, data

security is the major challenge. Besides, the equipment involved is huge. IoT networks may also be at the risk. Therefore, equipment safety is also critical.

- g. Self Configuring – This is one of the most important characteristics of IoT. IoT devices are able to upgrade their software in accordance with requirements with a minimum of user participation. Additionally, they can set up the network, allowing for the addition of new devices to an already existing network.

## CATEGORIES OF IOT

For IoT, the scope can be within an organization (smart factory) or between organizations (retailer supply chain). This is definitely the most established and mature part of IoT. The IIoT will help a business to achieve:

- Efficiency
- Harness intelligence from a wide range of equipment
- Improve operations (productivity)
- Increase customer satisfaction

For CIoT, the scope can be a single individual, family, small group, or community. The CIoT will help make life easier for consumers by improving:

- Quality
- Comfort
- Security
- Convenience
- Efficiency

## APPLICATIONS OF IOT IN 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:

### 1. 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 CO<sub>2</sub> emissions low. In fact, intelligent technologies to achieve an energy-efficient and environmentally friendly infrastructure. For example, to reduce the need for electrical power, smart lighting only gives light when someone actually walks past smart lights; setting brightness levels and tracking daily use are both important components of smart lights.

### 2. 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.

### 3. 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. At the same time, historical data is used to predict where traffic can go – and none of these processes require human involvement.

### 4. 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. Others use vehicle feedback to precisely pinpointing the location of openings and guide waiting cars down the path of least resistance. Smart Parking is a reality today and does not require complicated infrastructure and a high investment, making this smart city application ideal for a mid-sized smart city initiative.

### 5. 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 smartphone. The message helps them avoid half empty drains by appearing to empty a full container.

## APPLICATIONS OF IOT IN SMART HOMES

### a) Lighting

Lighting in the house may now be adjusted automatically to meet the demands of the individual. For example, if people begin watching a movie, the lights may be set to decrease automatically so that they do not become distracted from the storyline. When you go inside your house, the lights may automatically switch on without you having to click a button.

When you leave your house, the system may automatically switch down the lights to save energy, so you don't have to. Your smartphone, laptop, and other linked devices can control all of your house lights. As a result, you may set your app to turn on your light when your alarm goes off in the morning.

### b) Bathrooms

In the bathroom, IoT technology may make your daily routine more enjoyable and convenient. Smart mirrors may link to other devices such as computers and smartphones, detect the faces of family members in front of them, and show information that interests those individuals, such as news articles, weather forecasts, or specific websites.

If no one is in the bathroom, special sensors can detect movement and switch off the water automatically. Smart shower controls may also recognise people and set their preferred water temperature and pressure, as well as limit the amount of time spent in the shower to save water.

Users of automated jacuzzis may relax and enjoy their bath without having to manually modify their chosen temperature and air-jet regime, or pick their favorite music, because the app will manage all of it for them.

### c) **Gardens**

Sensors may be quite useful for people who want to cultivate their own veggies, fruit, and herbs at home. Users may check on the app to see whether the temperature is correct, if the plant is sufficiently hydrated, and if it is receiving enough sunshine.

The software can track the present status of the soil, determine whether it has adequate moisture, and, if necessary, activate a smart irrigation system.

The sensor recognises when the amount of moisture reaches the ideal level and turns off the watering system, preventing water waste. IoT technology has resulted in a true breakthrough in gardening, which will fundamentally change the way plants are grown in the future.

### d) **Kitchen**

IoT devices can make cooking safer and easier by utilizing AI technologies. Smart sensors can monitor for smoke and carbon monoxide, as well as the temperature and humidity levels in your kitchen, to ensure that everything is in working order.

Special built-in applications keep track of whether the user has enough food in the fridge (and reorder it if necessary), offer recipe suggestions, and assess the nutritional worth of meals. Smart spoons, for example, urge users to eat gently.

### e) **Security Systems**

When you leave the house, these controllers can lock the entrance, close the shutters, switch off electronic gadgets, and ensure that your home is safe from human and animal intruders. Users may use the app on their phones to check on their homes and manage the temperature, humidity, and lighting remotely. You may also keep an eye on your older relatives and assist them if necessary.

### f) **Safety Sensors**

Safety sensors are intelligent gadgets that can detect when anything is wrong in your house. They can instantly alert users to possible hazards and even take action to avert them. They only need a smartphone with Internet access and sensors put in their house.

Temperature, humidity, and gas controllers can monitor the air in your house on a regular basis and give you notifications through the Internet if the indications are outside of the ideal range.

Natural calamities, fires, water, and gas leaks may all be prevented with the use of safety sensors. If a criminal tries to enter your house, proximity and video sensors can detect it and instantly activate the alarm and alert the authorities.

### g) **Temperature Control**

With temperature control automation, you can set the temperature in your house to the level that is most comfortable for you. Users may programme smart thermostats to manage the temperature based on their preferences and setups. These thermostats can detect your present activities and adjust the temperature as needed.

Users may, for example, use the app to automatically increase the temperature when they take a bath or shower. If they choose to work out, do yoga, pilates, or any other form of physical exercise at home, the temperature will drop to assist them stay cool.

### h) Doors and Windows

Our future doors will not require keys. The smart door may utilize face recognition to unlock your home. Any visitors who are not recognised as residents must be escorted inside the building by a resident. The doors may also be set to open as you approach your house and close as you depart.

They can also set off a chain reaction in other gadgets in your house. The entry door may detect the authorized users and open, followed by the light turning on; other doors in the house may then open, and the TV and coffee machine may be switched on.

Smart windows can be programmed to respond to signals from other appliances as well as triggering events. You won't have to bother about closing the windows when you leave the house since the system will check for you and close them if necessary.

Windows can be programmed to close or open at specific times, and shutters can open or close based on the time of day. As a result, the shutters may be raised in the morning and dropped at night. Weather conditions such as rain, snow, storms, or severe winds can potentially trigger these devices.

### i) Home Routine

The temperature in your home, the lighting arrangement, and the security system may all be controlled using AI and ML technologies. The technology can provide you with news updates, locate information on the Internet, give you notifications via an app on the Internet about purchases you need to make, order you a meal, organize an appointment, and book you a trip or hotel.

## APPLICATIONS OF IOT IN SMART TRANSPORTATION

These benefits of IoT technology in transportation can be applied through a number of applications within the sector. Here are five of the most common applications:

### a) **Traffic Management**

Roading is by far the biggest segment within transportation when it comes to the adoption of IoT technologies and this is expected to grow as we head towards 2023. Within cities, data can be collected from CCTV feeds which transmit vehicle-related data to traffic management centres. Applications using IoT technology include:

- Smart parking
- Traffic lights
- Smart accident assistance

### b) **Toll and Ticketing**

Conventional toll systems are becoming rapidly outdated. With the increase in vehicles on the roads, queues at toll booths have become a common sight, not to mention the manpower needed to operate toll booths on busy highways. Whilst automated tolls, using a RFID tag, have improved the flow of traffic, further improvements have been made possible by the use of IoT technology.

Many of today's modern vehicles are equipped with IoT connectivity. A vehicle can be detected up to a kilometre away from a tolling station, correctly identified and the barrier lifted for the vehicle to pass through. Alternatively, for older vehicles, a registered smartphone could serve the same purpose, taking automatic payment from the digital wallet linked on the phone.

### c) Connected Cars

As mentioned above, cars today rely on connectivity and a key part of that is many new cars are now equipped with internet connectivity, sensors and actuators, all monitoring a wide range of applications from brakes and engine to the control of tyre pressure and exhaust gas composition.

In the future, connected cars will use the in-vehicles networks, radar and cameras to help detect and communicate with one other, prevent collisions and to help promote smooth traffic flow.

### d) Vehicle Tracking Systems

Vehicle tracking systems are typically used within the freight segment to help companies manage their fleets effectively. They also help to monitor driver behaviour and can collect data which informs on idling time and driving style. Examples of IoT-powered functionality include:

- Trip scheduling
- Fleet tracking
- Driving times and driver rest break scheduling
- Alerts for speeding, harsh cornering, acceleration or braking
- Monitoring of vehicle load
- Distance travelled and fuel consumption

### e) Public Transport Management

One key area in which NEC has been operating is smart transportation, with a focus on the public transport segment. IoT technologies are already in wide use in this segment and our solutions, including integrated ticketing and automated fare collection, passenger information systems, passenger information display systems and advanced vehicle Logistics solutions, all utilising IoT technology to help solve social and economic issues such as traffic congestion in public transport.

IoT technology for connected public transport systems provides the following benefits:

- **Real-time vehicle tracking** – this helps public transport agencies better communicate with customers and provide accurate arrival times through both mobile devices and passenger information displays at transit stops and stations
- **Data analysis and real-time management** – the technology allows transit agencies to monitor progress in real-time and make adjustments for unpredicted incidents such as accidents, roadworks, emergencies etc., helping to re-route and make journeys more efficient
- **Personalised travel information** – transit agencies can track and monitor commuter behaviour and travel patterns and deliver personalised information direct to their smart phone on key changes such as delays, station closures or re-routing

## APPLICATION OF IOT IN SMART HEALTHCARE

### 1. Remote patient monitoring

Remote patient monitoring is the most common application of IoT devices for healthcare. IoT devices can automatically collect health metrics like heart rate, blood pressure, temperature, and more from patients who are not physically present in a healthcare facility, eliminating the need for patients to travel to the providers, or for patients to collect it themselves.

When an IoT device collects patient data, it forwards the data to a software application where healthcare professionals and/or patients can view it. Algorithms may be used to analyze the data in order to recommend treatments or generate alerts. For example, an IoT sensor that detects a patient's unusually low heart rate may generate an alert so that healthcare professionals can intervene.

A major challenge with remote patient monitoring devices is ensuring that the highly personal data that these IoT devices collect is secure and private.

## 2. Glucose monitoring

For the more than 30 million Americans with diabetes, glucose monitoring has traditionally been difficult. Not only is it inconvenient to have to check glucose levels and manually record results, but doing so reports a patient's glucose levels only at the exact time the test is provided. If levels fluctuate widely, periodic testing may not be sufficient to detect a problem.

## 3. Heart-rate monitoring

Like glucose, monitoring heart rates can be challenging, even for patients who are present in healthcare facilities. Periodic heart rate checks don't guard against rapid fluctuations in heart rates, and conventional devices for continuous cardiac monitoring used in hospitals require patients to be attached to wired machines constantly, impairing their mobility.

Today, a variety of small IoT devices are available for heart rate monitoring, freeing patients to move around as they like while ensuring that their hearts are monitored continuously. Guaranteeing ultraaccurate results remains somewhat of a challenge, but most modern devices can deliver accuracy rates of about 90 percent or better.

## 4. Hand hygiene monitoring

Traditionally, there hasn't been a good way to ensure that providers and patients inside a healthcare facility washed their hands properly in order to minimize the risk of spreading contagion.

Today, many hospitals and other health care operations use IoT devices to remind people to sanitize their hands when they enter hospital rooms. The devices can even give instructions on how best to sanitize to mitigate a particular risk for a particular patient.

A major shortcoming is that these devices can only *remind* people to clean their hands; they can't do it for them. Still, research suggests that these devices can reduce infection rates by more than 60 percent in hospitals.

## 5. Depression and mood monitoring

Information about depression symptoms and patients' general mood is another type of data that has traditionally been difficult to collect continuously. Healthcare providers might periodically ask patients how they are feeling, but were unable to anticipate sudden mood swings. And, often, patients don't accurately report their feelings.

"Mood-aware" IoT devices can address these challenges. By collecting and analyzing data such as heart rate and blood pressure, devices can infer information about a patient's mental state. Advanced IoT devices for mood monitoring can even track data such as the movement of a patient's eyes.



The key challenge here is that metrics like these can't predict depression symptoms or other causes for concern with complete accuracy. But neither can a traditional in-person mental assessment.

#### 6. Parkinson's disease monitoring

In order to treat Parkinson's patients most effectively, healthcare providers must be able to assess how the severity of their symptoms fluctuate through the day.

IoT sensors promise to make this task much easier by continuously collecting data about Parkinson's symptoms. At the same time, the devices give patients the freedom to go about their lives in their own homes, instead of having to spend extended periods in a hospital for observation.

#### 7. Connected inhalers

Conditions such as asthma or COPD often involve attacks that come on suddenly, with little warning. IoTconnected inhalers can help patients by monitoring the frequency of attacks, as well as collecting data from the environment to help healthcare providers understand what triggered an attack.

In addition, connected inhalers can alert patients when they leave inhalers at home, placing them at risk of suffering an attack without their inhaler present, or when they use the inhaler improperly.

#### 8. Ingestible sensors

Collecting data from inside the human body is typically a messy and highly disruptive affair. No one enjoys having a camera or probe stuck into their digestive tract, for example.

With ingestible sensors, it's possible to collect information from digestive and other systems in a much less invasive way. They provide insights into stomach PH levels, for instance, or help pinpoint the source of internal bleeding.

These devices must be small enough to be swallowed easily. They must also be able to dissolve or pass through the human body cleanly on their own. Several companies are hard at work on ingestible sensors that meet these criteria.

#### 9. Connected contact lenses

Smart contact lenses provide another opportunity for collecting healthcare data in a passive, non-intrusive way. They could also, incidentally, include microcameras that allow wearers effectively to take pictures with their eyes, which is probably why companies like Google have patented connected contact lenses.

Whether they're used to improve health outcomes or for other purposes, smart lenses promise to turn human eyes into a powerful tool for digital interactions.

#### 10. Robotic surgery

By deploying small Internet-connected robots inside the human body, surgeons can perform complex procedures that would be difficult to manage using human hands. At the same time, robotic surgeries performed by small IoT devices can reduce the size of incisions required to perform surgery, leading to a less invasive process, and faster healing for patients.

These devices must be small enough and reliable enough to perform surgeries with minimal disruption. They must also be able to interpret complex conditions inside bodies in order to make the right decisions about how to proceed during a surgery. But IoT robots are already being used for surgery, showing that these challenges can be adequately addressed.