

सत्यमेव जयते GOVERNMENT OF INDIA MINISTRY OF SKILL DEVELOPMENT & ENTREPRENEURSHIP



ASCI Agriculture Skill Council of India

# Partcipant Handbook

Sector Agriculture and Allied

Sub-Sector Agriculture Crop Production

Occupation Micro Irrigation Technician

Reference ID: AGR/Q1002, Version 1.0 NSQF Level 4

> Micro Irrigation Technician

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Shri Narendra Modi Prime Minister of India



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### Acknowledgements

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It is expected that this publication would meet the complete requirements of QP/NOS based training delivery, we welcome the suggestions from users, Industry experts and other stakeholders for any improvement in future.



### About this book

A Micro Irrigation Technician will be responsible for carrying out the ground level activities involved in Micro Irrigation as per the Micro Irrigation Technician Qualification Pack (QP). Micro Irrigation Technician is responsible for Installation, Testing, and Commissioning of Micro Irrigation System at farmer's field for better water management and increase in yield of crop. As per these standards the Micro Irrigation Technician should not work independently, should be laborious and must have the ability to make operational decisions pertaining to his area of work. The trainee should gain clarity of work and should be result oriented; The Trainee should also be able to demonstrate skills to use various tools in the Micro Irrigation. The trainee will enhance his/her knowledge under the guidance of the trainer in the following skills:

- Knowledge and Understanding: Adequate operational knowledge and understanding to perform the required task
- **Performance Criteria:** Gain the required skills through hands on training and perform the required operations within the specified standards
- **Professional Skills:** Ability to make operational decisions pertaining to the area of work.

The handbook incorporates well-defined roles for Installation, Testing, and Commissioning of Micro Irrigation System at field level by ensuring uninterrupted supply of water to the plant stand on the farm. This job-role requires the participant to work independently and be comfortable in making decisions pertaining to his/her area of work. Further it requires clarity, skill to basic arithmetic and algebraic principles too. The participant should be result oriented and responsible for his/her own working and learning. The participant should also be able to demonstrate skills of using various tools and decision making for instant problem solving.

We wish all the best for your future in the Micro Irrigation sector.



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# **1. Introduction**

Unit 1.1 - Importance of irrigation System



# Key Learning Outcomes 🕎

### At the end of this module, you will be able to:

- Define the Micro Irrigation System
- Explain the importance of Micro Irrigation System
- Understand the concept of Micro irrigation System

### **UNIT 1.1: Importance of Irrigation System**

### Unit Objectives Ø

#### At the end of this unit, you will be able to:

- 1. Explain the importance of Micro Irrigation System in Indian Agriculture
- 2. Identify the types of Irrigation System

### 1.1.1 General Instructions to Trainee -

- Greet your instructor and other participants when you enter the class
- Always be punctual for every class
- Be regular
- Inform your instructor if, for any reason, you need to miss class
- Pay attention to what your instructor is saying or showing
- If you do not understand something, put up your hand and seek clarificaation
- Make sure you do all exercises at the end of each module in this book. It will help you understand the concepts better
- Practice any new skills you have learnt as many time as possible
- Make sure you are neatly attired and presentable at all times
- Participate actively in all activities, discussions and games during training
- Bath daily, wear clean clothes and comb your hair before you come to class

The three most important words you must always remember and use in your daily conversation are 'please', 'thank you', and 'sorry'

### **1.1.2 Introduction**

Water is the most vital input in agriculture and has made a significant contribution providing stability to food grain production and self-sufficiency. Water is supplied to agricultural land through rainfall and artificial application of irrigation water.

Irrigation is continuous and a reliable water supply to the different crops in accordance with their needs". In other way irrigation is an artificial application of water to soil by supplying sufficient soil moisture to the crop for proper growth, as the timing of rainfall is not adequate to meet the water requirement of crops.

Efficient irrigation results in increased crop yields, with soil fertilitymaintained and water utilized economically. Whatever is the method of water application; it is essential that the system is designed to apply the right amount of water at the right time and apply it uniformly to raise the level of soil moisture in the crop root zone to its field capacity.

Water application method may be broadly classified into two groups: Surface irrigation method

(gravity) and Pressurized irrigation methods.

### **1.1.3 Importance of Irrigation in Indian Agriculture**

The necessity and importance of irrigation is highlighted below in points:

**1. Climate variation:** Indian climate and weather conditions experiences a varied range of climate. There is extreme heat at some places, while the climate remains extremely cold at other places. While there is excessive rainfall at some places, other places experience extreme dryness. So, good irrigation technology is needed in India.

**2. Irregular and uncertain monsoon:** India is a land of monsoon. But monsoon is irregular and erratic in nature. Sometimes it Comes easily and brings heavy rainfall, but some times monsoon is late and may bring inadequate rainfall. Further, there is irregularity in the distribution of Rainfall throughout the year. The irrigation system helps the farmers to have less dependency on rain-water. During the months of inadequate rainfall, the crops are supplied water through irrigation systems.

**3. Agriculture based economy:** Indian economy is based on agriculture. A large portion of Indian population depends on agriculture. Without irrigation agriculture is not possible in dry areas or during the months of inadequate rainfall. Naturally, for the agricultural activities across diverse regions, there is a need for proper irrigation system.

**4. Winter crop:** India is a vast country with fertile plain lands suitable for Rabi as well Kharif crops. But there is no rainfall during winter months in several places. Without irrigation production of Rabi crops along with other crops is not possible. Rabi crops are grown during the long dry spell of winter season. This is possible mainly due to advanced irrigation facilities.

**5.** Hybrid seeds: At present because of hybrid seeds, crops can be produced at any season. But the production of crops is totally dependent on water. The introduction of advanced irrigation system has enabled the farmers to produce crops even during dry seasons.

**6. Soil Character:** In many places, the soils have less water-retaining capacities. Irrigation refers to the process of supply of water through artificial means such as pipes, ditches, sprinklers, etc. The irrigation system helps the farmers to have less dependency on rain-water for the purpose of agriculture.

### **1.3.1 Job Role of a Micro IrrigationTechnician**

**Micro Irrigation Technician:** The individual holds a very critical role in the installation and function of micro irrigation system that not only uses the existing natural resources efficiently but also benefits the farmers in terms of decreased cost of cultivation in the long run. The individual is responsible for Installation, Testing, and Commissioning of Micro Irrigation System at field level and thus ensure uninterrupted supply of water to the plant standing on the farm.

This job requires the individual to work independently and be comfortable in making decisions pertaining to his/her area of work. Requires clarity, skill to basic arithmetic and algebraic principles. The individual should be result oriented and is responsible for his own working and learning. The individual should also be able to demonstrate skills of using various tools and decision making for instant problem solving.



# Tips 🚇

### Who is a Micro Irrigation Technician?

Think about this. Who do you think is responsible for Installation, Testing, and Commissioning of Micro Irrigation System at field level and thus ensure uninterrupted supply of water to the plant standing on the farm Well. It is the Micro irrigation Technician.

Notes		





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# 2. Designing & Layout of Micro Irrigation Systems

Unit 2.1 – Designing of Micro Irrigation Systems Unit 2.2 – Layout of designed Irrigation System



### -Key Learning Outcomes 🤾

At the end of the module the You will be able to:

- Identify the characteristics of the soil, climatic conditions, land gradient, crop etc. essential for designing the system
- Follow Micro Irrigation Principles in the design of the Micro Irrigation System in the field
- Layout Irrigation System as per the legend used in drawing
- Handle the site deviation if required
- Take note of basics of crop cultivation such as spacing, water requirement, spacing of the crop stand, nature of rooting etc.

### **UNIT 2.1 Designing of Micro Irrigation Systems**

### Unit Objectives 6

At the end of this unit, you will be able to:

- Know how on how to Design Micro Irrigation Systems
- Identify the characteristics of the soil, climatic conditions, land gradient, crop etc. Essential for designing the system
- Follow Micro Irrigation Principles in the design of the Micro Irrigation System in the field

### 2.1.1 Designing of Micro Irrigation Systems-

A properly designed irrigation system addresses uniform irrigation application in a timely manner while minimizing losses and damage to soil, water, air, plant, and animal resources. The design of a conservation irrigation system matches soil and water characteristics with water application rates to assure that water is applied in the amount needed at the right time and at a rate at which the soil can absorb the water without runoff. Physical characteristics of the area to be irrigated must be considered in locating the lines and spacing the sprinklers or emitters, and in selecting the type of mechanized system. The location of the water supply, capacity, and the source of water will affect the size of the pipelines, irrigation system flow rates, and the size and type of pumping plant to be used. The power unit selected will be determined by the overall pumping requirements and the energy source available.

Key points in designing an irrigation system include:

- The irrigation system must be able to deliver and apply the amount of water needed to meet the crop-water requirement.
- Application rates must not exceed the maximum allowable infiltration rate for the soil type. Excess application rates will result in water loss, soil erosion, and possible surface sealing. As a result, there may be inadequate moisture in the root zone after irrigation, and the crop could be damaged.
- Flow rates must be known for proper design and management.
- Soil textures, available soil water holding capacity and crop rooting depth must be known for planning and designing system application rates, irrigation water management, and scheduling irrigations so that water applied is beneficially used by the crop.
- The water supply, capacity, and quality need to be determined and recorded.
- Climatic data precipitation, wind velocity, temperature, and humidity must be addressed.
- Topography and field layout must be recorded.
- Farmer's preferences in irrigation methods, available operation time, farm labor, cultural practices, and management skills must be noted for selecting and planning the type and method of irrigation

### 2.1.2 Design Procedure

A step-by-step checklist of the procedure normally used in planning a sprinkler irrigation system follows:

**Step 1.** Identify resource concerns and problems. Determine objective(s) and purpose of new or revised irrigation system. Include soil, water, plant, and animal resources, and human considerations.



**Step 2.** Make an inventory of available resources and operating conditions. Include information on soils, topography, water supply (quantity and quality), and source of power (type and location), crops, and irrigator's desire for a type of sprinkler system, labor availability, farm operation schedules, and water management skills.

Сгор	Variety	Soil Type	Water Source	Source of Power	Irrigation type	Cost of Irrigation

**Step 3.** Determine soil characteristics and limitations. Include AWC, maximum allowable application rates, usable rooting depth, acidity, salinity, and water table. Crop rooting depth needs to be denied for specific fields and soils. A field investigation is strongly recommended. If a field contains more than one soil, the most restrictive soil must be determined.

Soil	Zone	Acidity	Salinity	Root Depth	Water application rates
Sand					
Loam					
Clay					

**Step 4.** Determine net irrigation water requirements for crops to be grown. Use season, month, and peak or average daily use rate, accounting for expected rainfall and acceptable risks.

Irrigation Schedule for------

	Start date-	Soil				Water	Irrigation	Irrigation
Week	end date	type	Moisture	Evaporation	Rainfall	Requirement	Frequency	System
1-2nd								
3-4th								
5-6th								
7-8th								
9-10th								
11-12th								

**Step 5.** Determine irrigation frequency, net and gross application (based on estimated applicaication efficiency) at each irrigation and minimum system capacity requirements.

**Step 6.** Determine alternati e irrigation systems suitable to the site and desired by the user. Evaluate alternative irrigation systems with user, and their r multi-source impacts on the environment.

**Step 7.** Determine sprinkler spacing, nozzle sizes, head type, discharge, operating pressure, wetted diameter, average applicationrate, and performance characterisstics.

Nozzle	Pressure	Litre pe	r minute	Radius Metres			
Pattern		Standard Flow	Low Flow	Standard Flow	Low Flow		

**Step 8.** Determine number of sprinklers in an irrigation set (zone) required to meet system capacity requirements; number of laterals needed for a selected time of set; set spacing; moves per day; and frequency of irrigation in days.



Step 9. Evaluate design. Does it meet the objective and purpose(s) identified in step 1.

**Step 10.** Make necessary adjustments to meet layout conditions so the system fits the field, soils, crops, water supply, environmental concerns, and the desires of the irrigation decision-maker.



**Step 11.** Finalize sprinkler irrigation System design, layout, and management skills required by then irrigation decision maker.



**Step 12.** Determine lateral size(s) based on number of heads, flow rate, pipeline length, and allowable pressure loss differentiate between the first and last sprinkler head. Determine if pressure or flow regulators are needed. Determine minimum operating pressure required in mainline(s) at various criti al location on the terrain.

**Step 13.** Determine mainline sizes required to meet pressure and flow requirements according to number of operating laterals.

**Step 14.** Determine maximum and minimum Total Dynamic Head (TDH) required for critical lateral location conditions Determine total accumulated d friction loss in mainline, elevation rise (drip) from pump to extreme point in the fields, water surface to pump impeller (lift) column loss with vertical turbine pumps, and miscellaneous losses (fittings alves, elbows) at the pump and throughout the system.

**Step 15.** Determine maximum and minimum pumping plant capacity using required flow rate and TDH. Estimate brake horsepower for the motor or engine to be used.

**Step 16.** Select pump and power unit for maximum operating efficiency within range of operating conditions. Use pump performance curves prepared for each make and model of pump. Every pump has a different set of performance (characteristic) curves relating to operating head (pressure) output and discharge capacity. Select pumps and power units for maximum operating efficiency within the full range of expected operating conditions. Only pump capacity and TDH requirements are recommended to be provided to the user. Never select a pump based on horsepower alone. Let a pump dealer select the appropriate motor or engine and pump to the conditions. Availability of a pump dealer for providing maintenance and repair should be considered by the operator. Buying a used pump without first checking pumps characteristic curves for that specific pump is seldom satisfactory. A pump needs to match the required capacity and TDH for efficient and economic performance. An inefficient operating pump can use needless excess energy.

The total head of	the pump is also known as the total dynamic head and can be calculated as,
Total head of pum	<ul> <li>ap = Suction head + Delivery head + Operating pressure of Drip system + Filter loss</li> <li>+ main line friction loss + Fitting loss</li> </ul>
Where,	
Operating pressur	e of
ñ Drip-	10 m to 20 m
ñ Foggers-	30 m to 40 m
ñ Mister-	30 m to 40 m
Filter losses are as Fitting losses are a Approximately,	sumed to be 2 m for sand filter and 2 m for screen/disc filter assumed as 2 m
	QxH
H.P. = Pump effic Where, H. P. = Horse powe Q = Maximum flov H = Total dynamic Pump efficiency ge Motor efficiency g	ciency x Motor efficiency er w rat5e the system or pump capacity, lit/sec head, m enerally taken as 75 % renerally taken as 80 %

**Step 17.** Prepare final layout and operation, maintenance, and irrigation water management plans. Include methods of determining when and how much to irrigate (irrigation scheduling). Provide recommendations and plans for at least one water measuring device to be installed in the system for water management purposes.



— Exercise	
1. How to determine the type of soil? Answer:	
2. Mention the parameters to be considered during the Answer:	designing of Micro Irrigation System?

# Tips 🚇

- Each crop needs a different range of nutrients at every critical stage of its development. For example, nitrogen and phosphorous are often more critical at early stages of growth to fuel root and leaf development, whereas zinc and boron are important during flowering.
- Cereal crops use nutrients for growth, progressively moving them from the roots, leaves and stems into the ear prior to the dying off and harvesting of the grain.
- Tree crops have different nutrient requirements than field crops. They can store nutrients like nitrogen within their trunk, branches and leaves and then redistribute them at key points during the growth cycle.
- Crops require a balanced diet of essential nutrients throughout their growth cycle.
- Many plant foods can be found in the soil, but often in insufficient quantities to sustain high crop yields.
- Soil and climatic conditions can also limit a plant's uptake of nutrients at key growth stages.
   Crop scientists recognize that plants need 13 essential minerals, all of which play a number of important functions. If any of these is lacking, plant growth and yield suffer.


### UNIT 2.2 Layout of designed Irrigation System

**Unit Objectives** 

At the end of this unit, you will be able to:

- Know how on the Layout of designed Micro Irrigation Systems
- Layout Irrigation System as per the legend used in drawing.

 $( \bigcirc )$ 

- Handle the site deviation if required.
- Take note of basics of crop cultivation such as spacing, water requirement, spacing of the crop stand, nature of rooting etc.,

### 2.2.1 Layout of designed Irrigation System-

This Drip Kit can be used for raised beds.



Fig 2.2.1Layout of designed Irrigation System

### Instructions:

1. Layout raised beds. Fill it up with soil. Then, space the brown drip lines 6" apart, so water will evenly distribute to the soil. Run drip lines from one end to the other.

2. Insert two stakes per drip line, about 12" apart. Then, snap the drip lines to the stakes. If the drip line is too long cut the ends of the drip lines. Now, use the three end plugs to close the ends of the drip lines.

3. Once all the drip lines are in place you will need to connect them with the black drip line that comes with the drip kit. Use the "L" connector for the first row and use the "T" connectors for the other two rows of drip lines.

4. Connect the black 4' drip line at the end of "T" connector. And plug a two-sided open connector to the end of that line.

5. Now, connect it to the 25' supply line, which connects to the line adapter and pressure regulator. 6. Connect to the Automatic Timer Valve which connects to the hose bib. And now, your drip irrigation is set!

6. If you want to test the irrigation and timer. Let it run for 20+ minutes and observe the moisture pattern. Confirm that all the fittings are snug and that water is distributed evenly. Adjust location of stakes as needed.

# Exercise

1. Control Head consists of ------ to control the discharge and pressure in the entire system

2. -----Devices used to control the discharge of water from the lateral to the plants.

3. Selection of type and number of emitters depends on the

- a) soil types,
- b) plant to plant distance of crop,
- c) age of the plant
- d) All of the above



Notes	 		





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# 3. Installation of Micro Irrigation Systems

Unit 3.1 – Components of Micro Irrigation System Unit 3.2 – Installation Techniques Unit 3.3 – Training of Farmers



AGR/N1005

### Key Learning Outcomes 🛛 🕸

#### At the end of the module the You will be able to:

- Identify various components of MIS
- Identify f various parts of the MI units for timely fitting and installation
- Use right components at the right place for better installation
- Do quick and error free installation of the MIS
- Test and Commission the MIS after installation
- Train farmers on using the system
- Explain farmers on how to retrieve the system after harvest and again laying the pipelines

### **UNIT 3.1: Components of micro irrigation System**

### Unit Objectives Ø

At the end of this unit, you will be able to:

- Identiy various components of MIS
- Identify various parts of the MI units for timely fit and installation

### 3.1.1 Components of Micro Irrigation System-

Micro irrigation System Design System Components System components should include the following staring at the water source:

1. Prescreening and filtration of debris, organic material or coarse sediments from surface water, such as sand media filter with automatic back flush, or automatic disc filters that back flush with preset pressure deferential; or if sand is being pumped from well, a sand separator.

2. Back flow preventer upstream of chemical injector device or chemigation valve (for injecting fertilizer or other pipeline cleaning chemicals). Can also be located in the zone with the injector device

3. Pressure gauges and flow meter to measure flow rate and pressure at pump discharge.

4. Filtration system for fine sand and sediment, such as a screen or disk filter. Pressure gauges necessary upstream and downstream of filter.

5. Mainlines: typically PVC plastic pipe sized for pumping capacity and irrigation water requirements.

6. Sub mains: typically PVC plastic pipe with control valves, pressure regulators, drains and air vents as necessary.

7. Lateral lines: typically surface or buried PE plastic tubing or tape.

8. Emission devices.

9. Automatic flush valves at ends of laterals

10. Appropriately placed soil moisture sensing devices for irrigation scheduling. Scheduling can be manual or if feasible automated using a controller and electric solenoid valves.











2. Identify the Specimen



Answer: -----
## Tips 🔍

• Low startup costs can result in high annual operating costs. When designing drip irrigation system it is important to consider uniformity and efficiency in order to keep total cost low.

•Uniformity is the ability of the irrigation system to deliver water and fertilizer as equally as possible to all the plants in the field or orchard.

•Efficiency is the ability of the irrigation system to deliver water and fertilizer according to the crop's needs as exactly as possible.

•Irrigation efficiency describes a field's performance. Water use efficiency is the ratio of the amount of irrigation water applied that is beneficially used by the plant, to the total amount of irrigation water applied.

•The higher the uniformity, the more efficient the use of water and energy.

Notes	<b>—</b>		

# **UNIT 3.2: Installation Techniques**

# Unit Objectives 🞯

At the end of the module the you will be able to:

- Use right components at the right place for better installation
- Do quick and error free installation of the MIS
- Test and Commission the MIS afer installation

### 3.2.1 Installation Techniques





nstallation					
1 Mention th	a tools/equipme	ants required for	or the installatio	n of MIS2	
Answert					
. Mention th	e steps for error	free installatio	on of MIS?		
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### **UNIT 3.3: Training of Farmers**

### Unit Objectives

At the end of the module the You will be able to:

- Train farmers on using the system
- Explain farmers on how to retrieve the system afer harvest and again laying the pipelines

### 3.3.1 Training of Farmers



Fig 3.3.1 Basic Sprinkler Facts for Farmers



### 3.3.2 Greenhouse - Herb and vegetable Production

Growing media are made of engineered materials designed to provide ideal physical and chemical characteristics for the root environment. In greenhouse agriculture, it is important that the substrate has good structural characteristics so it can hold up to frequent irrigation, root growth, drastic changes in temperature, pH and EC over the life of the crop. At the same time, it has to serve as a reservoir for water and nutrients and be able to allow air exchange between the root system and the aerial environment. It is important that the substrate has low Cation Exchange Capacity (CEC) so there is better control over fertilizer management and pH of the substrate.

#### **Physical Properties of Growing Media**

Substrates are engineered to provide ideal physical properties for crops by looking at the substrates particle sizes, water holding capacity, air porosity, solid content and the height and shape of the containers used. Hydraulic conductivity is important to know to avoid water stress and to ensure that roots have water in their vicinity, especially under high water demand. In other words, the substrate can have optimum water content, but it is not good if roots are using water faster than it can be transferred from one part of the container to the roots. The irrigation frequency will depend on the water holding characteristics of the substrates, container height, plant stage, aerial environment and the capability of the irrigation system to supply water when needed. A substrate that has high water retention at medium suction. One advantage of a substrate with low water retention is it can be easily leached if there is an accumulation of fertilizer and/or salts from the water.

**Grower's Watering Technique:** There are two schools of thought when it comes to watering: those who grow wet and those who grow dry. Wet growers understand plant water requirements and irrigation frequency and duration to produce quality crops. They water the plants just when needed, and adjust the irrigation schedule based on environmental conditions and plant stage. On the other hand, those who grow dry can have difficulties with irrigation scheduling and often have problems with over-irrigating, which leads to poor dry down of the substrate and root disease problems. It is best for a dry grower to use substrates with low water retention at medium suction to avoid oxygen deprivation.

Chemical Properties of Growing Media: For inert substrates (rockwool, perlite, sand), water pH is very important; it has to be maintained from 6.0 to 6.5 to maximize nutrient uptake. These substrates have low CEC, so they hold few cations (NH4, K, Ca, Mg, Fe, Mn and Zn). All nutrients must be provided by the fertilizer solution and remember these nutrients easily leach due to the low CEC. On the other hand, when using substrates with moderate CEC (peat, coir and bark) the water alkalinity, growing

medium pH, electrical conductivity (E.C.), and fertilizer management need to be monitored closely. The main reason is that the substrate will retain cations (especially K and Ca) and bicarbonates (which are like limestone) and the nitrogen form will influence the pH of the growing medium (nitrate is basic and ammonium is acidic).

**Peat:** Peat is a generic term for accumulated plant debris that decomposes at slow rates in water saturated environments due to the absence of oxygen and nutrients (peat lands). Large accumulation of peat can be found between latitudes 50-60N. There are several types of peat such as sphagnum peat moss, sedge peat, hypnum peat and others. Premier Tech Horticulture uses sphagnum peat moss in all its products. Sphagnum peat moss is virtually weed free, pathogen free and it can be compressed.



Fig 3.3.2 Peat Moss

Sphagnum peat moss has the ability to hold and release water at low suctions while providing good aeration for roots. In greenhouse agriculture, it is used as a substrate component to improve water holding capacity, water retention, air porosity and CEC. Its total porosity is 90-95%, air filled porosity 18-25% and bulk density of 0.07-0.11 g/cm3. At medium suction, its volumetric water content is 40%. It has a low pH = 3.8-4.2, moderate CEC of 150-250 meq/100g and it does not contain salts. Sphagnum peat moss can be used for a wide variety of applications depending on the fiber length; short fiber for germination and long fiber for plants which prefer high porosity.



Fig 3.3.2 Sphagnum Peat Moss



Fig 3.3.2 Tomatoes produced in a small greenhouse using Sphagnum peat moss

**Coconut Coir:** Coir comes from the coconut husk. The major suppliers of coir are located in Sri Lanka, India, Philippines, Indonesia, Mexico, Costa Rica and Guyana. The chemical and physical properties depend on the country of origin. Coconut coir is naturally high in salts, especially potassium and chloride; therefore, it is necessary to leach these salts before manufacturing and again before transplanting into it. Its pH is slightly acidic, so it requires little lime and has moderate to low CEC of approximately 50 meq/100g. Coconut coir has a total porosity of about 80%, water holding capacity of approximately 40%, and air filled porosity of 13% (all on a volume basis) and a bulk density of 0.08 g/cm3.



Fig 3.3.2 Coconut Coir

Coconut coir comes compressed in blocks and is available in three different particle sizes: dust, fibers and chunks. It will expand up to five times its compressed volume by adding water. A typical coconut coir slab has a length of 100 cm (39.4 in), width of 15 or 20 cm (5.9-7.8 in) and height of 8, 10, 12 or 15 cm (3.1-5.9 in) depending on the crop grown and particle size of the coir. Additionally, it can come in grow bags (open top bags) with dimensions of 20 cm (7.9 in) long x 18 cm (7.1 in) wide x 70 cm (27.5 in) high; this type of grow bag is recommended for cucumbers. Coconut coir maintains its structure over time and it can be reused for several crop cycles, but must be sterilized before transplanting a new crop into it. However, after 2-3 years, the coconut coir decomposes which increases its water content and reduces air filled porosity.



Fig 3.3.2 Vegetables production in Green House using Coconut Coir

#### **Composted Bark**

Composted bark is mainly used for organic production. Bark can be composted or aged; but it is best that it be composted so it will not rob nitrogen from the crop, decompose further in the container (this process generates heat which can burn plant roots and rob oxygen from them), and not contain viable weed seed or pathogens. Disadvantages of bark include the source of plant material (hardwood vs. softwood), initial salt content, particle size, time required to compost it and availability through the year. Its pH is close to neutral, the EC and phosphate can be high and it has a CEC up to 200 meq/100g (depending on the source). Pine bark, the most common type of bark, has 80% total porosity, about 22% air filled porosity (both by volume), bulk density of 0.2 g/cm<sup>3</sup> and CEC of 50 meq/100g.



Fig 3.3.2 Fine Bark



Fig 3.3.2 Composted Bark

#### Sand

Sand has been used as a substrate to grow plants for a long time. The porosity and water holding capacity depend on the particles size. Sand can be placed on beds with plastic liners along the length the greenhouse. Depending in the source, the pH can range from 3-6 and CEC close to zero. It has high bulk density at 1.6 g/cm<sup>3</sup>, 35% total porosity and 7% air filled porosity. The water content of coarse sand with particle sizes of <2 mm is 15%; if this type of sand is used in sub irrigation, then the solution will only wick up to 1.5 cm (0.6 in) above the water level. The recommended maximum container depth is from 20-40 cm (7.9-15.7 in) when this type of sand is used as a substrate.

#### Perlite

Perlite is a volcanic, glass rock that contains a small amount of water that, when heated to 1000C, expands up to 20 times its original size. This gives perlite many internal pores that reduce its bulk density to 0.1 g/cm<sup>3</sup>. It is pathogen and weed free due to high processing temperatures, non toxic and light weight. Perlite is considered inert due to its low CEC (3 meq/100g), neutral pH and EC of nearly zero. The physical properties depend on the particle size; small particles retain more water and less air than large particles. In general, perlite has about 75% total porosity and 30% air filled porosity (both by volume).



Fig 3.3.2 Perlite

Because of its rough structure, it can be used by itself or as a substrate component. In greenhouse vegetable production, perlite is used in 28 liter slabs (length=100 cm (39 in) x width=20 cm (7.9 in) x height = 15 cm (5.9in)) which can support three tomato or two cucumber plants. Also, perlite substrate is often used in 3 gallon Bato buckets which can support two tomato plants. Perlite can be reused for 5 years without losing its physical and chemical characteristics. Steam or chemical sanitation is required before a new crop is transplanted into perlite. Perlite is often used as a growing medium to produce crops in Bato buckets.



Fig 3.3.2 Perlite used as a growing medium for crop production

#### Rockwool

Rockwool is a combination of basalt rock, coke and limestone. This mixture is heated to 1600°C and the product is spun at high velocities to produce fibers of 0.005 mm. Rockwool is offered in slabs or blocks. It is inert and sterile (pathogen and weed free). Slabs are used to grow crops and blocks are used for germination purposes. Rockwool slabs come in different sizes and shapes; the fibers are arranged parallel, vertical or a combination of both within the same slab. Rockwool slabs used for tomatoes have dimensions of 100 cm (39.3 in) long, 12 cm (4.7 in) wide and 7.5 cm (3.0 in) high and for

cucumbers 100 cm (39.3 in) long, 20 cm (7.9 in) wide and 7.5 cm (3.0 in) high.

Rockwool has 96% total porosity, 11% air filled porosity, 91% water holding capacity (all by volume) and bulk density of 0.85 g/cm<sup>3</sup>. Rockwool easily releases most of its water to plants unlike organic materials like peat, bark and coir. The pH is alkaline around 8 and the EC is negligible. Irrigation management is crucial; if the irrigation system breaks, plants can be vulnerable because they will take all water from the substrate in a matter of minutes. The advantage is that salts can be easily leached without the use of high volumes of water. Rockwool can be reused for up to 3 years with proper sanitation. However, some European countries and Japan have legislation that prohibits the disposal of rockwool in landfills, so its use has declined.





Fig 3.3.2 Rockwool

### 3.3.3 Drip Irrigation for Green House Vegetable Production

#### Soil Moisture Control:

Automatic Drip Irrigation is a valuable tool for accurate soil moisture control in highly specialized greenhouse vegetable production. Total automation of drip irrigation offers a simple, precise method for sensing soil moisture and applying water. Management time savings and the removal of human error in estimating and adjusting available soil moisture levels enable skilled growers to maximize net profits. Available soil moisture is an important limiting factor in growth and productivity. Greenhouse vegetable growers commonly estimate the availability of soil moisture by plant and soil appearance. Slight wilting of succulent terminal leaves indicates water stress in plants. Growers squeeze handfuls of soil taken from near the surface at several locations in the greenhouse. Soil that does not stay compressed in a tight ball is considered too dry.

Water deficiency can be detrimental to plants before visible wilting occurs. Slowed growth rate, lighter weight fruit and, in tomato, blossom end rot often follow slight water deficiencies. Replacing traditional methods of estimating available soil moisture with a more accurate method is necessary to maintain optimum soil moisture levels. Conventional irrigation methods usually wet plants lower leaves and stems. The entire soil surface is saturated and often stays wet long after irrigation is completed. Such conditions promote infection by gray mold-rot (Botrytis) and leaf mold fungi. Most greenhouse vegetable plants remove large amounts of water from soil at the 10" to 12" depth. An accurate estimate of available soil moisture at this important depth cannot be made by testing the top few inches of soil. In a greenhouse on a sunny day, transpiration and evaporation can occur so rapidly that excessive water loss can cause plant damage before sufficient water can be applied to correct moisture stress. Water stress, no matter how slight, will cause a significant reduction in harvest weight.

Drip irrigation is a slow water delivery system in which water can be applied, drop by drop, to the soil surface near the base of the plant. A properly designed automatic drip irrigation system can remove much guessing about when to irrigate and how much water to apply. Water is applied whenever the sensor indicates a sub-optimum soil moisture level. Using automatic drip irrigation systems, skilled greenhouse managers can:

- Apply correct water amounts precisely when required to maintain optimum available soil moisture in the root zone.
- Reduce management time required for observing plant water needs and manually controlling irrigation systems.
- Keep leaf surfaces and stems drier because water drips directly on the soil instead of spraying in the air.

- Prevent water puddling and splashing by applying water no faster than it will percolate into the soil.
- Reduce incidence of leaf mold, gray mold-rot and other foliage diseases.
- Reduce evaporation losses and fruit deterioration by keeping more soil surface dry.
- Increase production if other factors are not limiting.



Fig 3.3.3 Drip Irrigation in Green House

#### Planning a Drip Irrigation System

Uniform water application, operating convenience and minimum cost are important objectives in planning a greenhouse drip irrigation system. Carefully study these sections ideas on achieving these objectives before selecting drip irrigation system components. Divide the total greenhouse area into equal or similar sections or into individual houses. Plan irrigation systems so that each house or section can be irrigated independently. Plan total irrigation systems in conjunction with other greenhouse water needs to prevent exceeding water supplies.

The total amount of water available for all greenhouse uses, often described in gallons per minute, is a useful figure. Using a portable water meter, the well or other supply source usually can be measured. Water delivery rate from small wells often is determined by measuring the time required (in seconds or minutes) to fill a container of known volume (such as a 30-gallon garbage can or a 55-gallon barrel). When greenhouse water requirements exceed the well delivery rate, a storage tank can increase the quantity available during the peak usage.

#### Water Requirements

Drip irrigation requires less water than lay-flat perforated hose, flooding or other frequently used water distribution procedures. Plan irrigation piping for each separately irrigated greenhouse section or individual greenhouse to distribute 1.6 to 2.4 gallons per minute for each 1,000 square feet. This is 8 to 12 gallons per minute for each 5,000 square feet of growing area. Less water may not fully pressurize the irrigation system piping, causing uneven water application. Uneven water distribution often creates dry or over wet areas.

Soil texture controls the rate at which water can be absorbed by the soil. To prevent puddling and runoff, plan lower water delivery rates for heavy clay soils with characteristic lower water intake rates. Be careful to plan the water delivery rate to be no greater than the soil water intake rate. See further discussion under water application in this section.

#### **Flow Control Valve**

The quantity of water that can enter any independently controlled or operated portion of the drip irrigation system should be regulated with a flow control valve. Each greenhouse section or separate house should have one flow control valve which is sized and selected according to reliable plant water requirement values. Flow control valves are usually available in 1 and 2 gallons-per-minute size increments. Sizes of pipe connections usually are 3/4 and 1 inch. The flow control valve should be located upstream from the solenoid valve where the irrigation system is automatically controlled.

A minimum water supply pressure of 15 pounds per square inch is required for proper operation of most flow control valves. Valves will function properly, however, with pressures as high as 60 to 80 pounds per square inch. For best performance, maintain pressure in the main water supply line between 20 and 40 pounds per square inch. The flow control valve assures application of a constant quantity of water by the irrigation system as long as the greenhouse water system pressure is within the allowable range. Flow control or other valves must limit water entering each greenhouse irrigation system when low pressure drip emitters are used to prevent puddling, over watering and plant splashing. A properly sized flow control valve reduces water pressure range of 2 to 4 pounds is correct for low pressure drip irrigation emitters.

#### Piping

Black polyethylene (PE) and polyvinyl chloride (PVC) pipe are used most commonly in drip irrigation systems. Low costs and handling ease are primary factors. Low pressure, rigid polyvinyl chloride pipe often is used for supply and header lines because the connections and fittings can be solvent bonded. Polyethylene connections, however, must be clamped or held by a tight fit. Polyethylene pipe (usually 80 pounds per square inch, non-sanitation-foundation approved) normally is used for emitter laterals because it is flexible and easy to handle. Flexible polyvinyl chloride pipe is less sensitive to high temperature and sunlight and is more durable, but it is also more expensive. Water for processing and human consumption should not be supplied through non-sanitation-approved pipe.



Fig 3.3.3 Black polyethylene Pipe

A ½ inch polyethylene pipe is adequate for emitter lateral lines. Where manufactured emitters are used, ½ inch pipe will provide equal water distribution and uniform water application throughout the usually 100 to 150 foot greenhouse irrigation runs. Of course, other irrigation system components must be properly designed and selected. Plan a ½ inch lateral emitter line for each plant row unless experience suggests a successful alternative. Place lateral pipe containing emitters at the base of plants. Keep the pipe in line on the inside of the plant row with respect to the working aisle. Soil in the working aisle can become compressed by traffic. With emitter lines on the aisle side of the plants, water tends to flood the aisles.

When drip irrigation is installed in an existing greenhouse with rows spaced 20 inches apart or closer, one emitter line may be sufficient for two plant rows. However, production is normally significantly higher where plant rows are spaced further apart. Consider wider row spacing for future crops and plan the system accordingly. Do not place a single emitter line serving two rows in a furrow or ditch. Water will not move up the soil incline and across the row to properly wet soil in the aisles. In this case, no roots develop in the aisle soil and plants tend to stress for water sooner during high water requirement periods.

Polyethylene pipe, which is sensitive to high temperature, will contract and expand and can move out of position. Light springs, such as screen door springs, can be attached to the lower end of emitter lines with the other end fastened to a stake or wall. This helps hold the pipe next to the plants. Adjust the fasteners tension while the system is irrigating and the pipe is cold and contracted. Pipe 3/4 to 1 inch in size is usually large enough for header lines, not main supply lines, for 5,000 square feet of growing area. Make the connection to the supply pipe at the center of the header pipe rather than at the end. A tee connection into the center of the header line equally divides the water supply and reduces water pressure losses. Plug or tape the ends of all piping and fittings during installation except when making the final connection. This keeps soil and other particles out of the system and reduces drip emitter plugging.



Fig 3.3.3 Polyvinyl chloride (PVC) pipe

#### Emitters

Several kinds of drip irrigation water emitters, perforated hose and porous pipe are available for use in drip irrigation systems. Drip emitter water application is described in gallons per hour, and emitters are made to apply a specific amount per hour. Most are within a range of ½ to 3 gallons per hour. Rate of water delivery from an emitter can be changed by increasing or decreasing the water pressure. Drip irrigation emitters and perforated pipe and hose can also be further classified as low or high pressure. When exposed to the same pressure increase, the water output from low pressure emitters increases at a rate of three to four times that of high pressure emitters. Plan greenhouse drip irrigation systems so that each drip emitter applies 1 to ½ gallons per hour.

Low pressure emitters operate best when pressure in the emitter lateral pipe is 2 to 4 pounds per square inch. Level the greenhouse soils surface so that elevation does not create a difference in pressure. A properly sized flow control valve reduces the typically higher greenhouse water system pressure to about 2 to 4 pounds in emitter laterals. The Melnor-Tirosh emitter, Submatic insert emitter, Chapin Twin-Wall, ANJAC Bi-Wall (or other perforated hose), Triklon Microtube, and 3 to 12 inch lengths of .036 or .045 inch diameter spaghetti tube are examples of low pressure emitters and perforated hose. High pressure drip emitters can also be used in greenhouses, but their cost is usually greater. High pressure emitters are designed to apply ½ to 3 gallons per hour at 15 to 25 pounds of pressure. Do not install a constant flow control valve when high pressure emitters are used. The valve reduces the lateral or emitter line pressure below that required by high pressure emitters to apply adequate water. Instead, install Globe valves, solenoid valves with flow control, or other controls that allow higher pressure. Use them in conjunction with a pressure gauge to manually set the system pressure near 15 pounds or to apply 1 to 1-1/2 gallons per hour from each emitter.

Emitter and hose durability and ease of installation are important considerations in emitter selection. While spaghetti tubing is more economical than manufactured emitters, more labor is required for its installation. Perforated hose is installed more easily, but is not as durable. Emitters, pipes and fittings should be black to prevent algae growth inside the piping system.

#### Emitter Spacing

Space emitters about 3 feet apart in the ½ inch polyethylene lateral lines. Allowing 24 to 30 inches between emitters provides more uniform soil moisture in extremely sandy soils where water lateral movement is limited. Where only 20 inches exist between plant rows in a pair and single ½ inch emitter line is installed to irrigate the two rows, space emitters 24 to 30 inches apart. Where plants are in rows more than 20 inches apart, allow one emitter line for each plant row. A spacing of 28 to 32 inches between rows in a pair is preferred for maximum foliage exposure to sunlight. Place emitter pipelines along rows on the side of plants away from walking aisles.



Fig 3.3.3 Emitter



Fig 3.3.3 Emitter

#### Water Application

The key to successful drip irrigation is applying small quantities of water very slowly and as frequently as required to maintain soil moisture content at a uniformly high level. Application rates range from 0.15 to 0.23 inch per hour, or from 1.6 to 2.4 gallons per minute per 1,000 square feet of greenhouse area. Short on-and-off operating cycles, such as 15 minutes on and 15 minutes off, allow additional time for water to move into the soil and equalize soil moisture.

Intermittent irrigation cycles help prevent puddling and surface runoff from heavy clay soils with slow water intake. If intermittent irrigation cycles are utilized for soils with extremely low water intake rates, a lower water application rate such as 0.10 inch per hour may be required to prevent water puddling and runoff. This low application rate may not provide enough water volume to fully pressurize the piping in a system using low pressure emitters, and water distribution will not be uniform. High pressure emitters that apply ½ gallon per hour are more likely to provide even water distribution using smaller water quantities and should be used where an intermittent irrigation cycle is not employed.

Drip irrigation emitters spaced 3 feet apart should each apply 1 to 1 ½ gallons of water per hour. Corresponding water applications using factory perforated pipe or hose is 1/3 to ½ gallon per hour per linear foot. Estimate the average emitter application for a greenhouse area by multiplying the flow control valve size in gallons per minute by 60 (minutes per hour) to establish the gallons per hour. Dividing the gallons per hour by the number of emitters in the sub-area or house gives the average gallons per hour per emitter. This calculation can be made using the following formula.

Average Flow control valve

 $GPH/emitter = GPM \times 60 min./hr.$ 

Number of emitters/house

To establish an emitter application rate of 1 to 1 ½ gallons per hour, it may be necessary to tentatively select the flow control valve size which will apply 1.6 to 2.4 gallons of water per minute for each 1,000 square feet. The objective is to establish an emitter application rate of 1 to 1 ½ gallons per hour. Choosing the proper size flow control valve is most important when using low pressure emitters.

#### Water Filtration

Water must be filtered before flowing into a drip irrigation system. Very small diameter emitter and hose perforations, ranging from .020 to .050 inch, are required to accomplish the slow water delivery technique of drip irrigation. Sand, soil, plant and other foreign material which can easily cause plugging must be filtered from the water. Water containing large quantities of sand, silt, or debris (such as that from canals) requires large capacity, extra fine filters. A single filtration system normally can be installed on the main water supply line to serve the total irrigation system. Water filtration is the key to successful performance of drip irrigation systems. Only clean water insures trouble-free operation month after month.

Y-type, in-line strainers, containing at least 100-mesh screens and equipped with clean-out faucets, normally provide adequate filtration for minimum sand conditions. Trapped particles can be flushed from the filter by opening the faucet, and screens can be removed for more thorough cleaning or replacement. Daily flushing is necessary when the filter collects considerable material. Install the filter with the screen housing and flush valve down. This allows trapped particles to be washed from the filter rather than moving beyond the screen and into the downstream piping when the screen is removed for cleaning or replacement.

Replaceable cartridge filters, multi-mesh screens (such as 100 and 180 mesh) or other fine mesh filters are required where water contains larger quantities of sand. Where sand is an extreme problem, a sand separator, sand trap, or sand settling basin is required in conjunction with filters. Install each separator, trap or basin upstream from the cartridge or mesh filter.

Where the water supply is an open reservoir, canal or stream, install a rayon or dacron cloth box filter on the inlet or pump suction pipe. A box frame 3'x3'x3' fabricated from angle or rod iron can be covered with shirt grade dacron cloth. Where possible, the pump suction pipe should enter the box through a hole in the top side. Install pressure gauges behind and ahead of the filter to identify the need for cleaning clogged filters.



#### Fertilizer Injector

Fig 3.3.3 Fertilizer Injector

When the soil is drying, water from the instruments water column moves from the porous tip to the soil. A vacuum created inside the column during the water removal pulls water from the soil through the porous tip back into the tensiometer as the soil is re-wetted. The vacuum gauge dial registers the pressure changes associated with changes in available soil moisture.

The electrical contact switch must be pre-set manually by its orientation on the vacuum gauge dial to close and start the irrigation system. The electrical switch is set at the driest soil moisture level allowed. When the soil has been irrigated sufficiently for the dial to register a lower reading than the switch setting in centibars ( a higher moisture level), the switch opens and stops irrigation. The tensiometer switch setting is critical in maintaining accurate soil moisture control.

The switching tensiometer operates on 24-volt electricity. The switch is rated 12 watts and ½ ampere. Therefore, the solenoid valve must be of very low wattage (2 to 3 watts) to be connected to the same circuit and controlled directly by the tensiometer switch. Use a 24-volt control circuit utilizing a relay to prevent electrical overload in the tensiometer switch and extend its life. The tensiometer switch is electrically connected with the transformer and relay, which each must be 24 volts, to form the automatic control circuit. When soil dries to the switching tensiometer setting, the tensiometer switch closes the control circuit and the relay causes the solenoid valve to open, allowing water to enter the portion of the irrigation system controlled by this particular tensiometer. When the soil has been re-wetted, the switching tensiometer senses the wetter soil; the tensiometer switch opens, causing the solenoid valve to close a turn off the irrigation system.



#### Automatic System Operation

#### Irrigation Frequency:

Water application frequency and watering time of individual irrigations are highly influenced by air temperature, relative humidity, and sunlight and plant size. Record the system operating frequency and total operating time for at least one or two sections or houses. Operating time recorders can be connected to the relay in the tensiometer control circuit using a double pole relay. Regular time clocks can be wired similarly to run only when the irrigation system is on.

Recorders on automatic drip irrigation systems show that average irrigation frequency is almost 4 days. The frequency ranges from 1 to 7 days but most commonly is 3 to 5 days. The interval between irrigations tends to be slightly longer during winter months.

#### **Time of Individual Irrigations**

Actual water application time of individual irrigations commonly ranges from 1 to 3 ½ hours. In a system using 15 minute on-and-off cycles, the 1 to 3 ½ hours of irrigation occurs in a total time period of 2 to 7 hours. Irrigation time varies less than the days between irrigations, indicating that soil dries to nearly the same level before each irrigation and that similar quantities of water are required to rewet the soil each time. Water application during 1 ½ hours of irrigation averages 0.45 inch.

#### System Management

An automatic drip irrigation system does not replace good grower management, but can be an elegant production tool for a skilled grower. Indispensable to the success of the novice grower, an automatic drip irrigation system can simplify irrigation procedures, reduce irrigation labor and provide precise soil moisture control. The system requires periodic operation checks and frequent observation, especially following initial installation.

Management tips will be helpful to growers who want to become fully acquainted with the versatility of automatic drip irrigation in increasing their plants productivity.

#### Plant, Soil, and Tensiometer Relationships

Water exists in plants as a continuous column from the leaf interior downward through them xylem vessels of the stem through the roots to the tiny root hairs. Water molecules in the narrow xylem vessels are held to one another by strong, cohesive forces. Water exists in the soil as a film of molecules around the grains of sand, microscopic clay micelles and particles of organic matter.

Transpiration is the process by which water evaporates from leaf surfaces and creates an upward movement of water through the plant, replacing water vaporized and released into the air from leaves. A suction force is transferred from leaves downward, inside the xylem of stems to plant root hairs and finally to the water film around soil particles. As water is removed from soil by roots, the film of water around soil particles become thinner. An increasingly greater suction force is required to pull water molecules from soil particles to the root hairs. If more water is released from the leaves than is taken in through the roots, the leaves wilt. A natural effort to correct this moisture imbalance in tomato occurs by withdrawing water from around fruit. This is the primary cause of blossom end rot.

A tensiometer contains a closed water column with a porous ceramic tip. Water molecules can move through the porous tip to its exterior surface and then into the soil. Water molecules on the surface of a tensiometers porous tip are in contact with water molecules on root hair surfaces and soil particles.

The suction force created by plant transpiration on the water column is registered by a vacuum gauge on tensiometers. The force required to remove water from the soil is similar to that to which the plant is exposed. A tensiometer gauge registers the vacuum or suction force in centibars. One centibar of vacuum is equivalent to 1/1000 of an atmosphere (14.7 pounds per square inch) or 0.147 pounds per square inch.

#### **Tensiometer Location**

Locate a switching tensiometer in the driest portion of the soil area it controls. This is often near the exhaust fan end of the greenhouse, but the location should be 10 to 20 feet within the growing area. Locate the tensiometer in a representatively dry area and not in a high place or an area receiving additional water.

When rows are equally spaced, locate the tensiometer midway between two drip emitters and toward the midpoint of two plant rows. Some growers prefer the tensiometer to be positioned in the working aisle to insure optimum soil moisture levels. Do not install the tensiometers in a plant row, for irrigation will be stopped before water moves to the entire soil root zone. This limits the soil area wetted, and the adequate soil moisture is not likely to be available.

Where one emitter lateral is serving two closely spaced rows and is lying midway between the rows, place the tensiometer on the opposite side of the row toward the center of the aisle. Protect and set the tensiometer at an angle to minimize interference with greenhouse traffic.

#### **Tensiometer Sensing Depth**

The porous tip of the tensiometer should be installed to sense the soil moisture level at 6 to 8 inches just after setting and while establishing plants. As the plants grow, lower the sensing tip so that the tip is 10 to 12 inches deep to monitor the maximum moisture extraction rate. A 12 to 18 inch sensing depth may prove best in extremely sandy soils.

The tensiometer usually can be pushed to desired soil depth. Never push on the gauge or cap. Grasp the shank of the tensiometer with both hands and push downward. Be sure that the soil is uniformly and firmly in contact with the porous tip. An oversized hole or loose, dry soil causes poor contact with the porous tip and inaccurate tensiometer readings. Proper tensiometer sensing is essential for accurate irrigation system control.

#### **Tensiometer Switch Setting**

The ideal soil moisture level for greenhouse tomato production is slightly less than field capacity. Field capacity describes a very high soil moisture content-all the water soil can hold against the downward pull of gravity. The amount of water that can be stored in an acre-foot of greenhouse soil varies directly with the amount of clay. Sandy soils hold less water available to plants than do loam or clay loam soils.

The moisture level at which the switching tensiometer starts irrigation must be set manually. This setting is critical in successfully maintaining optimum soil moisture. A high setting may allow plants to undergo stress before soil moisture is replenished. A low setting allows too much irrigation time and establishes a detrimental over wet condition, causing water to leach fertilizer elements from the root zone. Plant roots in soil which is too wet can experience oxygen starvation and consequent injury.

Identify the correct tensiometer switch setting through and experience, closely observing plants and fruits. The following range of settings is recommended as guidelines.

Soil Texture	Switch Setting
Sandy Soil	10 to 15 cent bars
Sandy loam soil	15 to 29 cent bars
Loams and clay loam	20 to 25 cent bars

#### Table 3.3.3 Tensiometer Settings

Make the switch setting by orienting the electric switch unit over the recommended number on the gauge dial of the tensiometer. Soil drying is registered as a rise in the gauge reading. Conversely, a lower reading indicates wetter soil. It is possible to keep soil moisture uniform and always within the optimum range using an automatically controlled irrigation system.

#### **Tensiometer Sensing Delay**

The tensiometer senses soil drying more quickly than re-wetting. Because there is a short delay in tensiometer response to soil re-wetting following a drying period, operate the irrigation system on frequent on-and-off cycles. The off period allows time for the tensiometer to sense soil wetting and for water to move horizontally in the soil. On-and-off irrigation cycles of 15 minutes are satisfactory for West Texas sandy loam soils. Heavy clay soils and higher water application rates may require a longer off time. The switching tensiometer turns on the irrigation system with an accuracy of 3 to 4 centibars. A time clock, sequencing controller or other electric or time control can be used as a primary override control to cause the system to irrigate on intermittent cycles.

#### **Tensiometer Servicing**

The tensiometer must be charged with water and the level kept near the top. Keep alert to tensiometer water levels during routine greenhouse work. Water will be removed faster during hot weather when plant water requirements are high. Proper servicing may be best accomplished on a definite schedule, such as once a week. When placing the screw top on the tensiometer water reservoir, tighten until the rubber stopper just barely contacts the inside base of the reservoir. Then, tighten only 1/4 to ½ turn more. Forcing the cap on too tightly distorts the threads and prevents a closed water column, which makes the tensiometer inoperative.

#### **Support Tensiometers**

Two or more regular tensiometers can provide a check on switching tensiometers performance accuracy and can help identify soil moisture differences within individual greenhouse sections. One procedure for using support tensiometers is to locate three tensiometers together to sense soil moisture at three depths, such as 6, 12, and 18 inches. Another procedure is to install support tensiometers at three locations over the house to sense moisture at the same depth as the switching tensiometer. The same tensiometers can be used together at one location for 7 to 14 days, and then moved to three locations to limit the number required.

#### Filter

Filter screens usually can be cleaned with very dilute acid solutions and, in some cases, with high pressure air or water. When the filter element or screen is removed to be cleaned or replaced, be careful not to move sand and other foreign particles from the filter into the downstream piping. Install the filter so that the element or screen is moved downward and away when removed. This allows loose water to flush trapped particles to the outside of the element housing.

#### Fertilization

Highly soluble fertilizers such as potassium nitrate, calcium nitrate, ammonium nitrate and ammonium polyphosphate can be applied singly by the drip irrigation system. First dissolve the fertilizer material in water and make the proper concentrate.

Determine the solubility of other fertilizers by mixing a small quantity of fertilizer material and irrigation water in a clear container. Do this before attempting to inject other fertilizer material into the irrigation system. Some fertilizer-water mixtures form precepitates which clog filters and drip emitters. Mixing fertilizer materials is not wise. For example, calcium ions in calcium nitrate fertilizer solution combine with phosphate ions in ammonium polyphosphate solution to form insoluble calcium phosphate which can plug drip irrigation emitters. The fertilizer solution should be moved through the irrigation system quickly, but uniformly, so that sufficient time is allowed for flushing with clear water before the irrigation cycle ends.

#### Mulching

Mulching with sterilized rice hulls, clean straw, peanut hulls, etc., minimizes water evaporation from the soil surface and provides a clean, dry cushion for heavy fruit clusters. Lateral water movement in the soil is encouraged and soil compaction in the aisles is reduced. Annual incorporation of organic mulch materials into the soil slowly increases soil water and nutrient-holding capacities.

Soil temperatures are usually 2 to 4 degrees warmer in the winter when mulches are used. Earlier harvest often follows. Mulching can prevent fruit contact with soil, especially in high yielding crops. Fruit contact with the soil is a major cause of soil rot and low grade blemished fruit.

#### **Air Humidity Control**

Do not allow relative humidity to drop below 50 percent. Low humidity causes dry pollen, excessive plant transpiration and water stress. Where resistant varieties of plants are used, overhead fine mist nozzles coupled to a hygrometer can help keep relative humidity high. The nozzles should apply a very fine mist that does not wet the plants.

Automation does not replace the necessity for overall management skill; it just reduces management time. Growers must not ignore plants for more than a day at a time. Be keenly alert for any wilting or slowed growth rate. Powdery, bluish-green foliage can be caused by slight water stress. More attention is required on hot, dry days and when plants are setting the first four clusters. Growers, whether novice or experienced, can do a better management job with automatic sensing and soil moisture control.



1. How to Tra	in and address the farmers regarding installation of MIS?	
Answer:		

- As small farm holdings may not have individual source of water, it would be preferable to encourage a group of farmers to avail the benefits of drip irrigation through a common water source.
- Farmers may can avail Government schemes for installing Micro Irrigation System through subsidies and other Financial support through NABARD and other related Government departments
- A farmer shall be eligible for assistance only if adequate water is available for the area proposed to be brought under Drip/Sprinkler irrigation. The installation of Drip/Sprinkler Irrigation system and the assistance should be limited to the area for which adequate water is available.
- The Micro Irrigation scheme will facilitate increase in coverage of area under drip as well as sprinkler irrigation systems for enhancing crop productivity.
- Drip Irrigation involves technology for irrigating plants at the root zone through emitter's fitted on a network of pipes (mains, sub-mains and laterals). The emitting devices could be drippers, micro sprinklers, mini sprinklers, micro jets, misters, fan jets, micro sprayers, foggers and emitting pipes, which are designed to discharge water at prescribed rates.
- Assistance will be available to the farmers growing all horticultural crops like fruit, vegetables including potato, onion and other root and tuber crops, spices, medicinal & aromatic plants, all plantation crops excluding tea, coffee, rubber and oil palm. The scheme will be implemented on compact area basis.

Notes				





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# 4. Maintenance of Micro Irrigation Systems

Unit 4.1 – Trouble shooting the problems that occur in the farmer's field Unit 4.2 – Maintenance of micro irrigation system



AGR/N1006
## Key Learning Outcomes

At the end of the module the You will be able to:

- Identify various problems farmer may come across in the farmer's field
- Address the common problems during the installation of the system
- Rectify common problem in MI System faced by farmers
- Do System cleaning as per the field situation in terms of type of soil and its other characteristics
- Fix the system clogging due to fertigation
- Follow various maintenance guidelines prescribed for a given micro irrigation system

# UNIT 4.1: Trouble shooting the problems that occur in the farmer's field

Unit Objectives 🚳

#### At the end of this unit, You will be able to:

- Identify various problems farmer may come across in the farmer's field.
- Address the common problems during the installation of the system

# - 4.1.1 Trouble shootng the problems that occur in the farmer's field

- Micro irrigation systems also feature constraints and risks that farmers have to know and take into account:
- The amounts of water applied are more difficult to check visually, especially in the case of sub- irrigation, and the large number of water emitting points in the system cause control procedures to be more complicated and more time consuming;
- It is necessary to select carefully the equipment to best match agronomic, climatic and pedagogical conditions. Equipment specifications have to be far more precise than for other irrigation techniques;
- This technique requires the most extensive knowledge of system performance to enable correct operation by the users, avoiding water excesses or deficits and heterogeneity in water application;
- A preliminary treatment of the water (filtration, injection of agricultural chemicals) is often necessary, and controlling these additional devices will require extended skills from farmers;
- Maintenance, including cleaning of filters, control of emitter flows, operation of line flushing, is a critical process, but indispensable for it conditions the life span of such systems, which usually involve superior investment radios per hectare.

#### Possible improvements to micro irrigation techniques

- More than for other irrigation techniques, production yields are dependent on the reliability of micro irrigation systems and on the conservation of system performance over time.
- The quality of irrigation equipment should be considered as a major point (certification by approved bodies). The problem is even more critical whenever fertigation is performed. As a matter of fact, this technique requires a very good uniformity of distribution and precise irrigation scheduling

Techniques, but would not be implemented without risk for crop production if the system performance evolves negatively over time;

• System monitoring, preventive and curative maintenance including the implementation of methods for evaluating and controlling the actual system performance on the field;

• The possible automation of this technique saves labor and facilitates the implementation of precise irrigation scheduling techniques.

- Use of upgraded design techniques;
- Control and prevention of soil salinization.

Several control systems have been developed for micro irrigation systems to apply scheduling techniques. Recent progress concern computation procedures, electronic engineering and soil water sensors. This enables the soil water contribution to be more accurately taken into account.

The implementation by the farmers of recent results of the research into improving scheduling tools and techniques is obviously a necessary condition for improving agronomic and economic irrigation performance. However, on its own it is not sufficient and the concurrent improvement of on-field irrigation equipment and of farmers' management skills is indispensable.

Procedures for obtaining long-term improved results from irrigation systems can be approached with a classical 'global system quality' analysis method.

The quality of irrigation systems shows critical improvement possibilities and emphasizes the need for considering, promoting and checking:

- The quality control of equipment, based on standards and certification,
- The quality control of design, inclusive of operational adaptation to local field conditions,
- The quality control of procedures for disseminating information to users.

Advances should focus on developing operational methods enabling the mastering of on-field irrigation equipment, on insisting on the minimum performance standards required from irrigation equipment, on upgrading existing on-field design procedures, and on promoting farmers' capability for improved on-field system control and operation. Doing so will enable farmers to derive higher benefits from using modern scheduling techniques and thus to improve overall irrigation performance (agronomic and economic performance, waste water reduction, etc.).

Irrigation Efficiency for Various Micro irrigation Techniques

Irrigation	
technique	Efficiency (%)
Orchard	
Drip/Spray	75-90
Bubbler	60-85
Hose-pull	65-90
Hose-basin	55-80
Row-crop	
Reusable	65-90
Disposable	60-80

Table 4.1.1 Irrigation efficiency for various MIS

- Exercise

1. What are the Problems that occur in the MIS ? Answer:-

2. How to trouble shoot the problems that occur in the MIS ? Answer:-

Liba 🗟
• To improve current on-field irrigation system performance: select the most appropriate technique, of match the local context, and of use certified equipment with performance
meeting relevant standards, and which canensure a minimum quality for on-field irrigaation,
• Implement the upgraded management methods for Certified equipment and techniques, and of develop skills to avoid errors currently occurring during ordinary system operation.
Notes

## **UNIT 4.2: Maintenance of Micro Irrigation System**

# Unit Objectives 6

#### At the end of this unit, You will be able to:

- Do System cleaning as per the field situation in terms of type of soil and its other characteristics.
- Fix the system clogging due to fertigation
- Follow various maintenance guidelines prescribed for a given micro irrigation system

# **4.2.1** Maintenance of Micro Irrigation System

#### Maintenance

Frequent maintenance is essential to keep emitters functioning at design flow rates. A good operation and maintenance program is critical to ensure design standard emission uniformity and system efficiency. The following items are recommended: Clean or back flush filter systems: This can be done manually or through automated back flushing based on pressure differentials. Flush lateral lines regularly. Automatic flush valves can be installed on the end of each line. Check emitter discharge rates and replace emitters if clogged. Check operating pressure often. A pressure drop or rise may indicate leaks or clogs. Inject chemicals as required to prevent precipitate buildup such as iron, iron bacteria slime, and algae growth. Inject liquid fertilizers when needed. Check and service pumps regularly.

#### Automation

Micro irrigation systems can be operated fully automatic, semiautomatic, or manually. A time clock, or programmed control panel can be installed to operate solenoid valves, to start and stop the irrigation, and to control each sub main and lateral. This degree of automatic control is simple, the parts are readily available, and it electively controls the desired amount of water to be applied. A manual priority switch that can override clock or control panel switches is desirable to postpone or add irrigations. A fully automatic system, using soil moisture sensors to provide the triggering mechanism to start and stop irrigation, can also be designed. This can be applied easily with an electric pump relay system. Several sensors are recommended, depending on soils and rooting depth of crops grown. Over-irrigation can be a management problem with automated systems that do not use soil moisture sensors for staring and shutting down the system.

#### **Design Procedures**

The primary objective of good micro irrigation system design and management is to provide sufficient system capacity to adequately meet crop-water needs. Uniform application depends on the uniformity of emitter discharge, system maintenance, and elevations of the ground surface. Non-uniform discharge is caused by the pressure deferential from friction losses, elevation change, plugging, and manufacturer variability

Using pressure compensating emitters somewhat alleviates the elevation change and pressure deferential problem. Also using multiple emitters per tree, vine, or plant helps to compensate for manufacturing variability, and minimize plant damage that results from plugged or malfunctioning emitters. The designer must make a rational choice about the duration of application, the number of emitters per plant, the specific type of emission device, and the discharge per emitter to provide the most elective irrigation. Filtration Design of filtration systems requiring sand media filters shall consider flow rates and filtration during back flushing. Recommended media tank sizes for emitter and row crop drip systems should be based on less than 37 GPM/sq.ft during back flushing as indicated below.

System Flow Rate	Tank Number and Size
50 gpm	2-18"
100 gpm	3-18"
150 gpm	3-24"
200-250 gpm	3-30"
300- 400 gpm	4-30"
450-550 gpm	4-36"
600-750 gpm	3-48"
800-1000 gpm	4-48"

#### Table 4.2.1 Design Procedure

Water Management Proper water management with micro irrigation is essential to avoid excessive water use. Deep percolation, typically the result of over-irrigation, cannot be seen. As a result, over-irrigation is by far the biggest problem with users of micro irrigation. The irrigation system designer needs to have realistic expectations of water management skills and desires of the user.



Fig 4.2.1 Proper water management with micro irrigation

Irrigation Run Time The duration of each irrigation application is influenced by the overall irrigation schedule (based on available water holding capacity and crop water use), and by incorporating a safety factor in the design. Application time must be sufficient to apply the water that has been consumed since the previous irrigation or rainfall.

# - Exercise

1. What are the common problems occur in the MIS?	
Answei	
2. How to clean the MIS as per the field situation?	
Answer:	







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# 5. Maintain Health & Safety at the Workplace

Unit 5.1 - Maintain clean and efficient work place Unit 5.2 - Render Appropriate Emergency Procedures

AGR/N9903

## Key Learning Outcomes

At the end of the module the You will be able to:

- Undertake basic safety checks before operation of all machinery and vehicles and hazards are reported to the appropriate supervisor
- Work for which protective clothing or equipment is required is denied and the appropriate protective clothing or equipment is used in performing these duties in accordance with workplace policy
- Read and understand the hazards of use and contamination mentioned on the labels of pesticides/fumigants etc.
- Assess risks prior to performing manual handling jobs, and work according to currently recommended safe practice
- Use equipment and materials safely and correctly and return the same to designated storage when not in use
- Dispose of waste safely and correctly in a designated area
- Recognize risks to bystanders and take action to reduce risk associated with jobs in the workplace
- Perform your work in a manner which minimizes environmental damage all procedures and work instructions for controlling risk are followed closely
- Report any accidents, incidents or problems without delay to an appropriate person and take necessary immediate action to reduce further danger
- Follow procedures for dealing with accidents, fires and emergencies, including communicating location and directions to emergency
- Follow emergency procedures to company standard / workplace requirements
- Use emergency equipment in accordance with manufacturers' specifications and workplace requirements
- Provide treatment appropriate to the patient's injuries in accordance with recognized first aid techniques
- Recover (if practical), clean, inspect/test, refurbish, replace and store the first aid equipment as appropriate
- Report details of first aid administered in accordance with workplace procedures

## UNIT 5.1: Maintain clean and efficient work place

# Unit Objectives **Solution**

#### At the end of this unit, You will be able to:

- Undertake basic safety checks before operation of all machinery and vehicles and hazards are reported to the appropriate supervisor
- Work for which protective clothing or equipment is required is denied and the appropriate protective clothing or equipment is used in performing these duties in accordance with workplace policy
- Read and understand the hazards of use and contamination mentioned on the labels of pesticides/fumigants etc.
- Assess risks prior to performing manual handling jobs, and work according to currently recommended safe practice
- Use equipment and materials safely and correctly and return the same to designated storage when not in use
- Dispose of waste safely and correctly in a designated area
- Recognize risks to bystanders and take action to reduce risk associated with jobs in the workplace
- Perform your work in a manner which minimizes environmental damage all procedures and work instructions for controlling risk are followed closely report any accidents, incidents or problems without delay to an appropriate person and take necessary immediate action to reduce further danger

## 5.1.1 Maintain Clean and Efficient work place -

#### Health and Safety Improvement Cycle

The Health and Safety Improvement Cycle is a roadmap to reducing workplace injuries and illnesses. It is a guide for building comprehensive workplace health and safety systems. The Health and Safety Improvement Cycle provides a continuous process of improvement.

#### Hazard Identification Assessment, control and monitoring

Hazard management is the foundation of any health and safety system. Identifying, assessing and controlling hazards are the key to workplace health and safety. Good hazard management will help you to:

- Develop and manage a safe working environment
- Keep you, sta ffand any visitors to your workplace safe

Reduce the number and severity of workplace injuries

By working through the Cycle, you can set up and support the comprehensive health and safety systems required to keep workplaces safe. There are three key steps involved:

#### 1. Review

A review is important to assess your organization's injury prevention performance. It will enable you to determine the value of your health and safety activities, and provide you with a basis for your planning. The main purpose of an initial review is to gather material to help develop an improvement plan. This could include:

- Identifying hazards and injury factors
- Identifying the electiveness of your current systems and practices
- Establishing baselines to measure future progress
- Quantify the upfront and hidden costs of workplace illnesses and injuries.

In later reviews you will also measure progress against activities and targets in your improvement plan

#### 2. Plan

Planning involves setting goals, objectives and action steps to make improvements happen. When planning, you need to:

- Identify and specify goals. These are usually activities or controls designed to eliminate, isolate or minimize factors causing injuries and illnesses
- Determine the resources needed (time, money, people, skills, knowledge)
- Identify objectives that are SMART (specific, measurable, achievable, realistic and timely)
- Prioritize actions
- Identify measures and targets
- Create an action plan of the specific steps needed to meet your objectives.

#### 3. Action

Action means developing, implementing and monitoring systems and practices. The main areas of focus for action are:

- Hazard management
- Incident investigation
- Training and supervision
- Employee participation
- Emergency readiness
- Contractor management

• Return to work. Evaluation data collected at this stage will help you to recognize successful implementation and identify opportunities for improvement when the Cycle goes to review again.



Figure 4.1.1 Comprehensive health and safety systems

Health and safety should not take second place. The Incident Investigation Process in Health and safety is one of a number of models and investigation techniques that can help you to identify the factors that contribute to a workplace incident or injury. These factors relate to:

-The workplace culture

-The systems and environmental factors

-The way tasks are carried out.



Step 1: Identiy workplace hazards and issues.

Regardless of the type of work, many workplaces have specific policies which support their general health and safety policy and relate to all employees. Common policies include:

- non-smoking policy;
- policy on use of drugs and alcohol; and
- housekeeping policy

There are many aspects of your work environment where written procedures will help prevent workplace illness and injuries and control hazards at their source. Some examples where written procedures may be required are:

- specific workplace hazards
  - identification and assessment of the risks
  - risk control
  - reporting hazards;
- issue resolution;
- consultation on proposed change;
- workplace in spections;
- investigating incidents and issues, with corrective actions;
- reactive and response activities such as:
  - first aid and medical emergencies
  - reporting illness, injury
  - reporting incidents and dangerous occurrences;
- administrative activities such as record keeping and purchasing;
- legal responsibilities in relation to:
  - contractors
  - visitors
  - injury records
  - health monitoring
  - complying with new regulations which apply to the workplace

# Step 2: Collect information about the activity What sort of information do you need?

The type of information you need is determined by the activities concerned and whether you are developing a policy or a procedure. In general, you need information which will tell you or allow you to work out:

- o the causes of the hazard and factors creating the risk;
- o relevant legal standards or requirements;
- o possible control measures; and
- o workplace factors which will affect implementation of the policy or procedure

There are many different sources of information available in your

workplace, but some will only be available externally. Possible sources include:

- o health and safety representatives
- o employees
- o regulations, standards, codes of practice
- o your records, knowledge and experience
- o product and equipment specifications
- o publications and journals on health and safety

Health and safety representatives and employees will probably be your most important information source. Without their contribution management will not be able to ensure the policy or procedure is realistic.

#### **Step 3: Prepare the policy or procedure**

It is very important to consult with employees while preparing policies and procedures. Employees will be involved with implementing any new arrangements, and because of their day-to-day "hands on" role, they are likely to know whether the proposed arrangements will work. If the people who are affected by the procedures or policies are involved in their development, it is also likely that their commitment to making those policies and procedures work will follow.

#### Step 4: Implement the policy or procedure

Policies can be used to provide information about particular health and safety goals. They are a statement to all employees and therefore need to be communicated to all employees. Procedures are used in a variety of ways. They are used for instruction, supervision and hazard control activities, including investigation.Because procedures must be understood before they can be implemented, an important part of implementation is working out the best way to communicate the information to employees. Implementing a procedure may also require resources and changes to existing administrative procedures.

#### How do you in form employees?

Everyone should be aware of the policies and procedures which have been developed for the workplace. Employees directly involved will need detailed knowledge of all relevant policies and procedures. You could do this by:

- o explaining policies and procedures during inductiontraining;
- o including information on policies and procedures in refresher training; and
- o filming and presenting informative in a video

#### Step 5: Review and make changes if required

Policies and procedures need to be reviewed regularly. You need to make sure they are achieving their purpose, they are still relevant to your workplace, and they are providing value for money. You will want to know how well they achieve your goals for hazard identification risk control. You also need to know whether the policies and procedures are supporting your preventive strategies. Make a plan or a tim table for reviewing every procedure in your workplace.

Once you have set up prevention strategies such as policies and procedures, you need to make sure they continue to work to keep your workplace safe and without risks to health. Evaluation is an important part of efffectively maintaining health and safety in your workplace.

# – Exercise

1. Mention the basic safety tools and equipments to be used in the field? Answer:				
2. How to dispose the waste material?				
Answer:				

## Tips 🖳

- Every employee is expected to share in the commitment to health and safety.
- Every manager, supervisor and foreperson is accountable to the employer for the health and safety of employees working under their direction.
- Each employee is expected to help maintain a safe and healthy workplace through:
  - Follow all safe work procedures, rules and instructions
  - Properly using all safety equipment and clothing provided
  - Reportingearly any pain or discomfort
  - Taking an acti e role in the company's treatment and rehabilitation plan, for their 'early and durable return to work'

- Reportingall incidents, injuries and hazards to the appropriate person

Notes	≣		

## **UNIT 5.2 Render appropriate emergency procedures**

# Unit Objectives 6

#### At the end of this unit, You will be able to:

- Follow procedures for dealing with accidents, fires and emergencies, including communicating location direction to emergency
- Follow emergency procedures to company standard / workplace requirements
- Use emergency equipment in accordance with manufacturers' specification and workplace requirements
- Provide treatment appropriate to the patient's injuries in accordance with recognized first aid techniques
- Recover (if practical), clean, inspect/test, refurbish, replace and store the first aid equipment as appropriate

Report details of first aid administered in accordance with workplace procedures

## 5.2.1 Render appropriate emergency procedures

To manage the health and safety in your Workplace:

- Assign safety responsibilities for all levels of your business, from employees on the work floor to senior managers. Write them into the job descriptions.
- Regularly share your performance in health and safety improvements. Measure things such as the quality of the incident investigation carried out and the number of safety improvement suggestion received. Report back to employees on how things are going.
- Build a shared vision of health and safety goals among your managers and supervisors. Be clear about the priority of health and safety among other important business priorities.
- Make your managers and supervisors accountable for being seen to be involved, setting proper example and leading your business's health and safety improvements.
- Create a health and safety committee. Ensure it functions Well.
- Provide employees with ways to participate and contribute suggestion
   – able to raise concerns or
   problems. Encourage them to share these and ideas for improvement with supervisors and
   managers accountable for their responses.
- Regularly review the way you investigate incidents. Investigations completed at the right time are elective. They should identify the genuine sources and underlying causes of incidents, and not blame employees.

 Regularly review the way you investi ate incidents. Investigation completed at the right time are effective. They should identify the genuine sources and underlying causes of incidents, and not blame employees.

#### Scanning for safety

Scanning to ensure safety is a simple Health & Safety strategy that can help you develop hazard recognition skills. The aim is to have staff readily alert to potential hazards, which can be done by following these steps:

- 1. Scan for potential hazards when walking through your service:
  - Keep your eyes moving, taking in what is in the area.
  - While scanning, identify each item that could be a potential hazard.
- 2. Predict what could happen, and briefly review in your mind what could go wrong if the hazard is not recited.
- 3. Decide what action should be taken to rectify the hazard.
- 4. Execute the required action; you need to be willing to act to prevent possible accidents

Personal protective equipment (PPE) is equipment worn by a person to provide protection from hazards. It provides a physical barrier between the person and the hazard. Some PPE that might be used in your service includes:

- face and eye protection, such as sunglasses and hats
- hand protection, such as disposable gloves
- clothing and footwear, such as flat soled, closed shoes and aprons
- head protection such as helmets and hats



Fig 5.2.1 Caution and Equipment Safety

Many accidents are caused by poor maintenance practices. Monitoring Health & Safety practices through observation, cleaning routine and maintenance throughout the day can help lower the impact and costs associated with injuries and accidents.

1. What are the risks/hazards may occur in the working field? Answer:
2. What is First aid? Answer:
3. Identify the specimen
Answer:
4. Identify and mention the uses of specimen
Answer:

## Tips 🚇

- All staff should be actively involved in contributing to safe work practices, including discussing and documenting workplace safety issues.
- Your role is to provide current and accurate health and safety information and direction and to support your work team through encouragement, role modeling, initiating discussions and elective communication processes.
- Consultation is important for providing information about the processes used to isolate, eliminate or minimize hazards; for seeking clarification or improvements to procedures or control methods; and for providing feedback about the electiveness of current safe working strategies.
- Workers at any organization have a responsibility to report any health and safety issues and concerns they identify. Health & Safety issues must be reported according to the organization's policies and procedures and legislation.
- You can use a maintenance report, service report form, and maintenance request or maintenance work schedule to report health and safety concerns or issues. These checklists and reports can be used to identify and manage hazards and risks electively.




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# 6. Employability & Entrepreneurship Skills

- Unit 6.1 Personal Strengths & Value Systems
- Unit 6.2 Digital Literacy: A Recap
- Unit 6.3 Money Matters
- Unit 6.4 Preparing for Employment & Self Employment
- Unit 6.5 Understanding Entrepreneurship
- Unit 6.6 Preparing to be an Entrepreneur

## AGR/N4103

## - Key Learning Outcomes

#### At the end of this unit, you will be able to:

- 1. Explain the meaning of health
- 2. List common health issues
- 3. Discuss tips to prevent common health issues
- 4. Explain the meaning of hygiene
- 5. Understand the purpose of Swacch Bharat Abhiyan
- 6. Explain the meaning of habit
- 7. Discuss ways to set up a safe work environment
- 8. Discuss critical safety habits to be followed by employees
- 9. Explain the importance of self-analysis
- 10. Understand motivation with the help of Maslow's Hierarchy of Needs
- 11. Discuss the meaning of achievement motivation
- 12. List the characteristics of entrepreneurs with achievement motivation
- 13. List the different factors that motivate you
- 14. Discuss how to maintain a positive attitude
- 15. Discuss the role of attitude in self-analysis
- 16. List your strengths and weaknesses
- 17. Discuss the qualities of honest people
- 18. Describe the importance of honesty in entrepreneurs
- 19. Discuss the elements of a strong work ethic
- 20. Discuss how to foster a good work ethic
- 21. List the characteristics of highly creative people
- 22. List the characteristics of highly innovative people
- 23. Discuss the benefits of time management
- 24. List the traits of effective time managers
- 25. Describe effective time management technique
- 26. Discuss the importance of anger management
- 27. Describe anger management strategies
- 28. Discuss tips for anger management
- 29. Discuss the causes of stress
- 30. Discuss the symptoms of stress
- 31. Discuss tips for stress management
- 32. Identify the basic parts of a computer
- 33. Identify the basic parts of a keyboard
- 34. Recall basic computer terminology
- 35. Recall basic computer terminology

- 36. Recall the functions of basic computer keys
- 37. Discuss the main applications of MS Office
- 38. Discuss the benefits of Microsoft Outlook
- 39. Discuss the different types of e-commerce
- 40. List the benefits of e-commerce for retailers and customers
- 41. Discuss how the Digital India campaign will help boost e-commerce in India
- 42. Explain how you will sell a product or service on an e-commerce platform
- 43. Discuss the importance of saving money
- 44. Discuss the benefits of saving money
- 45. Discuss the main types of bank accounts
- 46. Describe the process of opening a bank account
- 47. Differentiate between fixed and variable costs
- 48. Describe the main types of investment options
- 49. Describe the different types of insurance products
- 50. Describe the different types of taxes
- 51. Discuss the uses of online banking
- 52. Discuss the main types of electronic funds transfers
- 53. Discuss the steps to prepare for an interview
- 54. Discuss the steps to create an effective Resume
- 55. Discuss the most frequently asked interview questions
- 56. Discuss how to answer the most frequently asked interview questions
- 57. Discuss basic workplace terminology
- 58. Discuss the concept of entrepreneurship
- 59. Discuss the importance of entrepreneurship
- 60. Describe the characteristics of an entrepreneur
- 61. Describe the different types of enterprises
- 62. List the qualities of an effective leader
- 63. Discuss the benefits of effective leadership
- 64. List the traits of an effective team
- 65. Discuss the importance of listening effectively
- 66. Discuss how to listen effectively
- 67. Discuss the importance of speaking effectively
- 68. Discuss how to speak effectively
- 69. Discuss how to solve problems
- 70. List important problem solving traits

- 71. Discuss ways to assess problem solving skills
- 72. Discuss the importance of negotiation
- 73. Discuss how to negotiate
- 74. Discuss how to identify new business opportunities
- 75. Discuss how to identify business opportunities within your business
- 76. Understand the meaning of entrepreneur
- 77. Describe the different types of entrepreneurs
- 78. List the characteristics of entrepreneurs
- 79. Recall entrepreneur success stories
- 80. Discuss the entrepreneurial process
- 81. Describe the entrepreneurship ecosystem
- 82. Discuss the government's role in the entrepreneurship ecosystem
- 83. Discuss the current entrepreneurship ecosystem in India
- 84. Understand the purpose of the Make in India campaign
- 85. Discuss the relationship between entrepreneurship and risk appetite
- 86. Discuss the relationship between entrepreneurship and resilience
- 87. Describe the characteristics of a resilient entrepreneur
- 88. Discuss how to deal with failure
- 89. Discuss how market research is carried out
- 90. Describe the 4 Ps of marketing
- 91. Discuss the importance of idea generation
- 92. Recall basic business terminology
- 93. Discuss the need for CRM
- 94. Discuss the benefits of CRM
- 95. Discuss the need for networking
- 96. Discuss the benefits of networking
- 97. Understand the importance of setting goals
- 98. Differentiate between short-term, medium-term and long-term goals
- 99. Discuss how to write a business plan
- 100. Explain the financial planning process
- 101. Discuss ways to manage your risk
- 102. Describe the procedure and formalities for applying for bank finance
- 103. Discuss how to manage your own enterprise
- 104. List important questions that every entrepreneur should ask before starting an enterprise

## **UNIT 6.1: Personal Strengths & Value Systems**

# - Unit Objectives 🏼

#### At the end of this unit, you will be able to:

- 1. Explain the meaning of health
- 2. List common health issues
- 3. Discuss tips to prevent common health issues
- 4. Explain the meaning of hygiene
- 5. Understand the purpose of Swacch Bharat Abhiyan
- 6. Explain the meaning of habit
- 7. Discuss ways to set up a safe work environment
- 8. Discuss critical safety habits to be followed by employees
- 9. Explain the importance of self-analysis
- 10. Understand motivation with the help of Maslow's Hierarchy of Needs
- 11. Discuss the meaning of achievement motivation
- 12. List the characteristics of entrepreneurs with achievement motivation
- 13. List the different factors that motivate you
- 14. Discuss how to maintain a positive attitude
- 15. Discuss the role of attitude in self-analysis
- 16. List your strengths and weaknesses
- 17. Discuss the qualities of honest people
- 18. Describe the importance of honesty in entrepreneurs
- 19. Discuss the elements of a strong work ethic
- 20. Discuss how to foster a good work ethic
- 21. List the characteristics of highly creative people
- 22. List the characteristics of highly innovative people
- 23. Discuss the benefits of time management
- 24. List the traits of effective time managers
- 25. Describe effective time management technique
- 26. Discuss the importance of anger management
- 27. Describe anger management strategies
- 28. Discuss tips for anger management
- 29. Discuss the causes of stress
- 30. Discuss the symptoms of stress
- 31. Discuss tips for stress management

## - 6.1.1 Health, Habits, Hygiene: What is Health

As per the World Health Organization (WHO), health is a "State of complete physical, mental, and social well-being, and not merely the absence of disease or infirmity." This means being healthy does not simply mean not being unhealthy – it also means you need to be at peace emotionally, and feel fit physically. For example, you cannot say you are healthy simply because you do not have any physical ailments like a cold or cough. You also need to think about whether you are feeling calm, relaxed and happy.

### **Common Health Issues**

Some common health issues are:

- Allergies
- Asthma
- Skin Disorders
- Depression and Anxiety
- Diabetes
- Cough, Cold, Sore Throat
- Difficulty Sleeping
- Obesity

## Tips to Prevent Health Issues -

Taking measures to prevent ill health is always better than curing a disease or sickness. You can stay healthy by:

- Eating healthy foods like fruits, vegetables and nuts
- Cutting back on unhealthy and sugary foods
- Drinking enough water everyday
- Not smoking or drinking alcohol
- Exercising for at least 30 minutes a day, 4-5 times a week
- Taking vaccinations when required
- Practicing yoga exercises and meditation

#### How many of these health standards do you follow? Tick the ones that apply to you.

- 1. Get minimum 7-8 hours of sleep every night.
- 2. Avoid checking email first thing in the morning and right before you go to bed at night.

3. Don't skip meals – eat regular meals at correct meal times.

- 4. Read a little bit every single day.
- 5. Eat more home cooked food than junk food.

6.	Stand more than you sit.	
7.	Drink a glass of water first thing in the morning and have at least 8 glasses of water through the day.	
8.	Go to the doctor and dentist for regular checkups.	
9.	Exercise for 30 minutes at least 5 days a week.	
10	Avoid consuming lots of aerated beverages.	

## - What is Hygiene? -

As per the World Health Organization (WHO), "Hygiene refers to conditions and practices that help to maintain health and prevent the spread of diseases." In other words, hygiene means ensuring that you do whatever is required to keep your surroundings clean, so that you reduce the chances of spreading germs and diseases.

For instance, think about the kitchen in your home. Good hygiene means ensuring that the kitchen is always spick and span, the food is put away, dishes are washed and dustbins are not overflowing with garbage. Doing all this will reduce the chances of attracting pests like rats or cockroaches, and prevent the growth of fungus and other bacteria, which could spread disease.

#### How many of these health standards do you follow? Tick the ones that apply to you.

1.	Have a bath or shower every day with soap – and wash your hair with shampoo 2-3	
	times a week.	
2.	Wear a fresh pair of clean undergarments every day.	

- 3. Brush your teeth in the morning and before going to bed.
- 4. Cut your fingernails and toenails regularly.
- 5. Wash your hands with soap after going to the toilet.
- 6. Use an anti-perspirant deodorant on your underarms if you sweat a lot.
- 7. Wash your hands with soap before cooking or eating.
- 8. Stay home when you are sick, so other people don't catch what you have.
- 9. Wash dirty clothes with laundry soap before wearing them again.
- 10. Cover your nose with a tissue/your hand when coughing or sneezing.

See how healthy and hygienic you are, by giving yourself 1 point for every ticked statement! Then take a look at what your score means.

#### **Your Score**

0-7/20: You need to work a lot harder to stay fit and fine! Make it a point to practice good habits daily and see how much better you feel!

7-14/20: Not bad, but there is scope for improvement! Try and add a few more good habits to your daily routine.

14-20/20: Great job! Keep up the good work! Your body and mind thank you!

### Swachh Bharat Abhiyan

We have already discussed the importance of following good hygiene and health practices for ourselves. But, it is not enough for us to be healthy and hygienic. We must also extend this standard to our homes, our immediate surroundings and to our country as a whole.

The 'Swachh Bharat Abhiyan' (Clean India Mission) launched by Prime Minister Shri Narendra Modi on 2<sup>nd</sup> October 2014, believes in doing exactly this. The aim of this mission is to clean the streets and roads of India and raise the overall level of cleanliness. Currently this mission covers 4,041 cities and towns across the country. Millions of our people have taken the pledge for a clean India. You should take the pledge too, and do everything possible to keep our country clean!

## What are Habits?

A habit is a behaviour that is repeated frequently. All of us have good habits and bad habits. Keep in mind the phrase by John Dryden: "We first make our habits, and then our habits make us." This is why it is so important that you make good habits a way of life, and consciously avoid practicing bad habits.

Some good habits that you should make part of your daily routine are:

- Always having a positive attitude
- Making exercise a part of your daily routine
- Reading motivational and inspirational stories
- Smiling! Make it a habit to smile as often as possible
- Making time for family and friends
- Going to bed early and waking up early

Some bad habits that you should quit immediately are:

- Skipping breakfast
- Snacking frequently even when you are not hungry
- Eating too much fattening and sugary food
- Smoking, drinking alcohol and doing drugs
- Spending more money than you can afford
- Worrying about unimportant issues
- Staying up late and waking up late

– Tips

- Following healthy and hygienic practices every day will make you feel good mentally and physically.
- Hygiene is two-thirds of health so good hygiene will help you stay strong and healthy!

## - 6.1.2: Safety: Tips to Design a Safe Workplace

Every employer is obligated to ensure that his workplace follows the highest possible safety protocol. When setting up a business, owners must make it a point to:

- Use ergonomically designed furniture and equipment to avoid stooping and twisting
- Provide mechanical aids to avoid lifting or carrying heavy objects
- Have protective equipment on hand for hazardous jobs
- Designate emergency exits and ensure they are easily accessible
- Set down health codes and ensure they are implemented
- Follow the practice of regular safety inspections in and around the workplace
- Ensure regular building inspections are conducted
- Get expert advice on workplace safety and follow it

## Non-Negotiable Employee Safety Habits

Every employer is obligated to ensure that his workplace follows the highest possible safety protocol. When setting up a business, owners must make it a point to:

- Immediately report unsafe conditions to a supervisor
- Recognize and report safety hazards that could lead to slips, trips and falls
- Report all injuries and accidents to a supervisor
- Wear the correct protective equipment when required
- Learn how to correctly use equipment provided for safety purposes
- Be aware of and avoid actions that could endanger other people
- Take rest breaks during the day and some time off from work during the week

## Tips

- Be aware of what emergency number to call at the time of a workplace emergency
- Practice evacuation drills regularly to avoid chaotic evacuations

# 6.1.3 Self Analysis – Attitude, Achievement Motivation: What is Self-Analysis

To truly achieve your full potential, you need to take a deep look inside yourself and find out what kind of person you really are. This attempt to understand your personality is known as self-analysis. Assessing yourself in this manner will help you grow, and will also help you to identify areas within yourself that need to be further developed, changed or eliminated. You can better understand yourself by taking a deep look at what motivates you, what your attitude is like, and what your strengths and weaknesses are.

## - What is Motivation?

Very simply put, motivation is your reason for acting or behaving in a certain manner. It is important to understand that not everyone is motivated by the same desires – people are motivated by many, many different things. We can understand this better by looking at Maslow's Hierarchy of Needs.

## Maslow's Hierarchy of Needs -

Famous American psychologist Abraham Maslow wanted to understand what motivates people. He believed that people have five types of needs, ranging from very basic needs (called physiological needs) to more important needs that are required for self-growth (called self-actualization needs). Between the physiological and self-actualization needs are three other needs – safety needs, belongingness and love needs, and esteem needs. These needs are usually shown as a pyramid with five levels and are known as Maslow's Hierarchy of Needs.



As you can see from the pyramid, the lowest level depicts the most basic needs. Maslow believed that our behaviour is motivated by our basic needs, until those needs are met. Once they are fulfilled, we move to the next level and are motived by the next level of needs. Let's understand this better with an example.

Rupa comes from a very poor family. She never has enough food, water, warmth or rest. According to Maslow, until Rupa is sure that she will get these basic needs, she will not even think about the next level of needs – her safety needs. But, once Rupa is confident that her basic needs will be met, she will move to the next level, and her behaviour will then be motivated by her need for security and safety. Once these new needs are met, Rupa will once again move to the next level, and be motivated by her need for relationships and friends. Once this need is satisfied, Rupa will then focus on the fourth level of needs – her esteem needs, after which she will move up to the fifth and last level of needs – the desire to achieve her full potential.

## – Understanding Achievement Motivation

We now know that people are motivated by basic, psychological and self-fulfillment needs. However, certain people are also motivated by the achievement of highly challenging accomplishments. This is known as Achievement Motivation, or 'need for achievement'.

The level of motivation achievement in a person differs from individual to individual. It is important that entrepreneurs have a high level of achievement motivation – a deep desire to accomplish something important and unique. It is equally important that they hire people who are also highly motivated by challenges and success.

## What Motivates You?

What are the things that really motivate you? List down five things that really motivate you. Remember to answer honestly!

I am motivated by:

## **Characteristics of Entrepreneurs with Achievement Motivation**

Entrepreneurs with achievement motivation can be described as follows:

- Unafraid to take risks for personal accomplishment
- Love being challenged
- Future-oriented
- Flexible and adaptive
- Value negative feedback more than positive feedback

#### Think about it:

• How many of these traits do you have?

- Very persistent when it comes to achieving goals
- Extremely courageous
- Highly creative and innovative
- Restless constantly looking to achieve more
- Feel personally responsible for solving problems
- Can you think of entrepreneurs who display these traits?

### How to Cultivate a Positive Attitude

The good news is attitude is a choice. So it is possible to improve, control and change our attitude, if we decide we want to! The following tips help foster a positive mindset:

- Remember that you control your attitude, not the other way around
- Devote at least 15 minutes a day towards reading, watching or listening to something positive
- Avoid negative people who only complain and stop complaining yourself
- Expand your vocabulary with positive words and delete negative phrases from your mind
- Be appreciative and focus on what's good in yourself, in your life, and in others
- Stop thinking of yourself as a victim and start being proactive
- Imagine yourself succeeding and achieving your goals

### What is Attitude?

Now that we understand why motivation is so important for self-analysis, let's look at the role our attitude plays in better understanding ourselves. Attitude can be described as your tendency (positive or negative), to think and feel about someone or something. Attitude is the foundation for success in every aspect of life. Our attitude can be our best friend or our worst enemy. In other words:

"The only disability in life is a bad attitude."

When you start a business, you are sure to encounter a wide variety of emotions, from difficult times and failures to good times and successes. Your attitude is what will see you through the tough times and guide you towards success. Attitude is also infectious. It affects everyone around you, from your customers to your employees to your investors. A positive attitude helps build confidence in the workplace while a negative attitude is likely to result in the demotivation of your people.
## What Are Your Strengths and Weaknesses?

Another way to analyze yourself is by honestly identifying your strengths and weaknesses. This will help you use your strengths to your best advantage and reduce your weaknesses.

Note down all your strengths and weaknesses in the two columns below. Remember to be honest with yourself!

Strengths	Weaknesses

- Tips 🚇

- Achievement motivation can be learned.
- Don't be afraid to make mistakes.
- Train yourself to finish what you start.
- Dream big.

## 6.1.4 Honesty & Work Ethics: What is Honesty?

Honesty is the quality of being fair and truthful. It means speaking and acting in a manner that inspires trust. A person who is described as honest is seen as truthful and sincere, and as someone who isn't deceitful or devious and doesn't steal or cheat. There are two dimensions of honesty – one is honesty in communication and the other is honesty in conduct.

Honesty is an extremely important trait because it results in peace of mind and builds relationships that are based on trust. Being dishonest, on the other hand, results in anxiety and leads to relationships full of distrust and conflict.

## **Qualities of Honest People**

Honest individuals have certain distinct characteristics. Some common qualities among honest people are:

- 1. They don't worry about what others think of them. They believe in being themselves they don't bother about whether they are liked or disliked for their personalities.
- 2. They stand up for their beliefs. They won't think twice about giving their honest opinion, even if they are aware that their point of view lies with the minority.
- 3. They are think skinned. This means they are not affected by others judging them harshly for their honest opinions.
- 4. They forge trusting, meaningful and healthy friendships. Honest people usually surround themselves with honest friends. They have faith that their friends will be truthful and upfront with them at all times.

They are trusted by their peers. They are seen as people who can be counted on for truthful and objective feedback and advice.

- Honesty and employees: When entrepreneurs build honest relationships with their employees, it leads to more transparency in the workplace, which results in higher work performance and better results.
- Honesty and investors: For entrepreneurs, being honest with investors means not only sharing strengths but also candidly disclosing current and potential weaknesses, problem areas and solution strategies. Keep in mind that investors have a lot of experience with startups and are aware that all new companies have problems. Claiming that everything is perfectly fine and running smoothly is a red flag for most investors.
- Honesty with oneself: The consequences of being dishonest with oneself can lead to dire results, especially in the case of entrepreneurs. For entrepreneurs to succeed, it is critical that they remain realistic about their situation at all times, and accurately judge every aspect of their enterprise for what it truly is.

## **Importance of Honesty in Entrepreneurs**

One of the most important characteristics of entrepreneurs is honesty. When entrepreneurs are honest with their customers, employees and investors, it shows that they respect those that they work with. It is also important that entrepreneurs remain honest with themselves. Let's look at how being honest would lead to great benefits for entrepreneurs.

 Honesty and customers: When entrepreneurs are honest with their customers it leads to stronger relationships, which in turn results in business growth and a stronger customer network.

### What are Work Ethics?

Being ethical in the workplace means displaying values like honesty, integrity and respect in all your decisions and communications. It means not displaying negative qualities like lying, cheating and stealing.

Workplace ethics play a big role in the profitability of a company. It is as crucial to an enterprise as high morale and teamwork. This is why most companies lay down specific workplace ethic guidelines that must compulsorily be followed by their employees. These guidelines are typically outlined in a company's employee handbook.

## **Elements of a Strong Work Ethic**

An entrepreneur must display strong work ethics, as well as hire only those individuals who believe in and display the same level of ethical behavior in the workplace. Some elements of a strong work ethic are:

- **Professionalism**: This involves everything from how you present yourself in a corporate setting to the manner in which you treat others in the workplace.
- **Respectfulness**: This means remaining poised and diplomatic regardless of how stressful or volatile a situation is.
- **Dependability**: This means always keeping your word, whether it's arriving on time for a meeting or delivering work on time.
- **Dedication**: This means refusing to quit until the designated work is done, and completing the work at the highest possible level of excellence.
- **Determination**: This means embracing obstacles as challenges rather than letting them stop you, and pushing ahead with purpose and resilience to get the desired results.
- Accountability: This means taking responsibility for your actions and the consequences of your actions, and not making excuses for your mistakes.
- **Humility**: This means acknowledging everyone's efforts and had work, and sharing the credit for accomplishments.

## How to Foster a Good Work Ethic

As an entrepreneur, it is important that you clearly define the kind of behaviour that you expect from each and every team member in the workplace. You should make it clear that you expect employees to display positive work ethics like:

- **Honesty**: All work assigned to a person should be done with complete honesty, without any deceit or lies.
- **Good attitude**: All team members should be optimistic, energetic, and positive.
- **Reliability**: Employees should show up where they are supposed to be, when they are supposed to be there.
- **Good work habits** Employees should always be well groomed, never use inappropriate language, conduct themselves professionally at all times, etc.
- Initiative: Doing the bare minimum is not enough. Every team member needs to be proactive and show initiative.
- **Trustworthiness**: Trust is non-negotiable. If an employee cannot be trusted, it's time to let that employee go.

- **Respect**: Employees need to respect the company, the law, their work, their colleagues and themselves.
- **Integrity**: Each and every team member should be completely ethical and must display above board behaviour at all times.
- **Efficiency**: Efficient employees help a company grow while inefficient employees result in a waste of time and resources.

Tips 🖳

- Don't get angry when someone tells you the truth and you don't like what you hear.
- Always be willing to accept responsibility for your mistakes.

## - 6.1.5 Creativity & Innovation : What is Creativity

Creativity means thinking outside the box. It means viewing things in new ways or from different perspectives, and then converting these ideas into reality. Creativity involves two parts: thinking and producing. Simply having an idea makes you imaginative, not creative. However, having an idea and acting on it makes you creative.

## **Characteristics of Highly Creative People**

Some characteristics of creative people are:

- They are imaginative and playful
- They see issues from different angles
- They notice small details
- They have very little tolerance for boredom

## What is Innovation?

There are many different definitions of innovation. In simple terms, innovation means turning an idea into a solution that adds value. It can also mean adding value by implementing a new product, service or process, or significantly improving on an existing product, service or process.

## **Characteristics of Highly Innovative People**

Some characteristics of highly innovative people are:

- They embrace doing things differently
- They don't believe in taking shortcuts
- They are not afraid to be unconventional
- They are highly proactive and persistent
- They are organized, cautious and risk-averse

## Tips

- Take regular breaks from your creative work to recharge yourself and gain fresh perspective.
- Build prototypes frequently, test them out, get feedback, and make the required changes.

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- They detest rules and routine
- They love to daydream
- They are very curious

## - 6.1.6 Time Management: What is Time Management?

Time management is the process organizing your time, and deciding how to allocate your time between different activities. Good time management is the difference between working smart (getting more done in less time) and working hard (working for more time to get more done).

Effective time management leads to an efficient work output, even when you are faced with tight deadlines and high pressure situations. On the other hand, not managing your time effectively results in inefficient output and increases stress and anxiety.

## **Benefits of Time Management**

Time management can lead to huge benefits like:

- Greater productivity
- Better professional reputation
- Higher chances for career advancement
- Higher efficiency
- Reduced stress
- Greater opportunities to achieve goals

Not managing time effectively can result in undesirable consequences like:

- Missing deadlines
- Substandard work quality
- Stalled career

- Inefficient work output
- Poor professional reputation
- Increase in stress and anxiety

### **Traits of Effective Time Managers**

Some traits of effective time managers are:

- They begin projects early
- They set daily objectives
- They modify plans if required, to achieve better results
- They are flexible and open-minded
- They inform people in advance if their help will be required
- They know how to say no

- They break tasks into steps with specific deadlines
- They continually review long term goals
- They think of alternate solutions if and when required
- They ask for help when required
- They create backup plans

## **Effective Time Management Techniques**

You can manage your time better by putting into practice certain time management techniques. Some helpful tips are:

- Plan out your day as well as plan for interruptions. Give yourself at least 30 minutes to figure out your time plan. In your plan, schedule some time for interruptions.
- Put up a "Do Not Disturb" sign when you absolutely have to complete a certain amount of work.
- Close your mind to all distractions. Train yourself to ignore ringing phones, don't reply to chat messages and disconnect from social media sites.

- Delegate your work. This will not only help your work get done faster, but will also show you the unique skills and abilities of those around you.
- Stop procrastinating. Remind yourself that procrastination typically arises due to the fear of failure or the belief that you cannot do things as perfectly as you wish to do them.
- Prioritize. List each task to be completed in order of its urgency or importance level. Then focus on completing each task, one by one.
- Maintain a log of your work activities. Analyze the log to help you understand how efficient you are, and how much time is wasted every day.
   Create time management goals to reduce time wastage.

## Tips

- Always complete the most important tasks first.
- Get at least 7 8 hours of sleep every day.
- Start your day early.
- Don't waste too much time on small, unimportant details.
- Set a time limit for every task that you will undertake.
- Give yourself some time to unwind between tasks.

## - 6.1.7 Anger Management: What is Anger Management

Anger management is the process of:

- 1. Learning to recognize the signs that you, or someone else, is becoming angry
- 2. Taking the best course of action to calm down the situation in a positive way

Anger management does not mean suppressing anger.

## **Importance of Anger Management**

Anger is a perfectly normal human emotion. In fact, when managed the right way, anger can be considered a healthy emotion. However, if it is not kept in check, anger can make us act inappropriately and can lead to us saying or doing things that we will likely later regret. Extreme anger can:

- **Hurt you physically:** It leads to heart disease, diabetes, a weakened immune system, insomnia, and high blood pressure.
- **Hurt you mentally**. It can cloud your thinking and lead to stress, depression and mental health issues.
- **Hurt your career**: It can result in alienating your colleagues, bosses, clients and lead to the loss of respect.
- Hurt your relationships: It makes it hard for your family and friends to trust you, be honest with you and feel comfortable around you. This is why anger management, or managing anger appropriately, is so important.

## **Anger Management Strategies**

Here are some strategies that can help you control your anger:

#### **Strategy 1: Relaxation**

Something as simple as breathing deeply and looking at relaxing images works wonders in calming down angry feelings. Try this simple breathing exercise:

- 1. Take a deep breath from your diaphragm (don't breathe from your chest)
- 2. Visualize your breath coming up from your stomach
- 3. Keep repeating a calming word like 'relax' or 'take it easy' (remember to keep breathing deeply while repeating the word)
- 4. Picture a relaxing moment (this can be from your memory or your imagination)

Follow this relaxation technique daily, especially when you realize that you're starting to feel angry.

### Strategy 2: Cognitive Restructuring

Cognitive restructuring means changing the manner in which you think. Anger can make you curse, swear, exaggerate and act very dramatically. When this happens, force yourself to replace your angry thoughts with more logical ones. For instance, instead of thinking 'Everything is ruined' change your mindset and tell yourself 'It's not the end of the world and getting angry won't solve this'.

#### Strategy 3: Problem Solving

Getting angry about a problem that you cannot control is a perfectly natural response. Sometimes, try as you may, there may not be a solution to the difficulty you are faced with. In such cases, stop focusing on solving the problem, and instead focus on handling and facing the problem. Remind yourself that you will do your best to deal with the situation, but that you will not blame yourself if you don't get the solution you desire.

#### **Strategy 4: Better Communication**

When you're angry, it is very easy to jump to inaccurate conclusions. In this case, you need to force yourself to stop reacting, and think carefully about what you want to say, before saying it. Avoid saying the first thing that enters your head. Force yourself to listen carefully to what the other person is saying. Then think about the conversation before responding.

#### **Strategy 5: Changing Your Environment**

If you find that your environment is the cause of your anger, try and give yourself a break from your surroundings. Make an active decision to schedule some personal time for yourself, especially on days that are very hectic and stressful. Having even a brief amount of quiet or alone time is sure to help calm you down.

## **Tips for Anger Management**

- The following tips will help you keep your anger in check:
- Take some time to collect your thoughts before you speak out in anger.
- Express the reason for your anger in an assertive, but non-confrontational manner once you have calmed down.
- Do some form of physical exercise like running or walking briskly when you feel yourself getting angry.
- Make short breaks part of your daily routine, especially during days that are stressful.
   Focus on how to solve a problem that's making you angry, rather than focusing on the fact that the problem is making you angry.

## Tips

- Try to forgive those who anger you, rather than hold a grudge against them.
- Avoid using sarcasm and hurling insults. Instead, try and explain the reason for your frustration in a polite and mature manner.

## - 6.1.8 Stress Management: What is Stress

We say we are 'stressed' when we feel overloaded and unsure of our ability to deal with the pressures placed on us. Anything that challenges or threatens our well-being can be defined as a stress. It is important to note that stress can be good and bad. While good stress keeps us going, negative stress undermines our mental and physical health. This is why it is so important to manage negative stress effectively.

## Causes of Stress

Stress can be caused by internal and external factors.

### Internal causes of stress

- Constant worry
- Rigid thinking
- Unrealistic expectations

### **External causes of stress**

- Major life changes
- Difficulties with relationships
- Having too much to do

- Pessimism
- Negative self-talk
- All in or all out attitude
- Difficulties at work or in school
- Financial difficulties
- Worrying about one's children and/or family

## **Symptoms of Stress**

Stress can manifest itself in numerous ways. Take a look at the cognitive, emotional, physical and behavioral symptoms of stress.

	Cognitive Symptoms		Emotional Symptoms	
•	Memory problems	•	Depression	
•	Concentration issues	•	Agitation	
•	Lack of judgement	•	Irritability	
•	Pessimism	•	Loneliness	
•	Anxiety	•	Anxiety	
•	Constant worrying	•	Anger	

Physical Symptoms	Behavioral Symptoms
Aches and pain	Increase or decrease in appetite
Diarrhea or constipation	Over sleeping or not sleeping enough
• Nausea	Withdrawing socially
• Dizziness	Ignoring responsibilities
Chest pain and/or rapid heartbeat	Consumption of alcohol or cigarettes
• Frequent cold or flu like feelings	• Nervous habits like nail biting, pacing etc.

## <sup>-</sup> Tips to Manage Stress

The following tips can help you manage your stress better:

- Note down the different ways in which you can handle the various sources of your stress.
- Remember that you cannot control everything, but you can control how you respond.
- Discuss your feelings, opinions and beliefs rather than reacting angrily, defensively or passively.
- Practice relaxation techniques like meditation, yoga or tai chi when you start feeling stressed.
- Devote a part of your day towards exercise.
- Eat healthy foods like fruits and vegetables. Avoid unhealthy foods especially those containing large amounts of sugar.
- Plan your day so that you can manage your time better, with less stress.
- Say no to people and things when required.
- Schedule time to pursue your hobbies and interests.
- Ensure you get at least 7-8 hours of sleep.
- Reduce your caffeine intake.
- Increase the time spent with family and friends.

## Tips 4

- Force yourself to smile even if you feel stressed. Smiling makes us feel relaxed and happy.
- Stop yourself from feeling and thinking like a victim. Change your attiude and focus on being proactive.

## **UNIT 6.2. Digital Literacy: A Recap**

## Unit Objectives

At the end of this unit, you will be able to:

- 1. Identify the basic parts of a computer
- 2. Identify the basic parts of a keyboard
- 3. Recall basic computer terminology
- 4. Recall basic computer terminology
- 5. Recall the functions of basic computer keys
- 6. Discuss the main applications of MS Office
- 7. Discuss the benefits of Microsoft Outlook
- 8. Discuss the different types of e-commerce
- 9. List the benefits of e-commerce for retailers and customers
- 10. Discuss how the Digital India campaign will help boost e-commerce in India
- 11. Describe how you will sell a product or service on an e-commerce platform

## 6.2.1 Computer and Internet basics: Basic Parts of a Computer



## Basic Parts of a Keyboard-



### Basic Parts of a Computer

- **Central Processing Unit (CPU)**: The brain of the computer. It interprets and carries out program instructions.
- Hard Drive: A device that stores large amounts of data.
- Monitor: The device that contains the computer screen where the information is visually displayed.
- **Desktop**: The first screen displayed after the operating system loads.
- **Background**: The image that fills the background of the desktop.

## **Basic Parts of a Computer**

- **Mouse**: A hand-held device used to point to items on the monitor.
- **Speakers**: Devices that enable you to hear sound from the computer.
- **Printer**: A device that converts output from a computer into printed paper documents.
- Icon: A small picture or image that visually represents something on your computer.
- **Cursor**: An arrow which indicates where you are positioned on the screen.
- **Program Menu**: A list of programs on your computer that can be accessed from the Start menu.
- **Taskbar**: The horizontal bar at the bottom of the computer screen that lists applications that are currently in use.
- Recycle Bin: A temporary storage for deleted files.

## **Basic Internet Terms**

- **TheInternet**: Avast, international collection of computer networks that transfers information.
- The World Wide Web: A system that lets you access information on the Internet.
- **Website**: A location on the World Wide Web (and Internet) that contains information about a specific topic.
- **Homepage**: Provides information about a website and directs you to other pages on that website.
- Link/Hyperlink: A highlighted or underlined icon, graphic, or text that takes you to another file or object.
- Web Address/URL: The address for a website.
- Address Box: A box in the browser window where you can type in a web address.

## - Basic Computer Keys

- Arrow Keys: Press these keys to move your cursor.
- **Space bar**: Adds a space.
- Enter/Return: Moves your cursor to a new line.
- Shift: Press this key if you want to type a capital letter or the upper symbol of a key.
- **Caps Lock**: Press this key if you want all the letters you type to be capital letters. Press it again to revert back to typing lowercase letters.
- **Backspace**: Deletes everything to the left of your cursor.

## – Tips 🍳

- When visiting a .com address, there no need to type http:// or even www. Just type the name of the website and then press Ctrl + Enter. (Example: Type 'apple' and press Ctrl + Enter to go to <u>www.apple.com</u>)
- Press the Ctrl key and press the + or to increase and decrease the size of text.
- Press F5 or Ctrl + R to refresh or reload a web page.

## – 6.2.2 MS Office and Email: About MS Office

MS Office or Microsoft Office is a suite of computer programs developed by Microsoft. Although meant for all users, it offers different versions that cater specifically to students, home users and business users. All the programs are compatible with both, Windows and Macintosh.

## **Most Popular Office Products**

Some of the most popular and universally used MS Office applications are:

- Microsoft Word: Allows users to type text and add images to a document.
- Microsoft Excel: Allows users to enter data into a spreadsheet and create calculations and graphs.
- Microsoft PowerPoint: Allows users to add text, pictures and media and create slideshows and presentations.
- Microsoft Outlook: Allows users to send and receive email.
- Microsoft OneNote: Allows users to make drawings and notes with the feel of a pen on paper.
- Microsoft Access: Allows users to store data over many tables.

## Why Choose Microsoft Outlook

A popular email management choice especially in the workplace, Microsoft Outlook also includes an address book, notebook, web browser and calendar. Some major benefits of this program are:

- Integrated search function You can use keywords to search for data across all Outlook programs.
- Enhanced security: Your email is safe from hackers, junk mail and phishing website email.
- **Email syncing**: Sync your mail with your calendar, contact list, notes in One Note and...your phone!
- Offline access to email No Internet? No problem! Write emails offline and send them when you're connected again.

## Tips

- Press Ctrl+R as a shortcut method to reply to email.
- Set your desktop notifications only for very important emails.
- Flag messages quickly by selecting messages and hitting the Insert key.
- Save frequently sent emails as a template to reuse again and again.
- Conveniently save important emails as files.

## – 6.2.3 E-Commerce: What is E-Commerce

E-commerce is the buying or selling of goods and services, or the transmitting of money or data, electronically on the internet. E-Commerce is the short form for "electronic commerce."

## **Examples of E-Commerce**

Some examples of e-commerce are:

Online shopping

Electronic payments

Online auctions

Internet banking

Online ticketing

## Types of E-Commerce

E-commerce can be classified based on the types of participants in the transaction. The main types of e-commerce are:

- Business to Business (B2B): Both the transacting parties are businesses.
- Business to Consumer (B2C): Businesses sell electronically to end-consumers.
- Consumer to Consumer (C2C): Consumers come together to buy, sell or trade items to other consumers.
- Consumer-to-Business (C2B): Consumers make products or services available for purchase to companies looking for exactly those services or products.
- **Business-to-Administration (B2A)** Online transactions conducted between companies and public administration.
- **Consumer-to-Administration (C2A)**: Online transactions conducted between individuals and public administration.

### - Benefits of E-Commerce

The e-commerce business provides some benefits for retailers and customers.

#### Benefits for retailers:

- Establishes an online presence
- Reduces operational costs by removing overhead costs
- Increases brand awareness through the use of good keywords
- Increases sales by removing geographical and time constraints

### Benefits for customers:

- Offers a wider range of choice than any physical store
- Enables goods and services to be purchased from remote locations
- Enables consumers to perform price comparisons

## - Digital India Campaign

Prime Minister Narendra Modi launched the Digital India campaign in 2015, with the objective of offering every citizen of India access to digital services, knowledge and information. The campaign aims to improve the country's online infrastructure and increase internet connectivity, thus boosting the e-commerce industry.

Currently, the majority of online transactions come from tier 2 and tier 3 cities. Once the Digital India campaign is in place, the government will deliver services through mobile connectivity, which will help deliver internet to remote corners of the country. This will help the e-commerce market to enter India's tier 4 towns and rural areas.

## - E-Commerce Activity -

Choose a product or service that you want to sell online. Write a brief note explaining how you will use existing e-commerce platforms, or create a new e-commerce platform, to sell your product or service.



- Before launching your e-commerce platform, test everything.
- Pay close and personal attention to your social media.

## **UNIT 6.3: Money Matters**

## Unit Objectives

At the end of this unit, you will be able to:

- 1. Discuss the importance of saving money
- 2. Discuss the benefits of saving money
- 3. Discuss the main types of bank accounts
- 4. Describe the process of opening a bank account
- 5. Differentiate between fixed and variable costs
- 6. Describe the main types of investment options
- 7. Describe the different types of insurance products
- 8. Describe the different types of taxes
- 9. Discuss the uses of online banking
- 10. Discuss the main types of electronic funds transfers

## - 6.3.1 Personal Finance – Why to Save: Importance of Saving

We all know that the future is unpredictable. You never know what will happen tomorrow, next week or next year. That's why saving money steadily through the years is so important. Saving money will help improve your financial situation over time. But more importantly, knowing that you have money stashed away for an emergency will give you peace of mind. Saving money also opens the door to many more options and possibilities.

## **Benefits of Saving**

Inculcating the habit of saving leads to a vast number of benefits. Saving helps you:

- **Become financially independent**: When you have enough money saved up to feel secure you can start making your choices, from taking a vacation whenever you want, to switching careers or starting your own business.
- Invest in yourself through education: Through saving, you can earn enough to pay up for courses that will add to your professional experience and ultimately result in higher paying jobs.
- **Get out of debt**: Once you have saved enough as a reserve fund, you can use your savings to pay off debts like loans or bills that have accumulated over time.
- **Be prepared for surprise expenses** : Having money saved enables you to pay for unforeseen expenses like sudden car or house repairs, without feeling financially stressed.
- **Pay for emergencies**: Saving helps you deal with emergencies like sudden health issues or emergency trips without feeling financially burdened.

- Afford large purchases and achieve major goals: Saving diligently makes it possible to place down payments towards major purchases and goals, like buying a home or a car.
- **Retire**: The money you have saved over the years will keep you comfortable when you no longer have the income you would get from your job.



- Break your spending habit. Try not spending on one expensive item per week, and put the money that you would have spent into your savings.
- Decide that you will not buy anything on certain days or weeks and stick to your word.

## 6.3.2 Types of Bank Accounts, Opening a Bank Account: Types of Bank Accounts

In India, banks offer four main types of bank accounts. These are:

- Current Accounts
- Savings Accounts
- Recurring Deposit Accounts
- Fixed Deposit Accounts

#### **Current Accounts**

Current accounts offer the most liquid deposits and thus, are best suited for businessmen and companies. As these accounts are not meant for investments and savings, there is no imposed limit on the number or amount of transactions that can be made on any given day. Current account holders are not paid any interest on the amounts held in their accounts. They are charged for certain services offered on such accounts.

#### Savings Accounts

Savings accounts are meant to promote savings, and are therefore the number one choice for salaried individuals, pensioners and students. While there is no restriction on the number and amount of deposits made, there are usually restrictions on the number and amount of withdrawals. Savings account holders are paid interest on their savings.

#### **Recurring Deposit Accounts**

Recurring Deposit accounts, also called RD accounts, are the accounts of choice for those who want to save an amount every month, but are unable to invest a large sum at one time. Such account holders deposit a small, fixed amount every month for a pre-determined period (minimum 6 months). Defaulting on a monthly payment results in the account holder being charged a penalty amount. The total amount is repaid with interest at the end of the specified period.

#### **Fixed Deposit Accounts**

Fixed Deposit accounts, also called FD accounts, are ideal for those who wish to deposit their savings for a long term in return for a high rate of interest. The rate of interest offered depends on the amount deposited and the time period, and also differs from bank to bank. In the case of an FD, a certain amount of money is deposited by the account holder for a fixed period of time. The money can be withdrawn when the period expires. If necessary, the depositor can break the fixed deposit prematurely. However, this usually attracts a penalty amount which also differs from bank to bank.

### **Opening a Bank Account** -

Opening a bank account is quite a simple process. Take a look at the steps to open an account of your own:

### Step 1: Fill in the Account Opening Form

This form requires you to provide the following information:

- Personal details (name, address, phone number, date of birth, gender, occupation, address)
- Method of receiving your account statement (hard copy/email)
- Details of your initial deposit (cash/cheque)
- Manner of operating your account (online/mobile banking/traditional via cheque, slip books) Ensure that you sign wherever required on the form.

### Step 2: Affix your Photograph

Stick a recent photograph of yourself in the allotted space on the form.

### Step 3: Provide your Know Your Customer (KYC) Details

KYC is a process that helps banks verify the identity and address of their customers. To open an account, every individual needs to submit certain approved documents with respect to photo identity (ID) and address proof. Some Officially Valid Documents (OVDs) are:

- Passport
- Driving License
- Voters' Identity Card
- PAN Card
- UIDAI (Aadhaar) Card

### Step 4: Submit All your Documents

Submit the completed Account Opening Form and KYC documents. Then wait until the forms are processed and your account has been opened!

## Tips 🔮

- Select the right type of account.
- Fill in complete nomination details.
- Ask about fees.
- Understand the rules.
- Check for online banking it's convenient!
- Keep an eye on your bank balance.

## 6.3.3 Costs: Fixed vs Variable: What are Fixed and Variable Costs

Fixed costs and variable costs together make up a company's total cost. These are the two types of costs that companies have to bear when producing goods and services.

A fixed cost does not change with the volume of goods or services a company produces. It always remains the same.

A variable cost, on the other hand, increases and decreases depending on the volume of goods and services produced. In other words, it varies with the amount produced.

## **Differences Between Fixed and Variable Costs**

Let's take a look at some of the main differences between fixed and variable costs:

Criteria	Fixed Costs	Variable Costs
Meaning	A cost that stays the same, regardless of the output produced.	A cost that changes when the
Nature	Time related.	Volume related.
Incurred	Incurred irrespective of units being produced.	Incurred only when units are produced.
Unit cost	Inversely proportional to the number of units produced.	Remains the same, per unit.
Examples	Depreciation, rent, salary, insurance, tax etc.	Material consumed, wages, commission on sales, packing expenses, etc.

## – Tips 🤇

• When trying to determine whether a cost is fixed or variable, simply ask the following question: Will the particular cost change if the company stopped its production activities? If the answer is no, then it is a fixed cost. If the answer is yes, then it is probably a variable cost.

## 6.3.4 Investment, Insurance and Taxes: Investment

Investment means that money is spent today with the aim of reaping financial gains at a future time. The main types of investment options are as follows:

- **Bonds:** Bonds are instruments used by public and private companies to raise large sums of money too large to be borrowed from a bank. These bonds are then issued in the public market and are bought by lenders.
- **Stocks:** Stocks or equity are shares that are issued by companies and are bought by the general public.
- Small Savings Schemes: Small Savings Schemes are tools meant to save money in small amounts. Some popular schemes are the Employees Provident Fund, Sukanya Samriddhi Scheme and National Pension Scheme.
- **Mutual Funds:** Mutual Funds are professionally managed financial instruments that invest money in different securities on behalf of investors.
- **Fixed Deposits:** A fixed amount of money is kept aside with a financial institution for a fixed amount of time in return for interest on the money.
- **Real Estate:** Loans are taken from banks to purchase real estate, which is then leased or sold with the aim of making a profit on the appreciated property price.
- Hedge Funds: Hedge funds invest in both financial derivatives and/or publicly traded securities.
- **Private Equity:** Private Equity is trading in the shares of an operating company that is not publicly listed and whose shares are not available on the stock market.
- **Venture Capital:** Venture Capital involves investing substantial capital in a budding company in return for stocks in that company.

### Insurance -

There are two types of insurance – Life Insurance and Non-Life or General Insurance.

#### Life Insurance

Life Insurance deals with all insurance covering human life.

#### **Life Insurance Products**

The main life insurance products are:

- **Term Insurance:** This is the simplest and cheapest form of insurance. It offers financial protection for a specified tenure, say 15 to 20 years. In the case of your death, your family is paid the sum assured. In the case of your surviving the term, the insurer pays nothing.
- Endowment Policy: This offers the dual benefit of insurance and investment. Part of the premium is allocated towards the sum assured, while the remaining premium gets invested in equity and debt. It pays a lump sum amount after the specified duration or on the death of the policyholder, whichever is earlier.
- Unit-Linked Insurance Plan (ULIP): Here part of the premium is spent on the life cover, while the remaining amount is invested in equity and debt. It helps develop a regular saving habit.

- **Money Back Life Insurance:**While the policyholder is alive, periodic payments of the partial survival benefits are made during the policy tenure. On the death of the insured, the insurance company pays the full sum assured along with survival benefits.
- Whole Life Insurance: It offers the dual benefit of insurance and investment. It offers insurance cover for the whole life of the person or up to 100 years whichever is earlier.

#### **General Insurance**

General Insurance deals with all insurance covering assets like animals, agricultural crops, goods, factories, cars and so on.

#### **General Insurance Products**

The main general insurance products are:

- **Motor Insurance:** This can be divided into Four Wheeler Insurance and Two Wheeler Insurance.
- **Health Insurance:** The main types of health insurance are individual health insurance, family floater health insurance, comprehensive health insurance and critical illness insurance.
- **Travel Insurance:** This can be categorised into Individual Travel Policy, Family Travel Policy, Student Travel Insurance and Senior Citizen Health Insurance.
- Home Insurance: This protects the house and its contents from risk.
- Marine Insurance: This insurance covers goods, freight, cargo etc. against loss or damage during transit by rail, road, sea and/or air.

### Taxes

There are two types of taxes – Direct Taxes and Indirect Taxes.

#### **Direct Tax**

Direct taxes are levied directly on an entity or a person and are non-transferrable.

Some examples of Direct Taxes are:

- **Income Tax:** This tax is levied on your earning in a financial year. It is applicable to both, individuals and companies.
- **Capital Gains Tax:** This tax is payable whenever you receive a sizable amount of money. It is usually of two types – short term capital gains from investments held for less than 36 months and long term capital gains from investments held for longer than 36 months.
- Securities Transaction Tax: This tax is added to the price of a share. It is levied every time you buy or sell shares.
- **Perquisite Tax:** This tax is levied is on perks that have been acquired by a company or used by an employee.
- **Corporate Tax:** Corporate tax is paid by companies from the revenue they earn.

#### **Indirect Tax**

Indirect taxes are levied on goods or services.

Some examples of Indirect Taxes are:

• **Sales Tax:** Sales Tax is levied on the sale of a product.

- Service Tax: Service Tax is added to services provided in India.
- Value Added Tax: Value Added Tax is levied at the discretion of the state government. The tax is levied on goods sold in the state. The tax amount is decided by the state.
- **Customs Duty & Octroi:** Customs Duty is a charge that is applied on purchases that are imported from another country. Octroi is levied on goods that cross state borders within India.
- Excise Duty: Excise Duty is levied on all goods manufactured or produced in India.

- Tips

- Think about how quickly you need your money back and pick an investment option accordingly.
- Ensure that you are buying the right type of insurance policy for yourself.
- Remember, not paying taxes can result in penalties ranging from fines to imprisonment.

## - 6.3.5 Online Banking, NEFT, RTGS etc.: What is Online Banking

Internet or online banking allows account holders to access their account from a laptop at any location. In this way, instructions can be issued. To access an account, account holders simply need to use their unique customer ID number and password.

Internet banking can be used to:

- Find out an account balance
- Transfer amounts from one account to another
- Arrange for the issuance of cheques
- Instruct payments to be made
- Request for a cheque book
- Request for a statement of accounts
- Make a fixed deposit

### **Electronic Funds Transfers**

Electronic funds transfer is a convenient way of transferring money from the comfort of one's own home, using integrated banking tools like internet and mobile banking.

Transferring funds via an electronic gateway is extremely convenient. With the help of online banking, you can choose to:

- Transfer funds into your own accounts of the same bank.
- Transfer funds into different accounts of the same bank.
- Transfer funds into accounts in different banks, using NEFT.
- Transfer funds into other bank accounts using RTGS.
- Transfer funds into various accounts using IMPS.

## NEFT -

NEFT stands for National Electronic Funds Transfer. This money transfer system allows you to electronically transfer funds from your respective bank accounts to any other account, either in the same bank or belonging to any other bank. NEFT can be used by individuals, firms and corporate organizations to transfer funds between accounts.

In order to transfer funds via NEFT, two things are required:

- A transferring bank
- A destination bank

Before you can transfer funds through NEFT, you will need to register the beneficiary who will be receiving the funds. In order to complete this registration, you will require the following

- Recipient's name
- Recipient's account number
- Recipient's bank's name
- Recipient's bank's IFSC code

### - RTGS

RTGS stands for Real Time Gross Settlement. This is a real time funds transfer system which enables you to transfer funds from one bank to another, in real time or on a gross basis. The transferred amount is immediately deducted from the account of one bank, and instantly credited to the other bank's account. The RTGS payment gateway is maintained by the Reserve Bank of India. The transactions between banks are made electronically.

RTGS can be used by individuals, companies and firms to transfer large sums of money. Before remitting funds through RTGS, you will need to add the beneficiary and his bank account details via your online banking account. In order to complete this registration, you will require the following information:

- Name of the beneficiary
- Beneficiary's account number
- Beneficiary's bank address
- Beneficiary's bank's IFSC code

## IMPS ·

IMPS stands for Immediate Payment Service. This is a real-time, inter-bank, electronic funds transfer system used to transfer money instantly within banks across India. IMPS enables users to make instant electronic transfer payments using mobile phones through both, Mobile Banking and SMS. It can also be used through ATMs and online banking. IMPS is available 24 hours a day and 7 days a week. The system features a secure transfer gateway and immediately confirms orders that have been fulfilled.

To transfer money through IMPS, the you need to:

- Register for IMPS with your bank
- Receive a Mobile Money Identifier (MMID) from the bank
- Receive a MPIN from the bank

Once you have both these, you can login or make a request through SMS to transfer a particular amount to a beneficiary.

For the beneficiary to receive the transferred money, he must:

- 1. Link his mobile number with his respective account
- 2. Receive the MMID from the bank

In order to initiate a money transfer through IMPS, you will need to enter the following information:

- 1. The beneficiary's mobile number
- 2. The beneficiary's MMID
- 3. The transfer amount
- 4. Your MPIN

As soon as money has been deducted from your account and credited into the beneficiary's account, you will be sent a confirmation SMS with a transaction reference number, for future reference.

## Differences Between NEFT, RTGS & IMPS

Criteria	NEFT	RTGS	IMPS	
Settlement	Done in batches	Real-time	Real-time	
Full form	National Electronic Fund Transfer	Real Time Gross Settlement	Immediate Payment Service	
Timings on Monday – Friday	Timings on 8:00 am – 6:30 pm Nonday – Friday		24x7	
Timings on 8:00 am – 1:00 pm Saturday		9:00 am – 1:30 pm	24x7	
Minimum amount of money transfer limit	`1	`2 lacs	`1	
Maximum amount `10 lacs of money transfer limit		`10 lacs per day	`2 lacs	
Maximum charges as per RBI	Upto 10,000 – `2.5 above 10,000 – 1 lac – `5 above 1 – 2 lacs – `15 above 2 – 5 lacs – `25 above 5 – 10 lacs – `25	above 2 – 5 lacs – `25 above 5 – 10 lacs – `50	Upto 10,000 – `5 above 10,000 – 1 lac – `5 above 1 – 2 lacs – `15	

- Tips 🔍

- Never click on any links in any e-mail message to access your online banking website.
- You will never be asked for your credit or debit card details while using online banking.
- Change your online banking password regularly.

## UNIT 6.4. Preparing for Employment & Self Employment

## Unit Objectives

At the end of this unit, you will be able to:

- 1. Discuss the steps to prepare for an interview
- 2. Discuss the steps to create an effective Resume
- 3. Discuss the most frequently asked interview questions
- 4. Discuss how to answer the most frequently asked interview questions
- 5. Discuss basic workplace terminology

## 6.4.1 Interview Preparation: How to Prepare for an Interview

The success of your getting the job that you want depends largely on how well your interview for that job goes. Therefore, before you go in for your interview, it is important that you prepare for it with a fair amount of research and planning. Take a look at the steps to follow in order to be well prepared for an interview:

- 1. Research the organization that you are having the interview with.
  - Studying the company beforehand will help you be more prepared at the time of the interview. Your knowledge of the organization will help you answer questions at the time of the interview, and will leave you looking and feeling more confident. This is sure to make you stand out from other, not as well informed, candidates.
  - Look for background information on the company. Ty and find an overview of the company and its industry profile.
  - Visit the company website to get a good idea of what the company does. A company
    website offers a wealth of important information. Read and understand the company's
    mission statement. Pay attention to the company's products/services and client list. Read
    through any press releases to get an idea of the company's projected growth and stability.
  - Note down any questions that you have after your research has been completed.
- 2. Think about whether your skills and qualifications match the job requirements.
  - Carefully read through and analyze the job description.
  - Make a note of the knowledge, skills and abilities required to fulfill the job requirements.
  - Take a look at the organization hierarchy. Figure out where the position you are applying for fits into this hierarchy.
- 3. Go through the most typical interview questions asked, and prepare your responses.
  - Remember, in most interviews a mix of resume-based, behavioral and case study questions are asked.
  - Think about the kind of answers you would like to provide to typical questions asked in these three areas.
  - Practice these answers until you can express them confidently and clearly.

#### 4. Plan your attire for the interview.

- It is always safest to opt for formal business attire, unless expressly informed to dress in business casual (in which case you should use your best judgement).
- Ensure that your clothes are clean and well-ironed. Pick neutral colours nothing too bright or flashy.
- The shoes you wear should match your clothes, and should be clean and suitable for an interview.
- Remember, your aim is to leave everyone you meet with the impression that you are a professional and highly efficient person.
- 5. Ensure that you have packed everything that you may require during the interview.
  - Carry a few copies of your resume. Use a good quality paper for your resume print outs.
  - Always take along a notepad and a pen.
  - Take along any information you may need to refer to, in order to fill out an application form.
  - Carry a few samples of your work, if relevant.
- 6. Remember the importance of non-verbal communication.
  - Practice projecting confidence. Remind yourself to smile and make eye contact. Practice giving a firm handshake.
  - Keep in mind the importance of posture. Practice sitting up straight. Train yourself to stop nervous gestures like fidgeting and foot-tapping.
  - Practice keeping your reactions in check. Remember, your facial expressions provide a good insight into your true feelings. Practice projecting a positive image.

#### 7. Make a list of questions to end the interview with.

- Most interviews will end with the interviewer(s) asking if you have any questions. This
  is your chance to show that you have done your research and are interested in learning
  more about the company.
- If the interviewer does not ask you this question, you can inform him/her that you have some queries that you would like to discuss. This is the time for you to refer to the notes you made while studying the company.
- Some good questions to ask at this point are:
  - What do you consider the most important criteria for success in this job?
  - How will my performance be evaluated?
  - o What are the opportunities for advancement?
  - What are the next steps in the hiring process?
- Remember, never ask for information that is easily available on the company website.

## Tips

- Ask insightful and probing questions.
- When communicating, use effective forms of body language like smiling, making eye contact, and actively listening and nodding. Don't slouch, play with nearby items, fidget, chew gum, or mumble.

## 6.4.2 Preparing an Effective Resume: How to Create an Effective Resume

A resume is a formal document that lists a candidate's work experience, education and skills. A good resume gives a potential employer enough information to believe the applicant is worth interviewing. That's why it is so important to create a résumé that is effective. Take a look at the steps to create an effective resume:

### Step 1: Write the Address Section

The Address section occupies the top of your resume. It includes information like your name, address, phone number and e-mail address. Insert a bold line under the section to separate it from rest of your resume.

#### Example:

Jasmine Watts Breach Candy, Mumbai – India Contact No: +91 2223678270 Email: jasmine.watts@gmail.com

### Step 2: Add the Profile Summary Section

This part of your resume should list your overall experiences, achievements, awards, certifications and strengths. You can make your summary as short as 2-3 bullet points or as long as 8-10 bullet points.

Example:

#### **Profile Summary**

- A Content Writer graduated from University of Strathclyde having 6 years of experience in writing website copy.
- Core expertise lies in content creation for e-learning courses, specifically for the K-12 segment.

#### **Step 3: Include Your Educational Qualifications**

When listing your academic records, first list your highest degree. Then add the second highest qualification under the highest one and so on. To provide a clear and accurate picture of your educational background, it is critical that include information on your position, rank, percentage or CPI for every degree or certification that you have listed.

If you have done any certifications and trainings, you can add a Trainings & Certifications section under your Educational Qualifications section.

#### Example:

#### **Educational Qualifications**

- Masters in International Management (2007) from Columbia University with 8.8 CPI.
- Bachelor of Management Studies (2004) from Mumbai University with 87% marks.
- 10+2 with Math, Stats (2001) from Maharashtra Board with 91% marks.
- High School (1999) from Maharashtra Board with 93% marks.

#### Step 4: List Your Technical Skills

When listing your technical skills, start with the skills that you are most confident about. Then add the skills that you do not have as good a command over. It is perfectly acceptable to include just one skill, if you feel that particular skill adds tremendous value to your résumé. If you do not have any technical skills, you can omit this step. **Example:** 

Technical	Skills	

- Flash
- Photoshop

#### Step 5: Insert Your Academic Project Experience

List down all the important projects that you have worked on. Include the following information in this section:

•	Project title	•	Organization	•	Platform used
•	Contribution	•	Description		

Example:

#### **Academic Projects**

Project Title: Different Communication Skills

**Organization**: True Blue Solutions

Platform used: Articulate

Contribution: Content writing and graphic visualization

**Description**: Development of storyboards for corporate induction & training programs

#### **Step 6: List Your Strengths**

This is where you list all your major strengths. This section should be in the form of a bulleted list. **Example:** 

#### Strengths

- Excellent oral, written and presentation skills
- Action-oriented and result-focused
- Great time management skills

#### Step 7: List Your Extracurricular Activities

It is very important to show that you have diverse interests and that your life consists of more than academics. Including your extracurricular activities can give you an added edge over other candidates who have similar academic scores and project experiences. This section should be in the form of a bulleted list.

Extracurricular Activities	
Member of the Debat	e Club
Played tennis at a nati	ional level
• Won first prize in the	All India Camel Contest, 2010
ep 8: Write Your Personal	l Details
ne last section of your résu	umé must include the following personal information:
Date of birth	Gender & marital status
Nationality	Languages known
ample:	
Personal Details	
• Date of birth:	25 <sup>th</sup> May, 1981
Gender & marital stat	us: Female, Single
Nationality:	Indian

## Tips 🖳

- Keep your resume file name short, simple and informational.
- Make sure the resume is neat and free from typing errors.
- Always create your resume on plain white paper.

## 6.4.3 Interview FAQs

Take a look at some of the most frequently asked interview questions, and some helpful tips on how to answer them.

#### Q1. Can you tell me a little about yourself?

#### Tips to answer:

- Don't provide your full employment or personal history.
- Offer 2-3 specific experiences that you feel are most valuable and relevant.
- Conclude with how those experiences have made you perfect for this specific role.

#### Q2. How did you hear about the position?

#### Tips to answer:

- Tell the interviewer how you heard about the job whether it was through a friend (name the friend), event or article (name them) or a job portal (say which one).
- Explain what excites you about the position and what in particular caught your eye about this role.

### Q3. What do you know about the company?

#### Tips to answer:

- Don't recite the company's About Us page.
- Show that you understand and care about the company's goals.
- Explain why you believe in the company's mission and values.

#### Q4. Why do you want this job?

#### Tips to answer:

- Show that you are passionate about the job.
- Identify why the role is a great fit for you.
- Explain why you love the company.

#### Q5. Why should we hire you?

### Tips to answer:

- Prove through your words that you can not only do the work, but can definitely deliver excellent results.
- Explain why you would be a great fit with the team and work culture.
- Explain why you should be chosen over any other candidate.

#### Q6. What are your greatest professional strengths?

#### Tips to answer:

- Be honest share some of your real strengths, rather than give answers that you think sound good.
- Offer examples of specific strengths that are relevant to the position you are applying for.
- Provide examples of how you've demonstrated these strengths.

### Q7. What do you consider to be your weaknesses?

#### Tips to answer:

- The purpose of this question is to gauge your self-awareness and honesty.
- Give an example of a trait that you struggle with, but that you're working on to improve.

### Q8. What are your salary requirements?

### Tips to answer:

- Do your research beforehand and find out the typical salary range for the job you are applying for.
- Figure out where you lie on the pay scale based on your experience, education, and skills.
- Be flexible. Tell the interviewer that you know your skills are valuable, but that you want the job and are willing to negotiate.

### Q9. What do you like to do outside of work?

### Tips to answer:

- The purpose of this question is to see if you will fit in with the company culture.
- Be honest open up and share activities and hobbies that interest and excite you.

### Q10. If you were an animal, which one would you want to be?

### Tips to answer:

- The purpose of this question is to see if you are able to think on your feet.
- There's no wrong answer but to make a great impression try to bring out your strengths or personality traits through your answer.

### Q11: What do you think we could do better or differently?

#### Tips to answer:

- The purpose of this question is to see if you have done your research on the company, and to test whether you can think critically and come up with new ideas.
- Suggest new ideas. Show how your interests and expertise would help you execute these ideas.

### Q12: Do you have any questions for us?

#### Tips to answer:

- Do not ask questions to which the answers can be easily found on the company website or through a quick online search.
- Ask intelligent questions that show your ability to think critically.

## – Tips

- Be honest and confident while answering.
- Use examples of your past experiences wherever possible to make your answers more impactful.

# 6.4.4 Work Readiness – Terms & Terminologies: Basic Workplace Terminology

Every employee should be well versed in the following terms:

- Annual leave: Paid vacation leave given by employers to employees.
- **Background Check:** A method used by employers to verify the accuracy of the information provided by potential candidates.
- Benefits: A part of an employee's compensation package.
- Breaks: Short periods of rest taken by employees during working hours.
- **Compensation Package:** The combination of salary and benefits that an employer provides to his/her employees.
- Compensatory Time (Comp Time): Time off in lieu of pay.
- **Contract Employee:** An employee who works for one organization that sells said employee's services to another company, either on a project or time basis.
- **Contract of Employment:** When an employee is offered work in exchange for wages or salary, and accepts the offer made by the employer, a contract of employment exists.
- **Corporate Culture:** The beliefs and values shared by all the members of a company, and imparted from one generation of employees to another.
- **Counter Offer/Counter Proposal:** A negotiation technique used by potential candidates to increase the amount of salary offered by a company.
- **Cover Letter:** A letter that accompanies a candidate's resume. It emphasizes the important points in the candidate's resume and provides real examples that prove the candidate's ability to perform the expected job role.
- **Curriculum Vitae (CV)/Resume:** A summary of a candidate's achievements, educational background, work experience, skills and strengths.
- **Declining Letter:** A letter sent by an employee to an employer, turning down the job offer made by the employer to the employee.
- **Deductions:** Amounts subtracted from an employee's pay and listed on the employee's pay slip.
- **Discrimination:** The act of treating one person not as favourably as another person.
- Employee: A person who works for another person in exchange for payment.
- **Employee Training:** A workshop or in-house training that an employee is asked to attend by his or her superior, for the benefit of the employer.
- **Employment Gaps:** Periods of unemployed time between jobs.
- **Fixed-Term Contract:** A contract of employment which gets terminated on an agreed-upon date.
- Follow-Up: The act of contacting a potential employer after a candidate has submitted his or her resume.
- Freelancer/Consultant/Independent Contractor: A person who works for him or herself and pitches for temporary jobs and projects with different employers.
- Holiday: Paid time-off from work.
- Hourly Rate: The amount of salary or wages paid for 60 minutes of work.
- **Internship**: A job opportunity offered by an employer to a potential employee, called an intern, to work at the employer's company for a fixed, limited time period.
- **Interview**: A conversation between a potential employee and a representative of an employer, in order to determine if the potential employee should be hired.
- Job Application: A form which asks for a candidate's information like the candidate's name, address, contact details and work experience. The purpose of a candidate submitting a job application, is to show that candidate's interest in working for a particular company.
- **Job Offer**: An offer of employment made by an employer to a potential employee.
- Job Search Agent: A program that enables candidates to search for employment opportunities by selecting criteria listed in the program, for job vacancies.
- Lay Off: A lay off occurs when an employee is temporarily let go from his or her job, due to the employer not having any work for that employee.
- Leave: Formal permission given to an employee, by his or her employer, to take a leave of absence from work.
- Letter of Acceptance: A letter given by an employer to an employee, confirming the offer of employment made by the employer, as well as the conditions of the offer.
- Letter of Agreement: A letter that outlines the terms of employment.
- Letter of Recommendation: A letter written for the purpose of validating the work skills of a person.
- **Maternity Leave**: Leave taken from work by women who are pregnant, or who have just given birth.
- Mentor: A person who is employed at a higher level than you, who offers you advice and guides you in your career.
- Minimum wage: The minimum wage amount paid on an hourly basis.
- **Notice**: An announcement made by an employee or an employer, stating that the employment contract will end on a particular date.
- Offer of Employment: An offer made by an employer to a prospective employee that contains important information pertaining to the job being offered, like the starting date, salary, working conditions etc.
- Open-Ended Contract: A contract of employment that continues till the employer or employee terminates it.
- **Overqualified**: A person who is not suited for a particular job because he or she has too many years of work experience, or a level of education that is much higher than required for the job, or is currently or was previously too highly paid.
- Part-Time Worker: An employee who works for fewer hours than the standard number of hours normally worked.
- **Paternity Leave**: Leave granted to a man who has recently become a father.
- Recruiters/Headhunters/Executive Search Firms: Professionals who are paid by employers to search for people to fill particular positions.
- **Resigning/Resignations**: When an employee formally informs his or her employer that he or she is quitting his or her job.
- **Self-Employed**: A person who has his or her own business and does not work in the capacity of an employee.
- **Time Sheet**: A form that is submitted to an employer, by an employee, that contains the number of hours worked every day by the employee.

# **UNIT 6.5. Understanding Entrepreneurship**

## - Unit Objectives 🛛 🎯

- 1. At the end of this unit, you will be able to:
- 2. Discuss the concept of entrepreneurship
- 3. Discuss the importance of entrepreneurship
- 4. Describe the characteristics of an entrepreneur
- 5. Describe the different types of enterprises
- 6. List the qualities of an effective leader
- 7. Discuss the benefits of effective leadership
- 8. List the traits of an effective team
- 9. Discuss the importance of listening effectively
- 10. Discuss how to listen effectively
- 11. Discuss the importance of speaking effectively
- 12. Discuss how to speak effectively
- 13. Discuss how to solve problems
- 14. List important problem solving traits
- 15. Discuss ways to assess problem solving skills
- 16. Discuss the importance of negotiation
- 17. Discuss how to negotiate
- 18. Discuss how to identify new business opportunities
- 19. Discuss how to identify business opportunities within your business
- 20. Understand the meaning of entrepreneur
- 21. Describe the different types of entrepreneurs
- 22. List the characteristics of entrepreneurs
- 23. Recall entrepreneur success stories
- 24. Discuss the entrepreneurial process
- 25. Describe the entrepreneurship ecosystem
- 26. Discuss the government's role in the entrepreneurship ecosystem
- 27. Discuss the current entrepreneurship ecosystem in India
- 28. Understand the purpose of the Make in India campaign
- 29. Discuss the relationship between entrepreneurship and risk appetite
- 30. Discuss the relationship between entrepreneurship and resilience
- 31. Describe the characteristics of a resilient entrepreneur
- 32. Discuss how to deal with failure

## 6.5.1 Concept Introduction, (Characteristic of an Entrepreneur, types of firms / types of enterprises): Entrepreneurs and Entrepreneurship

Anyone who is determined to start a business, no matter what the risk, is an entrepreneur. Entrepreneurs run their own start-up, take responsibility for the financial risks and use creativity, innovation and vast reserves of self-motivation to achieve success. They dream big and are determined to do whatever it takes to turn their idea into a viable offering. The aim of an entrepreneur is to create an enterprise. The process of creating this enterprise is known as entrepreneurship.

## **Importance of Entrepreneurship**

Entrepreneurship is very important for the following reasons:

- 1. It results in the creation of new organizations
- 2. It brings creativity into the marketplace
- 3. It leads to improved standards of living
- 4. It helps develop the economy of a country

## **Characteristics of Entrepreneurs**

All successful entrepreneurs have certain characteristics in common.

They are all:

- Extremely passionate about their work
- Confident in themselves
- Disciplined and dedicated
- Motivated and driven
- Highly creative
- Visionaries
- Open-minded
- Decisive

Entrepreneurs also have a tendency to:

- Have a high risk tolerance
- Thoroughly plan everything
- Manage their money wisely
- Make their customers their priority
- Understand their offering and their market in detail
- Ask for advice from experts when required
- Know when to cut their losses

## - Examples of Famous Entrepreneurs

Some famous entrepreneurs are:

- Bill Gates (Founder of Microsoft)
- Steve Jobs (Co-founder of Apple)
- Mark Zuckerberg (Founder of Facebook)
- Pierre Omidyar (Founder of eBay)

## **Types of Enterprises**

As an entrepreneur in India, you can own and run any of the following types of enterprises:

#### Sole Proprietorship

In a sole proprietorship, a single individual owns, manages and controls the enterprise. This type of business is the easiest to form with respect to legal formalities. The business and the owner have no separate legal existence. All profit belongs to the proprietor, as do all the losses - the liability of the entrepreneur is unlimited.

#### Partnership

A partnership firm is formed by two or more people. The owners of the enterprise are called partners. A partnership deed must be signed by all the partners. The firm and its partners have no separate legal existence. The profits are shared by the partners. With respect to losses, the liability of the partners is unlimited. A firm has a limited life span and must be dissolved when any one of the partners dies, retires, claims bankruptcy or goes insane.

#### Limited Liability Partnership (LLP)

In a Limited Liability Partnership or LLP, the partners of the firm enjoy perpetual existence as well as the advantage of limited liability. Each partner's liability is limited to their agreed contribution to the LLP. The partnership and its partners have a separate legal existence.

# Tips

- Learn from others' failures.
- Be certain that this is what you want.
- Search for a problem to solve, rather than look for a problem to attach to your idea.

## 6.5.2 Leadership & Teamwork: Leadership and Leaders

Leadership means se翿 ng an example for others to follow. Se翿 ng a good example means not asking someone to do something that you wouldn't willingly want to do yourself. Leadership is about figuring out what to do in order to win as a team, and as a company.

Leaders believe in doing the right things. They also believe in helping others to do the right things. An effective leader is someone who:

- Creates an inspiring vision of the future.
- Motivates and inspires his team to pursue that vision.

## Leadership Qualities That All Entrepreneurs Need

Building a successful enterprise is only possible if the entrepreneur in charge possesses excellent leadership qualities. Some critical leadership skills that every entrepreneur must have are:

- 1. **Pragmatism**: This means having the ability to highlight all obstacles and challenges, in order to resolve issues and reduce risks.
- 2. **Humility**: This means admi翿 ng to mistakes often and early, and being quick to take responsibility for your actions. Mistakes should be viewed as challenges to overcome, not opportunities to point blame.
- 3. **Flexibility**: It is critical for a good leader to be very flexible and quickly adapt to change. It is equally critical to know when to adapt and when not to.
- 4. **Authenticity**: This means showing both, your strengths and your weaknesses. It means being human and showing others that you are human.
- 5. **Reinvention**: This means refreshing or changing your leadership style when necessary. To do this, it's important to learn where your leadership gaps lie and find out what resources are required to close them.
- 6. **Awareness**: This means taking the time to recognize how others view you. It means understanding how your presence affects those around you.

## **Benefits of Effective Leadership**

Effective leadership results in numerous benefits. Great leadership leads to the leader successfully:

- Gaining the loyalty and commitment of the team members
- Motivating the team to work towards achieving the company's goals and objectives
- Building morale and instilling confidence in the team members
- Fostering mutual understanding and team-spirit among team members
- Convincing team members about the need to change when a situation requires adaptability

### **Teamwork and Teams**

Teamwork occurs when the people in a workplace combine their individual skills to pursue a common goal. Effective teams are made up of individuals who work together to achieve this common goal. A great team is one who holds themselves accountable for the end result.

## Importance of Teamwork in Entrepreneurial Success

For an entrepreneurial leader, building an effective team is critical to the success of a venture. An entrepreneur must ensure that the team he builds possesses certain crucial qualities, traits and characteristics. An effective team is one which has:

- 1. **Unity of purpose:** All the team members should clearly understand and be equally committed to the purpose, vision and goals of the team.
- 2. **Great communication skills:** Team members should have the ability to express their concerns, ask questions and use diagrams, and charts to convey complex information.
- 3. **The ability to collaborate:** Every member should feel entitled to provide regular feedback on new ideas.
- 4. **Initiative:** The team should consist of proactive individuals. The members should have the enthusiasm to come up with new ideas, improve existing ideas, and conduct their own research.
- 5. **Visionary members:** The team should have the ability to anticipate problems and act on these potential problem before they turn into real problems.
- 6. **Great adaptability skills:** The team must believe that change is a positive force. Change should be seen as the chance to improve and try new things.
- 7. **Excellent organizational skills:** The team should have the ability to develop standard work processes, balance responsibilities, properly plan projects, and set in place methods to measure progress and ROI.

# – Tips 🍳

- Don't get too attached to your original idea. Allow it to evolve and change.
- Be aware of your weaknesses and build a team that will complement your shortfalls.
- Hiring the right people is not enough. You need to promote or incentivize your most talented people to keep them motivated.
- Earn your team's respect.

## 6.5.3 Communication Skills: Listening & Speaking: The Importance of Listening Effectively

Listening is the ability to correctly receive and understand messages during the process of communication. Listening is critical for effective communication. Without effective listening skills, messages can easily be misunderstood. This results in a communication breakdown and can lead to the sender and the receiver of the message becoming frustrated or irritated.

It's very important to note that listening is not the same as hearing. Hearing just refers to sounds that you hear. Listening is a whole lot more than that. To listen, one requires focus. It means not only paying attention to the story, but also focusing on how the story is relayed, the way language and voice is used, and even how the speaker uses their body language. The ability to listen depends on how effectively one can perceive and understand both, verbal and non-verbal cues.

## • How to Listen Effectively

To listen effectively you should:

- Stop talking
- Stop interrupting
- Focus completely on what is being said
- Nod and use encouraging words and gestures
- Be open-minded
- Think about the speaker's perspective
- Be very, very patient
- Pay attention to the tone that is being used
- Pay attention to the speaker's gestures, facial expressions and eye movements
- Not try and rush the person
- Not let the speaker's mannerisms or habits irritate or distract you

## How to Listen Effectively

How successfully a message gets conveyed depends entirely on how effectively you are able to get it through. An effective speaker is one who enunciates properly, pronounces words correctly, chooses the right words and speaks at a pace that is easily understandable. Besides this, the words spoken out loud need to match the gestures, tone and body language used.

What you say, and the tone in which you say it, results in numerous perceptions being formed. A person who speaks hesitantly may be perceived as having low self-esteem or lacking in knowledge of the discussed topic. Those with a quiet voice may very well be labelled as shy. And those who speak in commanding tones with high levels of clarity, are usually considered to be extremely confident. This makes speaking a very critical communication skill.

## - How to Speak Effectively

To speak effectively you should:

- Incorporate body language in your speech like eye contact, smiling, nodding, gesturing etc.
- Build a draft of your speech before actually making your speech.
- Ensure that all your emotions and feelings are under control.
- Pronounce your words distinctly with the correct pitch and intensity. Your speech should be crystal clear at all times.
- Use a pleasant and natural tone when speaking. Your audience should not feel like you are putting on an accent or being unnatural in any way.
- Use precise and specific words to drive your message home. Ambiguity should be avoided at all costs.
- Ensure that your speech has a logical flow.
- Be brief. Don't add any unnecessary information.
- Make a conscious effort to avoid irritating mannerisms like fidgeting, twitching etc.
- Choose your words carefully and use simple words that the majority of the audience will have no difficulty understanding.
- Use visual aids like slides or a whiteboard.
- Speak slowly so that your audience can easily understand what you're saying. However, be careful not to speak too slowly because this can come across as stiff, unprepared or even condescending.
- Remember to pause at the right moments.

# — Tips 🍳

- If you're finding it difficult to focus on what someone is saying, try repeating their words in your head.
- Always maintain eye contact with the person that you are communicating with, when speaking as well as listening. This conveys and also encourages interest in the conversation.

## 6.5.4 Problem Solving & Negotiation skills: What is a Problem?

As per The Concise Oxford Dictionary (1995), a problem is, "A doubtful or difficult matter requiring a solution"

All problems contain two elements:

1. Goals 2. Obstacles

The aim of problem solving is to recognize the obstacles and remove them in order to achieve the goals.

### **How to Solve Problems**

Solving a problem requires a level of rational thinking. Here are some logical steps to follow when faced with an issue:

Step 1: Identify the problem	Step 2: Study the problem in detail
Step 3: List all possible solutions	Step 4: Select the best solution
Step 5: Implement the chosen solution	Step 6: Check that the problem has really been solved

### Important Traits for Problem Solving

Highly developed problem solving skills are critical for both, business owners and their employees. The following personality traits play a big role in how effectively problems are solved:

- Being open minded
- Being proactive
- Having a positive attitude
- Asking the right questions
- Not panicking
- Focusing on the right problem

## How to Assess for Problem Solving Skills

As an entrepreneur, it would be a good idea to assess the level of problem solving skills of potential candidates before hiring them. Some ways to assess this skill are through:

- 1. **Application forms**: Ask for proof of the candidate's problem solving skills in the application form.
- 2. **Psychometric tests**: Give potential candidates logical reasoning and critical thinking tests and see how they fare.
- 3. **Interviews**: Create hypothetical problematic situations or raise ethical questions and see how the candidates respond.
- 4. **Technical questions**: Give candidates examples of real life problems and evaluate their thought process.

### - What is Negotiation?

Negotiation is a method used to settle differences. The aim of negotiation is to resolve differences through a compromise or agreement while avoiding disputes. Without negotiation, conflicts are likely to lead to resentment between people. Good negotiation skills help satisfy both parties and go a long way towards developing strong relationships.

## Why Negotiate -

Starting a business requires many, many negotiations. Some negotiations are small while others are critical enough to make or break a startup. Negotiation also plays a big role inside the workplace. As an entrepreneur, you need to know not only know how to negotiate yourself, but also how to train employees in the art of negotiation.

### How to Negotiate

Take a look at some steps to help you negotiate:

<b>Step 1:</b> Pre-Negotiation Preparation	Agree on where to meet to discuss the problem, decide who all will be present and set a time limit for the discussion.
<b>Step 2:</b> Discuss the Problem	This involves asking questions, listening to the other side, putting your views forward and clarifying doubts.
<b>Step 3:</b> Clarify the Objective	Ensure that both parties want to solve the same problem and reach the same goal.
<b>Step 4:</b> Aim for a Win-Win Outcome	Try your best to be open minded when negotiating. Compromise and offer alternate solutions to reach an outcome where both parties win.
Step 5: Clearly Define the Agreement	When an agreement has been reached, the details of the agreement should be crystal clear to both sides, with no scope for misunderstandings.
<b>Step 6:</b> Implement the Agreed Upon Solution	Agree on a course of action to set the solution in motion

## Tips 🤇

- Know exactly what you want before you work towards getting it
- Give more importance to listening and thinking, than speaking
- Focus on building a relationship rather than winning
- Remember that your people skills will affect the outcome
- Know when to walk away sometimes reaching an agreement may not be possible

## 6.5.5 Business Opportunities Identification: Entrepreneurs and Opportunities

"The entrepreneur always searches for change, responds to it and exploits it as an opportunity." Peter Drucker

The ability to identify business opportunities is an essential characteristic of an entrepreneur.

## - What is an Opportunity?

The word opportunity suggests a good chance or a favourable situation to do something offered by circumstances.

A business opportunity means a good or favourable change available to run a specific business in a given environment, at a given point of time.

## **Common Questions Faced by Entrepreneurs**

A critical question that all entrepreneurs face is how to go about finding the business opportunity that is right for them.

Some common questions that entrepreneurs constantly think about are:

- Should the new enterprise introduce a new product or service based on an unmet need?
- Should the new enterprise select an existing product or service from one market and offer it in another where it may not be available?
- Should the enterprise be based on a tried and tested formula that has worked elsewhere?

It is therefore extremely important that entrepreneurs must learn how to identify new and existing business opportunities and evaluate their chances of success.

## When is an Idea an Opportunity?

An idea is an opportunity when:

- It creates or adds value to a customer
- It solves a significant problem, removes a pain point or meets a demand
- Has a robust market and profit margin
- Is a good fit with the founder and management team at the right time and place

### Factors to Consider When Looking for Opportunities

Consider the following when looking for business opportunities:

- Economic trends
- Changes in funding
- Changing relationships between vendors, partners and suppliers
- Market trends
- Changes in political support
- Shift in target audience

## - Ways to Identify New Business Opportunities

1. Identify Market Inefficiencies

When looking at a market, consider what inefficiencies are present in the market. Think about ways to correct these inefficiencies.

2. Remove Key Hassles

Rather than create a new product or service, you can innovatively improve a product, service or process.

3. Create Something New

Think about how you can create a new experience for customers, based on existing business models.

4. Pick a Growing Sector/Industry

Research and find out which sectors or industries are growing and think about what opportunities you can tap in the same.

5. Think About Product Differentiation

If you already have a product in mind, think about ways to set it apart from the existing ones.

## Ways to Identify Business Opportunities Within Your Business

1. SWOT Analysis

An excellent way to identify opportunities inside your business is by creating a SWOT analysis. The acronym SWOT stands for strengths, weaknesses, opportunities, and threats. SWOT analysis framework:



Consider the following when looking for business opportunities:

By looking at yourself and your competitors using the SWOT framework, you can uncover opportunities that you can exploit, as well as manage and eliminate threats that could derail your success.

2. Establishing Your USP

Establish your USP and position yourself as different from your competitors. Identify why customers should buy from you and promote that reason.

## - **Opportunity Analysis**

Once you have identified an opportunity, you need to analyze it.

To analyze an opportunity, you must:

- Focus on the idea
- Focus on the market of the idea
- Talk to industry leaders in the same space as the idea
- Talk to players in the same space as the idea

## Tips

- Remember, opportunities are situational.
- Look for a proven track record.
- Avoid the latest craze.
- Love your idea.

(1)

## 6.5.6 Entrepreneurship Support Eco - System: What is an Entrepreneur?

An entrepreneur is a person who:

- Does not work for an employee
- Runs a small enterprise
- Assumes all the risks and rewards of the enterprise, idea, good or service

## **Types of Entrepreneurs**

There are four main types of entrepreneurs:

- 1. **The Traditional Entrepreneur**: This type of entrepreneur usually has some kind of skill they can be a carpenter, mechanic, cook etc. They have businesses that have been around for numerous years like restaurants, shops and carpenters. Typically, they gain plenty of experience in a particular industry before they begin their own business in a similar field.
- 2. **The Growth Potential Entrepreneur**: The desire of this type of entrepreneur is to start an enterprise that will grow, win many customers and make lots of money. Their ultimate aim is to eventually sell their enterprise for a nice profit. Such entrepreneurs usually have a science or technical background.
- 3. **The Project-Oriented Entrepreneur**: This type of entrepreneur generally has a background in the Arts or psychology. Their enterprises tend to be focus on something that they are very passionate about.
- 4. **The Lifestyle Entrepreneur**: This type of entrepreneur has usually worked as a teacher or a secretary. They are more interested in selling something that people will enjoy, rather than making lots of money.

## **Characteristics of an Entrepreneur**

Successful entrepreneurs have the following characteristics:

- They are highly motivated
- They are creative and persuasive
- They are mentally prepared to handle each and every task
- They have excellent business skills they know how to evaluate their cash flow, sales and revenue
- They are willing to take great risks
- They are very proactive this means they are willing to do the work themselves, rather than wait for someone else to do it
- They have a vision they are able to see the big picture
- They are flexible and open-minded
- They are good at making decisions

## - Entrepreneur Success Stories

#### Dhiru Bhai Ambani

Dhirubhai Ambani began his entrepreneurial career by selling "bhajias" to pilgrims in Mount Girnar on weekends. At 16, he moved to Yemen where he worked as a gas-station attendant, and as a clerk in an oil company. He returned to India with Rs. 50,000 and started a textile trading company. Reliance went on to become the first Indian company to raise money in global markets and the first Indian company to feature in Forbes 500 list.

#### Dr. Karsanbhai Patel

Karsanbhai Patel made detergent powder in the backyard of his house. He sold his product door-to-door and offered a money back guarantee with every pack that was sold. He charged Rs. 3 per kg when the cheapest detergent at that time was Rs.13 per kg. Dr. Patel eventually started Nirma which became a whole new segment in the Indian domestic detergent market.

## **The Entrepreneurial Process**

Let's take a look at the stages of the entrepreneurial process.

**Stage 1**: Idea Generation. The entrepreneurial process begins with an idea that has been thought of by the entrepreneur. The idea is a problem that has the potential to be solved.

**Stage 2**: Germination or Recognition. In this stage a possible solution to the identified problem is thought of.

**Stage 3**: Preparation or Rationalization. The problem is studied further and research is done to find out how others have tried to solve the same problem.

**Stage 4**: Incubation or Fantasizing. This stage involves creative thinking for the purpose of coming up with more ideas. Less thought is given to the problem areas.

**Stage 5**: Feasibility Study: The next step is the creation of a feasibility study to determine if the idea will make a profit and if it should be seen through.

**Stage 6**: Illumination or Realization. This is when all uncertain areas suddenly become clear. The entrepreneur feels confident that his idea has merit.

**Stage 7**: Verification or Validation. In this final stage, the idea is verified to see if it works and if it is useful.

Take a look at the diagram below to get a better idea of this process.



### - What is an Entrepreneur?

The entrepreneurship support ecosystem signifies the collective and complete nature of entrepreneurship. New companies emerge and flourish not only because of the courageous, visionary entrepreneurs who launch them, but they thrive as they are set in an environment or 'ecosystem' made of private and public participants. These players nurture and sustain the new ventures, facilitating the entrepreneurs' efforts.

An entrepreneurship ecosystem comprises of the following six domains:

- 1. **Favourable Culture:** This includes elements such as tolerance of risk and errors, valuable networking and positive social standing of the entrepreneur.
- 2. **Facilitating Policies & Leadership:** This includes regulatory framework incentives and existence of public research institutes.
- 3. **Financing Options:** Angel financing, venture capitalists and micro loans would be good examples of this.
- 4. **Human Capital:** This refers to trained and untrained labour, entrepreneurs and entrepreneurship training programmes, etc.
- 5. **Conducive Markets for Products & Services:** This refers to an existence or scope of existence of a market for the product/service.
- 6. **Institutional & Infrastructural Support:** This includes legal and financing advisers, telecommunications, digital and transportation infrastructure, and entrepreneurship networking programmes.

These domains indicate whether there is a strong entrepreneurship support ecosystem and what actions should the government put in place to further encourage this ecosystem. The six domains and their various elements have been graphically depicted.

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• O ince customer sviews	pen aoor tor aavocate ntrepreneurship strategy	<ul> <li>Financial support e.g. for R&amp;D, jump start fur</li> </ul>	• Ve Ids leg	:nture-friendly gislation
ution channels	gency, crisis and challeng	se Regulatory framework	• e.	g. Bankruptcy,
Networks		incentives e g Tax henifits	CO	ntract enforcement, pro-
<ul> <li>Entrepreneure's networks</li> <li>Discours networks</li> </ul>	Policy			נו נין דוקורט, מוומ ומסכמו
<ul> <li>Diaspora networks</li> <li>Multinational corporations</li> </ul>		Financial	Capital	-
-	Market	Finance     Angel inv	ans estors, fri- •	venture capital runds Private equity
Labour		ends and	family •	Public capital markets
<ul> <li>Skilled and unskilled</li> <li>Serial entrepreneures</li> </ul>	Entrepreneu	Zero-stag     capital     capital	e venture	Debt
<ul> <li>Later generation family</li> </ul>		Success S	tories	
stitutions	Human	• Visible s	uccesses	
es (professional and academic)	Capital	Wealth      Wealth      Internat	generation for fo ional reputatior	ounders r
	Support	Societal n	orms	
Infrastructure		- Tolor	of rich mictaly	
<ul> <li>Telecommunications</li> <li>Transportation &amp; logistics</li> </ul>		Innovatic     Social sta	r or risk, misuake in, creativity, ex tus of entreprei	es, lallure perimentation neur
• Energy		Wealth c	reation	
<ul> <li>Zones, incubation centers, cluster</li> </ul>	rs Non-Government In:	stitution • Ambition	, drive, hunger	
Support Professions	<ul> <li>Entrepreneurship</li> <li>promotion in</li> </ul>	Conferences		
• Legal	non-profits			
<ul> <li>Accounting</li> <li>Investment bankers</li> </ul>	<ul> <li>Business plan</li> <li>contests</li> </ul>	Entrepreneur- fri- endly association		

Every entrepreneurship support ecosystem is unique and all the elements of the ecosystem are interdependent. Although every region's entrepreneurship ecosystem can be broadly described by the above features, each ecosystem is the result of the hundred elements interacting in highly complex and particular ways.

Entrepreneurship ecosystems eventually become (largely) self-sustaining. When the six domains are resilient enough, they are mutually beneficial. At this point, government involvement can and should be significantly minimized. Public leaders do not need to invest a lot to sustain the ecosystem. It is imperative that the entrepreneurship ecosystem incentives are formulated to be self-liquidating, hence focusing on sustainability of the environment.

# - Government's Role in the Entrepreneurship Ecosystem

Encouraging new ventures is a major focus for policymakers. Governments across the world are recognizing that new businesses flourish in distinctive types of supportive environments. Policymakers should study the scenario and take into account the following points whilst they formulate policies and regulations that enable successful entrepreneurship support ecosystems.

- 1. Policymakers should avoid regulations that discourage new entrants and work towards building efficient methods for business startups. Policies and regulations that favour existing, dominant firms over entrepreneurial ventures, restrict competition and obstruct entry for new companies.
- Instead of developing policies conceptually intended to correct market failures, policymakers should interact with entrepreneurs and understand the challenges faced by them. The feedback should be used to develop policies that incite idea exploration, product development and increased rates of deal flow.
- 3. Entrepreneurial supporters should create a database that enables identifying who the participants in the ecosystem are and how they are connected. These ecosystem maps are useful tools in developing engagement strategies.
- 4. Disruptions are unavoidable in economic and social life. However, it's important to note that economic disruption gives rise to entrepreneurial opportunities. Architects of the entrepreneurship ecosystems (entrepreneurs, mentors, policymakers and consumers,) should anticipate these dips, thus capitalizing on the opportunities they create.

The need for effective strategies to enable local entrepreneurship support ecosystems is a practical one. Better understanding of the actual ecosystems provides a framework within which policy makers can ask relevant questions, envisage more efficient approaches, and assess ensuing outcomes.

## **Snapshot of the Entrepreneurship Ecosystem in India**

Entrepreneurship has earned a newfound respect in India. Many Indians, with exposure to the world of business, who traditionally would have opted for a job, are setting up their own ventures. Many elements of the entrepreneurship ecosystem are beginning to come together. For example, increase in venture capitalists, government schemes and incubators, academia industry linkages, and emerging clusters and support to rural economy. All these initiatives are effective but there is a need to scale up and enrich the ecosystem further in the following ways:

- 1. We need to review our attitude towards failures and accept them as learning experiences.
- 2. We must encourage the educated to become entrepreneurs and provide students in schools and colleges with entrepreneurship skills.

- 3. Universities, research labs and the government need to play the role of enablers in the entrepreneurship support ecosystem.
- 4. Policymakers need to focus on reducing the obstacles such as corruption, red tape and bureaucracy.
- 5. We need to improve our legal systems and court international venture capital firms and bring them to India.
- 6. We must devise policies and methods to reach the secondary and tertiary towns in India, where people do not have access to the same resources available in the cities.

Today, there is a huge opportunity in this country to introduce innovative solutions that are capable of scaling up, and collaborating within the ecosystem as well as enriching it.

### Make in India Campaign

Every entrepreneur has certain needs. Some of their important needs are:

- To easily get loans
- To easily find investors
- To get tax exemptions
- To easily access resources and good infrastructure
- To enjoy a procedure that is free of hassles and is quick
- To be able to easily partner with other firms

The Make in India campaign, launched by Prime Minister Modi aims to satisfy all these needs of young, aspiring entrepreneurs. Its objective is to:

- Make investment easy
- Support new ideas
- Enhance skill development
- Safeguard the ideas of entrepreneurs
- Create state-of-the-art facilities for manufacturing goods

# Tips

- Research the existing market, network with other entrepreneurs, venture capitalists, angel investors, and thoroughly review the policies in place to enable your entrepreneurship.
- Failure is a stepping stone and not the end of the road. Review yours and your peers' errors and correct them in your future venture.
- Be proactive in your ecosystem. Identify the key features of your ecosystem and enrich them to ensure self-sustainability of your entrepreneurship support ecosystem.

## 6.5.7 Risk Appetite & Resilience: Entrepreneurship and Risk

Entrepreneurs are inherently risk takers. They are path-makers not path-takers. Unlike a normal, cautious person, an entrepreneur would not think twice about quitting his job (his sole income) and taking a risk on himself and his idea.

An entrepreneur is aware that while pursuing his dreams, assumptions can be proven wrong and unforeseen events may arise. He knows that after dealing with numerous problems, success is still not guaranteed. Entrepreneurship is synonymous with the ability to take risks. This ability, called risk-appetite, is an entrepreneurial trait that is partly genetic and partly acquired.

## What is Risk Appetite?

Risk appetite is defined as the extent to which a company is equipped to take risk, in order to achieve its objectives. Essentially, it refers to the balance, struck by the company, between possible profits and the hazards caused by changes in the environment (economic ecosystem, policies, etc.). Taking on more risk may lead to higher rewards but have a high probability of losses as well. However, being too conservative may go against the company as it can miss out on good opportunities to grow and reach their objectives.

The levels of risk appetite can be broadly categorized as "low", "medium" and "high." The company's entrepreneur(s) have to evaluate all potential alternatives and select the option most likely to succeed. Companies have varying levels of risk appetites for different objectives. The levels depend on:

- The type of industry
- Market pressures
- Company objectives

For example, a startup with a revolutionary concept will have a very high risk appetite. The startup can afford short term failures before it achieves longer term success. This type of appetite will not remain constant and will be adjusted to account for the present circumstances of the company.

## **Risk Appetite Statement**

Companies have to define and articulate their risk appetite in sync with decisions made about their objectives and opportunities. The point of having a risk appetite statement is to have a framework that clearly states the acceptance and management of risk in business. It sets risk taking limits within the company. The risk appetite statement should convey the following:

- The nature of risks the business faces.
- Which risks the company is comfortable taking on and which risks are unacceptable.
- How much risk to accept in all the risk categories.
- The desired tradeoff between risk and reward.
- Measures of risk and methods of examining and regulating risk exposures.

## - Entrepreneurship and Resilience

Entrepreneurs are characterized by a set of qualities known as resilience. These qualities play an especially large role in the early stages of developing an enterprise. Risk resilience is an extremely valuable characteristic as it is believed to protect entrepreneurs against the threat of challenges and changes in the business environment.

## What is Entrepreneurial Resilience? -

Resilience is used to describe individuals who have the ability to overcome setbacks related to their life and career aspirations. A resilient person is someone who is capable of easily and quickly recovering from setbacks. For the entrepreneur, resilience is a critical trait. Entrepreneurial resilience can be enhanced in the following ways:

- By developing a professional network of coaches and mentors
- By accepting that change is a part of life
- By viewing obstacles as something that can be overcome

### **Characteristics of a Resilient Entrepreneur**

The characteristics required to make an entrepreneur resilient enough to go the whole way in their business enterprise are:

- A strong internal sense of control
- Strong social connections
- Skill to learn from setbacks
- Ability to look at the bigger picture
- Ability to diversify and expand
- Survivor attitude
- Cash-flow conscious habits
- Attention to detail

# Tips

- Cultivate a great network of clients, suppliers, peers, friends and family. This will not only help you promote your business, but will also help you learn, identify new opportunities and stay tuned to changes in the market.
- Don't dwell on setbacks. Focus on what the you need to do next to get moving again.
- While you should try and curtail expenses, ensure that it is not at the cost of your growth.

## 6.5.8 Success & Failures: Understanding Successes and Failures in Entrepreneurship

Shyam is a famous entrepreneur, known for his success story. But what most people don't know, is that Shyam failed numerous times before his enterprise became a success. Read his interview to get an idea of what entrepreneurship is really about, straight from an entrepreneur who has both, failed and succeeded.

**Interviewer**: Shyam, I have heard that entrepreneurs are great risk-takers who are never afraid of failing. Is this true?

**Shyam**: Ha ha, no of course it's not true! Most people believe that entrepreneurs need to be fearlessly enthusiastic. But the truth is, fear is a very normal and valid human reaction, especially when you are planning to start your own business! In fact, my biggest fear was the fear of failing. The reality is, entrepreneurs fail as much as they succeed. The trick is to not allow the fear of failing to stop you from going ahead with your plans. Remember, failures are lessons for future success!

Interviewer: What, according to you, is the reason that entrepreneurs fail?

**Shyam**: Well, there is no one single reason why entrepreneurs fail. An entrepreneur can fail due to numerous reasons. You could fail because you have allowed your fear of failure to defeat you. You could fail because you are unwilling to delegate (distribute) work. As the saying goes, "You can do anything, but not everything!" You could fail because you gave up too easily – maybe you were not persistent enough. You could fail because you were focusing your energy on small, insignificant tasks and ignoring the tasks that were most important. Other reasons for failing are partnering with the wrong people, not being able to sell your product to the right customers at the right time at the right price... and many more reasons!

Interviewer: As an entrepreneur, how do you feel failure should be looked at?

**Shyam**: I believe we should all look at failure as an asset, rather than as something negative. The way I see it, if you have an idea, you should try to make it work, even if there is a chance that you will fail. That's because not trying is failure right there, anyway! And failure is not the worst thing that can happen. I think having regrets because of not trying, and wondering 'what if' is far worse than trying and actually failing.

Interviewer: How did you feel when you failed for the first time?

**Shyam:** I was completely heartbroken! It was a very painful experience. But the good news is, you do recover from the failure. And with every subsequent failure, the recovery process gets a lot easier. That's because you start to see each failure more as a lesson that will eventually help you succeed, rather than as an obstacle that you cannot overcome. You will start to realize that failure has many benefits.

Interviewer: Can you tell us about some of the benefits of failing?

**Shyam:** One of the benefits that I have experienced personally from failing is that the failure made me see things in a new light. It gave me answers that I didn't have before. Failure can make you a lot stronger. It also helps keep your ego in control.

**Interviewer:** What advice would you give entrepreneurs who are about to start their own enterprises?

**Shyam:** I would tell them to do their research and ensure that their product is something that is actually wanted by customers. I'd tell them to pick their partners and employees very wisely and cautiously. I'd tell them that it's very important to be aggressive – push and market your product as aggressively as possible. I would warn them that starting an enterprise is very

expensive and that they should be prepared for a situation where they run out of money.

I would tell them to create long term goals and put a plan in action to achieve that goal. I would tell them to build a product that is truly unique. Be very careful and ensure that you are not copying another startup. Lastly, I'd tell them that it's very important that they find the right investors.

**Interviewer:** That's some really helpful advice, Shyam! I'm sure this will help all entrepreneurs to be more prepared before they begin their journey! Thank you for all your insight!

# – Tips 🏼

- Remember that nothing is impossible.
- Identify your mission and your purpose before you start.
- Plan your next steps don't make decisions hastily.

# **UNIT 6.6: Preparing to be an Entrepreneur**

## - Unit Objectives

#### At the end of this unit, you will be able to:

- 1. Discuss how market research is carried out
- 2. Describe the 4 Ps of marketing
- 3. Discuss the importance of idea generation
- 4. Recall basic business terminology
- 5. Discuss the need for CRM
- 6. Discuss the benefits of CRM
- 7. Discuss the need for networking
- 8. Discuss the benefits of networking
- 9. Understand the importance of setting goals
- 10. Differentiate between short-term, medium-term and long-term goals
- 11. Discuss how to write a business plan
- 12. Explain the financial planning process
- 13. Discuss ways to manage your risk
- 14. Describe the procedure and formalities for applying for bank finance
- 15. Discuss how to manage your own enterprise
- 16. List important questions that every entrepreneur should ask before starting an enterprise

## 6.6.1 Market Study / The 4 Ps of Marketing / Importance of an IDEA: Understanding Market Research

Market research is the process of gathering, analyzing and interpreting market information on a product or service that is being sold in that market. It also includes information on:

- Past, present and prospective customers
- Customer characteristics and spending habits
- The location and needs of the target market
- The overall industry
- Relevant competitors

Market research involves two types of data:

- Primary information. This is research collected by yourself or by someone hired by you.
- Secondary information. This is research that already exists and is out there for you to find and use.

#### **Primary research**

Primary research can be of two types:

- Exploratory: This is open-ended and usually involves detailed, unstructured interviews.
- Specific: This is precise and involves structured, formal interviews. Conducting specific research is the more expensive than conducting exploratory research.

#### Secondary research

Secondary research uses outside information. Some common secondary sources are:

- Public sources: These are usually free and have a lot of good information. Examples are government departments, business departments of public libraries etc.
- Commercial sources: These offer valuable information but usually require a fee to be paid. Examples are research and trade associations, banks and other financial institutions etc.
- Educational institutions: These offer a wealth of information. Examples are colleges, universities, technical institutes etc.

## The 4 Ps of Marketing

The 4 Ps of marketing are Product, Price, Promotion and Place. Let's look at each of these 4 Ps in detail.

### Product -

A product can be:

A tangible good
 An intangible service

Whatever your product is, it is critical that you have a clear understanding of what you are offering, and what its unique characteristics are, before you begin with the marketing process.

Some questions to ask yourself are:

- What does the customer want from the product/service?
- What needs does it satisfy?
- Are there any more features that can be added?
- Does it have any expensive and unnecessary features?
- How will customers use it?
- What should it be called?
- How is it different from similar products?
- How much will it cost to produce?
- Can it be sold at a profit?

### - Price

Once all the elements of Product have been established, the Price factor needs to be considered. The Price of a Product will depend on several factors such as profit margins, supply, demand and the marketing strategy.

Some questions to ask yourself are:

- What is the value of the product/service to customers?
- Do local products/services have established price points?
- Is the customer price sensitive?
- Should discounts be offered?
- How is your price compared to that of your competitors?

### Promotion

Once you are certain about your Product and your Price, the next step is to look at ways to promote it. Some key elements of promotion are advertising, public relations, social media marketing, email marketing, search engine marketing, video marketing and more.

Some questions to ask yourself are:

- Where should you promote your product or service?
- What is the best medium to use to reach your target audience?
- When would be the best time to promote your product?
- How are your competitors promoting their products?

### Place -

According to most marketers, the basis of marketing is about offering the right product, at the right price, at the right place, at the right time. For this reason, selecting the best possible location is critical for converting prospective clients into actual clients.

Some questions to ask yourself are:

- Will your product or service be looked for in a physical store, online or both?
- What should you do to access the most appropriate distribution channels?
- Will you require a sales force?
- Where are your competitors offering their products or services?
- Should you follow in your competitors' footsteps?
- Should you do something different from your competitors?

### Importance of an IDEA -

Ideas are the foundation of progress. An idea can be small or ground-breaking, easy to accomplish or extremely complicated to implement. Whatever the case, the fact that it is an idea gives it merit. Without ideas, nothing is possible. Most people are afraid to speak out their ideas, out for fear of being ridiculed. However, if are an entrepreneur and want to remain competitive and innovative, you need to bring your ideas out into the light.

Some ways to do this are by:

- Establishing a culture of brainstorming where you invite all interested parties to contribute
- Discussing ideas out loud so that people can add their ideas, views, opinions to them
- Being open minded and not limiting your ideas, even if the idea who have seems ridiculous
- Not discarding ideas that you don't work on immediately, but instead making a note of them and shelving them so they can be revisited at a later date

Tips

- Keep in mind that good ideas do not always have to be unique.
- Remember that timing plays a huge role in determining the success of your idea.
- Situations and circumstances will always change, so be flexible and adapt your idea accordingly.

## 6.6.2 Business Entity Concepts: Basic Business Terminology

If your aim is to start and run a business, it is crucial that you have a good understanding of basic business terms. Every entrepreneur should be well versed in the following terms:

- Accounting: A systematic method of recording and reporting financial transactions.
- Accounts payable: Money owed by a company to its creditors.
- Accounts Receivable: The amount a company is owed by its clients.
- Assets: The value of everything a company owns and uses to conduct its business.
- Balance Sheet: A snapshot of a company's assets, liabilities and owner's equity at a given moment.
- Bottom Line: The total amount a business has earned or lost at the end of a month.
- Business: An organization that operates with the aim of making a profit.
- Business to Business (B2B): A business that sells goods or services to another business.
- Business to Consumer (B2C): A business that sells goods or services directly to the end user.
- Capital: The money a business has in its accounts, assets and investments. The two main types of capital are debt and equity.
- Cash Flow: The overall movement of funds through a business each month, including income and expenses.
- Cash Flow Statement: A statement showing the money that entered and exited a business during a specific period of time.
- Contract: A formal agreement to do work for pay.
- Depreciation: The degrading value of an asset over time.
- Expense: The costs that a business incurs through its operations.
- Finance: The management and allocation of money and other assets.
- Financial Report: A comprehensive account of a business' transactions and expenses.
- Fixed Cost: A one-time expense.
- Income Statement (Profit and Loss Statement): Shows the profitability of a business during a period of time.
- Liabilities: The value of what a business owes to someone else.
- Marketing: The process of promoting, selling and distributing a product or service.
- Net Income/Profit: Revenues minus expenses.
- Net Worth: The total value of a business.
- Payback Period: The amount of time it takes to recover the initial investment of a business.
- Profit Margin: The ratio of profit, divided by revenue, displayed as a percentage.
- Return on Investment (ROI): The amount of money a business gets as return from an investment.

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- Revenue: The total amount of income before expenses are subtracted.
- Sales Prospect: A potential customer.
- Supplier: A provider of supplies to a business.
- Target Market: A specific group of customers at which a company's products and services are aimed.
- Valuation: An estimate of the overall worth of the business.
- Variable Cost: Expenses that change in proportion to the activity of a business.
- Working Capital: Calculated as current assets minus current liabilities.

## – 6.6.3 CRM & Networking: What is CRM?

CRM stands for Customer Relationship Management. Originally the expression Customer Relationship Management meant managing one's relationship with customers. However, today it refers to IT systems and software designed to help companies manage their relationships.

## The Need for CRM -

The better a company can manage its relationships with its customers, the higher the chances of the company's success. For any entrepreneur, the ability to successfully retain existing customers and expand the enterprise is paramount. This is why IT systems that focus on addressing the problems of dealing with customers on a daily basis are becoming more and more in demand.

Customer needs change over time, and technology can make it easier to understand what customers really want. This insight helps companies to be more responsive to the needs of their customers. It enables them to modify their business operations when required, so that their customers are always served in the best manner possible. Simply put, CRM helps companies recognize the value of their clients and enables them to capitalize on improved customer relations.

### **Benefits of CRM**

CRM has a number of important benefits:

- It helps improve relations with existing customers which can lead to:
  - Increased sales

Identification of customer needs

Cross-selling of products

- It results in better marketing of one's products or services
- It enhances customer satisfaction and retention
- It improves profitability by identifying and focusing on the most profitable customers

## • 6.3.4 What is Networking? -

In business, networking means leveraging your business and personal connections in order to bring in a regular supply of new business. This marketing method is effective as well as low cost. It is a great way to develop sales opportunities and contacts. Networking can be based on referrals and introductions, or can take place via phone, email, and social and business networking websites.

## - 6.3.5 The Need for Networking

Networking is an essential personal skill for business people, but it is even more important for entrepreneurs. The process of networking has its roots in relationship building. Networking results in greater communication and a stronger presence in the entrepreneurial ecosystem. This helps build strong relationships with other entrepreneurs.

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Business networking events held across the globe play a huge role in connecting like-minded entrepreneurs who share the same fundamental beliefs in communication, exchanging ideas and converting ideas into realities. Such networking events also play a crucial role in connecting entrepreneurs with potential investors. Entrepreneurs may have vastly different experiences and backgrounds but they all have a common goal in mind – they all seek connection, inspiration, advice, opportunities and mentors. Networking offers them a platform to do just that.

## **Benefits of Networking**

Networking offers numerous benefits for entrepreneurs. Some of the major benefits are:

- Getting high quality leads
- Increased business opportunities
- Good source of relevant connections
- Advice from like-minded entrepreneurs
- Gaining visibility and raising your profile
- Meeting positive and enthusiastic people
- Increased self-confidence
- Satisfaction from helping others
- Building strong and lasting friendships

# Tips

- Use social media interactions to identify needs and gather feedback.
- When networking, ask open-ended questions rather than yes/no type questions.

## – 6.6.4 Business Plan: Why Set Goals

Setting goals is important because it gives you long-term vision and short-term motivation. Goals can be short term, medium term and long term.

#### Short-Term Goals

• These are specific goals for the immediate future.

**Example**: Repairing a machine that has failed.

#### **Medium-Term Goals**

- These goals are built on your short term goals.
- They do not need to be as specific as your short term goals.

Example: Arranging for a service contract to ensure that your machines don't fail again.

#### Long-Term Goals

These goals require time and planning.

They usually take a year or more to achieve.

Example: Planning your expenses so you can buy new machinery

## - Why Create a Business Plan

A business plan is a tool for understanding how your business is put together. It can be used to monitor progress, foster accountable and control the fate of the business. It usually offers a 3-5 year projection and outlines the plan that the company intends to follow to grow its revenues. A business plan is also a very important tool for getting the interest of key employees or future investors.

A business plan typically comprises of eight elements.

## **Elements of a Business Plan**

#### **Executive Summary**

The executive summary follows the title page. The summary should clearly state your desires as the business owner in a short and businesslike way. It is an overview of your business and your plans. Ideally this should not be more than 1-2 pages.

Your Executive Summary should include:

• The Mission Statement: Explain what your business is all about.

#### **Example: Nike's Mission Statement**

Nike's mission statement is "To bring inspiration and innovation to every athlete in the world."

- Company Information: Provide information like when your business was formed, the names and roles of the founders, the number of employees, your business location(s) etc.
- Growth Highlights: Mention examples of company growth. Use graphs and charts where possible.
- Your Products/Services: Describe the products or services provided.
- Financial Information: Provide details on current bank and investors.
- Summarize future plans: Describe where you see your business in the future.

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A business plan typically comprises of eight elements.

## **Elements of a Business Plan**

#### **Executive Summary**

The executive summary follows the title page. The summary should clearly state your desires as the business owner in a short and businesslike way. It is an overview of your business and your plans. Ideally this should not be more than 1-2 pages.

Your Executive Summary should include:

• The Mission Statement: Explain what your business is all about.

#### **Example: Nike's Mission Statement**

Nike's mission statement is "To bring inspiration and innovation to every athlete in the world."

- Company Information: Provide information like when your business was formed, the names and roles of the founders, the number of employees, your business location(s) etc.
- Growth Highlights: Mention examples of company growth. Use graphs and charts where possible.
- Your Products/Services: Describe the products or services provided.
- Financial Information: Provide details on current bank and investors.
- Summarize future plans: Describe where you see your business in the future.

#### **Business Description**

The second section of your business plan needs to provide a detailed review of the different elements of your business. This will help potential investors to correctly understand your business goal and the uniqueness of your offering.

Your Business Description should include:

- A description of the nature of your business
- The market needs that you are aiming to satisfy
- The ways in which your products and services meet these needs
- The specific consumers and organizations that you intend to serve
- Your specific competitive advantages

#### **Market Analysis**

The market analysis section usually follows the business description. The aim of this section is to showcase your industry and market knowledge. This is also the section where you should lay down your research findings and conclusions.

Your Market Analysis should include:

- Your industry description and outlook
- Information on your target market
- The needs and demographics of your target audience
- The size of your target market
- The amount of market share you want to capture
- Your pricing structure
- Your competitive analysis
- Any regulatory requirements

#### **Organization & Management**

This section should come immediately after the Market Analysis.

Your Organization & Management section should include:

- Your company's organizational structure
- Details of your company's ownership
- Details of your management team
- Qualifications of your board of directors
- Detailed descriptions of each division/department and its function
- The salary and benefits package that you offer your people
- The incentives that you offer

#### Service or Product Line

The next section is the service or product line section. This is where you describe your service or product, and stress on their benefits to potential and current customers. Explain in detail why your product of choice will fulfill the needs of your target audience.
Your Service or Product Line section should include:

- A description of your product/service
- A description of your product or service's life cycle
- A list of any copyright or patent filings
- A description of any R&D activities that you are involved in or planning

### Marketing & Sales

Once the Service or Product Line section of your plan has been completed, you should start on the description of the marketing and sales management strategy for your business. Your Marketing section should include the following strategies:

- **Market penetration strategy**: This strategy focuses on selling your existing products or services in existing markets, in order to increase your market share.
- **Growth strategy**: This strategy focuses on increasing the amount of market share, even if it reduces earnings in the short-term.
- **Channels of distribution strategy**: These can be wholesalers, retailers, distributers and even the internet.
- **Communication strategy**: These can be written strategies (e-mail, text, chat), oral strategies (phone calls, video chats, face-to-face conversations), non-verbal strategies (body language, facial expressions, tone of voice) and visual strategies (signs, webpages, illustrations).

Your Sales section should include the following information:

- A salesforce strategy: This strategy focuses on increasing the revenue of the enterprise.
- A breakdown of your sales activities: This means detailing out how you intend to sell your products or services will you sell it offline or online, how many units do you intend to sell, what price do you plan to sell each unit at, etc.

### **Funding Request**

This section is specifically for those who require funding for their venture.

The Funding Request section should include the following information:

- How much funding you currently require.
- How much funding you will require over the next five years. This will depend on your long-term goals.
- The type of funding you want and how you plan to use it. Do you want funding that can be used only for a specific purpose, or funding that can be used for any kind of requirement?
- Strategic plans for the future. This will involve detailing out your long-term plans what these plans are and how much money you will require to put these plans in motions.
- Historical and prospective financial information. This can be done by creating and maintaining all your financial records, right from the moment your enterprise started, to the present day. Documents required for this are your balance sheet which contains details of your company's assets and liabilities, your income statement which lists your company's revenues, expenses and net income for the year, your tax returns (usually for the last three years) and your cash flow budget which lists the cash that came in, the cash that went out and states whether you had a cash deficit (negative balance) or surplus (positive balance) at the end of each month.

#### **Financial Planning**

Before you begin building your enterprise, you need to plan your finances. Take a look at the steps for financial planning:

**Step 1**: Create a financial plan. This should include your goals, strategies and timelines for accomplishing these goals.

**Step 2**: Organize all your important financial documents. Maintain a file to hold your investment details, bank statements, tax papers, credit card bills, insurance papers and any other financial records.

**Step 3**: Calculate your net worth. This means figure out what you own (assets like your house, bank accounts, investments etc.), and then subtract what you owe (liabilities like loans, pending credit card amounts etc.) the amount you are left with is your net worth.

**Step 4**: Make a spending plan. This means write down in detail where your money will come from, and where it will go.

**Step 5**: Build an emergency fund. A good emergency fund contains enough money to cover at least 6 months' worth of expenses.

**Step 6**: Set up your insurance. Insurance provides long term financial security and protects you against risk.

#### **Risk Management**

As an entrepreneur, it is critical that you evaluate the risks involved with the type of enterprise that you want to start, before you begin setting up your company. Once you have identified potential risks, you can take steps to reduce them. Some ways to manage risks are:

- Research similar business and find out about their risks and how they were minimized.
- Evaluate current market trends and find out if similar products or services that launched a while ago are still being well received by the public.
- Think about whether you really have the required expertise to launch your product or service.
- Examine your finances and see if you have enough income to start your enterprise.
- Be aware of the current state of the economy, consider how the economy may change over time, and think about how your enterprise will be affected by any of those changes.
- Create a detailed business plan.

### – Tips

- Ensure all the important elements are covered in your plan.
- Scrutinize the numbers thoroughly.
- Be concise and realistic.
- Be conservative in your approach and your projections.
- Use visuals like charts, graphs and images wherever possible.

### 6.6.5 Procedure and Formalities for Bank Finance: The Need for Bank Finance

For entrepreneurs, one of the most difficult challenges faced involves securing funds for startups. With numerous funding options available, entrepreneurs need to take a close look at which funding methodology works best for them. In India, banks are one of the largest funders of startups, offering funding to thousands of startups every year.

# What Information Should Entrepreneurs Offer Banks for Funding?

When approaching a bank, entrepreneurs must have a clear idea of the different criteria that banks use to screen, rate and process loan applications. Entrepreneurs must also be aware of the importance of providing banks with accurate and correct information. It is now easier than ever for financial institutions to track any default behaviour of loan applicants. Entrepreneurs looking for funding from banks must provide banks with information relating to their general credentials, financial situation and guarantees or collaterals that can be offered.

### **General Credentials**

This is where you, as an entrepreneur, provide the bank with background information on yourself. Such information includes:

- Letter(s) of Introduction: This letter should be written by a respected business person who knows you well enough to introduce you. The aim of this letter is set across your achievements and vouch for your character and integrity.
- Your Profile: This is basically your resume. You need to give the bank a good idea of your educational achievements, professional training, qualifications, employment record and achievements.
- Business Brochure: A business brochure typically provides information on company products, clients, how long the business has been running for etc.
- Bank and Other References: If you have an account with another bank, providing those bank references is a good idea.
- Proof of Company Ownership or Registration: In some cases, you may need to provide the bank with proof of company ownership and registration. A list of assets and liabilities may also be required.

### **Financial Situation**

Banks will expect current financial information on your enterprise. The standard financial reports you should be prepared with are:

- Balance Sheet
- Cash-Flow Statement
- Business Plan

- Profit-and-Loss Account
- Projected Sales and Revenues
- Feasibility Study

### **Guarantees or Collaterals**

Usually banks will refuse to grant you a loan without security. You can offer assets which the bank can seize and sell off if you do not repay the loan. Fixed assets like machinery, equipment, vehicles etc. are also considered to be security for loans.

### The Lending Criteria of Banks

Your request for funding will have a higher chance of success if you can satisfy the following lending criteria:

- Good cash flow
- Adequate shareholders' funds
- Adequate security
- Experience in business
- Good reputation

### **The Procedure**

To apply for funding the following procedure will need to be followed.

- 1. Submit your application form and all other required documents to the bank.
- 2. The bank will carefully assess your credit worthiness and assign ratings by analyzing your business information with respect to parameters like management, financial, operational and industry information as well as past loan performance.
- 3. The bank will make a decision as to whether or not you should be given funding.

### Tips [

- Get advice on funding options from experienced bankers.
- Be cautious and avoid borrowing more than you need, for longer than you need, at an interest rate that is higher than you are comfortable with.

### 6.6.6 Enterprise Management - An Overview: How to Manage Your Enterprise

To manage your enterprise effectively you need to look at many different aspects, right from managing the day-to-day activities to figuring out how to handle a large scale event. Let's take a look at some simple steps to manage your company effectively.

### Step 1: Use your leadership skills and ask for advice when required.

Let's take the example of Ramu, an entrepreneur who has recently started his own enterprise. Ramu has good leadership skills – he is honest, communicates well, knows how to delegate work etc. These leadership skills definitely help Ramu in the management of his enterprise. However, sometimes Ramu comes across situations that he is unsure how to handle. What should Ramu do in this case? One solution is for him to find a more experienced manager who is willing to mentor him. Another solution is for Ramu to use his networking skills so that he can connect with managers from other organizations, who can give him advice on how to handle such situations.

#### Step 2: Divide your work amongst others - realize that you cannot handle everything yourself.

Even the most skilled manager in the world will not be able to manage every single task that an enterprise will demand of him. A smart manager needs to realize that the key to managing his enterprise lies in his dividing all his work between those around him. This is known as delegation. However, delegating is not enough. A manager must delegate effectively if he wants to see results. This is important because delegating, when done incorrectly, can result in you creating even more work for yourself. To delegate effectively, you can start by making two lists. One list should contain the things that you know you need to handle yourself. The second list should contain the things that you are confident can be given to others to manage and handle. Besides incorrect delegation, another issue that may arise is over-delegation. This means giving away too many of your tasks to others. The problem with this is, the more tasks you delegate, the more time you will spend tracking and monitoring the work progress of those you have handed the tasks to. This will leave you with very little time to finish your own work.

### Step 3: Hire the right people for the job.

Hiring the right people goes a long way towards effectively managing your enterprise. To hire the best people suited for the job, you need to be very careful with your interview process. You should ask potential candidates the right questions and evaluate their answers carefully. Carrying out background checks is always a good practice. Running a credit check is also a good idea, especially if the people you are planning to hire will be handling your money. Create a detailed job description for each role that you want filled and ensure that all candidates have a clear and correct understanding of the job description. You should also have an employee manual in place, where you

put down every expectation that you have from your employees. All these actions will help ensure that the right people are approached for running your enterprise.

#### Step 4: Motivate your employees and train them well.

Your enterprise can only be managed effectively if your employees are motivated to work hard for your enterprise. Part of being motivated involves your employees believing in the vision and mission of your enterprise and genuinely wanting to make efforts towards pursuing the same. You can motivate your employees with recognition, bonuses and rewards for achievements. You can also motivate them by telling them about how their efforts have led to the company's success. This will help them feel pride and give them a sense of responsibility that will increase their motivation. Besides motivating your people, your employees should be constantly trained in new practices and technologies. Remember, training is not a one-time effort. It is a consistent effort that needs to be carried out regularly.

### Step 5: Train your people to handle your customers well.

Your employees need to be well-versed in the art of customer management. This means they should be able to understand what their customers want, and also know how to satisfy their needs. For them to truly understand this, they need to see how you deal effectively with customers. This is called leading by example. Show them how you sincerely listen to your clients and the efforts that you put into understand their requirements. Let them listen to the type of questions that you ask your clients so they understand which questions are appropriate.

### Step 6: Market your enterprise effectively.

Use all your skills and the skills of your employees to market your enterprise in an effective manner. You can also hire a marketing agency if you feel you need help in this area.

Now that you know what is required to run your enterprise effectively, put these steps into play, and see how much easier managing your enterprise becomes!

# - Tips 🚇

- Get advice on funding options from experienced bankers.
- Be cautious and avoid borrowing more than you need, for longer than you need, at an interest rate that is higher than you are comfortable with.

## 6.6.7. 20 Questions to Ask Yourself Before Considering Entrepreneurship

- 1. Why am I starting a business?
- 2. What problem am I solving?
- 3. Have others attempted to solve this problem before? Did they succeed or fail?
- 4. Do I have a mentor<sup>1</sup> or industry expert that I can call on?
- 5. Who is my ideal customer<sup>2</sup>?
- 6. Who are my competitors<sup>3</sup>?
- 7. What makes my business idea different from other business ideas?
- 8. What are the key features of my product or service?
- 9. Have I done a SWOT<sup>4</sup> analysis?
- 10. What is the size of the market that will buy my product or service?
- 11. What would it take to build a minimum viable product<sup>5</sup> to test the market?
- 12. How much money do I need to get started?
- 13. Will I need to get a loan?
- 14. How soon will my products or services be available?
- 15. When will I break even<sup>6</sup> or make a profit?
- 16. How will those who invest in my idea make a profit?
- 17. How should I set up the legal structure<sup>7</sup> of my business?
- 18. What taxes<sup>8</sup> will I need to pay?
- 19. What kind of insurance<sup>9</sup> will I need?
- 20. Have I reached out to potential customers for feedback?

# - Tips 🏼

- It is very important to validate your business ideas before you invest significant time, money and resources into it.
- The more questions you ask yourself, the more prepared you will be to handle to highs and lows of starting an enterprise.

### Footnotes:

- 1. A mentor is a trusted and experienced person who is willing to coach and guide you.
- 2. A customer is someone who buys goods and/or services.
- 3. A competitor is a person or company that sells products and/or services similar to your products and/or services.
- 4. SWOT stands for Strengths, Weaknesses, Opportunities and Threats. To conduct a SWOT analysis of your company, you need to list down all the strengths and weaknesses of your company, the opportunities that are present for your company and the threats faced by your company.

- 5. A minimum viable product is a product that has the fewest possible features, that can be sold to customers, for the purpose of getting feedback from customers on the product.
- 6. A company is said to break even when the profits of the company are equal to the costs.
- 7. The legal structure could be a sole proprietorship, partnership or limited liability partnership.
- 8. There are two types of taxes direct taxes payable by a person or a company, or indirect taxes charged on goods and/or services.
- 9. There are two types of insurance life insurance and general insurance. Life insurance covers human life while general insurance covers assets like animals, goods, cars etc.

Notes	
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