

STUDY NOTES

Entrepreneurship Management and Smart Technology

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Government Polytechnic Sambalpur

Th1. ENTREPRENEURSHIP and MANAGEMENT & SMART TECHNOLOGY

(Common to All Branches)

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

Topic Wise Distribution of Periods

Sl No.	Topic	Periods
1	Entrepreneurship	10
2	Market Survey and Opportunity Identification(Business Planning)	8
3	Project report Preparation	4
4	Management Principles	5
5	Functional Areas of Management	10
6	Leadership and Motivation	6
7	Work Culture, TQM & Safety	5
8	Legislation	6
9	Smart Technology	6
	TOTAL	60

RATIONALE

In the present day scenario, it has become imperative to impart entrepreneurship and management concepts to students, so that a significant percentage of them can be directed towards setting up and managing their own small enterprises. It may be further added that an entrepreneurial mind set with managerial skill helps the student in the job market. The students can also be introduced with Startup and Smart Technology concept, which shall radically change the working environment in the coming days in the face of Industry 4.0

In this subject, the Students shall be introduced/ exposed to different concepts and Terminologies in brief only, so that he/she can have broad idea about different concepts/items taught in this subject. Solving numerical problem on any topic/item is beyond the scope of this subject.

OBJECTIVES

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

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

DETAILED CONTENTS

1. Entrepreneurship

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

2. Market Survey and Opportunity Identification (Business Planning)

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

3. Project report Preparation

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

4. Management Principles

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

5. Functional Areas of Management

- a) Production management
 - Functions, Activities
 - Productivity
 - Quality control
 - Production Planning and control
- b) Inventory Management
 - Need for Inventory management
 - Models/Techniques of Inventory management
- c) Financial Management
 - Functions of Financial management
 - Management of Working capital
 - Costing (only concept)
 - Break even Analysis

Entrepreneurship

Meaning of Entrepreneurship

→ Doing new things or doing things that are already being done in a new way is known as entrepreneurship.

→ Entrepreneurship can be described as a creative and ~~innov~~ innovative response to environment, that can take place in business, agriculture, education, social work and like.

Need of Entrepreneurship

→ Creation of employment.

(It provides an entry level job, required for gaining experience and training for unskilled workers)

→ Innovation.

→ Impact on society and community development. (Society becomes greater if the employment base is large and diversified).

→ Increase standard of living.

(increase in consumption of various goods and service by a household)

→ Support research and development.

Entrepreneur

→ An entrepreneur is one who organises, manages and assumes the risk of an enterprise.

→ Entrepreneurs are the owners of the business who contribute the capital and bear the risk of uncertainties in the business.

→ Entrepreneur is associated with innovations. He is the main factor of production.

→ ~~Entrepreneur~~ Entrepreneur takes decision regarding what to produce, how to produce, where to produce, and for whom to produce. He is responsible for both profit and loss.

Characteristics of entrepreneur

→ self confidence

→ task-result oriented

→ risk taker

→ leadership

→ originality

→ future oriented

Qualities of entrepreneur

→ risk taking ability

→ high level of motivation

→ business ~~assess~~ acumen

→ self confidence and positive self concept.

→ leadership qualities.

→ flexibility (change according to situation)

→ Managerial competence.

→ Problem solving

→ ability to perceive opportunities and threats

- Realistic approach to planning.
- Independence of thought and action.

Types of Entrepreneur

① Small business entrepreneur

① Skeptical Entrepreneur

- sees the success of others and starts to question it.

② Copycat entrepreneur

- sees the success of others and start tries to copy them exactly.
- don't copy just try model modeling.

③ Research Entrepreneur

- loves to learn
- use research every possible scenario and outcome for strategies to start/grow a business.
- Sometimes excess research creates hindrance for action.

④ Determined Entrepreneur

- believe.
- success is possible without copying.

⑤ Accomplished entrepreneur

- This entrepreneur has gone through all the stages of entrepreneurship and building a business and has reached success.
- They focused on scaling their business and leaving a legacy that extends beyond their time.

- Most valuable resource: TIME.

Functions of entrepreneur

- he manages business & takes decision.
- he studies the market and selects the business.
- he makes a selection of plant size.
- he selects plant site.
- he organises sales and holds the customers.

- he promotes the new inventions.
- he co-ordinates different factors of production.
- he arranges raw materials, machinery & finance.
- he employs labourers.
- he deals with govt. departments such as sales tax, labour, electricity, export-import, railways etc.
- he decides pricing policy.
- he distributes ~~wage~~ wages of labourers, interest to capitalists etc.

Barriers in entrepreneurship

- corrupt and unsupportive business environment.
- employee related difficulties.
- severe market entry regulations.
- shortage of fund and resources.

- lack of entrepreneurship opportunities
- lack of entrepreneurial capacity
- lack of adequate entrepreneurship training
- lack of appropriate technical & practical skills.
- lack of market experience.
- fear of failure.
- aversion to risk.

Entrepreneurs vs Manager

Entrepreneur	Manager
→ visionary & bears all financial risks.	→ works for salary & doesn't have to bear any risk.
→ focuses on starting & expanding business ideas.	→ focus on daily smooth functioning of business.

Entrepreneur

→ Key motivation for entrepreneur is achievements.

→ Reward for all the efforts* he earns from the enterprise.

(* is profit.)

→ Entrepreneur can be informal & casual.

→ Risk taker

Manager

→ Managers motivation come from power that comes with their position.

→ Remuneration is the salary he draws from the company as he is an employee.

→ Manager's approach to every problem is very formal.

→ Risk averse.

Forms of business ownership

Pole proprietorship

→ business own & run by someone for their own benefit.

→ the business existence is entirely dependent on owner's decision.

Advantages : → profit subject to owner.

→ very little regulation for proprietorship.

→ total flexibility.

→ very few requirement for starting.

Disadvantages : → Owner is 100% liable for business debt.

→ equity is limited to the owner's personal resources.

→ ownership is difficult to transfer.

→ No distinction between personal & business income,

Partnership

→ Two types ① general ② limited.

→ In general partnership if you invest a little, you are still potentially responsible for all its debt.

→ general partnership don't require a formal agree agreement.

→ limited partnership requires a formal agreement between the partners. limited partnerships allow partners to limit their own liability for business debts according to their position of ownership/investment.

Adv → shared resource provide more capital to business.

→ each partner shares the total profits of the company.

→ similar flexibility & simple design of proprietorship.

→ inexpensive to establish a business partnership (formal/informal).

Disadv.

- each partner is 100% responsible for debts and losses.
- selling the business is difficult.
- partnership ends when any partner decides to end it.

Corporat

Corporation

- Organization (a group of people/company)
- Profit generated by a corporation are taxed as the 'personal income' of the company. So any income distributed to the share holders as profits are taxed again as the personal income of the owners.

Adv. → limit liability of owner.

- profit & losses belong to corporation.
- can be transferred to new owners easily.
- personal assets can't be seized to pay for business debts.

Disadv.

- ~~corporation~~ corporation operations are costly.
- establishing a corporation is costly.
- start a corporate business require complex paperwork.
- with some exceptions, corporate income is taxed twice.

Limited Liability Company (LLC)

- LLC provides owners with limited liability while providing some of the incomes advantages of a partnership.

Adv.

- limits liability
- profits of the LLC ^{are} shared by owners without double taxation.

Disadv.

- Ownership is limited by certain state laws.
- Agreement must be comprehensive and complex.
- Beginning LLC has high costs due legal & filing fees.

Types of Industries

- Agriculture, plantations, other rural sectors
- basic metal production.
- chemical industries.
- commerce.
- construction.
- education.
- financial services, professional services
- food
- forestry, wood, pulp & paper
- health services
- hotels, tourism, catering.
- mining
- mechanical & electrical engg.
- media, culture, graphical.
- oil & gas production, oil refining
- postal & telecommunications service

- public service
- shipping, ports, fisheries, inland waterways
- textile, clothing, leather, footwear
- transport
- transport equipment manufacturing
- utilities (water, gas, electricity)

Concept of Startups

defn - A startup is a company working to solve a problem where the solution is not obvious and success is not guaranteed.

Types

① Lifestyle start up : founded by the entrepreneurs who are working for themselves and what they like.

② Small business start up

→ owner follows new less ambitious goals to provide only a comfortable life for his family.

③ Scalable startup

- founded by entrepreneurs who worry about finding a model scalable & repeatable business in order to draw the attention of investors to boost your business.

④ buyable startup

- these business are born with the goal of being sold to large companies after achieving positive results that catch their attention.

⑤ Large company startups

- innovation.
- limited duration of life.
- Business fall into this category develop products/service that revolutionaries become quickly recognized by the market.

⑥ Social Startups

- make a difference in the society and make a better world.
- Obj. is not to gain profit but rather to contribute positively to the community.

Entrepreneurial support agencies at National, State & District Level

DIC : District Industries ^{Centers} ~~Centres~~

- established in 1978.
- To promote small scale industries (SSI) in smaller towns/areas to make them available with all basic needs, services & facilities.
- generate employment in rural regions.
- DICs are operated & managed at district levels to provide all necessary support services to entrepreneurs to start their own MSMEs (Micro Small & Medium Enterprises).
- The functioning of DICs & their ~~achieving~~ achievement is monitored by Additional Chief Secretary (Industries) & Director of Industries & Commerce.
- Services like filling of entrepreneur memorandum part-I, II, cottage industries registration, handicrafts industries registration, PM Employment Generation programme are all done by DICs.
- DICs achievement ① Reduce regional imbalance ② Generating self employment

NSIC - National Small Industries Corporation

- A Govt. of India enterprise under ministry of MSME.
- Mission: To promote MSME sector by providing integrated support services encompassing marketing, technology, finance and other services.
- NSIC facilitates MSME to entrepreneurs with a set of specially tailored scheme to enhance their competitiveness.
- NSIC provides integrated support service under marketing, technology, finance & other services.

OSIC: Odisha Small Industries Corporation

- OSIC was established on 3.04.1972 as wholly owned corporation of Govt. of Odisha.
- Aim: To aid, assist and promote the MSMEs in the state for their sustainable growth and development to gear up industrialization process in state.

Mandate

- To provide quality raw material to MSMEs of state.
- To provide quality building material to MSME sector.
- To assist in marketing the products of MSME sector.
- To act as syndicate leader of MSME as per IPR of Govt. of Odisha.
- To act as nodal agency for sub-contract exchange for MSME sector and large industries.

Mission

- To provide quality raw material to MSME sector.
- To provide marketing assistance to MSME sector.
- To Market the MSME products by creating common brand and to name with quality assurance.

SIDBI Small Industries Development Bank of India

- set up on 02/04/1990.
- To work as principal financial institution for promotion, financing and development of the MSME sector and for co-ordination of the functions of institutions engaged in similar activities.
- SIDBI's initiatives have remained aligned to the national goals of ~~poor~~ poverty alleviation, employment generation etc.

NABARD National Bank ^{for} Agriculture and Rural Development.

- fully owned by GOI.
- ~~established on~~ established on 1982.
- functions:
 - Top level institution ~~an.~~ for financing agriculture and rural development projects.
 - co-ordinates the agricultural and rural financing activities with various agencies.

→ supervises RRB & Rural co-operative banks by doing inspection of these banks.

→ provides training facilities to the institution of rural credit.

→ conducts pilot programmes for Agricultural & rural finance.

Commercial Banks

→ bank which deals with commercial activities of a common customer like retail banking and serve customers for their daily banking needs.

→ Banks issue credit and debit cards to their customers for their usage, whatever commercial activities come into mind, is provided by such commercial banks.

KVIC

→ Khadi and Village Industries Commission

→ KVIC helps many young entrepreneur to establish tiny and small cottage industries.

Technology Business Incubators (TBI)

→ initiative of department of Science & Technology (DST), GOI.

→ It promotes the concept of growth through innovations & applications of technology, support and economic development strategies for small business development.

Science & Technology Entrepreneur Parks

→ initiated by National Science and Technology entrepreneurship development board (NSTEDB), dept. of Science & Tech, GOI.

→ provide reorientation in approach to innovation and entrepreneurship involving education, training, research, finance, management and govt.

→ employment generation through small scale industries involving technical institutions.

② Market Survey & Opportunity Identification (Business Planning)

Business Planning

- A written documents describing the nature of the business, the sales and marketing strategy, and financial background and containing a projected profit and loss statement.
- A business plan is also a roadmap that provides directions so a business can plan its future and helps it avoid bumps in road. The time you spend making your business plan ~~thorough~~ thorough and accurate and keeping it up to date is an investment that pays big dividends in the long term.

→ Information included in business plan

- Introduction/summary of project
- description of products & services
- market analysis & marketing strategy
- production plan
- Organizational plan
- financial plan & budgeting
- expected results, risk assessment & development prospects

SSI: Small Scale Industries

10
~~25~~ CRORE
35 lakhs.

- SSI: investments $\leq$ 10 CRORE
- for a developing nation the SSI hold an inevitable position as a major contributor to the country's economy, job employment generation & economic growth.
- There are almost 27% of people in population are below poverty line which is affecting the global rank of our nation, here SSI employ people & contribute to the economic growth of the country.
- SSI in India hold a great command over Indian market. From old grains to clothes, majority is produced with the assistance of SSI.

Role & scope of SSI

- increases employment
- they are labour intensive & require comparative little capital to start with.
- help reduction in price.
- accelerate rate of industrial growth.
- help in equitable distribution of national wealth.

how to start a SSI

- product identification
- preparation of preliminary project report
- decide form of ownership
- decide factory location
- buy land
- invite quotation for machinery and equipment
- prepare detail project report
- apply for registration
- plan finance
- follow up sanction loan
- open bank account
- place order for machinery
- apply for power
- plan layout of machinery
- apply for IT & sale tax number
- apply for raw material
- recruit personnel
- conduct trial run
- decide pricing policy
- organise marketing, plan account keeping & plan commercial production.

Procedure for registration of SS1

- provisional registration (before establishing the unit)
- permanent " (established the unit)

Ancillary Units

- Ancillary unit is the unit which supplies not less than 50% of its production to the parent unit.
- The ancillary unit has following features —

① the investments ≤ 1 crore

② → parent unit assists by providing technical & financial help.

Piny units

→ investments ≤ 25 lakhs

→ No assistance is there.

Service sector unit

→ There are mainly 03 economical sectors

* Primary sector (mining, farming, fishing)

* Secondary " (manufacturing)

* Tertiary " / service sector

(retails, banks, hotels, real estate, education, health work, social work etc)

Time Schedule Plan

Month 1: Complete business plan.

Month 2: Secure business loans.

Month 3: Begin search for retail space.

Month 5: ~~lease~~ lease and develop retail space, begin hiring

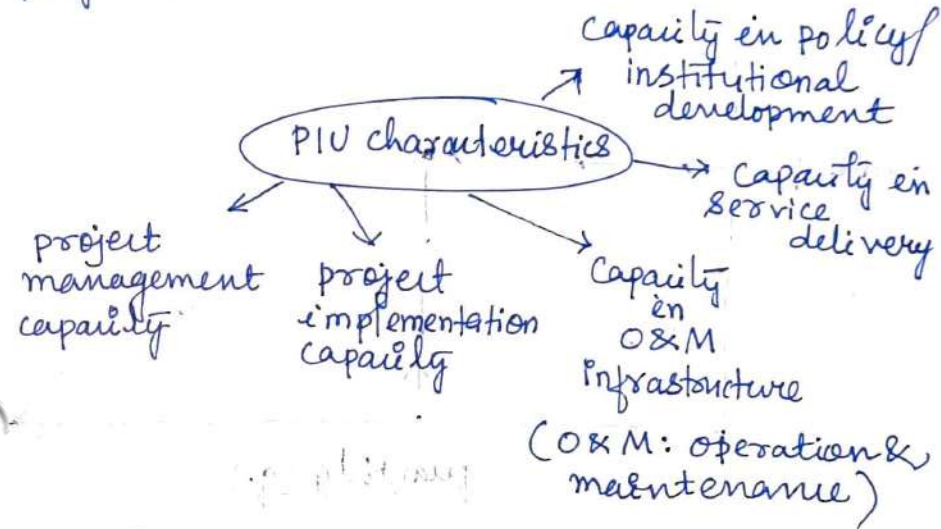
Month 7: Open shops, run holiday ads.

Month 8, ~~9, 10, 11~~: Holiday shopping season begins

Month 12: New store ~~beg~~ become profitable.

Agencies to be contacted for business project implementation :-

→ The responsible agency designated to implement, monitor and evaluate each projects.



Example

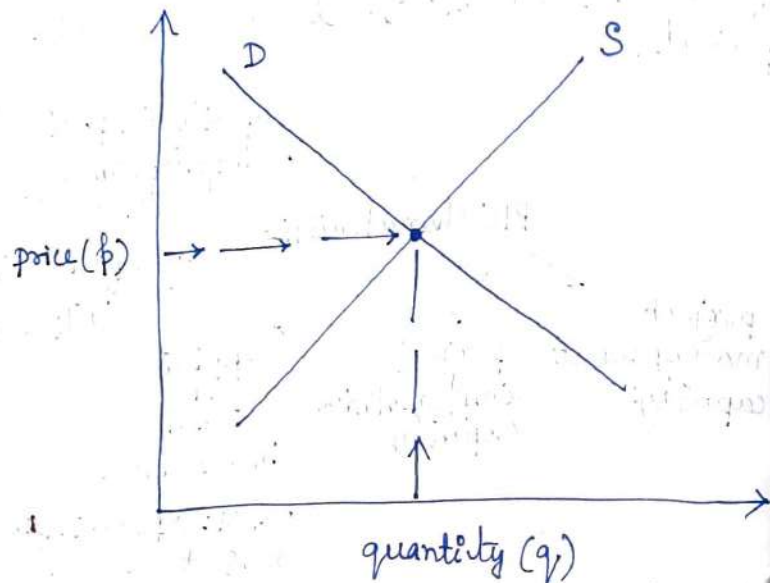
→ NHAI: National Highway Authority of India → Road Projects

→ RVNL: Rail Vikash Nigam Limited → Rail Projects

→ CPWD: Central Public Works Department → Central Projects

Assessment of demand and Supply

Supply & demand



Potential Areas of growth

1. Goal setting
2. Communication
3. Collaboration
4. Listening
5. Conflict resolution
6. Adaptability
7. Organization
8. Accepting constructive feedback
9. Integrity
10. Productivity

Identifying business opportunity

1. Identify problems

→ most opportunities disguise themselves as problems.

2. Position & timing

3. Be quick, but don't cut corners

→ be quick but don't rush as that leads to poor work and overlooking pitfalls.

→ cutting corners is a sure way to deliver subpar products leads to poor customer satisfaction / legal issues.

4. ~~It~~ Team

→ Assemble right team that understands the opportunity and can help you meet those goals on schedule.

5. Execute

→ Most important point.

Final Product Selection

- A right product selection → energetic growth
- product selection is the process in which retailers choose the shape/material of the product as per market demand.

Team included in product selection

- material
- shape
- colour
- price

product selection includes

- demand & supply characteristics
- frequency of consumption
- nature of use
- product characteristics

Concept of product selection

- * product selection is a decision process in which design team selects one/few product concept for further development.

- * As an entrepreneur senses business opportunities from changing env., keeps on adding, improving and dropping different types of product.

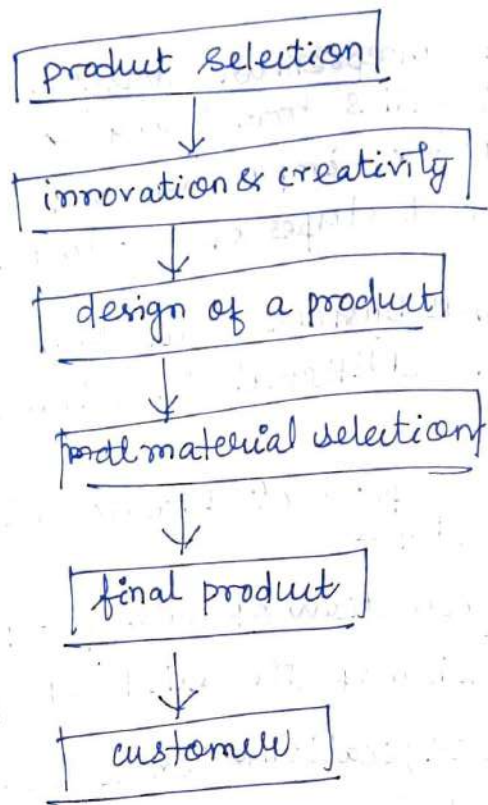
- A small business unit becomes large through additional investments.

- * The new product investment areas are as under —

- introduction of new product
- expansion of the existing product
- diversification in a new line of product by an already existing unit.
- business integration investments → the business is a step-by-step and sequential conversion of raw material into finished product.



cotton → spinning → weaving → processing
→ clothes



The 3 E's of product selection

- Experience
- Education
- Enthusiasm

Importance of product selection

- changes in business risk.
- changes in financial risk.
- changes the existing production system.
- changes in existing marketing system necessitating changes in channels of sales & distribution.
- changes in organization structure and personnel positions.
- tapping new sources of raw materials & other types of inputs.
- changes in the competitive.
- product position.

— X —

3. Project Report Preparation

Preliminary Project Report (PPR)

→ PPR is a formal document that describes specific activities, events, occurrences or subjects of a project to explain progress of the project upto a certain point in time (but not later than completion time).

→ This document is presented and communicated at project status meeting to explain what goals, deliverables and results are produced and what activities are still in progress.

→ The document serves as the basis for developing the final project report.

A PPR highlights the following data —

* problem/need

clear description of the problem/need the project aims to handle.

* proposed solution

brief description of how to address the problem/need.

* work effort

an analysis summary of work relevant to project.

* status

current state of project.

* Evaluation

an analysis and assessment of the project work.

* schedule

A timeline with specific milestones and events related to project work.

Detailed Project Report

→ A detailed project report is a ^{written} document which provides details ^{and information} on the overall picture of the proposed business.

→ It contains data on the basis of which the project has been appraised and found feasible.

→ It consists of information on economic, technical, financial, managerial & production aspects.

→ It enables the entrepreneur to know the inputs and helps him to obtain loans from banks or financial institution.

Contents of Project Report

1. General Information
2. Executive Summary (methods through which business can attain success)
3. Organization Summary
 - organization structure and pattern proposed for the unit.
4. Project description
5. Marketing plan
6. Capital Structure & operating cost
 - total capital req. of project
 - source of finance
7. Management & plan (team & individuals)
8. financial aspect (profit loss statement, balance sheet)

9. Technical Aspect

10. Project Implementation
(time table for project)

11. Social Responsibility
(draws input from society)

Techno Economic Feasibility (TEF)

feasibility study

It is an assessment of the practicality of a proposed project/system.

- IER TEF refers to the estimation of project demand potential & choice of optimal technology.
- TEF is an analysis on the existing market & technology.
- The choice of technology itself will be based on the demand potential in project design.
- It analyzes the project on individual criteria & set the stage for detailed design development.

Contents of TEF

- obj. & scope of the report
- product characteristics
- market position and trends.
- raw material req., prices, sources and properties of raw material.
- manufacturing processes, selection of process, production schedule and techniques
- plant & machinery.
- req. of land area, building, construction schedule.
- financial implications.
- marketing channels, their trending practices & marketing strategies.
- requirement of personnel labour & expenses on wage system.

Factors to be considered while preparing report

- * technical consideration
- * economic
- * financial
- * managerial
- * implementation schedule

Advantages in TEF

- A sword to verify that the running faults of the project are analyzed just before implementation.
- To make sure the suff. suggested project is a effective venture.
- provide guideline which will help the management in easy monitoring & controlling project implementation & production activity.
- helps you to convince bankers, partners govt. to avat necessary help.

PROJECT VIABILITY

There are mainly two broad elements to for project assessment —

- * project feasibility
- * project viability

The project can be tested for feasibility across several dimensions —

* technical feasibility

* legal

* env. & social sustainability

Project viability

→ Economic viability analysis is taken to decide whether a proposed project is a good use of public resources.

→ A project is economically viable if the economic benefits of the project exceeds its economic cost, when analyzed for society as whole.

→ Economic viability analysis can also include a cost effectiveness analysis to determine whether the project is lowest cost alternative to achieve the identified benefits.

Ex ① Benefits from improved ~~from~~ transportation for drivers, ~~for~~ faster connection, reduce vehicle maintenance, low accident rates etc

→ In addition to that the project may enhance regional economic activity & quality of life of people living in the vicinity of the project.

②

→ The value of education at high school should be measured by the enhancement in the lives and prospects of the children who attend the school, even if no school fee is charged.

→ x →

4. Management Principles

Definition of Management

→ It is defined as the process of administering & controlling the affairs of organization, irrespective of its nature, type, structure & size.

→ Management acts as a guide to group of people working in the organization & co-ordination co-ordinating their efforts towards the attainment of the common objective.

→ In other words, it is concerned with the optimally using 5M's to reach desired results.

{ Men
Machine
Material
Money
Methods

Principle of Management

There are mainly 14 management principles.

1. Division of work.
2. Balancing authority & responsibility
3. Discipline
4. Unity of command
5. Unity of direction
6. Subordination of individual interests to general interest.
7. Remuneration
8. Centralization (authority is concentrated only in few hands)
9. Scalar chain (chain of command)
10. Order (everything in right place)
11. Equity
12. Stability of tenure of personnel (job security)
13. Initiative
14. Esprit De Corps / Team spirit

Function of Management

planning



organizing



staffing



directing



controlling

Planning

- first & foremost function of management.
- formulating policies, establishing targets scheduling actions & so forth.

Organizing

- Once the plans are formulated, the next step is to organise the activities & resources.

Staffing

- hiring personnel for carrying out various activities of the organization.

Directing

- It is the task of the manager to guide, supervise lead & motivate the subordinates, to ensure them that they work in the right direction.

Controlling

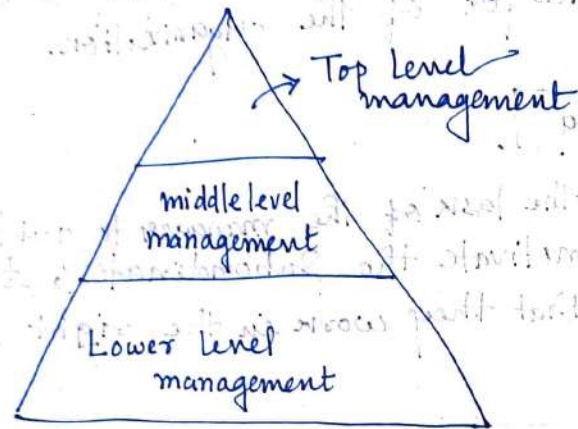
- no. of steps taken to ensure that the performance of the employees is as per the plans.

- It involves establishing performance standards & comparing them with actual performance.

Coordination

- Integration of the activities, processes & operations of the organization & synchronisation of efforts to ensure that every element of organization contributes to its success.

Level of management in an organization



Lower level management

→ As it directly interacts with the workers, it plays a crucial role in the organization because it helps in reducing wastage & idle time of workers, improving the quality & quantity of output.

Top level management

→ highest level in organizational hierarchy.

→ responsible for defining the objectives, formulating plans, strategies & policies.

Middle level management

→ It creates link between top & lower level management.

→ responsible for implementing & controlling plans & strategies which are formulated by top executives.

5. Functional Areas of Management

② Production Management

→ Every organization has management principles. And the application of that principle to production function is termed as "production management".

→ This management concept involves planning, scheduling, supervising & control of the activities that concern or the production of goods to meet the needs of consumers & also generate profit for the business.

Functions

→ production control

(If any deviations, the production manager has to take the right steps to correct them.)

→ Scheduling

(Planning when actual production would begin & ends).

→ Cost & quality control

→ Maintenance of machines

Activities

→ procurement of material & input resources such as land, ~~labour~~ labor, equipment & capital.

→ product design & development to determine the manufacturing process for changing input factors in the output of goods & services.

→ Supervision & control of the transformation process for the efficient production of goods & services.

Quality control

→ Quality control is an important task that a production manager must perform. It involves a no. of checks made on the product to ensure quality remains intact.

→ defective units must be repaired/rejected & ^{required} ~~poor~~ service repeated at no cost until customer is satisfied. If too many unit failures/instances of poor service occurs, a plan must be devised to improve the production/service process, then that plan must be put into action.

Quality Control (QC)

→ QC is a process/no. of actions projected to make sure that a man-made product/performed service adheres to a distinct set of quality standards/fulfills the need of the client/customer.

→ Main aim of QC is to check whether the products meet the specifications and requirements of the customer. If an issue is identified, it needs to be fixed before delivery to the customer.

→ QC also evaluates people on their quality level skills sets and impart training & certifications. This evaluation is required for the service-based organization & provide 'perfect' service to the organization.

Steps in QC

- Set the quality standards
- decide which quality standards to focus on.

- create operation processes to deliver quality
- Review your results
- Get feedback
- Make improvements

Production planning & control

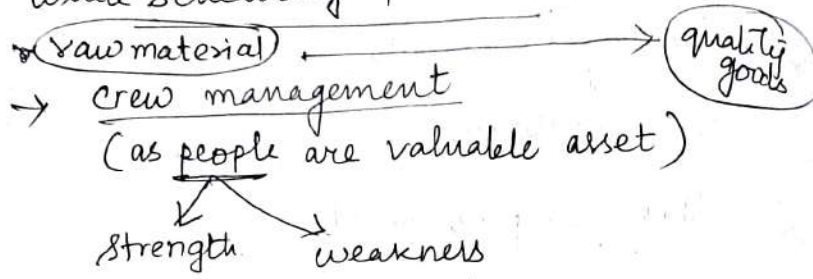
Production planning involves the accurate tracking of

- Team members
- Raw materials
- Workstations
- Processes
- Supplies

Good production planning involves -

- producing goods
- thinking ahead (high demand, shortfalls)
- identifying (inefficient spots)
- finding (optimal way to complete orders)

Key ~~facto~~ factors to be considered while scheduling production



(ensure they perform their task ~~are~~ given to them)

→ Running at capacity

(always make sure that the max. output is little higher than what is being done now)

→ So if larger order is received, no issue is there.

→ Raw material

→ Required raw materials available at all times so production is not pushed back due shortage of raw material.

Workshop logistics

→ Many production line has come grinding to ^ahalt as one weak link has been placed on wrong stage.

→ So logistical flow of each part in the manufacturing process require consideration

Problem solving

→ Over ~~ord~~ ordering & over producing is a band-aid solution, as this ~~fix~~ leads to extra costs / staff burnout.

→ So effective software is needed to track the flow & find production scheduling issues.

Know your manufacturing processes

→ Track & manage everything effectively & everything should work like clockwork.

→ understanding production scheduling ~~pr~~ principles allows you to methodically ^(supervise) oversee your manufacturing. ~~Everything~~ Effective production scheduling make it easier to do everything by book.

Inventory Management

→ Act of keeping track of company's stocked goods & monitoring their wt., dimension, amount & location.

→ Inventory management is a systematic approach to sourcing, storing & selling inventory - both raw materials & finished products.

→ It means the right stock, at the right levels, in the right place, at the right time and at the right cost as well as price.

Need of Inventory Management

→ It is needed to ensure a business has enough stock on hand to meet customer demand.

→ If inventory management is not handled properly, it can result in a business either losing money on potential sales that can't be filled or wasting money by stocking too much inventory.

→ avoid spoilage (near expiry products)

→ avoid dead stock

→ save on storage cost

→ improves cash flow

Inventory Management Techniques

- Set par levels
(min. amount of product that must be on hand at all times)
- first in first out
(coldest stocks get sold first)
- Manage relationship with Suppliers
- contingency planning
(figure out the risks & prepare a contingency plan)
- Regular auditing
(facts should match)
- physical inventory
(practice in counting all inventory at once)
- Spot checking
(during physical inventory if problem occurs we can go for spot checking)
- cycle counting
(either weekly, monthly basis)
- Prioritize with ABC (who needs more attention)
- accurate forecasting
- dropshipping (remove inventory management
(manufacturer/wholesaler will do it))

Financial Management

Functions of financial management

Defn - FM deals with the procurement of funds & their effective utilization in the business.

Functions

- financial planning & forecasting
- determination of capital composition
- fund investment
- maintain proper liquidity
(cash is the best source of for maintaining liquidity)
- disposal of surplus
- financial controls (depends upon results)

Working capital Management (WCM)

→ A company's WCM consists of current assets & current liabilities.

↓
day-to-day debts

↓
assets that can be converted into cash within 01 yr.

→ WCM refers to monitoring of above 02 components.

Three (03) fundamental parameters are req. to help manage WCM are :-

① Working capital ratio

The ratio between current assets to current liabilities.

② Collection period ratio

This ratio indicates company's ability to convert its debt into cash. The lesser the no., the better it is.

③ Inventory turnover ratio

This ratio monitors the time a company takes to convert its goods into cash. Lower the figure, higher the company's stock efficiency.

Costing

→ Techniques & process of ascertaining costs.

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

Main aim → To determine extra cost of each article.

→ To determine cost incurred during each operation to keep control over worker's age.

→ To provide ~~in~~ information to ascertain the selling price of product.

→ To supply information for detection of wastage.

→ helps in reducing the total cost of manufacturer.

→ suggest changes in design when the cost is higher.

→ help in formulating the policies for charging the prices of the product.

→ To facilitate preparation of estimate for submitting the rates in tenders or quotations.

→ To compare the actual cost with the estimated cost of the component.

Costing Methods

1. Multiple cost → concerns manufacturing a variety of standardised products, having no relation to ~~one~~ one another in cost, types or process.

2. Job cost → all items are charged to a specific order as it helps in showing the cost of each job/order of a work.

3. Departmental costing

→ It is adopted in estimating the cost of output of each department ~~separately~~ separately for the manufacture of standardised product.

4. Unit costs

It is adopted by the firms which supply a uniform product rather than a variety of products.

5. Process cost

It is adopted in industries where the raw material ~~is~~ passes through a no. of processes before it is converted into a final product.

6. Operating cost

firms providing utility services use this.
→ railway, transportation service, water works, electricity boards etc.

Advantages of costing

- helps in tracing wastage, leakage.
- gives info. about profitable & non profitable activities.
- provides an effective check on wage system.
- actual causes of reduction in profits can be easily found.
- gives info. regarding component parts
- helps in settlement of wage rates with trade union during dispute.
- ⇒ provides data for comparison betⁿ actual cost & estimated cost of article.

→ provides data for overhead charges to assist in the preparation of estimates for future work.

→ helps the management in forming the policies of price determination.

→ provides information of detailed expenditure, so that it can be checked when it is tending to exceed.

→ keeps control over selling price.

→ To compare the output of the persons of same trade & working on same types of machines.

→ helps in determining the efficiency of administrative & operative functions & decides the break point, where wastage and expenses need check.

→ helps the planning department in deciding about the quantity of material required & sequence of operations on the job.

Break Even Analysis

→ No loss/gain but all costs have been covered.
→ Break even analysis refers to the point in which total cost & total revenue are equal.

$$\text{Break even point} = \frac{FC}{C - VC}$$

FC = fixed cost

C = contribution per unit = $SP - VC$

SP = selling price/unit

VC = variable cost/unit

When is break even analysis used?

- Starting a new business
- creating a new product
- changing the business model.

Break even analysis is useful for the following reasons :-

- helps to determine remaining capacity of the company once the breakeven is reached.
- helps to determine the impact on profit on changing to automation from manual.

- helps to determine the change in profits if the price of a product is altered.
- helps to determine the amount of losses.

Ways to monitor break even point

- pricing analysis (less coupons/offers)
- technology "
- cost " (FC)
- margin " (push sales of highest margin items & attention to product margin)
- outsourcing (activity consists of FC is outsourced then reduction in break even point)

Benefits of break even analysis

- catch missing expenses
- set revenue target
- make smarter decisions

- find your business
- better pricing
- cover fixed costs

Brief about idea about accounting technology

Book Keeping

- Recording on daily basis of a company's financial transactions.
- Accurate book keeping is crucial for external users (investors, financial institutions, Govt) for reliable info. to make better investments/lending decisions.
- Entire economy relies on accurate & reliable book keeping for both internal and external users.
- proper book keeping gives companies a reliable measure of their performance. Once a business is up & running, spending extra time & money on maintaining proper record is critical.

→ To properly implement book keeping, companies need to first choose which basis of accounting they will follow.

Cash basis	accrual basis
→ record transaction only when cash is actually received or paid.	→ record transaction when it occurs, even if cash is received / paid.

ex: you purchase a 100 unit & will pay next month.

No record

Transaction recorded

Journal Entry

→ It is the art of keeping or making records of any transactions either economic or non economic.

→ It consists of several recordings, each of which is either a debit or credit. The total of the debits must be equal to total of credits.

or the journal entry is considered unbalanced.

→ In order to record journal entries one need to have knowledge about -

- * type of amounts
- * golden rules of accounting
- * experience of working
- * knowledge on debit & credit transaction

→ Advt.

→ provide date in chronological order

→ explanation of transaction.

→ ledger posting of transaction

→ possibility of error reduction

→ Disadvt.

→ An unsuitable large amount of transportation

→ cash balance is not revealed.

→ not a suitable to the ledger.

Petty cash book

→ petty cash book is an accounting book used for recording expenses which are small and of little value.

ex : stamps
postage & handling
stationery
carriage
daily wages

P & L Accounts (Profit & Loss)

→ The amount that shows annual net profit/net loss of a business is called P & L amount. It is prepared to determine the net profit/net loss of a trader.

→ The following items usually appear on the debit & credit side of a profit & loss account.

On debit side :

- (i) gross loss
- (ii) all indirect expenses

On credit side :

- (i) gross profit
- (ii) all indirect Revenue

Ex :

Net sales	100000
Net purchase	46000
Beginning inventory	8000
Ending "	-9000

Cost of good sold	45000		
Gross profit	55000	} 7000	} Profit & Loss
Expenses	48000		
other income	5000		
Net Profit	12000		

Balance Sheet

→ A balance sheet gives a statement of a business's assets, liabilities & shareholders equity at a specific point in time.

→ A balance sheet tells you a business's worth at a given time, so its financial position can be found out.

→ Items in the balance sheet

* assets

* liabilities

* shareholder equity (assets - liabilities)

Why BS is important?

→ liquidity (how much cash readily available)

→ efficiency

→ leverage (financial risk you face)

↓
investment strategy of using borrowed money.

Marketing Management

Concept of marketing & marketing management

→ The marketing concept is the strategy that firms implement to satisfy customers' needs, increase sales, maximize profit & beat the competition.

→ 05 marketing concepts every organization adopt.

① production concept

② product concept

③ selling "

④ marketing "

⑤ societal marketing "

production concept → consumers will favour favor products that are available & highly affordable.

product concept → consumers will favour products that offer the most quality, performance & innovative features.

Selling concept → consumers will not buy enough of the firm's products unless it ~~is~~ undertakes a large scale selling & promotion effort.

Marketing concept → achieving organizational goals depends on knowing the ~~great~~ needs & wants of target markets and delivering the desired satisfactions better than competitors do.

Societal Marketing Concept → Marketing strategy should deliver values to customers in a way that maintains/improves both the consumer's & society's well being.

Marketing Management

→ It is ~~organizational discipline~~ which focuses on the practical application of

→ It is the business function that controls the level & composition of demand in the market. It deals with creating & maintaining demand for goods & services of the organization.

→ It involves —

- * setting of marketing goals and objectives

- * developing the marketing plan

- * organising the marketing functions

- * putting the marketing plan into action

- * controlling the marketing programme.

→ key features of marketing concept

- * focus on customer needs

- * providing customer satisfaction
- * integrated marketing management
- * achieving organizational goals
- * innovation

Marketing management features

→ Managerial process

→ consumer centric

→ research analysis

→ planning & development

→ building marketing framework

→ organizational objectives

→ promotional & communication process

→ controlling activities

Marketing management functions

→ analysing the marketing activities

→ planning the marketing activities

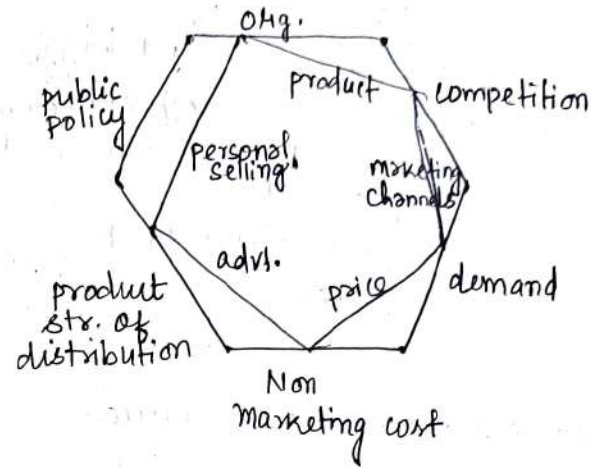
→ organising the marketing activities

- co-ordinating different activities of enterprise.
- directing & motivating the employee
- evaluating & controlling marketing efforts.

Marketing management scope

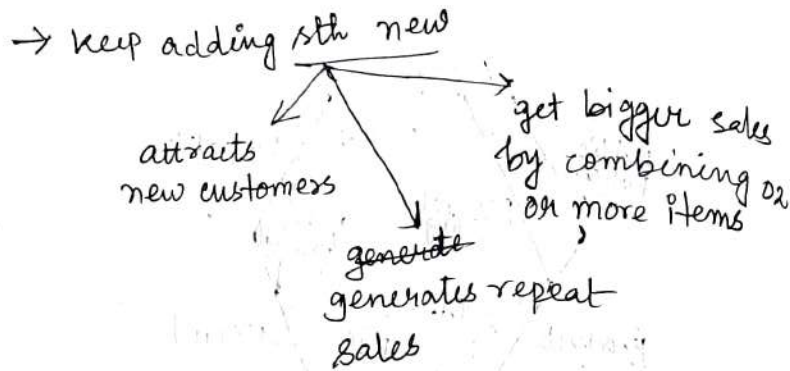
- marketing research
- determination of objectives
- planning marketing activities
- product planning & development
- pricing of product
- promotion
- distribution
- evaluation & controlling of marketing activities.

Marketing management elements



- the inside pentagon portrays the controllable elements, the ones about which the marketing manager can decide.
- the outside ~~penta~~ hexagon portrays the uncontrollable elements.

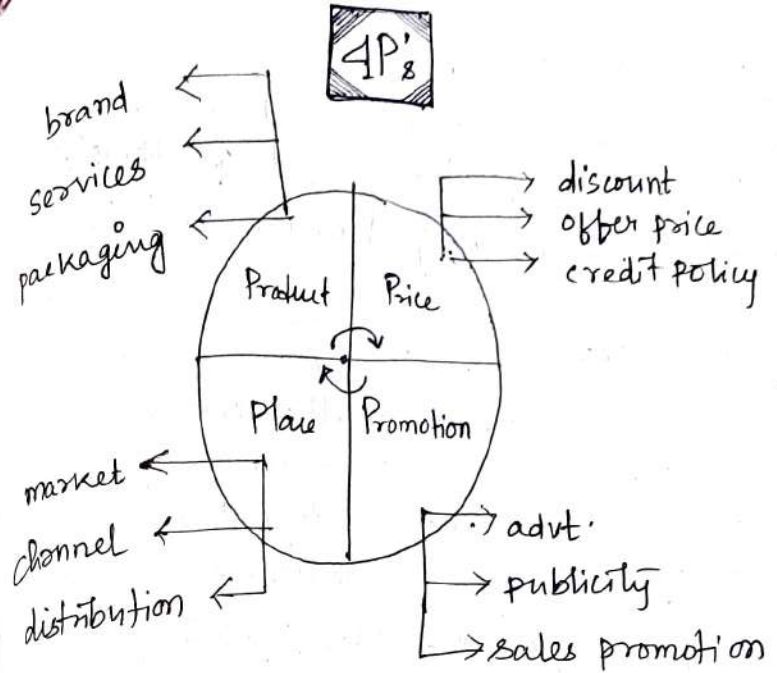
Marketing techniques



- become a valuable resource
- separate yourself from your competition
- promote the end result
(customers want the benefit produced by using it)
- Anticipate change
(expect change & prepare for it).

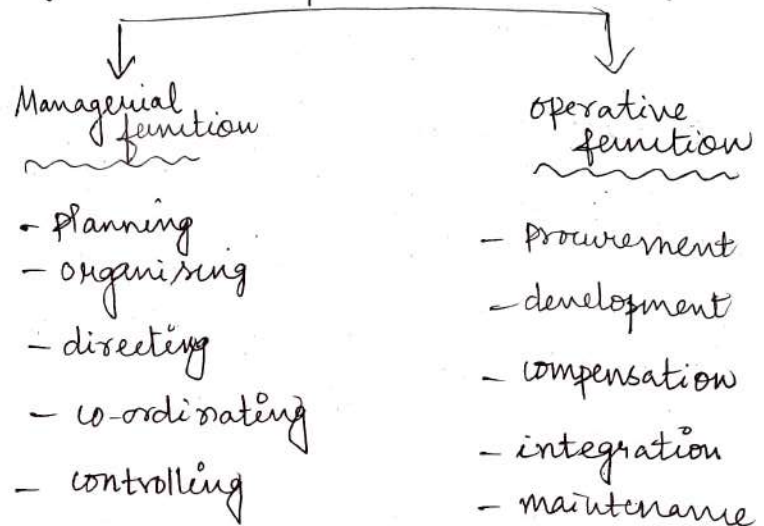
Concept of 4P's

Price
Place
Product
Promotion



② Human Resource Management

functions of personnel management



Manpower planning

→ It is the process of estimating the optimum no. of people required for completing a project, task/ a goal within time.

Recruitment

→ Recruitment refers to the process of identifying, attracting, interviewing, selecting, hiring and ~~on~~ onboarding employees. In simple words, it involves everything from the identification of a staffing need to filling it.

Types

- internal recruiting
- retained "
- contingency "
- staffing "
- outplacement "
- reverse "

Tips for effective recruiting

- look internally before externally
- reach out to passive candidate
- hire the sure thing

Sources of manpower

- internal sources
(personnel already on the payroll of an organization) i.e. promotion, transferred, demoted
- external sources
(advertising, employment exchange, casual callers, recommendation)

Selection process

- preliminary interview
- receiving applications
- screening of ~~applicants~~ applications
- employment tests
- selection interview
- checking of references
- medical exam.
- final selection

Method of testing

- cognitive ability test (reasoning, math, verbal)
- personality test
- physical ability tests
- job knowledge test (candidate's understanding about job)
- work sample
(it asks candidates to show examples of work they have already done)

Methods of training & development

- instructor based training
- online learning
- interactive training methods
- hands on training
- computer based training

Payment of wages

→ A sum of money paid to the staff by the employer for rendering service as per a contract.

factors which influence the wage rates

- * demand & supply of labor
- * legal provisions
- * ability to pay
- * nature of job
- * working hours
- * comparative wage levels
- * cost of living
- * type of employment

— X —

G. Leadership & Motivation

Leadership

Definition & importance

- Leadership is the art of getting someone else to do something you want done because he wants to do it.
- It is the art of guiding a team/individual to achieve a certain goal through direction & motivation. To be a great leader, it is necessary to learn & cultivate the skills it takes to be effective.

Importance of leadership

- essential of a successful business
- leader, an inspiration
- passion
- inspire morale
- vision
- positivity
- listen & communicate
- keeping the vision intact

- patient, a key to great leadership
- let the employees learn more & grow
- translating vision into reality
- actions must be stronger than words
- distribution of tasks
- employee satisfaction
- co-ordinates employee needs & organizational needs
- delegates responsibility

Qualities & functions of a leader

Qualities

- appearance
- vision & foresight
- intelligence
- communicative skills
- objective
- knowledge of work
- sense of responsibility
- self confidence & will power
- humanist
- empathy

Function of leader

Planning

- seeking all ~~information~~ available information.
- defining group task, purpose or goal.
- making a workable plan.

Initiating

- briefing teams on the aims & the plans.
- explain why aim / plan is necessary.
- allocating task to team members.

Controlling

- maintain group standards.
- ensure all actions are taken towards objective.
- prodding grp. to action/decision.

Informing

- clarifying task & play.
- giving new info. to ~~grp~~ group & keeping them in picture.
- Receiving info. from the group.
- ~~Summari~~ Summarizing ideas & suggestions coherently.

Functions of leader

1. Setting goals
2. Organizing
3. Initiating action
4. Co-ordination
5. Direction & motivation
6. Link betⁿ management & workers

Leader

- Do right thing (original)
- challenges
- Innovate
- people focus
- Inspire/motivate
- Strategic thinker
- Ask what & why?
- Long-term thinker
- have followers

Manager

- Do thing right (copy)
- Maintains
- Administer
- system focus
- control/solve problem
- Operational thinker
- Ask how & when?
- plans for execution/output
- have sub-ordinates

Style of leadership

Autocratic

- personal in charge has the total authority & control over decision making.
- Staffs are expected to obey orders without any explanation.
- doesn't consult staff nor any input.
- Rigid organization use this style.

Democratic

- leader shares the collaboration & free flow of ideas.
- Responsibility is shared among all members of staff with leader present to offer guidance & to keep discussion balanced & controlled.
- mutual respect
- Non profit org. (school, boards, forward thinking companies)
- Each team member has equal say in final decision.

Participative

- discuss as a group
- provide information
- The team's input is considered during decision making process, but final decision is ultimately made by the leader.

MRP(C)

Motivation

Defn - It is the state of the individual which disposes him to certain behaviour for seeking goals.

Ex - promotion, monetary

Characteristics

- personal & internal feeling
- art of stimulating someone
- produces goal
- motivation can be either positive/negative.
- It is system oriented.
- It is a sort of bargaining.

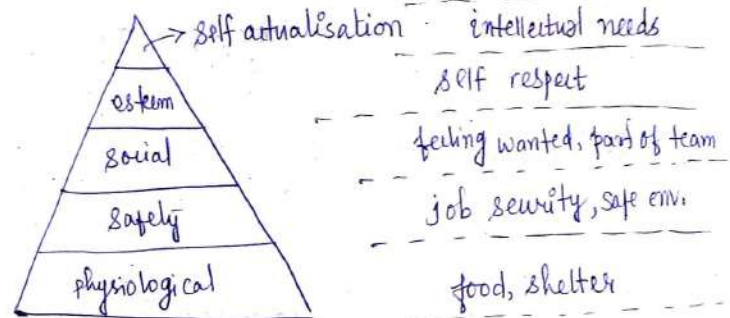
Importance

- improves performance level.
- helps to change negative/indifferent attitudes of employees.
- reduction in employee turnover.
- helps to reduce absenteeism in org.
- reduction in resistance to change.

factors affecting motivation

- appreciation for a job well done.
- being in the know about company matters.
- an understanding attitude from the management.
- job security.
- good wages.
- interesting works.
- career advancement opportunities.
- loyalty from management.
- good working conditions.
- tactful discipline.

Maslow Theory of motivation



- workers motivated as they move upward in hierarchy with each need met.
- 5 levels of need.
- workers must have lower level of needs fully met by firms before being motivated by next level

Methods of improving motivation

- create a culture of recognition (work)
- set small measurable goals
- celebrate results
- stay positive
- stay fueled
- take regular breaks
- stay healthy
- see & share the big picture
- be transparent
- provide clarity
- envision & share outcomes
- find purpose
- loose the reins (flexible time table to meet goal)
- provide a sense of security
- power pose
- encourage ~~team~~ teamwork
- offer small, consistent rewards
- change the ~~see~~ scenario scenario
- practice & promote mindfulness
- have fun

Importance of communication in business

- improves employee engagement
- eliminates email overload
- eliminates communication silos
↓
irrelevant content
- increases employee productivity
- improves interdepartmental communication
- improves communication with remote workers
- reduces employee turnover
- improves knowledge sharing efforts
- increases employee advocacy
(promotion of company by people who work for it)
- improves customer satisfaction & retention
- builds a better company culture

Types of barriers of communication

Types

- Verbal
- non-verbal
- written
- visual
- listening

barriers

- dissatisfaction linguistic
 - psychological
 - emotional
 - physical
 - cultural
 - organisational structure
 - attitude
 - perception
 - physiological
 - technological
 - social religious
- ~ p ~

7. Work Culture, TQM & Safety

Human relationship & performance in organisation :-

- human relationship is the relationship betⁿ one person & another and a group of people within community whether at work or social gathering.
- good human relationship between executives and other staffs will lead to an understanding which can generate co-operation and hence attainment of organizational productivity.

Type

- Informal (developed betⁿ 2 person if close connection)
- formal (relationships having unique & specific obligations, attributes)

effect of human relationship on organization productivity performance

- employee productivity $\propto$ human relationship $\rightarrow$ productivity
- employee motivation $\rightarrow$ productivity
- positive perception (good, bad, worst, better, best)
- company loyalty $\rightarrow$ turnover $\downarrow$

Relations with ~~peers~~ peers, superiors & sub-ordinates.

Peers → Same level with us (intelligent quotient, status, family structure or any other-way)

- we feel comfortable with them while interacting
- ex:- friends, cousins, colleagues

Superiors

- Higher than us (knowledge, experience, intelligent quotient)
- many things to learn from them
- we take time to interact with them directly as they have also an expectation barrier to break first with us.
- they expect respectful treatment from us.
- ex:- teacher, boss, seniors

Sub-ordinates

- lesser than us (age, knowledge, experience, knowledge)
- we feel good dealing with them & even show off seniority.
- they need our reciprocation for their growth.

TQM concepts (Total quality Management)

Quality policy

Defn - It is defined as the management approach to long-term success through customer satisfaction.

Quality policy

→ It is a document developed by management to express the directive of the top management with respect to quality.

→ Overall intentions & directions of an organization with regard to quality concerns, as formally expressed by the top management.

Ex:

Manufacturer of medical devices for diabetics

The quality policy of this manufacturer is -

We provide a comprehensive range of products & services due to which patients are impaired as little as possible by their diabetes. This quality policy addresses quality in its most original sense, namely the degree of fulfillment of a product's or service's characteristics

which meet the real requirement.

Quality Management → principles of quality at all level of an org.

→ It is the art of overseeing all activities & tasks that must be accomplished to maintain a desired level of excellence/quality.

→ It ensures that an organization, product or service is consistent.

4 components QM

→ quality control

→ quality planning

→ quality assurance

→ quality improvement

principles of QM

→ customer focus

→ leadership

→ ~~eng~~ engagement of people

→ process approach

→ improvement

→ evidence based decision making

→ relationship management

Quality System (QS)

→ A QS concerns the way an enterprise goes about running its business to achieve its goals.

→ Many ~~man~~ manufacturing & service enterprises have their quality systems certified against a recognised ~~against~~ a QM standard.

i.e. ISO 9000 standard

↓
provide certifications to org. after all conditions established (std. laid by ISO or other similar orgⁿ)

Accidents & safety

Accident - It is an undesired event & is normally defined as an unplanned event which interrupts the completion of an activity & which may/may not include injury to the person, damage to the property and env. or loss to the process.

→ There are 02 major components which contributed to the cause of accident.

① Work element → cause that directly caused the accident.

② Root cause



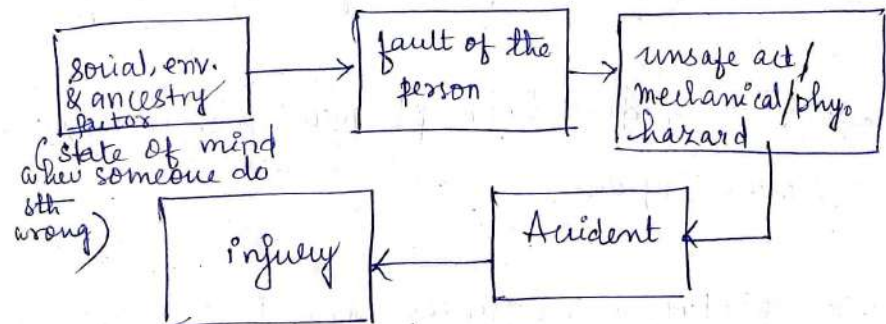
system failure that allowed work element to ~~occur~~ occur.

Ex:- spill of oil & someone slipped, injured

→ throughout investigation reveals the root cause.

Ex:- why oil spilled.

Five factors of Heinrich accident sequence



Multi-Cause theory

Accident → due to many factors

so fundamental root causes are to be found & removed to prevent recurrence.

Preventive measures for accident (workplace)

- always be alert
- avoid slips & falls
- be aware of electric hazards
- limit manual handling & lifting
- keep a well stocked first aid kit in a plain sight.
- create an emergency action plan.
- identify staff who may need extra help in an emergency.
- promote fire safety
- avoid injuries by storing items safely
- help reduce back pain & repetitive strain injuries.
- protect your business against water damage
- don't rush your work
- wear required safety gear

- follow instructions to a tee.
- pay attention to drills & follow emergency
- insist upon proper training.

General safety rules ^{against} for accident

- understand the risks
- reduce workplace stress
- take regular breaks
- avoid stooping/twisting
- use mechanical aids whenever possible
- protect your back/back ^{your} safety prog.
- wear protective equipment to suit the task
- learn how to lift
- stay sober & alert
- be tidy (good housekeeping)
- talk over any concerns
- get first aid immediately
- know your right
- reporting is important.
- never take a chance

Personal Protection Equipment (PPE)

- It protects the person wearing it from some hazard.
- In medical terms, it protects the medical personnel from infectious diseases.
- In other professions, it protects ~~per~~ workers' eyes from flying particles, hands from cuts, protects people from breathing noxious fumes.

Four lines of defense

- ① — Engg. control (engg. the process so no danger)
- ② Substitution (Can you substitute a less dangerous?)
- ③ Administrative (Rules)

④ PPE

~ o ~

8. Legislation

Intellectual Property Right (IPR)

- There are the rights given to persons over the creations of their minds.
- They usually give the creator an exclusive right over the use of his/her creation over a certain period of time.

Types

- copyright
- patents (invention)
- trademarks (signs)
- industrial designs
- geographical indications
- trade secrets

Patents

- A patent is the granting of a property right by a sovereign sovereign authority to an inventor. This grant provides the inventor exclusive rights to the patented process, design or invention for a designed period in exchange for a comprehensive disclosure

of the invention.

- patents protect inventions & discoveries that are new & non-obvious.

- type
- ① utility patents
 - ② design "
 - ③ plant "

Trademarks

- It is a type of intellectual property consisting of a recognizable sign, design or expression which identifies products or services of a particular source from those of others, although trademarks used to identify services are usually called service marks.

- The trademark owner can be an individual, business organization or any legal entity. It may be located on a package, a label, a voucher or on the product itself.

®

Registered trademark
symbol

TM

trademark
symbol

Copyright ©

→ It is a collection of rights that automatically vest to someone who creates an original work of authorship.

→ These rights include right to reproduce the work, to prepare the derivative works, to distribute copies & to perform & display the work publicly.

→ The copy right Act, 1957 came into effect from January 1958. Act has been amended 05 times i.e. 1983, 1984, 1992, 1999 & 2012.

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Features of Factories Act 1947 1948

why - safeguard imp. of workers & stop exploitation.

① Working hours

No adult worker shall be required/allowed to work in a factory for more than 48 hrs. in a week. There should be a weekly holiday.

② Health

- clean air in factory
- proper drainage system
- adequate lighting
- ventilation
- temperature
- adequate arrangements for drinking water.
- sufficient latrines & urinals should be provided.

③ Safety

- machinery should be fenced.
- in confined spaces → provision for manholes of adequate size so that in case of emergency the workers can escape.

④ Welfare

- washing facilities should be provided & maintained for the use of workers.
- facilities for drying clothing, facilities for sitting, first aid appliances, shelters, rest rooms, lunch rooms, canteens should be there.

⑤ Penalties

* If FA 1948 / any rules under act / any provision is violated, it is treated as an offence.

- imprisonment (≤ 1 yr)
- fine (≤ 1 lakh)
- both fine & imprisonment

* If any worker misuses an appliance / safety & health of workers / in relation to discharge of his duties ₹ 500/- fine can be imposed.

Features of Payment of Wages Act-1936

★ Rules for payment of wages ★ (Section 3-6)

- Responsibility for payment of wages (Section-3) by employer
- fixation of wage period (≠ 1 month).
- Time of payment of wages (Section-5)
 - * between 7-10 day of following wage period.
 - * in case of termination wages to be paid before expiry of 2nd working day from the day of termination.
 - * ~~ex~~ exemption on Govt. order
 - * wages to be paid on a working day.

→ Mode of payment of wages (sect. 08):

- * currency coin/notes or both.
- * credit wages in bank amount.

→ ~~deduct~~

→ Deduction from wage (Section 07-13)

- * fine
- * absence from duty
- * damage/loss
- * Services (house accommodation)
- * recovery of advances
- * recovery of loans
- * payment to co-operative societies & insurance schemes.
- * other deductions (IT, order of Court/authority, insurance schemes)

→ Maintenance of registers & records (Section -13A)

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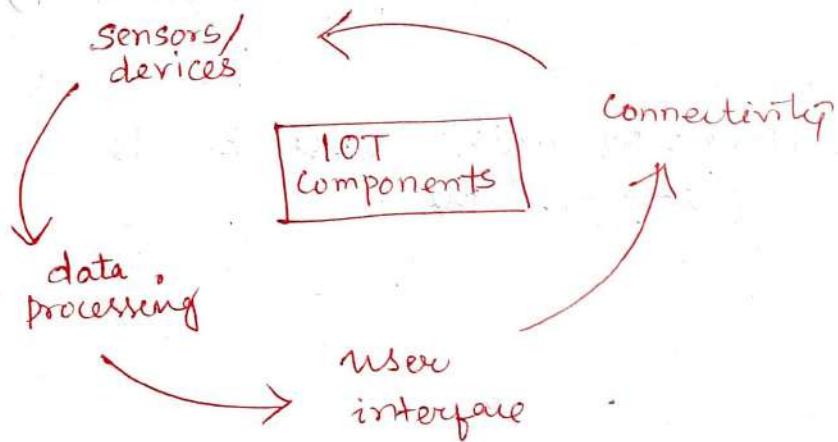
9. Smart Technology

Concept of IOT

→ It refers to the billions of physical devices around the world that are now connected to the internet, all collecting & sharing data.

ex - smart-bulb, laptops
smart watch, smartphones
fitness band etc.

How IOT works



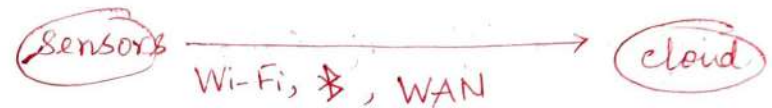
How IOT works

↑ GPS, accelerometer, camera
1. Sensors / Devices

↳ collect data from surroundings.

2. Connectivity

↳ collected data is sent to a cloud infrastructure.



3. Data processing

↳ Once data is collected & it gets to the cloud, the software performs processing on the acquired data.

ex: checking AC temp. on AC.

4. User interface

→ information made available to the end user in some-way.

Components of IOT

- sensors/devices
- network/connectivity layer
- security layers (to safe 'data')
- computer engines
- technology & governance standards
- intelligent insights & actions

Characteristics of IOT

- intelligence
- connectivity
- dynamic nature
- enormous scale
- sensing
- heterogeneity
(IOT should support direct network connectivity betⁿ heterogeneous networks)
- security security

Categories of IOT

- Consumer IOT (smartphones, wearables, fashion items)
- Enterprise IOT (to reduce manual work & increase business efficiency)
- Industrial IOT (IOT for manufacturing & energy management in industries)

Applications of IOT

smart cities

- city lighting applications
- city transit applications
- environmental & wastewater management applications

Smart transportation

- improve traveller exp.
- increase safety
- reduce congestion & energy use

- improve operational performance
- more efficient
- dynamic roadside message sign
- autonomous vehicles
- video surveillance solutions

Smart home

- measuring home condition
(Temp., humidity, light & proximity)
- managing home appliances
- controlling home access
- optimization of spending
(Electricity, water & gas consumption)
- Env. Impact
(Autonomous LED lighting, power consumption & waste management system)
- Improved comfort
- enhance security

Smart healthcare

- IoT devices will give b.p. & heart rate monitoring cuffs, calorie count, exercise check, appointments, blood pressure variation of patients.
- with IoT physicians can track patient's health & provide immediate treatment if req.
- hospitals use IoT for realtime ~~mo~~ tracking location of medical equipments. Deployments of medical staffs at diff. locations can also be analysed.
- health insurance companies also detect fraud claims & identify prospects for underwriting. IoT brings transparency betn insurers & customers in underwriting, pricing, claims handling, risk assessment processes.

Smart Industry

- IoT employs a network of sensors to collect critical production data & uses cloud software to turn this data into valuable insights about the efficiency of manufacturing operations.

Smart Agriculture

- real time update on climate condition
- precision farming
(helps farmers to generate data with the help of sensors & analyze that information to take intelligent & quick decisions)
- agricultural drones
(monitoring, spraying, analysis)
- smart greenhouse
(water consumption & greenhouse state can be monitored, pressure, humidity, temp. & light levels can be monitored)
- data analytics

Smart energy management (EMS)

- empowering energy efficient smart buildings
- saves ~~hundreds~~ hundreds of man-hours for utility providers.
- reduces energy bills.
- support green business initiative.
- minimize carbon ~~emissions~~ emissions.
- optimize asset maintenance.
- automate processes.
- cut operational expenses
- identify malfunction in time & prevent them
- effectively combat outages, accidents & blackouts.
- predict consumption, spending & plan accordingly.