List of Questions :—

1. Definition, concept, Meaning of Management.
2. Nature / Features / characteristics of Management.
3. Importance / significance / Needs / objectives of Management
4. Functions / process of Management.
5. Evaluation of Management
   a) scientific Management
   b) Henry fayol
6. theories of Motivation
   a) Types of Motivation
   b) theories
7. Decision making process / planning process
8. Organisation structures.
9. Principles of Organisation / Typology
10. International Management
    a) Leadership
    b) Organisation Behaviour & Effectiveness.

1. Defination of Organisation :—

Organisation is place where some people gathered and doing some activities.

→ Based on their activities they get salary (or) profit (or) money.

→ Based on their money they satisfied their needs & wants.

→ this is called Organisation.

Organisation is classified into 2 categories. They are

1. Service Organisation
2. Manufacturing Organisation

Service Organisation :—

→ Service Organisation is the organisation which will give services to public.

→ We need not to buy any raw materials to produce a product

→ Service organisation provide services to the customers and gets money from the customer.

Ex: Hospitals, colleges, schools, communication services Etc.....

Manufacturing Organisation :—

→ Manufacturing Organisation is the Organisation at which products are manufactured (or) produced.

→ We need to buy raw materials of better quality to produce a good product.

→ These organisations produce the products and send to markets.

Ex: Cement Factories, Soap factories, Brick Industries Etc.....

Organisation contains some departments

1. Financial Department
2. Human Resource Department
3. Marketing Department
4. Production Department.

Goals of Organisation : ⟶

Major goals :

* Satisfy the needs and Wants of customer.
* Satisfy the needs and Wants of Employee
* Satisfy the needs and Wants of Employer.

Minor goals :

* Increase the profit Rate
* Increase the Sales.
* Reduce the costs.

UNIT - I

1. Defination, concept, Meaning of Management ?

MAN → Manager
AGE → Skill, ability, capability, Talent, experience, Knowledge
MEN → Subordinates, 4 Departments, 5 M's (Money, Men, Machinary, Methods, Material)
T → Technology.

A Manager using of his age not the numerical age but here our meaning is managers skills, abilities, capacities, Talent, experience, knowledge etc.....

By using all these things he maintains his sub-ordinates (all Workers & employees), 4 departments (F, H.R, M, P) and also 5 M's of the Company with the help of technology is called as Management.

Defination :—

According F.W. Taylor : "Management is a art of getting Workdone by Others."

According James L. Lundy : Management is a principally the task of planning, co-ordinating, motivating and controlling the Effort of Other towards specific goals.

According Peter F. Drucker : Management is a multi purpose organ that manages a business manages managers & manages Workers and Work.

According Henry L. Sisk : Management is the co-ordination of all resources through the process of planning, Oganising, directing. and controlling in order to attain stated goals.

2. Nature (or) characteristics (or) Features of Management ?

Art as well as science :

Management is both an art of possessing of managing skill by a person and a science because of developing certain principles of laws applicable in a place where group of activities are co-ordinated.

Management is a discipline :

the boundaries of management are not exact like other physical science. It may be ~~discovered~~ increased by continuous discovery of more aspects of business enterprise.

Management is a multi purpose activity :

Management is concerned with objective acheivements through planning, organising, staffing, directing, controlling and decision making.

Management is a universal Application :

the same principles of management are applicable in every type of industry only the practice differs from one to another.

Leadership quality :

Leadership quality is developed in the persons who are working in the top level management

Management is Intangible :

Management is an unseen or invisible force. It cannot be seen but its presence can be felt everywhere in the form of results. However the managers who perform the functions of management are very much tangible and visible

Management involves efforts of groups :

Organisation consists of individuals and group of individuals. they are assigned specific tasks to complete. Management is a creative process of achieving results. It makes things happen.

Management is an Integrating Purpose :

Management integrates activities of people, men and machine for carrying out operations of Organisations for acheiving the pre-determined goals.

Management is Inseparable :

We cannot separate the duties of one department to other department. Management has 4 department. that departments have their own specific duties

Management should have Authority and Responsibility :

Management should take the responsibility of Employees. It must directs and control the Employees (or) wokers for various activities to acheive the goals.

Management is Interrelated :

Management is interrelated with their own departments like Finance, marketing, H-R & production

3. Important, needs (or) Benefits of Management ?

Al. To Obtain pre-determined goals :—

Management play a significant role in the attainment of pre-determined goals of an organistation. In the absence of an effective management system organisation can never achieve its pre-determined goals in the most Economic and proper way so, Organisation can be able to utilize the proper power of man and resources for the perfect development of Effective management.

Encourages Initiative :—

Management Encourages Initiative. Initiative means to do the right thing at the right time without being told (or) influenced by the superior. Initiative gives satisfaction to Employees and Success to Organisation.

Encourages Innovation :—

Management also encourages Innovation in the organisation. Innovation brings new Ideas, new technology, new methods, new Products, new services etc.... this makes the Organisation more competitive and Efficient.

Facilitates growth and Expansion :—

Management makes optimum utilisation of available resources. It reduces Wastage and increase efficiency. this results the growth and Expansion of Organisation.

Wealth maximization (or) Improve corporate Image :—

If the management is good, then the Organisation will produce good quality goods and services. this will improve the goodwill and image of the Oganisation. This image gets benefits and leads to business Expansion too.

Motivates Employees :—

Management motivates employees by providing financial and non-financial Incentives (bonus, Increments etc...). these Incentives gives (or) increases the willingness of the employees.

Proper use of Resources :—

Management brings together the available resources. If the managements brings best resources they made best products. this results a bring a best quality of product and customer satisfaction too.

Reduces Wastage :—

Management reduces the wastage of material and financial resources. Wastage is reduced by proper production planning and control. If Wastage is reduced then productivity will increase.

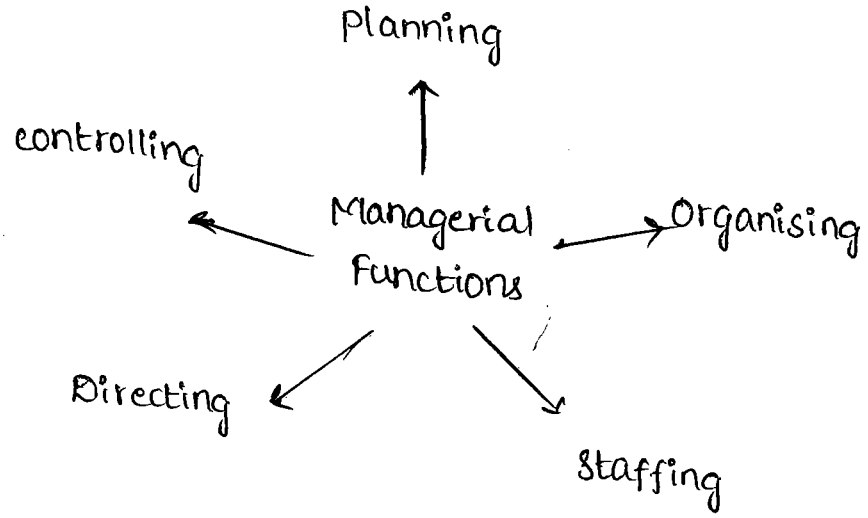
Encourages Team Work :—

Management encourages employees to work as a team. It develops a team spirit in the Organisation. this unity bring success to the Organisation.

Conflict Management & Smooth Functioning :—

It also useful the business to function smooth at the time of difficulties and overcome the problem in a good possible way.

4. Managerial Functions (or) process of Managements



Planning :—

Planning is deciding in advance what is to be done, when it is to be done, how it is to be done. It is basically concerned with the selection of goals to be achieved and determining the effective course of action from among the various alternatives. This involves Forecasting, Establishing targets, developing the policies, programming and scheduling the action, procedure Etc.....

Thus planning requires decisions to be made on what should be done, how it should be done, who will do it, where it will be done and why it is to be done. The Essential part of planning consists of setting goals and performing activities.

Organizing :—

After the plans have been drawn, management has to organize the activities and physical resources of the organisation to carry out the selected programmes successfully. It also involves determining the authority and Responsibility relationships

among functions, departments and personnel at various levels to ensure smooth and effective function together in accomplishing the objective.

Staffing :—

Staffing is concerned with employing people for the various activities to be performed. The objective of staffing is to ensure that suitable people have been appointed for different positions. It includes the functions of recruitment, training and development, placement and remuneration and performance appraisal of the employees.

Directing :

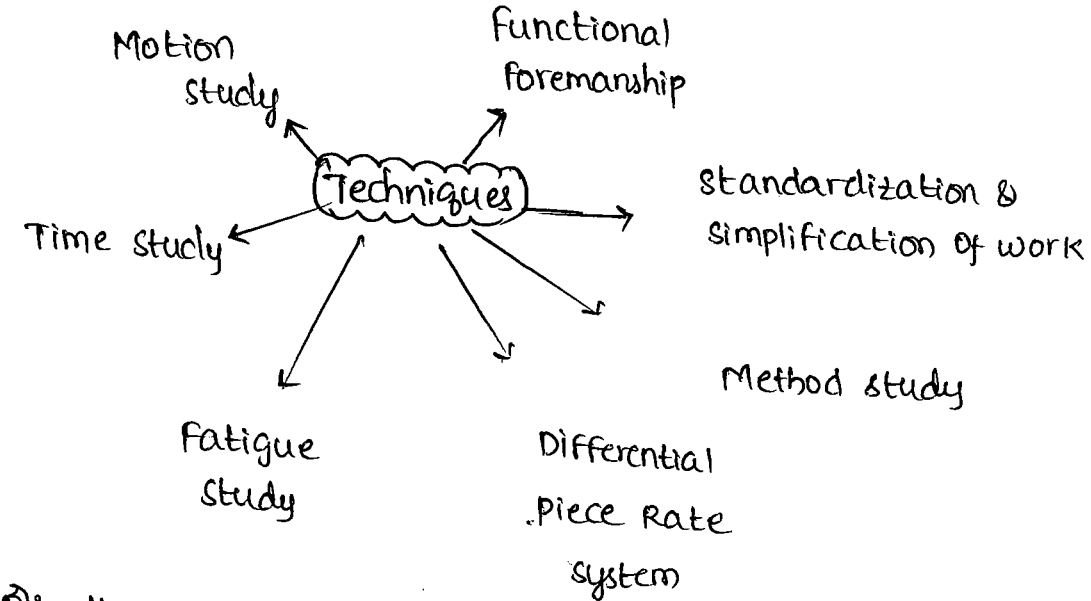
The directing function of management includes guiding the subordinates, supervising their performance, communicating effectively and motivating them. A manager should be a good leader. He should be able to command and issue instruction without any resentment among sub ordinates. The communication system i.e exchange of information should takes place regularly for building common understanding and clarity. The managers should also understand the needs of sub ordinates and inspire them to do their best and encourage initiative.

Controlling :—

This function of management consists of the steps taken to ensure that the performance of work in accordance with the plans. It involves establishing performance standards and measuring the actual performance with the standards. If differences are noticed corrective steps are taken which may include revision of standards, regulate operations and improve performance.

5
a) Scientific Management by F.W. Taylor :—

F.W. Taylor is considered as Father of Scientific Management.



Taylor's 4 Principles :—

1. Replace rule of thumb work methods with methods based on scientific study of task.
2. Scientifically select, train and develop each worker rather than passively leaving them to train themselves.
3. Cooperative with the workers to ensure that developed methods are followed.
4. Divide work nearly equally between managers and workers so that the managers apply scientific management planning.

Method study (or) Work study :

Work study eliminates wasteful and unnecessary operations, reduces effort and increases productivity.

Standardisation :

Standardisation means increase the efficiency and speed of work.

Functional Foremanship :

It is a management technique that advocates for having multiple foremen in different specialized roles.

Job Analysis

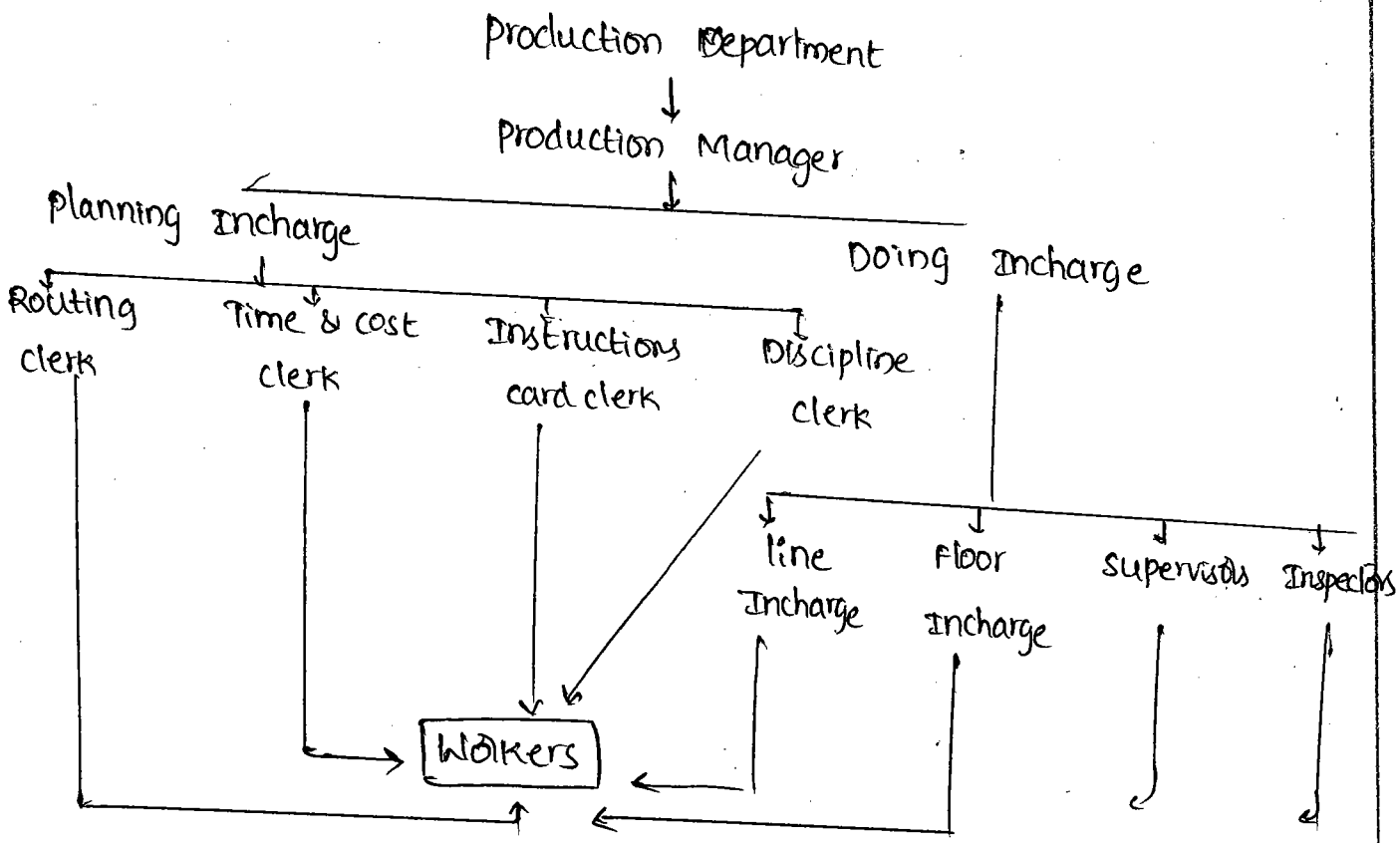
1. Job description
2. Job specification

→ fixing the targets.

→ selection of suitable candidates

→ provide proper training to the employee.

→ Systematic Approach



b) Henry Fayol 14 principles, Modern management (1841-1925).

Henry Fayol divides the activities of business enterprise into six groups : Technical, commercial, Financial, Accounting, security & Administrative or Managerial. His main focus was on managerial activities because he felt that managerial skills had been most neglected aspect of business operation. He defined five management functions as planning, Organising, commanding, co-ordinating and controlling.

Principles :—

i. Division of Work :

Division of work means specialisation. Each job should be assigned to specialised person. various functions of management like planning, organising, directing and controlling can not be performed efficiently by a single person (or) by a group of director.

ii. Authority and Responsibility :

As the management relates to the getting things done through. Others, it is necessary that - manager should have right to give Orders. Formal authority is derived from official positions while personal power is the result of intelligence, experience, ability to lead etc.... there should be proper balance between authority and Responsibility.

Discipline :

Discipline is necessary for smooth operation of Organisation. Discipline means Obedience to authority, sticking to rules of Organisation and norms of performance respect for superior etc.... the discipline can be maintained by

a) good supervision at all levels.

b) clean and fair agreement between Employee & Employer.

Unity of command :

According to Fayol, Each Employee should receive instructions about particular work from one superior only. If one person will get instructions from more than one boss, it can create confusion and chaos.

Unity of direction :

there should be unanimity in Individual goal and organisations goals. there should not be conflict between individual and organisations goals.

Subordination and Individual interest to general interest :

In a business enterprise, an individual is always interest in more money, recognition, satisfaction, image etc... this is against the general interest of maximising production. Hence there is a need to subordinate individual interest to general interest

Remuneration :

Organisation must paid fair remuneration to the employees. It should be based on general business conditions, cost of living, productivity of the concerned employee and capacity of the firm to pay. It also improves relationship between management and Employees.

Centralisation :

If subordinates are given more role and importance, it is decentralisation. But if subordinates are given less role and importance, it is centralisation. the degree of centralisation (or) decentralisation is based on the competency of subordinates, size of firm, type of activities, organisational structure etc.... The ultimate objective must be Effective utilisation of resources.

Scalar chain :—

Scalar chain means hierarchy from highest executive to the lowest for the purpose of communication. It states the relationship between superiors and subordinates. communication should pass through proper channel only.

Order :

There must be order for material and men. the principle of right place for everything and for every man should be observed by the management.

Equity :

Equity means fair treatment. Management must be Equal to Everybody. For this, manager must be free from all personal likes and dislikes. Equity Ensures healthy relation blw management and Workers.

Stability :

To motivate workers for better work they must be assured security of Job by management. If they have fear of insecurity of Job their morale will be low which will hamper their work

Initiative :

Initiative means freedom To think and Execute a plan. Employees must be Encouraged to take Initiative. Employees should be Encouraged to make Suggestions.

Espirit De Crops :

there should be unity among the workers to achieve organisational goals. To acheive this Fayol suggested 2 things

a) Motto of divide and rule should be avoided
b) Use of vertical communication to overcome understanding.

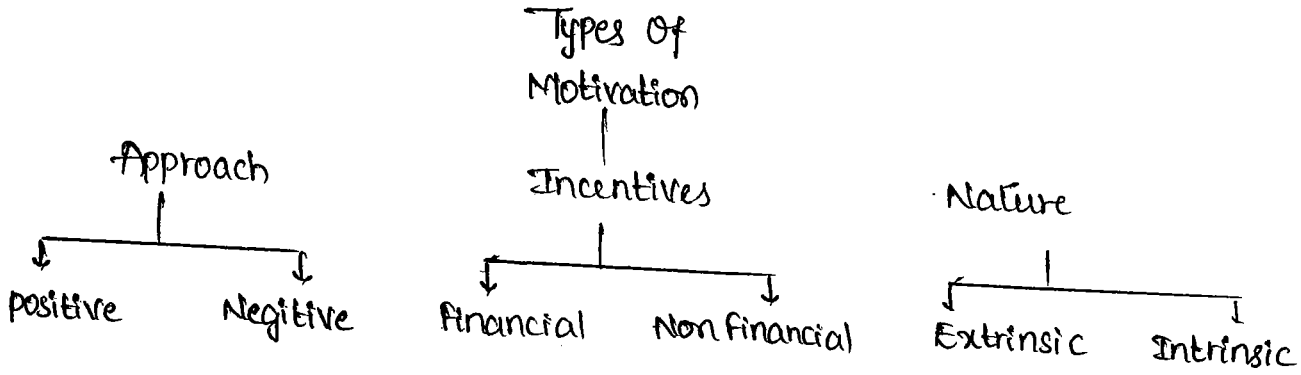
6. Motivation :——

Motivation is the main factor that leads a person to do Something.

Motivation means to provide a need (or) desire that causes a person to act.

this term Motivation derived from the latin word MOVERE which means to move.

According to W.G. Scott : Motivation means a process of stimulating people to action to accomplish desired goals.



Extrinsic Motivation :

Extrinsic Motivation means that the Individuals motivational Stimuli are coming from outside.

Extrinsic motivation is external in nature.

Examples :

Employee of the month Award
Bonuses
Benfit package etc ...

Intrinsic Motivation :

Intrinsic Motivation means that the Individuals motivational Stimuli are coming from within

Examples :

Honor, social status, social contact, curiosity etc ....

Motivation theories

Content theories

↓

Maslows Need Hierarchy

Herzbergs Motivation - Hygiene theory.

M.C Clellands Needs Theory

Alderfer's ERG1 theory

Process theories

↓

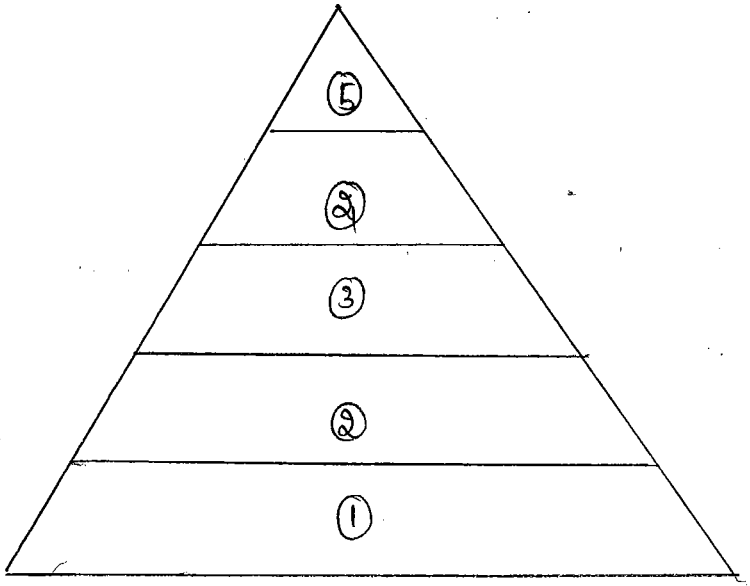
Vrooms Expectancy theory

Adams Equity theory

Goal setting theory

Reinforcement theory.

Maslows Need Hierarchy theory :—



Physiological Needs :

According to Maslow, physiological needs are most basic needs of Individual. these are biological needs required to preserve human life. therefore these needs are called survival needs. For example food, clothing, shelter, water etc.... According to Maslow, individual is not motivated towards next need till physiological need is not satisfied completely. these needs must be satisfied repeatedly but they are finite.

Safety Needs :

Once physiological needs are reasonably satisfied, an individual wants protection from physical dangers and needs Economic security. these are the needs for protection against danger, threat, deprivation and need for Job security. this need arises only when individual is satisfied completely with physiological needs. these needs are finite but acts as motivator. organisation can influence these needs through pension scheme, insurance plan, Job awareness.

Social Needs :

Since people are social being, they need belonging and acceptance by others. this need include belonging, acceptance by others, association, Friendship and love. this need arises only when physiological and safety needs are well satisfied. such needs are infinite as they are considered as secondary needs because they are not essential to preserve human life.

Esteem (Ego) needs :

this need includes self respect, self confidence, satisfaction of power, prestige, status, recognition by others and achievement. this need dominate only when all above three needs are satisfied. these needs are infinite and thwarting them results in feeling of inferiority, weakness and Helplessness.

Self - Actualisation Needs :

Maslow regard this at highest need. It is the desire to become what one is capable of becoming by his potential. He accepts such work which are challenging, Innovative, creative and which results in self development. It is infinite and growth level. Very few persons satisfy this need.

Herzbergs Motivation - Hygene theory (Two factor theory) : —

This theory also known as Hygene theory.

Depending upon his findings, Herzberg divided this theory into two parts which are :

1. Hygene factors
2. Motivational factors.

Hygene factors : —

There is one set of Job condition which dissatisfy the workers if the condition is not present. But their presence do not motivate the workers strongly. This set of condition is called Hygene factors. Hygene factors do not motivate workers but the absence of these factors disatisfy them. Therefore, these factors are also called as dissatisfies.

→ Hygene factors : Salary, status, Job security, company policy, administration, supervision, External working conditions are the Hygene factors.

→ These factors provide a working condition for the worker. These factor prevent losses in work performance by maintaining reasonable level of satisfaction of workers.

→ But absence of these facilities create dissatisfaction among workers which hampers their productivity.

→ But increase in these factor behind the limit do not provide satisfaction and do not motivate employees. But absence of these facilities create dissatisfaction among employees & demotivate them.

Motivation factor :

Motivational factors creates high job satisfaction. But their absence rarely dissatisfies the workers and helps to improve performance.

→ Motivational factors : Feeling of acheivement, Job itself, responsibility, recognition, opportunity for advancement and growth are the motivational factor.

→ these factors motivate the workers very strongly and give them Job satisfaction.

→ An increase in the above factors satisfy the Employees but any decrease do not affect their satisfaction level.

→ Therefore these are used as a motivational factor for achieving Organisational goal through workdone from others.

M. C. Gregors X & Y theory : —

Theory X	Theory Y
→ Suggests that individual has inherent dislike for work	→ Suggests that Individual has not inherently dislike for work. challenging & meaningful work can be great source of satisfaction.
→ Individuals like to be directed and controlled.	→ Individual can exercise self - control & self - direction in his work.
→ Avoid Responsibility	→ Like to accept responsibility under proper working conditions.
→ Lack creativity and resist change	→ creativity is available
→ Focus on lower level needs to motivate workers	→ Both lower and higher level of needs are sources of motivation
→ External control and close supervision is necessary to acheive organisational objectives	→ self direction & self control
→ centralisation of Authority	→ Decentralisation of authority and participative decision making.

J.S. Adams Equity theory :—

First developed in 1963 by John Stacey Adams.

Employees seek to maintain equity blw the inputs that they bring to a Job and the outcomes that they receive from it against the inputs and outcomes of others

the structure of Equity in the workplace is based on the ratio of inputs to outcomes.

1. Equity :

A person feels equitably treated when his outcome / input ratio is equal to other persons outcome / input ratio

$$\frac{\text{Individual outcome}}{\text{Individual Input}} = \frac{\text{Others outcome}}{\text{Others Input}}$$

2. under rewarded Inequity (or) Negitive inequity :

A person ~~who~~ feels under rewarded when his outcome / input ratio is less than whom the person compare himself

$$\frac{\text{Individuals outcome}}{\text{Individuals input}} < \frac{\text{Others outcome}}{\text{Others Input}}$$

Equity theory states that an underpaid worker feels angry.

3. Over rewarded Inequity (or) positive Inequity :

A person feels over rewarded when his outcome / Input ratio is greater than whom the person compare himself

$$\frac{\text{Individuals outcome}}{\text{Individuals input}} > \frac{\text{Others outcome}}{\text{Others Input}}$$

Equity theory states that an overpaid worker produce higher quality

Victor Vrooms theory :—

the theory assumes that behaviour results from conscious choices among alternatives whose purpose is to maximize pleasure and minimize pain.

Valence

Instrumentality

Expectancy.

Valence :

→ the term refers to emotional orientation people hold w.r.t outcomes.

→ valence may vary from −1 to +1

→ If it is -ve the individual prefers not attaining an outcome compared with attaining it.

→ If it is zero the individual is indifferent to the outcome

→ If it is +ve the individual has strong preference to the outcome

Instrumentality :

the Instrumentality refers to the belief that the first level outcome will lead to second level outcome.

The value varies from 0 to 1.

Expectancy :

Expectancy refers to the belief that an effort will lead to completion of a task

The values varies blw 0 to 1.

7. Decision making process (or) planning process ?

"A process of making a choice between a no. of options and committing to a future course of actions."

Steps involved in planning process :—

1. Identify the problem
↓
2. Diagnosing the problem
↓
3. Discover alternative courses of action
↓
4. Evaluate alternatives
↓
5. Select the best Alternatives
↓
6. Implementing & follow up action

Step 1 :

this stage involves understanding with absolute clarity what the issue is and what type of decision is going to be made.

the first thing one has to do is to state the underlying problem that has to be solved. you have to clearly state the outcome that you desire after you have to made the decision

Step 2 :

this stage is where you will do an extensive analysis of the issue. ~~and really do~~

This is necessary to classify the problem in order to know who must take the decision and who must be informed about the decision taken.

Step 3 :

In this step of the decision-making process, you will list all possible and desirable alternatives.

Here you do not have to restrict yourself to think about the very obvious options, rather you can use your creative skills & come out with alternatives that may look little irrelevant.

Step 4 :

One of the most important stages of decision-making procedure where you have to analyze each alternative you have come up with.

Step 5 :

In this step is where the hard work you have put in analyzing would lead to a proper decision.

This includes selecting the alternative which seems to be best suited to you.

Choice of the best alternative is the most critical point in decision making.

Step 6 :

In this step you experience the results of your decision and evaluate whether or not it has solved the need you identified in step 1. If it has, you may stay with this decision for some period of time.

If the decision has not resolved the identified need, you may repeat certain aspect of the process in order to make a new decision.

9. Principles of Organisation :

Principle of objective :

Every organisation, big (or) small, prescribes certain basic objectives. Organisation serves as a tool in attaining these prescribed objectives.

Specialization :

According to this principles division of work between the employees must be based on their ability, capability, tasks, knowledge & interest. this will ensure specialization and specialization will lead to effeciency, quality and elimination of wastage etc....

Scalar principle :

this principle is sometimes known as the chain command. there must be clear lines of authority running from the top to the bottom of the Organisation.

Principle of Authority :

It is the tool by which a manager is able to create an environment for Individual performance.

Principle of unity of command :

One subordinate should be kept in the supervision of one boss only. this principle avoids the possibility of conflicts in the instructions and develops the feeling of personnel responsibility for the work.

Principle span of control :

It is also known as span of Management, span of supervision (or) levels of Organisation etc....

Principles of unity of Direction :

Major objective can be split into functional activities and there should be one objective and one plan for each group of people.

Authority and Responsibility :

the management have a responsibility and authority on employees and employers of all 4 departments (F, H·R, M, P)

Departmentation → useful for fixation of Responsibility

~~Decentralization~~

the process of grouping the activities

Span of control :

It is important to a large degree bcoz it determines the no. of levels & managers an organisation has. Also determing the no. of employes a manager can effeciently and effectively image.

Centralization & Decentralization :

→ the authority to make important decision is retained by top level managers.

→ Decentralization : the authority to make important decisions is delagated to managers at all levels in the hierarchy.

Typology :

Typology means the systematic methods (or) techniques for acheiving common goals of the company. so here we use some specific rules (or) principles to acheive targets.

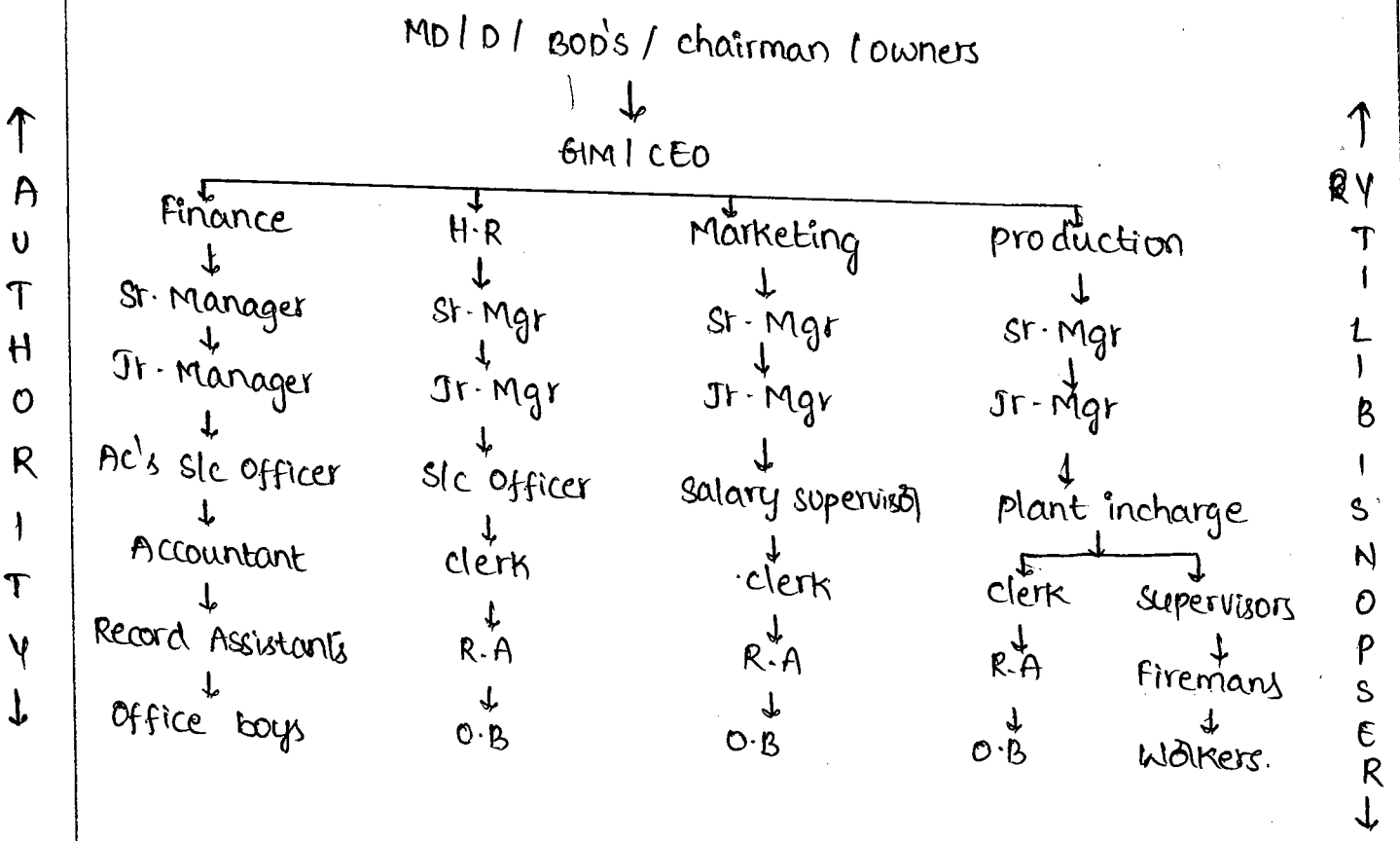
these principles should follow the all departments in the company.

8. Organisation Structures : —

An organisational structure is a system that outlines how certain activities are directed in order to acheive the goals of an Organisation. these activities can include rules, roles and Responsibilities.

Types : —

1. Line Organisation structure



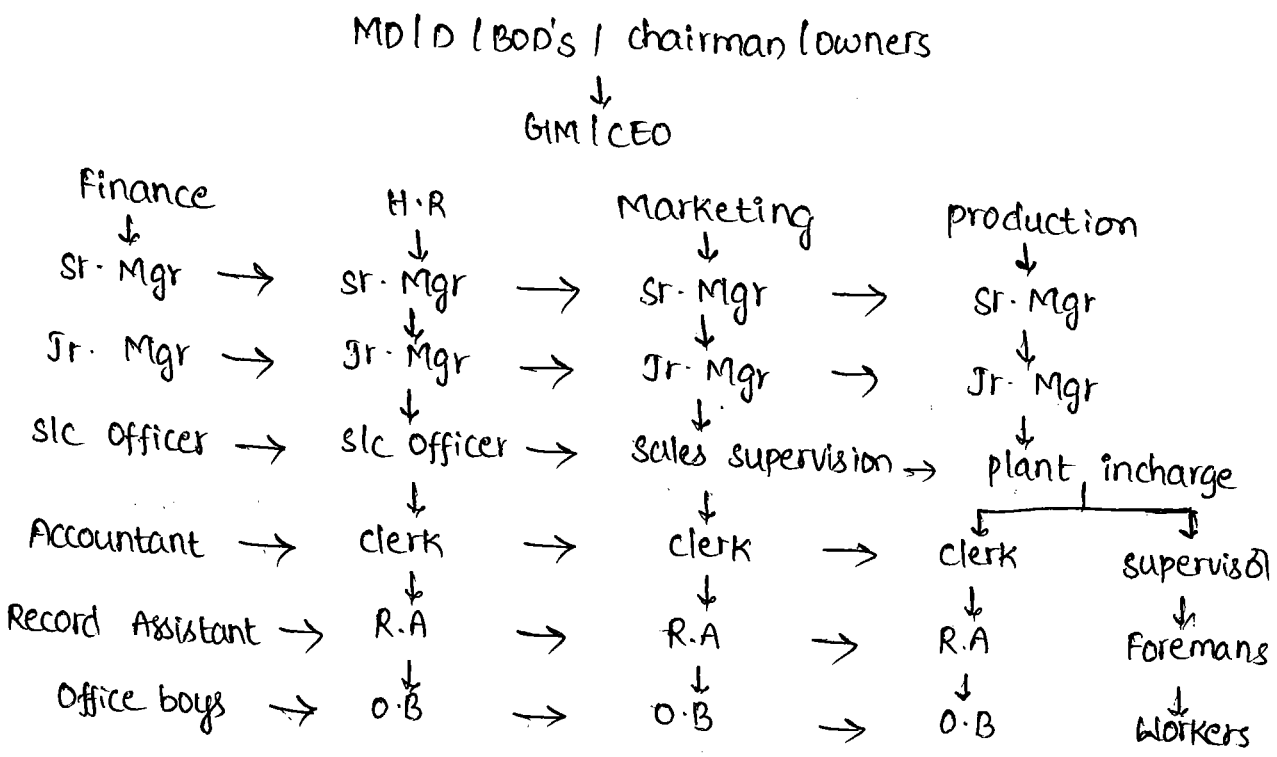
→ Line Organisation is the oldest and the simplest form of Internal organisation structure.

→ In which decision is taken by owner only.

→ In this system authority flows directly and vertically from top to bottom

→ Line Organisation is clearly identifies authority, Responsibility and accountability at each level.

2. Line and staff Organisation :



Most large Organisations belong to this type of organisational structure. these organisations have direct, vertical relationships between different levels responsible for Advising and assisting line managers. such organisations have both line and staff departments.

3. Product / Matrix Organisation structure :

Products	Finance	H·R	Marketing	production
product - 1	Sr. Mgr ! O.B	Sr Mgr ! O.B	Sr. Mgr ! O.B	Sr. Mgr ! O.B
Product - 2	Do	Do	Do	Do
product - 3	Do	Do	Do	Do
product - 4	Do	Do	Do	Do

→ It is a permanent organisation designed to acheive specific results by using teams of specialists from different functional areas in the organisation.

→ If a company having more than one product that the all products and all departments of the organisation structure shown in this one diagram only.

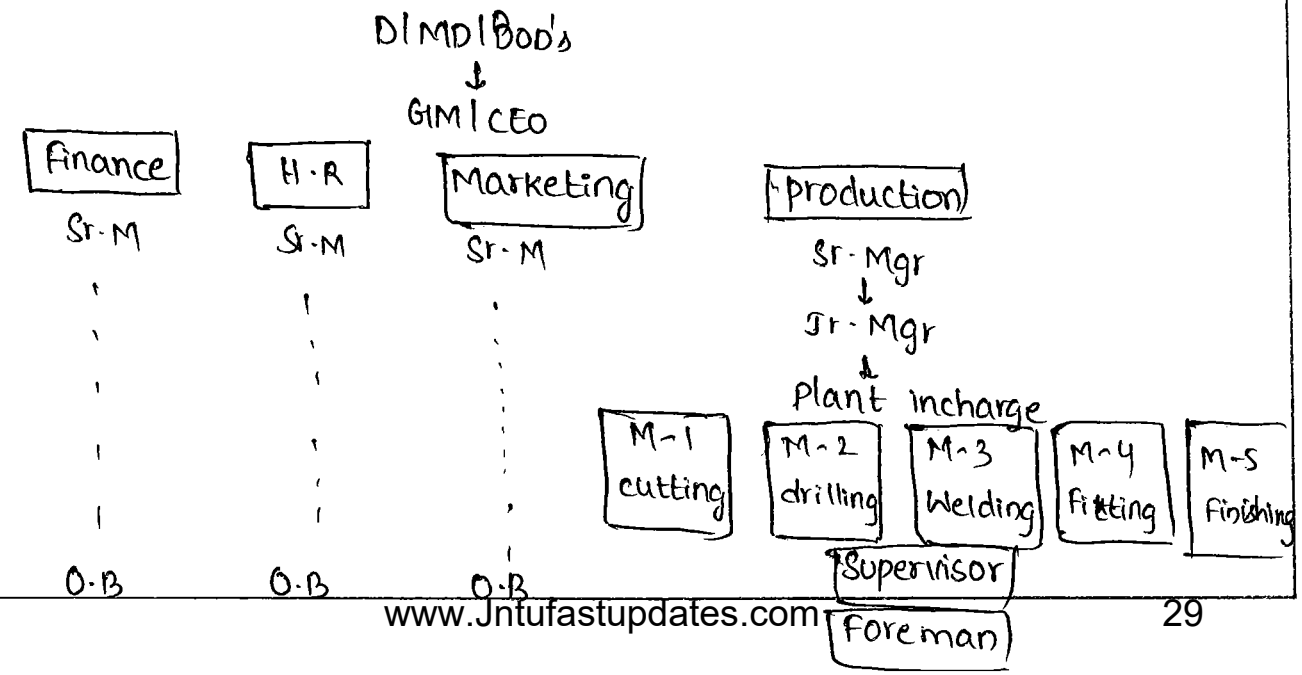
→ All designations are same but production objective is different

4. Project Organisation structure :

Projects	Finance	H·R	Marketing	Production
Project - 1	Sr. Mgr ! O·B	Sr. Mgr ! O·B	Sr. Mgr ! O·B	Sr. Mgr ! O·B
project - 2	DO	DO	DO	DO
Project - 3	DO	DO	DO	DO
Project - 4	DO	DO	DO	DO

A project organisation is a temporary organisation designed to achieve specific results by using teams of specialists from different functional areas in the Oganisation. The team focuses all its energies, resources and results on the assigned project.

5. Functional organisation structure :

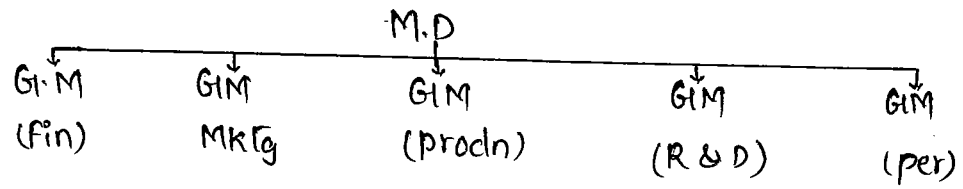


An Organisation where staff departments have authority over line personnel in narrow area of specialization is known as functional authority of Organisation.

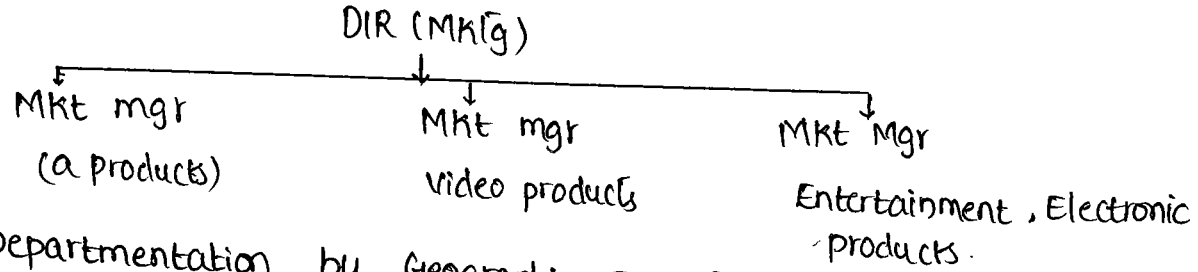
In the line Organisation, the line managers cannot be experts in all the functions they are required to perform. But in the functional authority Organisation, staff personnel who are specialists in some fields are given functional Authority.

6. Divisional Organisational structure :—

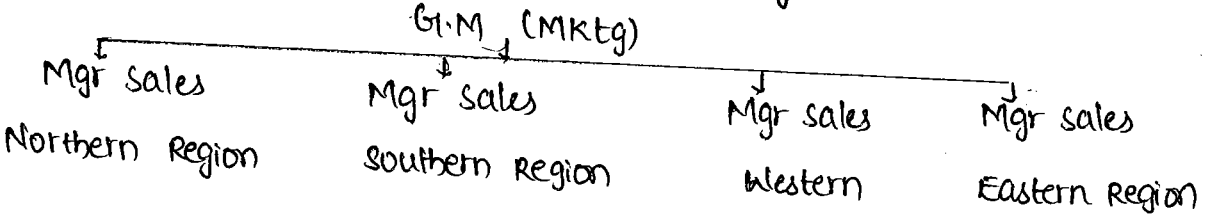
a) Departmentation by function.



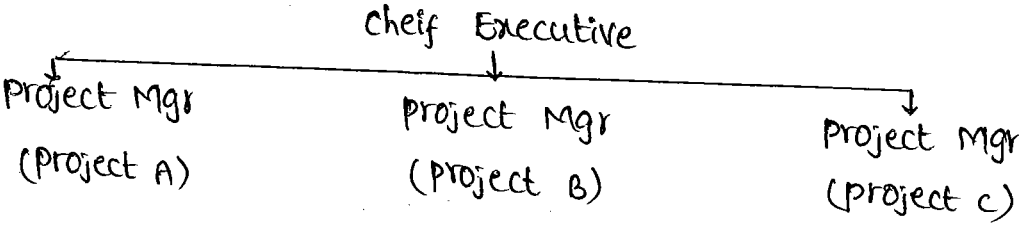
b) Departmentation by Product



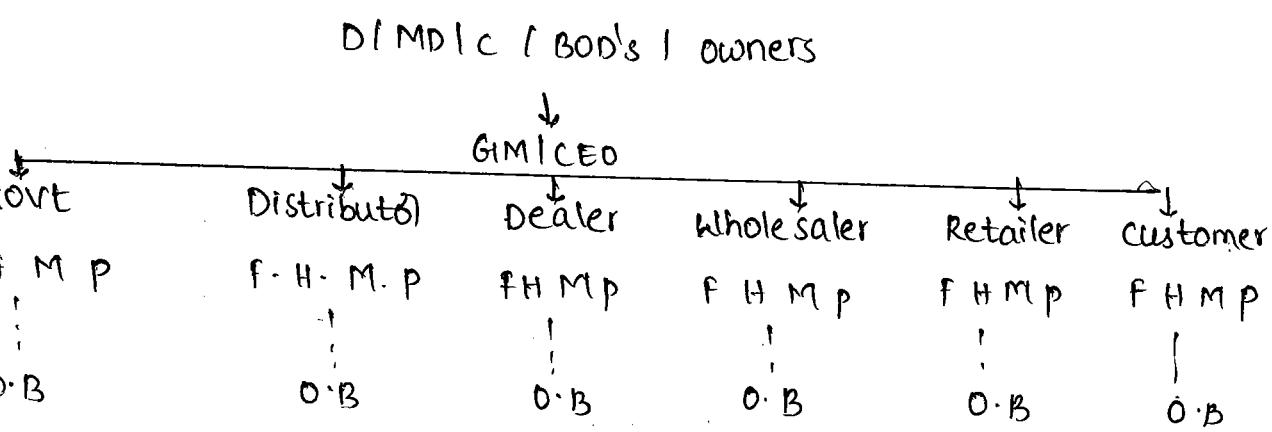
c) Departmentation by Geographic Territory.



D) Departmentation by Project



7. Market / customary Organisational structure :



this type of structure is used by multinational companies operating in the global environment. this kind of structure depends on factors such as degree of International orientation & commitment.

Formal Organisation :—

Formal organisation is an organisation in which job of each member is clearly defined, whose authority, Responsibility and accountability are fixed.

Advantages :

→ Systematic working
→ Achievement of organisational Objectives
→ co-ordination

Disadvantages :

→ Delay in action, Ignores social needs of employees

Informal Organisation :

Informal organisation is formed within the formal organisation as a network of interpersonal relationship when people interact with each other.

Advantages :

→ Fast communication
→ Fulfill social needs

Disadvantages :

→ spread Rumours
→ No systematic working etc....

10)

a) Leadership Management : ——

Leadership is setting a new direction (or) vision for a group that they follow. ~~i.e a leader is the~~ head

In other words leadership is ability to influence people to achieve the given goals in an Organisation.

the word lead means having capacity and authority to lead the team particularly providing directions, Motivating, Encouraging, guiding, skill development, solving disputes of the team for achieving the goals of the company.

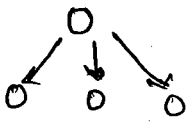
Leadership styles :

Autocratic Leadership style :

Autocratic leadership style is centered on the boss. In this leadership the leader holds all authority and responsibility - In this leadership, leader makes decisions on their own without consulting sub-ordinates

In this kind of leadership, guidelines, procedures and policies are all natural additions of an Autocratic leader.

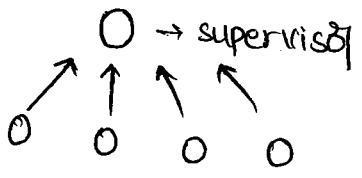
It is one-way communication i.e downward direction



Democratic Leadership style :

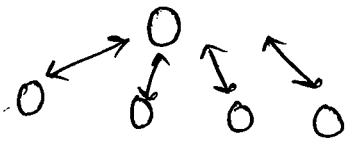
In this leadership style, sub ordinates are involved in making decisions. the democratic leader holds final responsibility but he is known to delegate authority to other people, who determine work projects.

the most unique feature of this leadership is that communication is active upward & downward but mostly upward.



3. Free Rain leadership :—

In this a manager gives complete freedom to his subordinates. the entire decision making authority is entrusted to them. there is free flow of communication. In this style, manager doesn't use power but maintains contact with them. Subordinates have to exercise self control. this style helps subordinates to develop independent personality.



Skills :—

* Authority and Responsibility
* Directing skills
* Motivating skills
* Encouragement skills (or) abilities
* controlling abilities
* Influencing capabilities
* Inspiring others
* Technical skills
* Knowledge
* Talent & Experiences
* Abilities & capabilities
* Communication skills
* Presentation skills
* Qualifications
* Honesty
* Ethics

Diff blw Management and Leadership

Management	Leadership
→ It focuses on Managerial functions	→ It focus on only direction of his team
→ It is not influencing the employees but forcing the employees to do some work	→ It influencing, motivating, Inspiring Employees to do some worke but not forcing.
→ It related to overall organisation	→ It releated to specific department
→ Here we can see BM's, CEO's, director, chairman, M.D, B.O.D's	→ only departmental Heads (or) Supervisors.
→ It focus on set the goal and achieving the goal for overall company.	→ It focus on preparation of plans and procedures to achieve target for their own departments
→ performance measuring for overall company	→ performance measuring for their own department
→ Guiding, controlling, directing, prepare plans for overall company	→ Guiding, controlling, directing prepare plans for their own department
→ Focuses on regulation and ensures that the given system is adhered to.	→ Focuses on creativity & Innovation

b, Organisation behaviour & Effectiveness.

→ Goal oriented

→ Fullfilment of Needs & Wants of customer

→ Inter disciplanary

→ Normative science

→ Systemative Approach

→ Quality of Work life

→ Employees satisfaction

→ Authority & Responsibility

→ Co-Ordination

→ Equality

Written by

17 8X 1A0171

Unit – 2 MANAGEMENT SCIENCE

List of topics/questions in this units:

1) **Principals of Operations Management**
2) **Types of Operations Management**
3) **Inventory – types, system, graph.**
4) **inventory control – techniques, need for inventory control.**
5) **Modern methods of inventory control/inventory management**
6) **Material management – importance / functions**
7) **Purchase process.**
8) **Work Study – method study, work measurement, & Work sampling techniques**
9) **method study – purpose, process, techniques**
10) **work measurement - purpose , techniques**
11) **Work sampling techniques**
12) **Statistical quality control – charts**

1) Principals of Operations Management

It is concerned with converting materials and labor into goods and services as efficiently as possible to maximize the profit of an organization. Operations management attempts to balance costs with revenue to achieve the highest net operating profit possible.

Operations management involves utilizing resources from staff, materials, equipment, and technology. Operations managers acquire, develop, and deliver goods to clients based on client needs and the abilities of the company.

Operations management handles various strategic issues, including determining the size of manufacturing plants and production methods, technology up-gradation, management of inventory levels, work-in-process, raw materials acquisition, quality control, materials handling, and maintenance policies.

Operations management entails studying the use of raw materials and ensuring minimal waste occurs. Operations managers utilize numerous formulas, such as the economic order quantity formula to determine when and how large of an inventory order to process and how much inventory to hold on hand. Operations management is responsible for finding vendors that supply the appropriate goods at reasonable prices and have the ability to deliver the product when needed.

Operations managers are involved in coordinating and developing new processes while reevaluating current structures. Organization and productivity are two key drivers of being an operations manager, and the work often requires versatility and innovation.

Principals of Operations Management

- **Reality.** Operations management should focus on the problem, instead of the techniques, because no tool in itself would present a universal solution.
- **Organization.** Processes in manufacturing are interconnected. All elements have to be predictable and consistent, in order to achieve a similar outcome in profits.
- **Fundamentals.** The Pareto rule is also applicable to operations: 80% of success comes from a strict adherence to precisely maintaining records and disciplines, and only 20% comes from applying new techniques to the processes.

- **Accountability.** Managers are expected to set the rules and the metrics, and define responsibilities of their subordinates, as well as regularly check if the goals are met. Only this way would the workers put in the necessary efforts.
- **Variance.** Variance of processes has to be encouraged, because if managed well, they can be sources of creativity.
- **Causality.** Problems are symptoms: effects of underlying causes. Unless the causes are attacked, the same problems will appear again.
- **Managed passion.** The passion of employees can be a major driver of company growth, and it can be instilled by the managers if not coming naturally.
- **Humility.** Instead of a costly trial and error process, managers should acknowledge their limitations, "get help, and move on."
- **Success.** What is considered success will change over time, but always consider the interest of the customer. In order to keep them, all the other principles have to be revised occasionally.
- **Change.** There will always be new theories and solutions, so you should not stick to one or the other, but embrace the change, and manage for stability in the long term.
- **Team up with customers.** Know what they buy and use, and organize product families accordingly.
- **Continual, rapid improvement.** Aim for non-stop improvement to always deliver the best quality, aim for a quicker response to customer demand, and always offer maximum flexibility. Thus, it gives more value, in a more flexible way.
- **Organize resources.** Set priorities in organizing resources in a way the operations are close to the customer rate of use or demand.
- **Invest in HR.** Offer cross-training options, job rotation, and improvements in work safety and health. Also offer more rewards and recognitions.
- **Maintain equipment.** Always think of improvement of current assets first, instead of a new purchase.
- **Simple "best" equipment.** Keep the equipment as simple and flexible as possible, at a reasonable cost.
- **Minimize human error.** Improve the equipment and keep frontline workers accountable.

2) Types of Operations Management

Operations management is an area of management concerned with designing and controlling the process of production and redesigning business operations in the production of goods or services.[1] It involves the responsibility of ensuring that businessoperations are efficient in terms of using as few resources as needed and effective in terms of meeting customer requirements. Operations management is primarily concerned with planning, organizing and supervising in the contexts of production, manufacturing or the provision of services

TYPES OF PRODUCTION / OPERATIONS MANAGEMENT (or) MANAGER

Operations Management

The operations manager is focused on optimizing general corporate infrastructure by monitoring and changing the work environment, vendor selection, supply chain management, real estate and budgets.

Materials Management

Stores a product through all phases from production to finished goods, shipping between departments, transportation to distribution centers, warehouses, and customers. Materials mangers must insure that the firm has the right item, at the right time, for the right price. This holds for both good and services. For services, the emphasis is on ordering, receiving, storing and distributing any resources required to perform the service. Jobs include: traffic manager, warehouse manager, logistics manager, materials manager.

Purchasing Management Buys the goods and services, raw materials, and supplies required by the firm for its operation. They coordinate the quantity, quality, price, and timing delivery appropriate for the firm's needs. Every firm makes certain purchases each day.

Industrial Production Management

Coordinates the activities of production departments of manufacturing firms. They are responsible for the production scheduling, staffing, quality control, equipment operation and maintenance, inventory control, and coordinating the unit's activities with that of the other departments. Jobs include: line supervisor, manufacturing manager, production planner, production manager.

Operations Research Management

Decides on the best allocation of resources within an organization or system. Resources include time, money, people, space, and raw materials. They might also compare competing research projects to determine what one performs best on time, results, and cost given a fixed set of resources and recommend what project to keep and what project to drop. Jobs include: industrial engineer, systems analyst, office manager, forecaster.

Quality Assurance Management

Works on the prevention of product deficiencies through prevention, detection, and correction. They ensure that production goals and quality are met. They might sample, inspect, and test operations and set standards. With the advent of the Malcolm Baldridge Award many of these manager are part of a firm's total quality management strategic initiatives. Jobs include: quality assurance manager, inspector, technician.

Facilities Management

Designs the physical environment of a company. Work on building design, furniture and associated equipment.

Logistics Management

Responsible for supply chain management in a key area of the corporation. Focused on efficiency and accuracy in receiving and shipping goods. Highly process focued

3) Inventory – types, system, graph

A) INVENTORY – TYPES:

Inventory is defined as a stock or store of goods. These goods are maintained on hand at or near a business's location so that the firm may meet demand and fulfill its reason for existence. If the firm is a retail establishment, a customer may look elsewhere to have his or her needs satisfied if the firm does not have the required item in stock when the customer arrives. If the firm is a manufacturer, it must maintain some inventory of raw materials and work-in-process in order to keep the factory running. In addition, it must maintain some supply of finished goods in order to meetdemand. Generally, inventory types can be grouped into four classifications: raw material, work-in-process, finished goods, and MRO goods.

RAW MATERIALS

Raw materials are inventory items that are used in the manufacturer's conversion process to produce components, subassemblies, or finished products. These inventory items may be commodities or extracted materials that the firm or its subsidiary has produced or extracted. They also may be objects or elements that the firm has purchased from outside the organization.

WORK-IN-PROCESS

Work-in-process (WIP) is made up of all the materials, parts (components), assemblies, and subassemblies that are being processed or are waiting to be processed within the system. This generally includes all material—from raw material that has been released for initial processing up to material that has been completely processed and is awaiting final inspection and acceptance before inclusion in finished goods.

FINISHED GOODS

A finished good is a completed part that is ready for a customer order. Therefore, finished goods inventory is the stock of completed products. These goods have been inspected and have passed final inspection requirements so

that they can be transferred out of work-in-process and into finished goods inventory. From this point, finished goods can be sold directly to their final user, sold to retailers, sold to wholesalers, sent to distribution centers, or held in anticipation of a customer order.

MRO GOODS INVENTORY (SPARE PARAT AND TOOLS)

Maintenance, repair, and operating supplies, or MRO goods, are items that are used to support and maintain the production process and its infrastructure. These goods are usually consumed as a result of the production process but are not directly a part of the finished product. Examples of MRO goods include oils, lubricants, coolants, janitorial supplies, uniforms, gloves, packing material, tools, nuts, bolts, screws, shim stock, and key stock.

B) INVENTORY SYSTEM:

Definition of an Inventory Management System
An inventory management system is the combination of technology (hardware and software) and processes and procedures that oversee the monitoring and maintenance of stocked products, whether those products are company assets, raw materials and supplies, or finished products ready to be sent to vendors or end consumers. A complete inventory management system consists of:

BIN CARD: A BIN Card is a table that records the status of a good held in stock. A typical retailing business with a large stock warehouse will use a BIN card to record a running balance of stock on hand, in addition to information about stock received and notes about problems associated with that stock item.

Barcode scanning: Easily identify and track your products; inventory management software integrates with barcode scanners for instant product identification and labeling.

Stock notifications (Inventory staturs file) : Receive alerts and notifications when there's over- or under-stocking beyond a defined doorstep. This helps you to place orders or offer promotional discounts to clear out extra stock.

Report generation: View sales history in the form of a list of your most popular products. This feature also enables you to manage items in your inventory that have not reached the sales levels you expected, for example, by offering discounts on them.

Material Requirement : inventory into predefined categories and ensure you're always updated about quantities of components and specifications that make up your product stock, and manage their reordering schedules as required.

Purchase order records: Create a single view of purchase order records. You can easily identify which products are in demand, both perpetually and seasonally, and prepare to meet your customers' needs.

Warehouse management: This feature is useful if you need to optimize your warehouse stock and maintain an accurate log of each product's location. It'll give you a single view of where all of your products are stored.

Benefits of Inventory Systems:

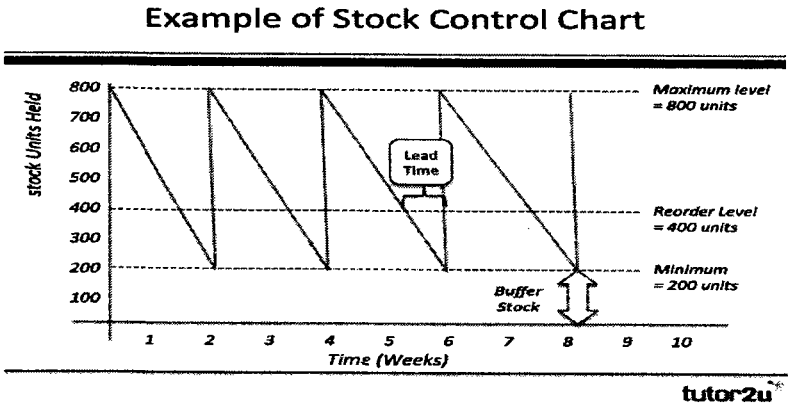
inventory management systems are critical for keeping tabs on current stock levels and understanding what items move quickly and which items are more slow-moving, which in turn enables organizations to determine when it's time to reorder with greater accuracy.

- Improved cash flow
- Better reporting and forecasting capabilities
- Reduction in storage costs (overhead)
- Reduced labor costs
- Reduction in dead stock
- Better organization
- Enhanced transparency
- Improved supplier, vendor, and partner relationships

C) INVENTORY (STOCK) GRAPH/ CHART

The overall objective of inventory (stock) control is to maintain inventory levels to that the total costs of holding stocks is minimise. A popular method of implementing stock control is through the use of inventory (stock) control charts and algorithms that automate the process.

An example of a traditional stock control chart is shown below:



The key parts of the stock control chart are:

Maximum level

- Max level of stock a business can or wants to hold
- Example chart: 800 units

Re-order level

- Acts as a trigger point, so that when stock falls to this level, the next supplier order should be placed
- Example chart: 400 units

Lead time

- Amount of time between placing the order and receiving the stock
- Example chart: just under a week

Minimum stock level

- Minimum amount of product the business would want to hold in stock.
- Assuming the minimum stock level is more than zero, this is known as buffer stock

Buffer stock

- An amount of stock held as a contingency in case of unexpected orders so that such orders can be met and in case of any delays from suppliers

Factors Affecting When / How Much Stock to Re-order

Lead-time from the supplier

- How long it takes for the supplier to deliver the order
- Higher lead times may require a higher re-order level

Implications of running out (stock-outs)

- If stock-outs are very damaging, then have a high re-order level & quantity

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4) inventory control – A) techniques, B) need for inventory control.

Inventory control meaning :

Maintaining the stock necessary to meet customer's **needs**, delivery in time, reaching quality expectations and to minimize the costs holding **inventory**. The three primary objectives of controlling **inventory** levels, safeguard **inventory** and report it correctly. **Inventory control** or **stock control** can be broadly defined as "the activity of checking stock. However, a more focused not only **verifying inventory but also focusing** on the many related part of **inventory management** (such as forecasting future demand) "within an organisation to meet the demand placed order to suppliers based on economy.

Other side of inventory control include supply chain management, production control, financial flexibility, and customer satisfaction. At the root of inventory control, however, is the inventory control problem, which involves determining when to order, how much to order, and the logistics/Trasportations etc., of those decisions.

A) INVENTRORY CONTROL TECHNIQUES:

Economic Order Quantity – EOQ
Economic order quantity (EOQ) is the ideal order quantity a company should purchase for its inventory given a set cost of production, a certain demand rate, and other variables. This is done to minimize inventory holding costs and order-related costs.

The equation for EOQ also takes into account inventory holding costs such as storage, ordering costs and shortage costs. This production-scheduling model was developed in 1913 by Ford W. Harris and has been refined over time. The formula assumes that demand, ordering, and holding costs all remain constant.

The **Formula** for Economic Order Quantity Is

Q=EOQ units

D=Demand in units (typically on an annual basis)

S=Order cost (per purchase order)

H=Holding costs (per unit, per year)

The goal of the EOQ formula is to identify the optimal number of product units to order so that a company can minimize its costs related to buying, taking delivery of and storing the units.

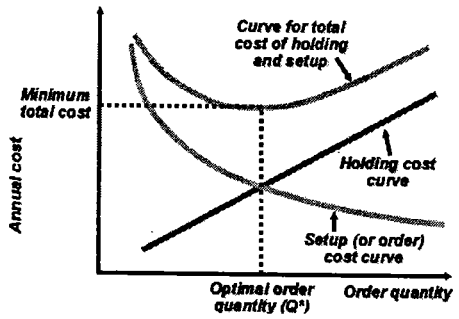
- the EOQ is a company's optimal order quantity that minimizes its total costs related to ordering, receiving and holding the inventory.
- The EOQ formula is best used in situations where demand, ordering, and holding costs remain constant over time.

Assumptions:

- (i) Constant or uniform demand.

- (ii) Independent orders.
- (iii) Instantaneous delivery.
- (iv) Constant ordering costs.
- (v) Constant carrying costs.
- (vi) Constant unit price.

EOQ GRAPH



EPQ: IT is quite similar to EOQ. But, small change is that if supplier is out siders, then it is inventory planning is called EOQ. IF supplier is insider, then plan of inventory is called EPQ (Econmic Production Quantity

Re-ordering level:
It is also known as 'ordering level' or 'ordering point' or 'ordering limit'. It is a point at which order for supply of material should be made.

This level is fixed somewhere between the maximum level and the minimum level in such a way that the quantity of materials represented by the difference between the re-ordering level and the minimum level will be sufficient to meet the demands of production till such time as the materials are replenished. Reorder level depends mainly on the maximum rate of consumption and order lead time. When this level is reached, the store keeper will initiate the purchase requisition.

Re-order level =Maximum Rate of consumption x maximum lead time

Maximum Level of inventory:
Maximum level is the level above which stock should never reach. It is also known as 'maximum limit' or 'maximum stock'. The function of maximum level is essential to avoid unnecessary blocking up of capital in inventories, losses on account of deterioration and obsolescence of materials, extra overheads and temptation to thefts etc. This level can be determined with the following formula. Maximum Stock level = Reordering level + Reordering quantity — (Minimum Consumption x Minimum re-ordering period)

Minimum Level of inventory:
It represents the lowest quantity of a particular material below which stock should not be allowed to fall. This level must be maintained at every time so that production is not held up due to shortage of any material.

It is that level of inventories of which a fresh order must be placed to replenish the stock. This level is usually determined through the following formula:

Minimum Level = Re-ordering level — (Normal rate of consumption x Normal delivery period)

Average Stock Level:
Average stock level is determined by averaging the minimum and maximum level of stock. Average level =1/2 (Minimum stock level + Maximum stock level)

Danger Level:
Danger level is that level below which the stock should under no circumstances be allowed to fall. Danger level is slightly below the minimum level and therefore the purchases manager should make special efforts to acquire required materials and stores.

Safety stock :Safety stock is an additional quantity of an item held by a company in inventory in order to reduce the risk that the item will be out of stock. Safety stock acts as **a buffer** in case the sales of an item are greater than planned and/or the company's supplier is unable to deliver additional units at the expected time.

lead time : The lead time is the delay applicable for inventorycontrol purposes. This delay is typically the sum of the supply delay, that is, the time it takes a supplier to deliver the goods once an order is placed, and the reordering delay, which is the time until an ordering opportunity arises again.

ABC analysis is an approach for classifying inventory items based on the items' consumption values. Consumption value is the total value of an item consumed over a specified time period, for example a year. the *ABC analysis* is an inventory categorization technique. ABC analysis divides an inventory into three categories—"A items" with very tight control and accurate records, "B items" with less tightly controlled and good records, and "C items" with the simplest controls possible and minimal records. (NOTES REFER)

HML analysis. An inventory classification scheme **HML** is based on Pareto principle, or 80/20 rule. In ABC **analysis** the items are categories into. H, M, L category based on unit cost. In this **analysis** cut-off-lines are then fixed by the management of the company to classify the inventory items.

VED Analysis :- It attempts to classify the items used into three broad categories, namely Vital, Essential, and Desirable. The **analysis** classifies items on the basis of their criticality for the industry or company.

FSN stands for fast-moving, slow-moving and non-moving items. Essentially, this segments inventory into three classifications. It looks at quantity, consumption rate and how often the item is issued and used. Fast-moving items are items in your inventory stock that are issued or used frequently.

SDE analysis is based upon the availability of items and is very useful in the context of scarcity of supply. * S refers to scarce items, generally imported, and those which are in short supply. * D refers to difficult items, which are available indigenously but are difficult items to procure.

Sos analysis : Seasonality refers to predictable changes that occur over a one-year period in a business or economy based on the seasons including calendar or commercial seasons.Seasonality can be used to help analyze stocks and economic trends. Companies can use seasonality to help determine certain business decisions such as inventories and staffing.

GOLF Classification:-

The letter stands for Government, Ordinary, Local and Foreign. There are mainly imported items which are canalized through the State Trading Corporation (STC) Minerals and Metals Trading Corporation, etc. Indian Drugs and Pharmaceutical Ltd (IDPL), Mica trading corporation etc. These are special procedures of inventory control which may not applicable to ordinary items as they require special procedures.

B) NEED/ IMPORTANCE/ SIGNIFICANCE/ OBJECTIVES OF INVENTORY CONTROL (or) INVENTORY MANAGEMENT

(i) Reducing Risk of Production Shortages:
Firms mostly manufacture goods with hundreds of components. The entire production operation can be halted if any of these are missing. To avoid the shortage of raw material the firm can maintain larger inventories.

(ii) Reducing Order Cost:
Where a firm places an order, it incurs certain expenses. Different forms have to be completed. Approvals have to obtained, and goods that arrive must be accepted, inspected and counted. These costs will vary with the number of orders placed. Smaller the inventories lesser the capital needed to carry inventories.

(iii) Minimise the Blockage of Financial Resources:
The importance of inventory control is to minimise the blockage of financial resources. It reduces the unnecessary tying up of capital in excess inventories. It also improves the liquidity position of the firm.

(iv) Avoiding Lost Sales:
Most firms would lose business without goods on hand. Generally a firm must be prepared to deliver goods on demand. By ensuring timely availability of adequate supply of goods, inventory control helps the firm as well as consumers.

(v) Achieving Efficient Production Scheduling:
The manufacturing process can occur in sufficiently long production runs and with preplanned schedules to achieve efficiencies and economies. By maintaining reasonable level of inventory production scheduling becomes easier for the management.

(vi) Gaining Quantity Discounts:
While making bulk purchases many suppliers will reduce the price of supplies and component supplies will reduce the price of supplies and component parts. The large orders may allow the firm to achieve discounts on regular basis. These discounts in turn reduce the cost of goods and increase the profits.

(vii) Taking the Advantage of Price Fluctuations:
When the prices of the raw materials are low the firm makes purchases in economic lots and maintains continuity of operations. By reducing the cost of raw materials and procuring high prices for its goods the firm maximises profit. This with the help of inventory control the firm takes advantage of price fluctuations.

(viii) Tiding over Demand Fluctuations:
Inventory control also helps the firm in tiding over the demand fluctuation. These are taken care of by keeping a safety stock by the firm. Safety stock refers inventories carried to protect against variations in sales rate, production rate and procurement time. Inventory control aims at keeping the cost of maintaining safety stock minimum.

(ix) Deciding timely Replenishment of Stocks:
Inventory control results in the maintenance of necessary records, which can help in maintaining the stocks within the desired limits. With the help of adequate records the firm can protect itself against thefts, wastes and leakages of inventories. These records also help in deciding about timely replenishment of stocks.

5) Modern methods of inventory control/ inventory management

1) JUST IN TIME (JIT)

The just-in-time (JIT) inventory system is a management planning to **arranges** the raw material orders from suppliers directly to production based on production schedules. Companies use this inventory strategy to **increase efficiency** and **decrease waste** by receiving goods only as they need them for the production process, which **reduces inventory costs**. This method requires producers to **forecast demand** accurately. And also **Providing** raw materials at right time, right palce, at quality, at quantity and at flexible pricing.

It is also known as **just-in-time production** or the Toyota Production System (TPS) Its origin and development was in Japan, largely in the 1960s and 1970s and particularly at Toyota. The success of the JIT production process relies on steady production, high-quality workmanship, no machine breakdowns, and reliable suppliers.

2) MRP (MATERIAL REQUIREMENT PLANNING)

Material requirements planning (MRP) is a system for calculating the materials and components needed to manufacture a product. It consists of three primary steps: taking inventory of the materials and components on hand, identifying which additional ones are needed and then scheduling their production or purchase. An MRP system is intended to simultaneously meet three objectives:

- Ensure materials are available for production and products are available for delivery to customers.
- Maintain the lowest possible material and product levels in store
- Plan manufacturing activities, delivery schedules and purchasing activities.

3) VENDOR RATING

Vendor Rating (also called: supplier rating) is a system used by buying organizations or industry analysts to record, analyze, rank and report the performance of a supplier in terms of a range of predefined criteria, which may include such things as:

- Quality of the Materials
- Delivery performance and Reliability
- Cost, price
- Right time delivery
- Quantity
- Financial support / Provide credit facility

The method includes defining the criteria and the weight each criterion receives in the overall result, development of the questions and questionnaires, actually carrying out the measurements, and finally interpreting the results. If vendor ratings are carried out periodically or even ongoing, the results (per vendor) can be analyzed and compared over time and finally select vendor

4) VALUE ANALYSIS

the systematic identification of **unnecessary costs** in a product or service and efficiently eliminating them without damage its **quality and efficiency.** It can also be defined as a systematic analysis and evaluation of techniques and functions in the various areas of a concern with a view to exploring of **performance improvement** so that the value attached to a particular product may be improved.

Systematic analysis that identifies and selects the best value alternatives for **designs, materials, processes, and systems.** It proceeds by eliminated defects and wastages, without diminishing the effectiveness, required quality, and gain customer satisfaction. It is Also know as value engineering

5) SUPPLY CHAIN MANAGEMENT:

Supply chain management (SCM) is the broad range of activities required to plan, control and execute a product's flow, from acquiring raw materials and production through distribution to the final customer, in the most streamlined and cost-effective way possible. A supply chain starts with the delivery of raw materials from a supplier to a manufacturer and ends with the delivery of the finished product or service to the end consumer.

supply chain which consists of five parts: 1) the plan or strategy, 2) the source (of raw materials or services), 3) manufacturing (focused on productivity and efficiency), 4) delivery and logistics, and 5) the return system (for defective or unwanted products).

the management of the flow of goods and services,[2] involves the movement and storage of raw materials, of work-in-process inventory, and of finished goods from point of origin to point of consumption. Interconnected, interrelated or interlinked networks, channels and node businesses combine in the provision of products and required by end customers in a supply chain. That are distributors, dealers, whole sellers, and retailers.

6) Material management – importance / functions

Materials Management is related to planning, procuring, storing and providingthe appropriate material of right quality, right quantity at right place in right time so as to co-ordinate and schedule the production activity in an integrative way for an industrialundertaking.

Most industries buy materials, transport them in to the plant, change thematerials in to parts, assemble parts in to finished products, sell and transport the productto the customer. All these activities of purchase of materials, flow

of materials, manufacturethem in to the product, supply and sell the product at the market requires various types of materials to manage and control their storage, flow and supply at various places. It is only possible by efficient materials management.

L.J. De Rose: - "Material management is the planning, directing, controlling and co-ordination of all those activities concerned with material and inventory requirements, from the point of their inception to their introduction into manufacturing process."

N.K. Nair: - "the co-ordination of all those activities which are related to the efficient use of materials".

Material management is a service function. It is as important as manufacturing, engineering and finance. The supply of proper quality of materials is essential for manufacturing standard products. The avoidance of material wastage helps in controlling cost of production. Material management is essential for every type of concern.

Functions of Material Management:

1. Production and Material Control:
Production manager prepares schedules of production to be carried in future. The requirements of parts and materials are determined as per production schedules. Production schedules are prepared on the basis of orders received or anticipated demand for goods. It is ensured that every type or part of material is made available so that production is carried on smoothly.

2. Purchasing:
Purchasing department is authorized to make buying arrangements on the basis of requisitions issued by other departments. This department keeps contracts with suppliers and collects quotations etc. at regular intervals. The effort by this department is to purchase proper quality goods at reasonable prices. Purchasing is a managerial activity that goes beyond the simple act of buying and includes the planning and policy activities covering a wide range of related and complementary activities.

3. Non-Production Stores:
Non-production materials like office supplies, perishable tools and maintenance, repair and operating supplies are maintained as per the needs of the business. These stores may not be required daily but their availability in stores is essential. The non-availability of such stores may lead to stoppage of work.

4. Transportation:
The transporting of materials from suppliers is an important function of materials management. The traffic department is responsible for arranging transportation service. The purpose is to arrange cheap and quick transport facilities for incoming materials.

5. Materials Handling:
It is concerned with the movement of materials within a manufacturing establishment and the cost of handling materials is kept under control. It is also seen that there are no wastages or losses of materials during their movement. Special equipment's may be acquired for material handling.

6. Receiving: The receiving department is responsible for the unloading of materials, counting the units, determining their quality and sending them to stores etc. The purchasing department is also informed about the receipt of various materials.

7. Production Control - As production schedules are generated through demand analysis, the materials that are needed are determined. It is important to find readily available materials to make sure that production flows smoothly.

8. Material Requirement Planning (MRP): Material Requirements Planning (MRP) is a computer-based production planning and inventory Control system. MRP is concerned with both production scheduling and inventory control. It is a material control system that attempts to keep adequate inventory levels to assure that required Materials are available when needed. The **major objectives of an MRP system** are to simultaneously:

- Ensure the availability of materials, components, and products for planned production and for Customer delivery,

- Maintain the lowest possible level of inventory,
- Plan manufacturing activities, delivery schedules, and purchasing activities.

9. Material Quality Control: The quality of the finished products manufactured will depend upon the quality of raw material used to manufacture those products. Therefore, the purchase of right quality of materials is indeed very important. The quality of materials can be measured through proper inspection, specification, quality control, simplification and standardization.

10. System Efficiency: This function ascertains the efficiency of the system being used. If the system used for materials management in inept of faulty, the above objectives cannot be met, irrespective of the procedure adopted. For things to be maintained in an effective manner as planned for managing materials, an effective control ought to be there for every single process in the department.

11. Product Design and Development: The product sales can be boosted with its range and functionality. With the help of the advanced technology such as computer such as Computer Aided Design (CAD), the product can be designed different with a variety of options and yet a fast pace. Another technology development in manufacturing is the computer Aided Manufacturing (CAM) that can bring both a variety as well as flexibility to a product.

12. Estimation and Planning: The MRP can be implemented through accurate estimates of sales and demand for products in the industry. Market fluctuations should be given due consideration to make any production control. The materials management department can make use of one of the methods of forecasting that gives productive results to the organization. Predicting the future demand of sales helps in the planning of materials supply.

The importance of material management :

- The material cost content of total cost is kept at a reasonable level. Scientific purchasing helps in acquiring materials at reasonable prices. Proper storing of materials also helps in reducing their wastages. These factors help in controlling cost content of products.
- The cost of indirect materials is kept under check. Sometimes cost of indirect materials also increases total cost of production because there is no proper control over such materials.
- The equipment is properly utilized because there are no break downs due to late supply of materials.
- The loss of direct labour is avoided.
- The wastages of materials at the stage of storage as well as their movement is kept under control.
- The supply of materials is prompt and late delivery instances are only few.
- The investments on materials are kept under control as under and over stocking is avoided.
- Congestion in the stores and at different stages of manufacturing is avoided.

- It helps to minimize loss by obsolescence,deterioration damage etc.
- It helps to protect against thefts, wastages,etc.
- It helps managers in decision making.
- To minimize capital investment in inventory.
- To minimize cost of material purchasing.
- To increase the storing capacity.
- To maintain reasonable stocks of materials.
- To facilitates regular and timely supply tocustomers.

- To ensures smooth production operations.
- To check national wastage.

7) Purchase process

1. Receiving and analysing purchasing requisition:
Purchase requisitions start with the department or person who will be the ultimate user. In the material requirements planning environment, the planner releases a planned order authorising the purchasing department to go ahead and process a purchase order. **The purchase requisition contains, at least, the following information:**

a. Identity of originator, signed approval, and account to which cost is assigned.

b. Material specification.

c. Quantity and unit of measure.

d. Required delivery date and place.

e. Any other supplementary information required.

2. Selecting suppliers:
Identifying and selecting suppliers are important responsibilities of the purchasing department. For routine items or those that have not been purchased in the past, a list of approved suppliers is kept. If the item has not been purchased before or there is no acceptable supplier on file, a search must be made.

3. Requesting quotations:
For major items, it is usually desirable to issue a request for quotation. This is a written inquiry that is sent to many suppliers to ensure that competitive and reliable quotations are received. It is not a sales order. After the suppliers have completed the quotations and returned it to the buyer, the quotations are analysed for price, compliance to specification, terms and conditions of sale, delivery, and payment terms.

4. Determining the right price:
This is the responsibility of the purchasing department and is closely tied to the selection of suppliers. The purchasing department is also **responsible for price negotiation** and will try to obtain the best price from the supplier.

5. Issuing a purchasing order:
A purchase order is a legal offer to purchase. Once accepted by the supplier, it becomes legal contract for delivery of the goods according to the terms and conditions specified in the purchase agreement. The purchase order is prepared from the purchase requisition or the quotations and from any other additional information needed. A **copy is sent to the supplier**; copies are retained by purchasing and are also sent to other departments such as accounting, the originating department, and receiving.

6. Following-up and delivery:
The supplier is responsible for delivering the items ordered on time. The purchasing department is responsible for ensuring that suppliers do deliver on time. If there is doubt that delivery dates can be met, purchasing must find out the problem in time and take corrective action. This might involve **speed up** transportation, alternate sources of supply, working with the supplier to solve its problems, or rescheduling production.

The purchasing department is also responsible for working with the supplier on any changes in delivery requirements. Demand for items changes with time, and it may be necessary to expedite certain items or push delivery back on some others. The buyer must keep the supplier informed of the true requirements so that the supplier is able to provide what is wanted and when.

7. Receiving and accepting goods: When the goods are received, the receiving department inspects the goods to ensure that correct ones have been sent, are in the right quantity, and the bill of lading supplied by the carrier. The receiving department then accepts the goods and writes up a receiving report noting any variance.

8. Approving supplier's invoice for payment:
When the supplier's invoice is received, there are three pieces of information that should agree – the purchase order, the receiving report, and the invoice. The items and the quantities should be the same on all; the prices, and extensions to prices, should be the same on the purchase order and the invoice.

8) Work Study – method study, work measurement, & Work sampling techniques

Introduction to Work Study.

Work Study is systematic **study** of**methods** of **work** in order to improve effective use of its resources and set standards of performance. It can be applied where a set of processes is involved. ...**Work study** helps to reduce waste through standardization of element of the **job**.

Work Study is systematic study of methods of work in order to improve effective use of its resources and set standards of performance. It can be applied where a set of processes is involved.

Work Study introduces the most effective method of working. It is the most efficient tool in the hands of management to improve efficiency at all levels of the organization. Work study helps to reduce waste through standardization of element of the job.

Work study is conducted in order to identify the current situation in the organization and to find the opportunities of improvement. This will help organizations become more systematic and profitable.

the objective of work study is to assist the management to obtain the optimum use of the human and material resources available to the organization for the accomplishment of the work for which, it is engaged.

Advantages of Work Study:

(1) It is direct means of improving productivity.
(2) It results in uniform and improved production flow.
(3) It reduces the manufacturing cost.
(4) With its help fast and accurate delivery dates are possible.
(5) It provides better service and consumer satisfaction.
(6) It improves employee-employer relations.
(7) It provides job satisfaction and job security to workers.
(8) Better working conditions are possible for workers.
(9) It is most important tool of analysis and can help in providing better wages to workers on scientific basis.
(10) Most accurate method and yet provides a sound basis for production planning, control and incentives for man power.
(11) Everyone concerned with industries is benefited from it such as worker, consumer and management of the unit.

Techniques of Work Study:

Basically there are two techniques:
Method study and work measurement as shown in Fig. 17.1.

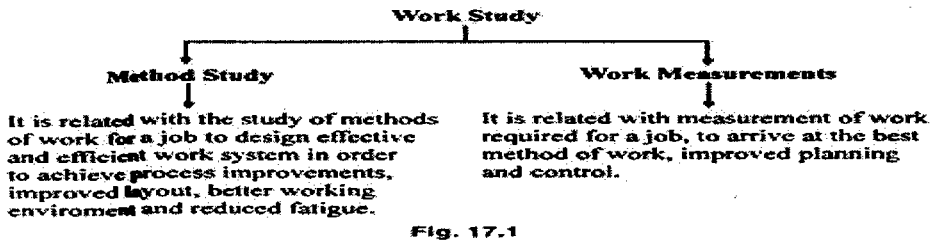


Fig. 17.1

Thus work study is the term used to embrace the techniques of Method Study and Work Measurement which are used to ensure the best utilization of manpower and material resources in carrying out specified activity.(COMBINATION OF NEXT 3 QUESTIONS I.E., 9, 10, 11 Questions REFFER)

9) METHOD STUDY: - A) PURPOSE, B) TECHNIQUES , C) PROCEDURE.

Method study enables the industrial engineer to subject each operation to systematic analysis. The main purpose of method study is to eliminate the unnecessary operations and to achieve the best method of performing the operation. Method study is also called **methods engineering or work design.** Method engineering is used to describe collection of analysis techniques which focus on improving the effectiveness of men and machines.

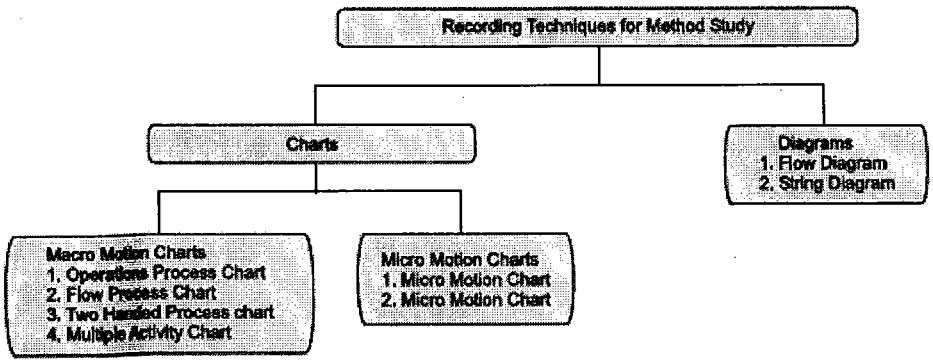
According to British Standards Institution (BS 3138): *"Method study is the systematic recording and critical examination or existing and proposed ways or doing work as a means or developing and applying easier and more effective methods and reducing cost."*

A) METHOD STUDY – PURPOSE/objectives/benifits:

- Better design of plant equipment and buildings.
- Less fatigue or workers by avoiding unnecessary movements of manpower.
- Better working conditions and environment for workers/employees.
- To have more effective utilisation of materials, machines and manpower and money.
- Better Product quality.
- Efficient and fast material handling equipment.
- Leads to standardisation, rationalisation, simplification and specialisation.
- Efficient planning of the section.
- Streamlined working procedures
- Dissatisfaction among the clients/Beneficiaries.
- Escalating operating costs.
- Low morale of the staff.
- Lack of discipline among the employees,visible through late comings,not available during the office hours etc.
- Operating costs-running higher than normal or gradually increasing
- High wastage-poor use of materials, machinery, labour, space and services
- Excessive movement and backtracking ions, handling of materials and men
- Existence of production bottlenecks
- Excessive overtime
- Excessive rejections and reworks
- Complaints about quality
- Complaints from workers-poor working condition of heavy job etc.

B) Method Study - TECHNIQUES

The method study techniques are explained below



CHARTS USED IN METHODS STUDY

This is the most popular method of recording the facts. The activities comprising the jobs are recorded using method study symbols. A great care is to be taken in preparing the charts so that the information it shows is easily understood and recognized. The following information should be given in the chart. These charts are used to measure the movement of operator or work (*i.e.*, in motion study).

a. Adequate description of the activities.
b. Whether the charting is for present or proposed method.
c. Specific reference to when the activities will begin and end.
d. Time and distance scales used wherever necessary.
e. The date of charting and the name of the person who does charting.

Types of Charts

It can be broadly divided into (A) Macro motion charts and (B) Micro motion charts. Macro motion charts are used

MACRO MOTION CHARTS

Following four charts are used under this type:

1. ***Operation Process Chart***
   It is also called outline process chart. An operation process chart gives the bird's eye view of the whole process by recording only the major activities and inspections involved in the process. Operation process chart uses only two symbols, *i.e.*, operation and inspection.
2. ***Flow Process Chart***
   Flow process chart gives the sequence of flow of work of a product or any part of it through the work centre or the department recording the events using appropriate symbols. It is the amplification of the operation process chart in which operations; inspection, storage, delay and transportation are represented. However, process charts are of three types:

   a. Material type— which shows the events that occur to the materials.
   b. Man type—Activities performed by the man.
   c. Equipment type— how equipment is used.

3. ***Two Handed Process Chart***
   A two handed (operator process chart) is the most detailed type of flow chart in which the activities of the workers hands are recorded in relation to one another. The two handed process chart is normally confined to work carried out at a single workplace. This also gives synchronized and graphical representation of the sequence of manual activities of the worker. The application of this charts are:
   - To visualize the complete sequence of activities in a repetitive task.
   - To study the work station layout.

   Multiple Activity Chart

   It is a chart where activities of more than subject (worker or equipment) are each recorded on a common time scale to show their inter-relationship. Multiple activity chart is made:
   - to study idle time of the man and machines,
   - to determine number of machines handled by one operator, and
   - to determine number of operators required in teamwork to perform the given job.

Diagrams Used in Method Study

Flow diagram and

1. String diagram.

1. ***FLOW DIAGRAM***
   Flow diagram is a drawing, of the working area, showing the location of the various activities identified by their numbered symbols and are associated with particular flow process chart either man type or machine type.The routes followed in transport are shown by joining the symbols in sequence by a line which represents as nearly as possible the path or movement of the subject concerned. Following are the procedures to make the flow diagram:

   1. The layout of the workplace is drawn to scale.
   2. Relative positions of the machine tools, work benches, storage, and inspection benches are marked on the scale.
   3. Path followed by the subject under study is tracked by drawing lines.
   4. Each movement is serially numbered and indicated by arrow for direction.
   5. Different colors are used to denote different types of movements.

2. ***STRING DIAGRAM***
   The string diagram is a scale layout drawing on which, length of a string is used to record the extent as well as the pattern of movement of a worker working within a limited area during a certain period of time. The primary function of a string diagram is to produce a record of a existing set of conditions so that the job of seeing what is actually taking place is made as simple as possible.
   Following are the procedures to draw string diagram:

   1. A layout of the work place of factory is drawn to scale on the soft board.
   2. Pins are fixed into boards to mark the locations of work stations, pins are also driven at the turning points of the routes.
   3. A measured length of the thread is taken to trace the movements (path).
   4. The distance covered by the object is obtained by measuring the remaining part of the thread and subtracting it from original length.

MICRO-MOTION STUDY CHART

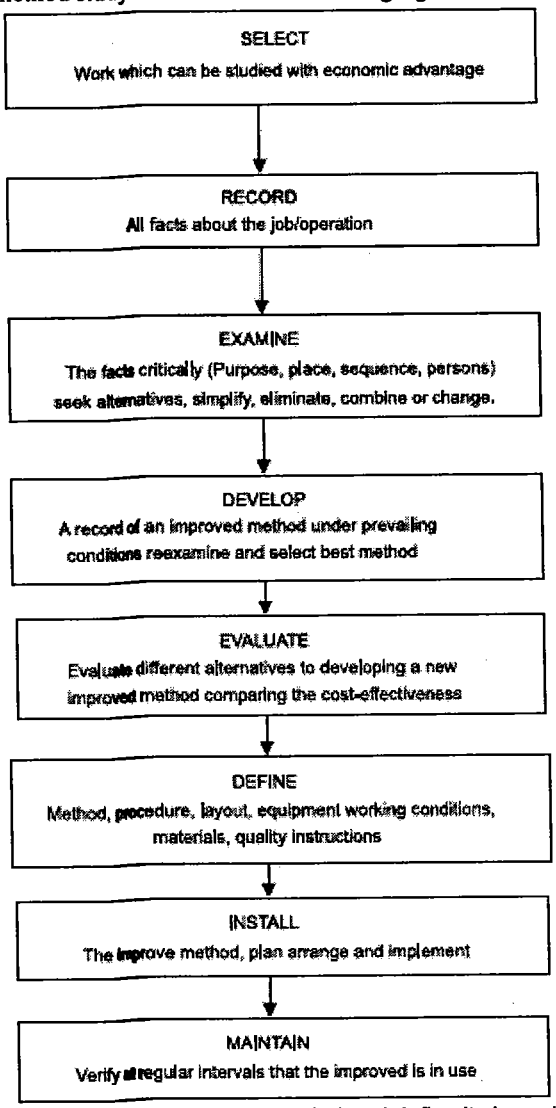
Micro-motion study provides a technique for recording and timing an activity. It is a set of techniques intended to divide the human activities in a groups of movements or micro-motions (called Therbligs) and the study of such movements helps to find for an operator one best pattern
of movements that consumes less time and requires less effort to accomplish the task. Therbligs were suggested by Frank O. Gilbreth, the founder of motion study. Micro-motion study was mainly employed for the job analysis. Its other applications include:

1. As an aid in studying the activities of two or more persons on a group work?
2. As an aid in studying the relationship of the activities of the operator and the machine as a means of timing operations.
3. As an aid in obtaining motion time data for time standards.
4. Acts as permanent record of the method and time of activities of the operator and the machine.

5. **ERGONOMICS (HUMAN ENGINEERING)**
   The word 'Ergonomics' has its origin in two Greek words *Ergon* meaning laws. So it is the study of the man in relation to his work. In USA and other countries it is called by the name 'human engineering or human factors engineering". ILO defines human engineering as, "The application of human biological sciences along with engineering sciences to achieve optimum mutual adjustment of men and his work, the benefits being measured in terms of human efficiency and well-being."

C) PROCEDURE OF METHODS STUDY:

The basic approach to method study consists of the following eight steps. The detailed procedure for conducting the method study is shown in the following figure.



1. ***SELECT*** the work to be studied and define its boundaries.
2. ***RECORD*** the relevant facts about the job by direct observation and collect such additional data as may be needed from appropriate sources.
3. ***EXAMINE*** the way the job is being performed and challenge its purpose, place sequence and method of performance.
4. ***DEVELOP*** the most practical, economic and effective method, drawing on the contributions of those concerned.
5. ***EVALUATE*** different alternatives to developing a new improved method comparing the cost- effectiveness of the selected new method with the current method with the current method of performance.
6. ***DEFINE*** the new method, as a result, in a clear manner and present it to those concerned, *i.e.*, management, supervisors and workers.
7. ***INSTALL*** the new method as a standard practice and train the persons involved in applying it.
8. ***MAINTAIN*** the new method and introduce control procedures to prevent a drifting back to the previous method of work.

10) WORK MEASUREMENT

Work measurement is also called by the name 'time study'. Work measurement is absolutely essential for both the planning and control of operations. Without measurement data, we cannot determine the capacity of facilities or it is not possible to quote delivery dates or costs. We are not in a position to determine the rate of production and also labor utilization and efficiency. It may not be possible to introduce incentive schemes and standard costs for budget control.

A) PURPOSE /OBJECTIVES OF WORK MEASUREMENT

The use of work measurement as a basis for incentives is only a small part of its total application. The objectives of work measurement are to provide a sound basis for:

1. Comparing alternative methods.
2. Assessing the correct initial manning (manpower requirement planning).
3. Planning and control.
4. Realistic costing.
5. Financial incentive schemes.
6. Delivery date of goods.
7. Cost reduction and cost control.
8. Identifying substandard workers.
9. Training new employees.

B) TECHNIQUES OF WORK MEASUREMENT

1. ***Repetitive work***: The type of work in which the main operation or group of operations repeat continuously during the time spent at the job. These apply to work cycles of extremely short duration.
2. ***Non-repetitive work:*** It includes some type of maintenance and construction work, where the work cycle itself is hardly ever repeated identically.

Various techniques of work measurement are:

1. Time study (stop watch technique),
2. Synthesis,
3. Work sampling,
4. Predetermined motion and time study,
5. Analytical estimating.

Time study and work sampling involve direct observation and the remaining are data based and analytical in nature.

1. ***Time study***: A work measurement technique for recording the times and rates of working for the elements of a specified job carried out under specified conditions and for analyzing the data so as to determine the time necessary for carrying out the job at the defined level of performance. In other words measuring the time through stop watch is called time study.
2. ***Synthetic data:***
   A work measurement technique for building up the time for a job or pans of the job at a defined level of performance by totaling element times obtained previously from time studies on other jobs containing the elements concerned or from synthetic data.
3. ***Work sampling: (NEXT QUESTION)***
   A technique in which a large number of observations are made over a period of time of one or group of machines, processes or workers. Each observation records what is happening at that instant and the percentage of observations recorded for a particular activity, or delay, is a measure of the percentage of time during which that activities delay occurs.
4. ***Predetermined motion time study (PMTS):***
   A work measurement technique whereby times established for basic human motions (classified according to the nature of the motion and conditions under which it is made) are used to build up the time for a job at the defined level of performance. The most commonly used PMTS is known as Methods Time Measurement (MTM).
5. ***Analytical estimating:***
   A work measurement technique, being a development of estimating, whereby the time required to carry out elements of a job at a defined level of performance is estimated partly from knowledge and practical experience of the elements concerned and partly from synthetic data. The work measurement techniques and their applications are shown in the following table.

6. ***MOTION STUDY:***
Motion study is a systematic way of determining the best method of doing the work by scrutinizing the**motions** made by the worker or the machine. As per Gilbreath it is the science of eliminating the wastefulness due to unnecessary **motions**.

7.**PRODUCTION STUDY**:
Production study is a continuous and lengthy **study** (may be of days), taken with purpose of checking the present or proposed standard time. It may be used to obtain the information affecting the rate of output. So **production study** is not a standard time setting technique but a checking technique.

C) PROCEDURE OF WORK MEASUREMENT:

(i) Divide the selected procedure into small work elements.

(ii) By direct observations record the relevant information regarding the various work elements.

(iii) In the light of relevant information examine the work critically.

(iv) Measure the work content in the terms of time of the work elements involved in method being adopted.

(v) Define and design the new selected method.

(vi) Finally convert the work content time in standard time.

11) WORK SAMPLING TECHNIQUES

Work sampling is the statistical technique for determining the proportion of time spent by workers in various defined categories of activity (e.g. setting up a machine, assembling two parts, idle...etc.).[1] It is as important as all other statistical techniques because it permits quick analysis, recognition, and enhancement of job responsibilities, tasks, performance competencies, and organizational work flows. Other names used for it are 'activity sampling', 'occurrence sampling', and 'ratio delay study'.[2]

In a work sampling study, a large number of observations are made of the workers over an extended period of time. For statistical accuracy, the observations must be taken at random times during the period of study, and the period must be representative of the types of activities performed by the subjects.

One important usage of the work sampling technique is the determination of the standard time for a manual manufacturing task. Similar techniques for calculating the standard time are time study, standard data, and predetermined motion time systems...

Work sampling, also called 'Activity Sampling' or 'Ratio Delay Study', is based on the statistical method first devised by L.H.S. Tippet in 1934. He used this technique firstly, in the British textile industry. Later Morrow carried out several investigations.

WORK SAMPLING TECHNIQUE

1. Random Sampling:
Under this plan, observations are distributed randomly over the day. There are a number of acceptable methods of achieving this. The most suitable and convenient method uses a table of random numbers. The appropriate type of table is one prepared from a rectangular distribution.

2. Systematic Sampling:
To facilitate more productive utilization of the periods between observations, some work engineers adopt the practice of observing at regular intervals say every 15 minutes or 30 minutes or one hour. Such apian of observation schedule is called systematic sampling.

3. Stratified Sampling: Whenever it is known or suspected that probability of occurrence of a given state of activity is appreciably different during different periods of the study or for different portions of the population of men or machines under study, a stratified sampling plan is preferred.

Under this plan total number of observations are divided into groups such that the number of observations in a group is proportional to the fraction of the men/machines and the group represents total population of men/machines.

4. Cluster Sampling:
When the lot submitted for the inspection consists of certain groups of clusters of items, it may be advantageous and economical to select a few clusters of items and then examine all the items in the selected clusters.

5. Two-Stage Sampling:
When the lot submitted for the inspection consists of larger number of packages, each consisting of number of items, it may not be economical to select few packages and inspect all the items in these packages (as in case of duster sampling).

In such cases, the sample is selected in two stages. In first stage a desired number of packages (primary units) are selected at random and in the second stage, the required number of items are chosen at random from the selected primary units. **Here sampling inspection may be carried out as:**(i) Sampling by attributes, and (ii) Sampling by variables.

6. **Single sampling**

A sampling plan in which a decision about the acceptance or rejection of a lot is based on a single sample that has been inspected is known as a single sampling plan.

7. **Double sampling**

A sampling plan in which a decision about the acceptance or rejection of a lot is based on two samples that have been inspected is known as a double sampling plan. The double sampling plan is used when a clear decision about acceptance or rejection of a lot cannot be taken on the basis of a single sample.

8. Multiple Sampling

Multiple Sampling is an extension of the double sampling concept. Multiple sampling is an extension of doublesampling. It involves inspection of 1 to k successive samples as required to reach an ultimate decision. Multiple sampling plans are usually presented in tabular form ...

12 STATISTICAL QUALITY CONTROL – CHARTS (follow notes also)

Statistical quality control. Statistical quality control refers to the use of **statistical** methods in the monitoring and maintaining of the **quality** of products and services. One method, referred to as acceptance sampling, can be used when a decision must be made to accept or reject...

Statistical process control (SPC) is a method of quality control which employs statistical methods to monitor and control a process. This helps to ensure that the process operates efficiently, producing more specification-conforming products with less waste (rework or scrap). SPC can be applied to any process where the "conforming product" (product meeting specifications) output can be measured. Key tools used in SPC include run charts, control charts, a focus on continuous improvement, and the design of experiments. An example of a process where SPC is applied is manufacturing lines.

VARIABLES CHARTS

Variables control charts plot continuous measurement process data, such as length or pressure, in a time-ordered sequence. It is for **measuring quality of each product.** In contrast, attribute control charts plot count data, such as the number of defects or defective units. Variables control charts, like all control charts, help you identify causes of variation to investigate, so that you can adjust your process without over-controlling it.

A number of samples of component coming out of the process are taken over a period of time. Each sample must be taken at random and the size of sample is generally kept as 5 but 10 to 15 units can be taken for charts.

X –Rn CHART

In statistical quality control, the **X chart** is a type of control chart used to monitor variables data when samples are collected at regular intervals from a business or industrial process.[1]

The chart is advantageous in the following situations:

1. The sample size is relatively small **(only 1 defectives)** are typically used for larger sample sizes)
2. The sample size is constant
3. Humans must perform the calculations for the chart

X-R CHART

In statistical quality control, the **X and R chart** is a type of control chart used to monitor variables data when samples are collected at regular intervals from a business or industrial process.[1]

The chart is advantageous in the following situations:[2]

4. The sample size is relatively small **(say, n ≤ 10— or 2 to 10 defectives)** X and R charts are typically used for larger sample sizes)
5. The sample size is constant
6. Humans must perform the calculations for the chart

X-S CHART

In statistical quality control, the **X and s chart** is a type of control chart used to monitor variables data when samples are collected at regular intervals from a business or industrial process.[1]

The chart is advantageous in the following situations:[2]

1. The sample size is relatively large **(say, n > 10—or more than 10 defectives)** X and S charts are typically used for smaller sample sizes)
2. The sample size is variable
3. Computers can be used to ease the burden of calculation

ATTRIBUTE CHARTS:
the inspection results are based on the **classification/features of products** as being defective or not defective, acceptable as good or bad accordingly as that product confirms or fails to confirm the specified specification.

In manufacturing, sometime it is required to control burns, cracks, voids, dents, scratches, missing and wrong components, rust etc. Here, we inspect products only as good or bad but not how much good or how much bad. Furthermore, there are many quality characteristics that come under the category of measurable variables but direct measurement is not taken for reasons of economy.

p-chart

the **p-chart** is a type of control chart used to monitor the proportion of non - conforming units in a sample, where the sample proportion nonconforming is defined as the ratio of the number of nonconforming units to the sample size, n. Simply, features checking of a product, for a particular time of production, varied sample and measuring number of defectives then we use p-chart

The p-chart only accommodates "pass"/"fail"-type inspection as determined by one or more go-no go gauges or tests, effectively applying the specifications to the data *before* they are plotted on the chart. Other types of control charts display the magnitude of the quality characteristic under study, making troubleshooting possible directly from those charts.

np-chart

the **np-chart** is a type of control chart used to monitor the number of nonconforming units in a sample. It is an adaptation of the p-chart and used in situations where personnel find it easier to interpret process performance in terms of concrete numbers of units rather than the somewhat more abstract proportion. Simply, features checking of a product, for a particular time of production, constant sample and measuring number of defectives then we use np-chart

u-chart

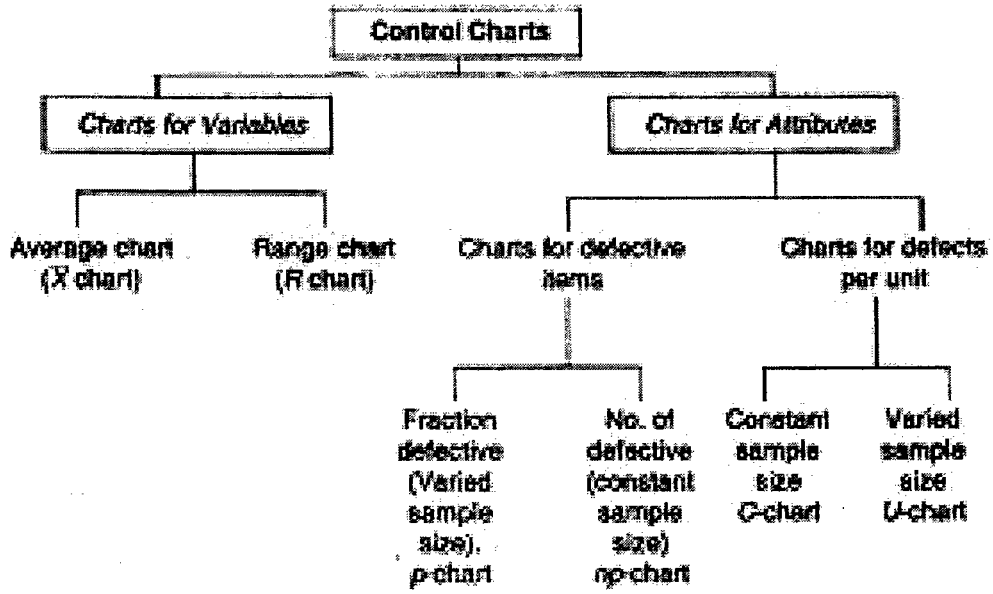
the **u-chart** is a type of control chart used to monitor "count"-type data where the sample size is greater than one, typically the average number of nonconformities per unit.

The u-chart differs from the c-chart in that it accounts for the possibility that the number or size of inspection units for which nonconformities are to be counted may vary. Larger samples may be an economic necessity or may be necessary to increase the area of opportunity in order to track very low nonconformity levels. Simply, features checking of a product, and the lot size varid sample and measuring number of defects then we use u-chart

c-chart

the **c-chart** is a type of control chart used to monitor "count"-type data, typically total number of nonconformities per unit.[1] It is also occasionally used to monitor the total number of events occurring in a given unit of time.

The c-chart differs from the p-chart in that it accounts for the possibility of more than one nonconformity per inspection unit, and that (unlike the p-chart and u-chart) it requires a fixed sample size. The p-chart models "pass"/"fail"-type inspection only, while the c-chart (and u-chart) give the ability to distinguish between (for example) 2 items which fail inspection because of one fault each and the same two items failing inspection with 5 faults each; in the former case, the p-chart will show two non-conformant items, while the c-chart will show 10 faults. Simply, features checking of a product, and the lot size constant sample and measuring number of defects then we use c-chart



- THE END -

Unit – 3 MANAGEMENT SCIENCE

List of topics/questions in this units:

1) **Functions of HRM/HR Manager's Functions**
2) **Wage Incentives**
3) **Job evaluation methods**
4) **Merit rating / performance appraisal methods**
5) **Marketing functions**
6) **Product life cycle**
7) **Channels of distribution / channel management.**
8) **Operationlizing change through performance management**

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1) What is HRM? Meaning and definitions , what are the Functions of HRM/HR Manager's Functions

Ans) : Human Resource Management is the process of recruiting, selecting, inducting employees, providing orientation, imparting training and development, appraising the performance of employees, deciding compensation and providing benefits, motivating employees, maintaining proper relations with employees.

Among the **five Ms** of management, i.e., men, money, machines, materials, and methods, HRM deals about the first M, which is men. It is believed that in the **five Ms, "men" is not so easy to manage**. "every man is different from other" and they are totally different from the other Ms in the sense that men possess the power to manipulate the other Ms. Whereas, the other Ms are either lifeless or abstract and as such, do not have the power to think and decide what is good for them.

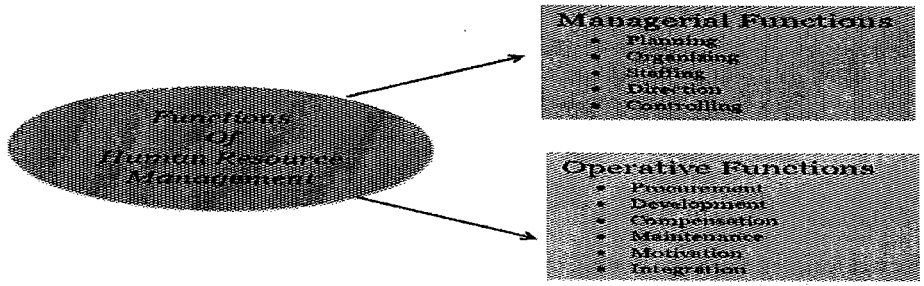
DEFINATIONS:

According to Michael J. Jucius - "a whole consisting of inter-related, inter-dependent and interacting physiological, psychological, sociological and ethical components".

According to Decenzo and Robbins,- "Human Resource Management is concerned with the people dimension" in management. Since every organization is made up of people, acquiring their services, developing their skills, motivating them to higher levels of performance and ensuring that they continue to maintain their commitment to the organization is essential to achieve organsational objectives.

The National Institute of Personal Management (NIPM) - "that part of management which is concerned with people at work and with their relationship within an enterprise. Its aim is to bring together and develop an effective organization to make their best contribution to its success".

HR FUNCITONS:



MANAGERIAL FUNCTIONS:

PLANNING

Planning is the first and basic function of the management and everything depends upon planning as it is a process of thinking about things before they happen and to make preparations in-advance to deal with them. Poor planning results in failure and effects overall system. Therefore HR Mangers should be aware of when is right time to do things, when things should be done and when things should not be done in order to achieve goals and objectives of the organization.

ORGANIZING

HR managers should be well aware of organizing everything related to human resource and organisation as organizing is the process of making and arranging everything in the proper manner in order to avoid any confusion and conflicts.

- Giving each member a specific tasks to finish overall objectives.
- Establishing departments and divisions of work.
- Delegating authority and responsibilities to the members
- Creating a system and coordinate the works of the members

STAFFING

Staffing is one of the key functions of human resource management as staffing is the process of employing right people, providing suitable training and placing them in the right job by paying them accordingly and satisfactorily.

- Determining the type of people to be hired
- Compensating the employees
- Setting performance standards,
- measuring and evaluating the employees
- Counselling the employees.

DIRECTING

Directing is a knowledge, discipline and formal way of communicating to others that what you are expecting from them to do for an organization. When a HR manager has right directing capabilities, it is gives clarity for employees what they are expected to perform, removes confusion in employees and gives clarity of what results are expected by the management from employees.

CONTROLLING

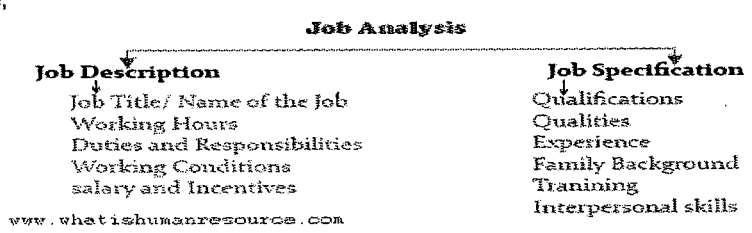
HR managers should have the knowledge of controlling all HR related matters, as they should be able to think and decide what should be done and what should not be done and which should be done and which should not be done while dealing with employees.

- Establishment of **standard performance** so as to measure the actual performance of the employees by conducting performance evaluation for appraisals
- **Measurement of actual performance** with the established performance standards of employees for finding out gaps in employee performance.
- **Actual performance compare with the standard** one to find the deviation for initiation of corrective actions, if there are any deviations. **Corrective actions** include giving proper and suitable training to such employees or withholding of increments in payments until performance gaps are none.

OPERATIVE FUNCTIONS:

PROCUREMENT - HR

- **Job analysis** is a systematic process of gathering all the data & information pertaining to the job for preparing of job specification which determine the skills, qualifications & qualities for job and preparation of job description which describes the duties and responsibilities so as to recruitment andselection of employee,



- **Recruitment & selection**
  - **Recruiting** is the process of inviting qualified job seekers by issuing notification in regular newspapers ,or employment newspapers, employment news and notifications, television media, online and on social networking websites which have become mostly used resources for recruitment and hiring people.
  - Subsequently, **selection** of right person form the pool of candidates by administering various selection tests like preliminarily screening, written tests, oral tests and interviews etc.
- **Human resource planning** (HRP):. The objective is to place right personnel for the right work and optimum utilization of the existing human resources. HRP exists as a part of the planning process of business. The major activities of Human resource planning include:
  - forecasting (future requirements of employees),
  - inventorying (present number of employees),
  - anticipating (comparison of present and future requirements)
- **Induction & Orientation**:

- Induction of Employee is the first step towards gaining an employees' commitment,
- Induction is aimed at introducing the job and organization to the recruit and him or her to the organization.
- Orientation is the planned introduction of new employees to their jobs, coworkers, and the organization so as to alien an employee with their job role.
- Explain the role employees have to play to achieve organization's goals.

DEVELOPMENT - HR

- **Career planning and Career development;** HR managers should help their employees in knowing their strengths for placing them in suitable job, guide employees what skills and knowledge should be acquired for attaining higher positions, planning for suitable training for polishing existing skill set and providing good work-life-balance to make balance between career and personal life, after all, every one work for their personal life .
- **Employee training and development** is the subsystem of an organization and core function of human resource management. It ensures continuous skill development of employees working in organisation and habituates process of learning for developing knowledge to work.

COMPENSATION - HR

- **Wages or salary administration** as prescribed by the labour laws, Wages for workers or salary for employees is the basic and primary thing for which employee's work for an organization.
- **wages** are classified as

1. Minimum wage - It is also called as irreducible wage, which should be sufficient for worker to get food clothing and shelter.
2. Fair wage - Wage which is paid according to the work of the work
3. Living wage - It is just above minimum wage, which is sufficient to meet minimum health expenses, children education with food, clothing and shelter.

Salary of employees is paid monthly and it consist of various components like basic pay, dearness allowance and house rent allowance especially in the case of government employees. Whereas private employees' salary normally doesn't consist of said components as it is paid under single head .salary format will be

Salary = Basic pay+ Dearness allowances+ House rent allowance.

- **Employee rewards, and benefits** payments according to the employment and labour laws. Employee benefits are categorised into statutory or mandatory and voluntary benefits.

1. Additional fixed pay(O.T)
2. retirement benefits
3. training opportunities
4. incentives
5. insurance benefit
6. health care assistance

MAINTENANCE / MOTIVATION - HR

- **security for employees;** Providing and contributing Employee Provident fund, Payment of Bonus, compensation, payment of gratuity, maternity benefit, paternity benefit and employee insurance
- **Worker's participation** encouraging workers individually or collectively, and become involved in one or more aspects of organizational decision making within the enterprises in which they work Would make employees feel motivated, satisfaction and stay loyal to the management.
- **Motivating employees** : identify the desire and energy in employees and set the target and benefit to interested in a job and committed to do it for attaining a goal. The most important motivating factors for employees are to have a healthy and good working environment, and to have good monitory/ non monitary (financial /non- financial) benefits, compensation and rewards, to have encouragement and support from management and to have a chance of

INTEGRATION - HR

- **Industrial relations** is the process of management dealing with one or more unions with a view to negotiate and subsequently administer collective bargaining agreement or labour contract. Maintaining proper industrial relationships is the core activity of Human Resource Management so as to avoid industrial disputes.

- **Employee Discipline** is a systematic procedure the set-rights and corrects or punishes a subordinate by superior because a rule of procedure has been disobeyed or violated. Discipline is the force that prompts employees to observe rules, regulations, standards and procedures deemed necessary for an organization.

- **Dispute settlement :** Causes of industrial disputes can be broadly classified into **two categories**: economic and non-economic causes.

  - The **economic causes** will include issues relating to compensation like wages, bonus, allowances, and conditions for work, working hours, leave and holidays without pay, unjust layoffs and retrenchments.
  - The **non economic** factors will include victimization of workers, ill treatment by staff members, sympathetic strikes, political factors, indiscipline etc

2) Wage Incentives: <Objectives and methods>

Wage incentive refers to performance linked compensation paid to improve motivation and productivity. It is the monetary inducements offered to employees to make them perform beyond the acceptance standards.

DEFINATIONS :

According to the National Commission of Labour "**wage incentives** are extra financial motivation.

Scott defines it as "any formal and announced programme under which the income of an individual, a small group, a plant work force or all the employees of a firm are partially or wholly related to some measure of productivity output".

Human and Nickerson define it in simple terms as "all the plans that provide extra pay for extra performance in addition to regular wages for a job".

Objectives of Wage Incentive Plans:
(1) The incentive scheme should be profitable to both workers and management.

(2) It should help increasing production and thereby lower the related costs.

(3) It should reward workers in proportion to their output, and thus high up their morale.

(4) The characteristics of an incentive scheme should be such that an able worker is in a position to earn sufficient amount of money to raise his standard of living.

(5) An incentive scheme should provide recognition to a worker for his good contribution.

(6) An incentive scheme should aid improvement in the utilization of equipment, materials and services.

(7) An incentive scheme should furnish a basis for cost control and labour control.

(8) An incentive scheme should help in reducing labour turnover and absentee rate.

(9) An incentive scheme should aim at improving relations between workers and management.

Method # 1. Time Rate System:
Time rate system is the simplest and oldest method of wage payment. According to this system, the workers are paid in accordance with the time spent on the job. The time may be on hourly, daily, weekly, fortnightly or monthly basis. The work or production done by an employee is not taken into consideration.

Method # 2. Piece Rate System: (we have 3 sub methods here)
Piece rate system is a system in which wages are paid in accordance with the number of units of work produced. This is independent of time spent on the job. A fixed rate of wage is paid for each piece of unit produced. We have 3 sub methods in this system:

a. Straight Piece Rate System:
In the straight piece rate system, a worker is paid straight for the number of pieces which he produces per day.

Earning of a worker = No. of pieces (i.e., units) produced x Rate per piece.

b. Straight Piece Rate with a Guaranteed Base Wage:
This method is an improvement over the straight piece rate system as it guarantees a minimum (hourly or daily) base wage. Suppose the standard of output set by the management is 16 pieces per day. If a worker produces less than this amount he still gets the minimum guaranteed wage and if another worker exceeds this standard, he is given a wage in direct proportion to the number of pieces produced by him at the straight piece rate.

c. Differential Piece Rate System: /output based plans: (3 plans)
i) **F. W. Taylor plan :** A differential piece rate system tends to overcome the disadvantages of the piece rate system by providing a guaranteed base. It bases itself on differential wage rates; a worker who exceeds the output standard is paid a higher wage rate per piece and another who fails to do so gets his earnings at a low piece rate. But, This system had the disadvantage that the **inferior or fresh workers, who were unable to reach output** standard, could earn very little and hardly survive.

ii) Merrick's plan: modified the Taylor's plan and introduced Merrick Differential piece Rate System. This plan assured a minimum wage to the workers and suggested separate differential piece rates (in an increasing order) for workers reaching up to 70%, 100%, 120% of the output standards and above This system, though improved Taylor's plan could not become popular because of its complex nature of wage calculations.

iii) Gant's task plan: is based on careful time and motion study. A standard time is fixed for doing a particular task, worker's actual performance is compared with the standard time and his efficiency is determined. If a worker takes more time than the standard time to complete the task (i.e., his efficiency is below 100%), he is given wages for the time taken by him and if a worker takes the standard time to perform the task (i.e., efficiency is 100%), he is given wages for the standard time and a bonus of 20% on the wages earned.

Method # 3. Combination of Time and Piece Rate System:
In this system, both time and product are taken into consideration. The minimum weekly wages are fixed for every worker, which are to be paid irrespective of his output during the week, provided he has worked for full working hours required in a week. The wages for the period of his absence are deducted from the total amount of his wages.

Method # 4. BONUS SCHEMES / INCENTIVES:

We have two different palns in this bonus schemes. They are a) individual incentive plans and b) group incentive plans

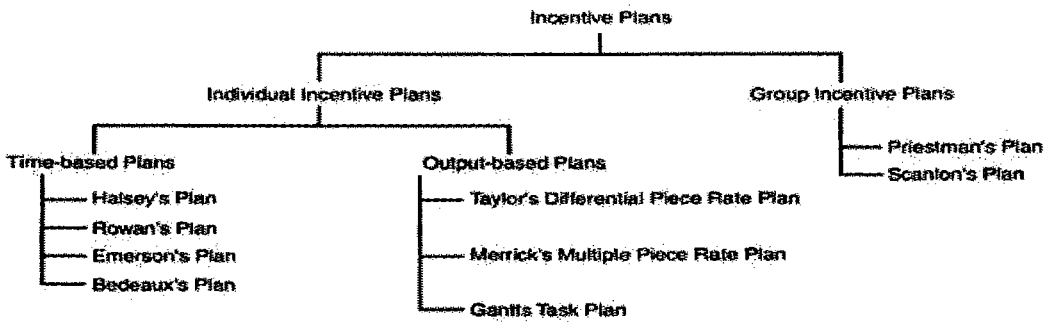


Fig. 12.1. Incentive Plans

Type # 1. Individual Incentive Plans:
Under individual incentive plan, individual employee is paid incentive on the basis of individual performance or output. The employers are liable to pay incentives to those employees who are producing more than the standard output. Individual incentive plans can be either time based or production based.

In case of time based incentive plans, a standard time is determined for doing a job and this standard time served as a basis for giving incentive. A worker is considered as efficient, if he completes his job in less than standard time. The worker is awarded for his efficiency by giving incentive under some incentive plans.

I. Halsey Incentive Plan:
In this method a **standard time** is fixed and compare with **actual time** for the completion of the job. A minimum base-wage is guaranteed to every worker. If a worker completes his job in just the standard time, he will not be given any incentive. If a worker performs his job in less than standard time, he is given incentive. The incentive will be equal to 50% of the time saved by the worker.

II. Rowan Plan:
This plan is **quite similar to Halsey plan.** It differs only in terms of calculation of incentive for **time saved.** The worker gets the guaranteed minimum wages. The incentive for completing the job in time lesser than standard time is paid on the basis of a ratio, which is time saved over standard time per unit standard time.

III. Emerson's Efficiency Plan:
In this plan, a minimum wage is guaranteed to every worker on time basis and incentive is given on the **basis of efficiency.** Efficiency is determined by the ratio of time taken to standard time. Payment of bonus/incentive is related to efficiency of the workers. Incentive will be given to those workers who attains more than $2/3^{rd}$ i.e. 66.67% of efficiency. No incentive will be given at 66.67% efficiency. At 100% efficiency incentive is 20% of the hourly rate. For efficiency exceeding 100%, 1% incentive/bonus is paid for every 1% increase in efficiency.

IV. Bedeaux Point Plan:
Bedeaux system also called units or point system also **guarantees a minimum base wage.** Under this plan, the standard time and time taken for each job is reduced to minutes. Each minute is referred to, as 'B' i.e. one hour is the same as **60B's.** The workers who complete the job within standard time are paid at a normal time rate. Those who complete the job in less time are paid bonus. The bonus paid to the worker is 75% of the wages for time saved. The time saved is divided between workers and management.

Output-Based Plans:
I. Taylor's Differential Piece Rate System:
II. Merrick's Multiple Piece Rate Plan:

III. Gantt's Task and Bonus Plan:

Type # 2. Group Incentive Plans:
A group incentive plan scheme is designed to promote effective teamwork, as the bonus is dependent on the performance and output of the team as a whole. Under group incentive plan, each employee is paid incentive on the basis of collective performance of his group to which he belongs. Within the group, each employee gets an equal share of the incentive.

I. Priestman's Plan:
In this plan workers are not considered individually but collectively. This system considers the productivity of all workers as a whole. **Bonus is paid in proportion in excess of standard output** per week. If in a year, the output increases either above the standard output or the output of the previous year, the wages are increased in the same ratio.

II. Scanlon's Plan:
A Scanlon plan is a type of gain sharing plan that pays a bonus to employees when they **improve their performance or productivity** by a certain amount as measured against a previously established standard. A typical Scanlon plan includes an employee suggestion program, a committee system, and a formula-based bonus system. A Scanlon plan focuses attention on the variables over which the organization and its employees have some control.

3) Job evaluation – (I) evaluation methods , (II) job analysis.

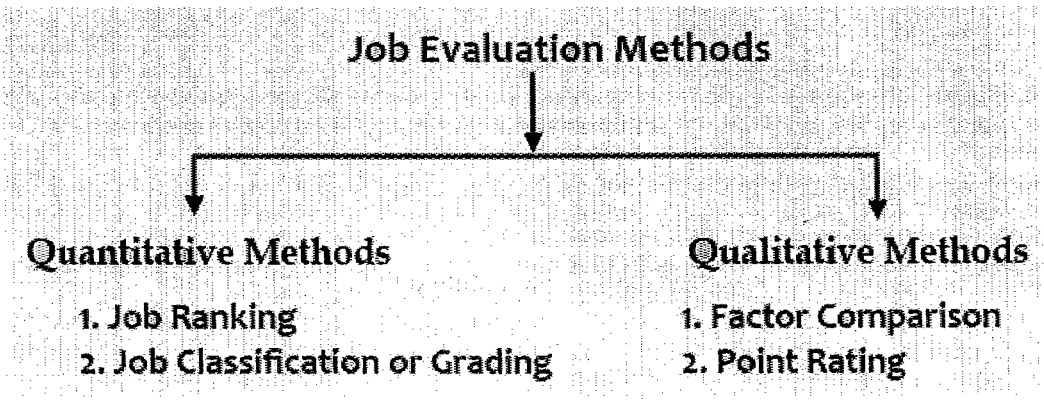
Job evaluation is the process to assess the relative value of a **job** in an organisation by comparing it with other jobs within the organisation and with **job** market outside. It attempts to make a methodical comparison between jobs to assess their relative worth for the purpose of establishing a rational pay structure.

A **job evaluation** is a systematic way of determining the value/worth of a job in relation to other jobs in an organization. It tries to make a systematic comparison between jobs to assess their relative worth for the purpose of establishing a rational pay structure. Job evaluation needs to be differentiated from job analysis. Job analysis is a systematic way of gathering information about a job. **Every job evaluation method requires at least some basic job analysis in order to provide accurate information about the jobs concerned.** Thus, job evaluation begins with job analysis and ends at that point where the worth of a job is ascertain for achieving pay the wage/salary equity between jobs and different roles.

(I) evaluation methods

For fixing compensation to different jobs, it is essential that there is internal equity and consistency among different job holders. **Job evaluation** is the process of determining the relative worth of different categories of jobs by analyzing their responsibilities and, consequently, fixation of their remuneration. The **basic objective of job evaluation** is to determine the relative contributions that the performance of different jobs makes towards the realization of organisational objectives.

There are four basic **methods of job evaluation**: ranking method, job grading method, point method and factor comparison method. Out of these, first two methods are non-quantitative and also known as traditional, non-analytical or summary methods. The last two **methods of job evaluation** are quantitative, also known as analytical methods, and use various quantitative techniques in evaluating a job.



The basic difference between qualitative and quantitative **methods of job evaluation** is in terms of;

1. Consideration of the job as a whole versus consideration of different components of a job; and
2. Judging and comparing jobs with each other versus assigning numerical scores on a rating scale.

Usually, in practice, a combination of different methods is followed. Based on this concept, some other methods have also been developed.

QUANTITATIVE METHODS

1. Ranking Method

In the **ranking method of job evaluation**, a whole job is compared with others and rank is provided on the basis of this comparison. The usual process followed in this method is as under:

- giving ranks based on performance levels of workers
- Responsibility
- Skills using
- Dependency / not
- Time punctuality
- the reliability of ranking, etc.,
  differences of opinions among the members about the ranking of a particular job

2. Grading Method

Job grading method also known **as job classification** method establishes various grades for different categories or different designations of jobs. For example, jobs of an operative may be classified as unskilled, semi-skilled, skilled and highly-skilled. Compare each designation with same designation with other dept. Different characteristics of each job are matched with description of job class and a job is placed in the class with which it matches best.

QUALITATIVE METHODS

Point Method

Point method of job evaluation is widely used in business organizations. It is an analytical and quantitative method which determines the relative worth of a job on the basis of points alloted to each specific factor of a job. The sum total to these points allotted to various job factors(co-operative, wastage reduction, Skills using, Dependency / not, Time punctuality, etc.,) is the worth of the job. This total is compared with that of other jobs and relative worth of various jobs is determined.

Factor Comparison Method

It was originally developed at the Philadelphia Rapid Transit Company, USA by Eugene J.Benge in 1926 to overcome **two** major problems faced in point method, that are determining the relative **importance of factors** and **describing their degrees** to compare. In this method, each factor of a job is compared with the same factor of the other jobs. For this purpose, Benge identified **five factors** – mental effort, skill, physical effort, responsibility and working conditions to compare with other jobs. The procedure for **factor comparison method of job evaluation – assumptions are** as follows:

1. key jobs which are **well recognized are selected**.
2. These jobs should be from a **cross-section** of departments. (simply, different departments)
3. all levels of wages and salaries which are considered **fair**, both internally as well as externally.
4. **Various factors** of the jobs which are to be considered for comparison,
5. These factors **may be 5 factors** mental requirement. Skills, physical requirement, responsibility and working conditions.
6. Each factor of a job is **compared with the same factor** of the key job and **rank is awarded**.
7. the rank is expressed in **terms of monetary** values and
8. these values are added together to get the **correct wage rate** for the job.

(II) job analysis:
Job Analysis in layman's language means the procedure of gathering information about a job. This process involves two sets of information:

1. Job Description
2. Job Specification

Before going into these two sets let us talk about a few definitions of Job Analysis.

- Job Analysis is a method of collecting and studying about the information related to a particular job. It includes the operations and tasks of a specific job.

- Another meaning of Job analysis is a complete examination of activities in a job. It can be considered a technical procedure that can be used to classify the duties and responsibilities of a job.
- It can also be defined as a group of tasks which can be performed by a lone employee towards the production of some services or products of an organization.

(a). Job Description:

This is a very vital document which is usually explanatory in nature. It consists of both organizational as well as functional information. It provides information as to the scope of activities, position of the job and the responsibilities. It gives the employees a very clear picture of what is required of him to meet the goals of his job.

→ **Job classification:** This includes title of the job, alternate title if any, job code, division or department etc. The title of the job designates the job properly and division or department indicates which department and location does the employee work.
→ **Job Summary:** It serves two purposes here; one is that when the Job Title is not sufficient it gives additional information on the job. Secondly it gives more descriptive information about the particular job.
→ **Duties and Responsibilities:** This lists out the entire duties and responsibilities of a particular job. Sometimes duties and responsibilities are also listed for particular skills and their incidence of occurrence.
→ **Relation to other jobs:** This gives the employees a fair amount of picture as to the hierarchy of the position. Like to whom they are reporting: senior, junior, etc.

(b). Job Specification:

Job Specification converts the job description to qualifications that are required for, in performing the job. This is usually a statement which consists of qualification, characteristics, traits etc, for an employee to possess to perform his duties. The first thing here is to prepare a directory of all jobs and then the next step is to make a write up of each and every job.

→ **Physical Qualifications:** These qualifications or specifications vary from job to job. Physical Qualifications are nothing but the capabilities of employees. These include height, weight, hearing, vision, capacity to handle machines etc.
→ **Mental Qualifications:** This includes the ability to interpret data, calculations, planning, general knowledge, judgement, memory etc.
→ **Social and Emotional specifications:** This is vital for the role of Managers and Supervisors. It includes emotional constancy and elasticity. It also includes the way they dress, personality and relationship.
→ **Behavioral Qualifications:** This qualification is very important in selecting employees for higher levels of management. This specification asks to depict the acts of the managers rather than traits which cause those acts. This includes creativity, research, maturity level, dominance etc.

Methods of Job Analysis

1. **Observation Method:** In this method the job analyst **observes the employees work and records all the tasks that are** performed and also those that are not performed. This may seem to be an easy method of job analysis, but it is the most difficult one. The main reason being that **every person has a different way of observing things**, which might involve personal bias, likes and dislikes which will not give the desired results.

2. **Interview Method:** In this method the **manpower is interviewed**. The employee under this method comes up **with different ideas towards their working style, problems faced by them and uncertainties or insecurities** faced by them. It helps the organization in knowing exactly what the employees are thinking about their jobs.

3. **Questionnaire Method:** This is another common method of Job Analysis, which uses a **questionnaire to be filled by the employees**. Care should be taken while framing questions for this, because this method also suffers from bias by the superiors. It is always better if the staff is communicated in a better way to make them understand that the data collected is for their own good. Here **different types of questionnaires are prepared for different grades** which is also time consuming.

4) Merit rating / performance appraisal methods

Meaning of Performance Appraisals

Performance Appraisals is the assessment of individual's performance in a systematic way. It is a developmental tool used for all round development of the employee and the organization. The performance is measured against such factors as job knowledge, quality and quantity of output, initiative, leadership abilities, supervision, dependability, co-operation, judgment, versatility and health.

Each method of performance appraisal has its strengths and weaknesses may be suitable for one organisation and non-suitable for another one. As such, there is no single appraisal method accepted and used by all organisations to measure their employees' performance.

DEFINITIONS:

"It is a systematic evaluation of an individual with respect to performance on the job and individual's potential for development."

Definition 2: Formal System, Reasons and Measures of future performance - "It is formal, structured system of measuring, evaluating job related behaviors and outcomes to discover reasons of performance and how to perform effectively in future so that employee, organization and society all benefits."

The various methods included in each of the two categories are listed in Table 28.4.

Table 28.4 : Methods of Performance Appraisal

Traditional Methods	*Modern Methods*
1. Ranking method	1. Management by Objectives (MBO)
2. Paired comparison	2. Behaviourally anchored rating scales
3. Grading	3. Assessment centres
4. Forced distribution method	4. 360-degree appraisal
5. Forced choice method	5. Cost accounting method
6. Checklist method	
7. Critical incidents method	
8. Graphic scale method	
9. Essay method	
10. Field review method	
11. Confidential report	

TRADITIONAL METHODS:

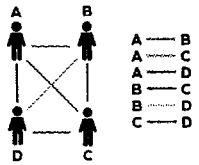
1)Ranking

Ranking is one of the simplest methods of performance appraisal. Under this method, employees are ranked from the best to the worst according to their performance level. The best performing employees are ranked #1 and the least performing one is ranked the last. Based on these rankings, the companies may take any actions, from promotion to termination.

2)Paired comparison

Under this method, the pairs of employees of same job post or level are formed, following which they are evaluated on the basis of performance of each other. Subjects like skills, experience, team player, behavior, etc. are evaluated by the raters and picks the best performing employee.

Paired Comparison

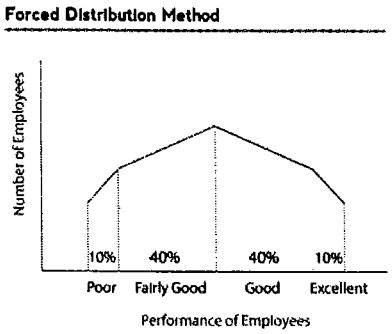


3)Grading Method:

In this method, certain categories of worth are established in advance and carefully defined. There can be three categories established for employees: **outstanding, satisfactory and unsatisfactory.** There can be more than three grades. Employee performance is compared with grade definitions.

4)Forced distribution method

Employers or raters are found to have tendency to rate their employees near average or above average performing categories. In around late 90s, Tiffen introduced a new method of performance appraisal call forced distribution, in an attempt to eliminate the flaws of the raters. The categories can be poor, average, good and excellent or percentile based like 10% poor, 40% fairly good, 40% good and 10% excellent.



5)Forced choice method

Forced choice method of performance appraisal was introduced by J.P. Guilford. It is one of the most systematic and reliable approach to evaluate employees accurately. Under this approach, **the HR manager, at first, prepares a set of positive as well as negative statements. The statements are then forwarded to the rater, following which the rater indicates which of the given statements suits the employee.** Once the rater finishes evaluating all employees, the report is sent to the HR manager for final assessment.

Positive statements

- Communicates well with superiors.
- Plays active role in meetings and other office events.

Negative statements

- Consistently over-promises and under-delivers.
- Isn't punctual, often comes late to the office.

6)Checklist

Checklist method is another of the easiest methods of appraising employee's performance. Under this method, a checklist is prepared by the HR manager and is forwarded to the rater. The checklist may include list of questions (depicting behavior and job performance of employee) and the rater has to answer them in just 'YES' or 'NO' form.

CHECKLIST METHOD

1. Is regular on the job?	☐ Yes	☐ No
2. Does maintain discipline well?	☐ Yes	☐ No
3. Shows consistent behaviour to all colleagues?	☐ Yes	☐ No
4. Is interested in their job?	☐ Yes	☐ No
5. Keeps making mistakes?	☐ Yes	☐ No
6 Shows favouritism towards particular colleagues?	☐ Yes	☐ No

7)Graphic rating scale method

Graphic rating scale is one of the oldest and commonly used methods of performance appraisal. Under this approach, the employees are evaluated on the basis of various job performance criterions, such that each criterion is categorically divided into poor, fairly poor, fairly good, good and excellent. Also, these criterions carry certain score weight. The rater ticks the category that best describes the employee and finally the score is totaled.

GRAPHIC SCALE RATING

Employee Name _____
Department _____
Job title _____

Performance Level / Work Dimension	Poor	Fairly Poor	Fairly Good	Good	Excellent
Attendance			✓		
Behavior towards Subordinates			✓		
Sincerity				✓	
Dependability					✓

8)Critical incident method

Generally, all employees perform alike during normal situations but there are very few who can maintain their performance during unfavorable time as well. Critical incident method is used to evaluate the ability of employees to work during such situation.

Under this method, the rater keeps record of effective as well as ineffective behaviors of individual employee at the workplace.Such appraisal is conducted periodically. And at the end of every assessment, the HR manager or some experts evaluate the behavior and score them, depending upon which the best scoring employees and poor scoring employees are identified.

9)Essay method

It is a traditional and judgmental approach under which employee is evaluated and a descriptive essay is written on him/her. The essay describes in detail about the strengths, weaknesses, potential, nature, etc. Essay method helps in collecting a lot of information about the employees as the evaluators are not confined to appraise the employees in rigidly defined criteria. The process is unrestricted and flexible, permitting the employers to emphasize on any issues or traits that they feel relevant.

10)Field review method

Field review method of performance appraisal is conducted **by the rater who does not belong to the employees' department.** The rater is someone from the corporate, especially from HR department.

Use of this technique to evaluate employees' performance is helpful in completely eliminating issues that arise due to rater's biasedness. However, this method is not widely used because of the drawbacks. They are

- The rater is not familiar with employees, making it impossible for him to observe their actual behavior.
- The rater might feel aggrieved in cases when employees try to clarify any matter.

11)Confidential report

Confidential report is the method of evaluating employee's performance and taking necessary actions without giving any feedbacks to the employees. Confidential report should only be viewed by authorized personnel. Therefore, it is not send openly but in sealed envelope. Generally, such method of performance appraisal is conducted yearly and employees are appraised on the following traits:

- Attendance
- Team work
- Dependability
- Leadership
- Behavior with superior, colleagues and junior workers

- Discipline
- Integrity and honesty
- Quality and quantity of output, etc.

MODERN METHODS :

1)Management by objectives (MBO)

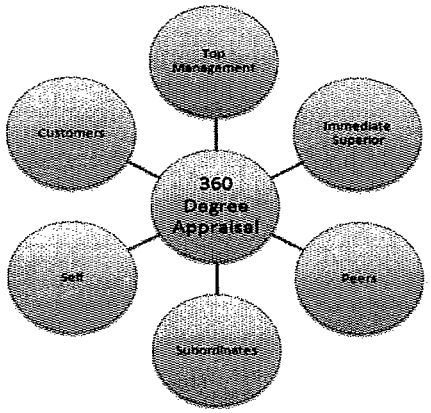
MBO is employer-employee driven approach of performance appraisal which involves superior and subordinates in setting goals. The employees work upon achieving their set goals and employers keep a record of how close they are to accomplishment of the goals. This way, employees become clear about which path to walk on to get the goals, subsequently increasing and improving his performance level.

2)Behaviorally anchored rating scales (BARS)

Behaviorally anchored rating scales (BARS) is the **combination of critical incident and rating scale methods** of performance appraisal. Under this method, the scale points are defined by critical (effective or ineffective) behaviors of the employee. BARS usually consists of scale ranging **from 5 to 9 points,** each representing continuum of statements that describes behavior of employees ranging from unacceptable to most effective.

3)360-degree appraisal

360-degree appraisal is a modern technique to evaluate employee's performance which was developed in the early 90s in the U.S.A. Under this method, an employee's job performance is appraised by the help of the factors that are present around him at the workplace. Such factors may be superiors, colleagues, subordinates and even clients, customer or spouse. An evaluator asks various questions to these factors and collects their feedback. The gathered information is then assembled through computerized system and individual reports are prepared.



4)Cost accounting method

Cost accounting method of performance appraisal is the process of evaluating monetary benefits yield to the organization from the job performance of an employee. In other words, this method is used to analyze the cost of keeping the employee and the benefits the company derives from his/her presence and / or absence. There are some major points which are considered while evaluating employee under this approach. They are:

- Average value of unit cost of production of goods and services
- Quality of the goods and services produced
- Overhead cost incurred (lighting, electricity, equipment, etc.)
- Extra-expenses (accident, error, damage, wear and tear of tools and equipment)
- Relationship with customers and clients
- Cost of the time spent by the supervisor in appraising the employee

5)Marketing functions

Introduction to Marketing: refers to activities undertaken by a company to promote the buying or selling of a product or service. Marketing includes advertising, selling, and delivering products to consumers or other businesses. Marketing is the study and management of exchange relationships.[1][2] Marketing is the business process of creating relationships with and satisfying customers. With its focus on the customer, marketing is one of the premier components of business management

The management process through which goods and services move from concept to the customer. It includes the coordination of four elements called **the 4 P's of marketing**:
(1) identification, selection and development of a product,

(2) determination of its price,

(3) selection of a distribution channel to reach the customer's place, and

(4) development and implementation of a promotional strategy.

Definitions:

- Marketing is defined by **the American Marketing Association** as "the activity, set of institutions, and processes for creating, communicating, delivering, and exchanging offerings that have value for customers, clients, partners, and society at large.
- From **a sales process engineering** perspective, marketing is "a set of processes that are interconnected and interdependent with other functions" of a business aimed at achieving customer interest and satisfaction"
- **Philip Kotler** defines marketing as "Satisfying needs and wants through an exchange process".
- **The Chartered Institute of Marketing** defines marketing as "the management process responsible for identifying, anticipating and satisfying customer requirements profitably".
- A similar concept is the **value-based marketing** which states the role of marketing to contribute to increasing shareholder value.

MARKETING FUNCTIONS:

1. Identify Consumer Needs

One of the first steps the company needs to take is to identify the needs and wants of the consumers in the market. To do so they must gather information and analyse this information. Once you understand your customer thoroughly you can base your product design on this information.

2. Gathering and Analyzing Market Information:
The most important function of a marketer is to gather and analyze the market information. Marketer tries to understand what do customers want to buy and when, in what quantity and at what price etc.? He also tries to understand the motive behind this purchase i.e. whether the customer is buying the product as a necessity or for style. On the basis of all this information and analysis, the product is designed. Labelled, branded, packed, promoted etc.

3. Marketing Planning:
It involves making plans for increasing production and sales, promotion of product etc. and also laying down a course of action for achieving these objectives. For example, if a product has become popular in Punjab, the target of an organization should be to make it popular in rest of North India first, followed by remaining states. For this, proper plans are to be made.

4. Product Designing and Development:
Another important function of marketing involves product designing and development. Product designing includes decision related to the quality standards to be used for shape or design of the product, packing, etc in order to make the product attractive to the target customers and better than the competitors' product. For example, product designing for a color television includes shape, size, quality standard, technology etc.

5. Standardization and Grading:
Standardization is a process of producing goods of predetermined standards so as to achieve the uniformity and consistency in products. This assures the buyers of the quality, price and packaging of the product. **Grading** refers to a process of classifying products into different groups on the basis of their features like size, shape quality etc. It is mainly done in case of agricultural products like wheat, rice, potatoes etc.

6. Packaging and Labelling:
Packaging means designing the package for the product while labelling is concerned with putting label on the package. Packaging and labelling have been recognized as pillars of marketing. They not only provide protection to the product but also act as a promotional tool. Sometimes, the customers assess the quality of the product from its packaging. Packaging has played an important role in the success of many consumer brands like Colgate tooth paste, Taj Mahal tea. Lays potato wafers etc.

7. Branding:
Branding is a process of giving a brand name to a product to differentiate it from competitor's products, in building customers' loyalty and in promoting the product. The most important decision under this strategy is whether to give a separate brand name or same brand to all products of a business firm. For example, (i) LG television, A.C and washing machines (ii) Philips bulbs, tubes and television, A.C and washing machines.

8. Customer Support Services:
The key to marketing success is the satisfaction of the customer. Therefore, an important function of marketing i.e. to provide various customer support services like after sales service, procuring credit services, handling customer complaints, consumer information etc. These services help in getting, keeping and growing the number of customers.

9. Pricing of Products:
The amount of money which a customer is required to pay for purchasing the product is known as product price. Pricing has a great effect on the demand for a product. A little variation in price may increase the demand for competitor's product. Thus, while determining the price for a product, various factors like, types of customers, their income, firm's objective, product demand, and competitors' policy etc should be considered.

10. Promotion:
Promotion of product and services refers to providing information to the customers about the firm's products, their features, uses, prices etc and persuading them to buy these products. Advertising, Personal selling. Publicity and Sales Promotion are the main tools of promotion. A marketer has to decide about the promotion budget, promotion mix (i.e. combination of promotional tools) etc.

11. Physical distribution:
Another important function to be performed by marketer is the physical distribution of goods and services. The important decision areas under this involve selection of channel of distribution, transportation, inventory levels, storage and warehousing.

12. Transportation:
Transportation means physical movement of goods from the place of production to the place of consumption. For example, Maruti cars are produced at Gurgaon but are available all over the country. Not only the finished goods are to be transported but also the raw material needs to be transported. A business firm analyses its transportation needs on the basis of factors like nature of the product, cost, location of the target market etc. and then take decisions regarding mode of transportation and other related aspects.

13. Storage or Warehousing:
There is a time gap between production and consumption of goods. Thus it is an important function of marketing to provide for proper storage of such goods until they are demanded. For example, apples are produced in winter are stored in cold storages and sold even in summer.

6)Product life cycle (1. life cycle, 2. Strategies)

1. life cycle : The **product life cycle** is an important concept in marketing. It explain the stages a product goes through from when it was first thought of until it finally is removed from the market. Not all products reach this final stage. Some continue to grow and others rise and fall.

The concept of product life cycle (PLC) concerns the life of a product in the market with respect to business/commercial costs and sales measures. The product life cycle proceeds through multiple phases, involves many professional disciplines, and requires many skills, tools and processes. PLC management makes the following **three assumptions:**

- Products have a limited life and thus every product has a life cycle.
- Product sales pass through distinct stages, each posing different challenges, opportunities, and problems to the seller.
- Products require different marketing, financing, manufacturing, purchasing, and human resource strategies in each life cycle stage.

Product Life Cycle Stages Explained

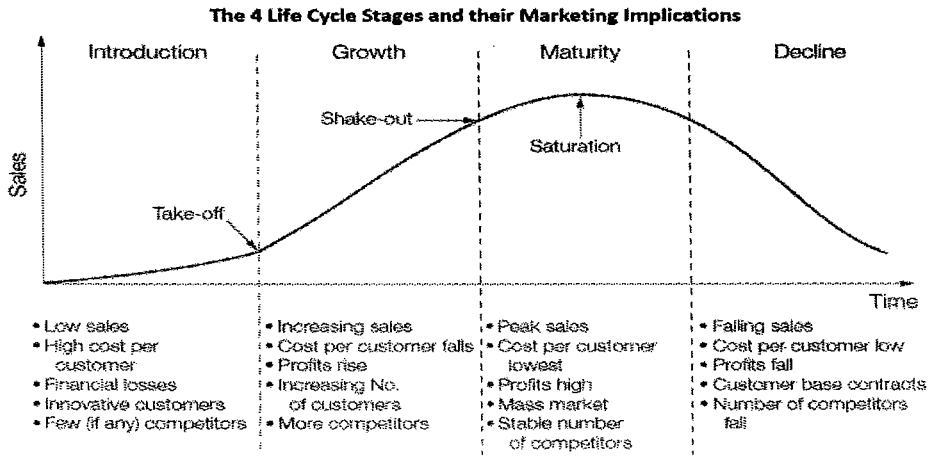
The product life **cycle has 4 very clearly defined stages**, each with its own characteristics that mean different things for business that are trying to manage the life cycle of their particular products.

Introduction Stage – This stage of the cycle could be the most expensive for a company launching a new product. The size of the market for the product is small, which means sales are low, although they will be increasing. On the other hand, the cost of things like research and development, consumer testing, and the marketing needed to launch the product can be very high, especially if it's a competitive sector.

Growth Stage – The growth stage is typically characterized by a strong growth in sales and profits, and because the company can start to benefit from economies of scale in production, the profit margins, as well as the overall amount of profit, will increase. This makes it possible for businesses to invest more money in the promotional activity to maximize the potential of this growth stage.

Maturity Stage – During the maturity stage, the product is established and the aim for the manufacturer is now to maintain the market share they have built up. This is probably the most competitive time for most products and businesses need to invest wisely in any marketing they undertake. They also need to consider any product modifications or improvements to the production process which might give them a competitive advantage.

Decline Stage – Eventually, the market for a product will start to shrink, and this is what's known as the decline stage. This shrinkage could be due to the market becoming saturated (i.e. all the customers who will buy the product have already purchased it), or because the consumers are switching to a different type of product. While this decline may be inevitable, it may still be possible for companies to make some profit by switching to less-expensive production methods and cheaper markets.



Essentially, each stage in the product life cycle is a function of two things – **Time on the X-axis**, and **Sales on the Y-axis**.

2.Product life cycle – strategies (plans, policies, approaches etc.,)

The **product life cycle** contains four distinct stages: introduction, growth, maturity and decline. Each stage is associated with changes in the product's marketing position. You can use various marketing strategies in each stage to try to prolong the life cycle of your products.

Product introduction strategies

Marketing strategies used in **introduction stages** include:

- rapid skimming - launching the product at a high price and high promotional level
- slow skimming - launching the product at a high price and low promotional level
- rapid penetration - launching the product at a low price with significant promotion
- slow penetration - launching the product at a low price and minimal promotion

During the introduction stage, **should aim to:**

- establish a clear brand identity
- connect with the right partners to promote your product
- set up consumer tests, or provide samples or trials to key target markets

Product growth strategies

Marketing strategies used in the **growth stage mainly aim** to increase profits. Some of the common strategies to try are:

- improving product quality
- adding new product features or support services to grow your market share
- enter new markets segments
- keep pricing as high as is reasonable to keep demand and profits high
- increase distribution channels to cope with growing demand
- shifting marketing messages from product awareness to product preference
- skimming product prices if your profits are too low. Growth stage is when you should see rapidly rising sales, profits and your market share. Your strategies should seek to maximise these opportunities.

Product maturity strategies

- market modification - this includes entering new market segments, redefining target markets, winning over competitor's customers, converting non-users
- product modification - for example, adjusting or improving your product's features, quality, pricing and differentiating it from other products in the marking.

Product decline strategies

- declining sales and profits. This can be caused by changes in consumer preferences, technological advances and alternatives on the market. At this stage, you will have to decide what strategies to take.

- reduce your promotional expenditure on the products
- reduce the number of distribution outlets that sell them
- implement price cuts to get the customers to buy the product
- fin another use for the product
- maintain the product and wait for competitors to withdraw from the market first
- harvest the product or service before discontinuing it
- Another option is for your business to discontinue the product from your offering.

7) Channels of distribution / channel management – 3 sub questions are - (1) functions of it, (2) types of it, and (3) factors of it.

A **distribution channel** represents a chain of businesses or intermediaries through which the final buyer purchases a good or service. **Distribution channels** include wholesalers, retailers, distributors, and the Internet. In a direct **distribution channel**, the manufacturer sells directly to the consumer.

Distribution channels are part of the **downstream process**, answering the question "How do we get our product to the consumer?" This is in contrast to the **upstream process**, also known as the supply chain, which answers the question "Who are our suppliers?"

The goods are produced at one place but the customers are spread over a wide geographical area. Thus, it is very difficult for a producer to distribute his products all over the country. Therefore, he takes the help of some intermediaries to distribute his goods. **For example**, Maruti cars are manufactured at **Gurgaon** (Gurugram, is a city located in the northern Indian state of Haryana.) but are available all over the country with the help of intermediaries.

Philips Kotler defines channel of distribution as "a set of independent organisations involved in the process of making a product or service available for use or consumption".

Channels of distribution bring economy of effort. They help **to cover a vast geographical area** and also bring efficiency in distribution **including transportation and warehousing**. Retailers, Wholesalers are the common channels of distribution. Channels of distribution **provide convenience to customer, who can get various items at one store.** If there were no channels of distribution, customer would have faced a lot of difficulties.

(1) Functions of Distribution Channels:

- Distribution channels provide time, place, and ownership utility. They make the product available when, where, and in which quantities the customer wants. But other than these **transactional functions**, marketing channels are also responsible to carry out the following functions:
- **Logistics and Physical Distribution:** Marketing channels are responsible for assembly, storage, sorting, and transportation of goods from manufacturers to customers.
- **Facilitation:** Channels of distribution even provide pre-sale and post-purchase services like financing, maintenance, information dissemination and channel coordination.
- **Creating Efficiencies:** This is done in two ways: *bulk breaking* and *creating assortments*. Wholesalers and retailers purchase large quantities of goods from manufacturers but break the bulk by selling few at a time to many other channels or customers. They also offer different types of products at a single place which is a huge benefit to customers as they don't have to visit different retailers for different products.
- **Sharing Risks:** Since most of the channels buy the products beforehand, they also share the risk with the manufacturers and do everything possible to sell it.
- **Marketing:** Distribution channels are also called marketing channels because they are among the core touch points where many marketing strategies are executed. They are in direct contact with the end customers and help the manufacturers in propagating the brand message and product benefits and other benefits to the customers.

- **Sorting:** Middlemen obtain the supplies of goods from various suppliers and sort them out into similar groups on the basis of size, quality etc.
- **Accumulation:** In order to ensure a continuous supply of goods, middlemen maintain a large volume of stock.
- **Allocation:** It involves packing of the sorted goods into small marketable lots like 1Kg, 500 gms, 250 gms etc.
- **Assorting:** Middlemen obtain a variety of goods from different manufacturers and provide them to the customers in the combination desired by them. For example, rice from Dehradun & Punjab.
- **Product Promotion:** Sales promotional activities are mostly performed by the producer but sometimes middlemen also participate in these activities like special displays, discounts etc.
- **Negotiation:** Middlemen negotiate the price, quality, guarantee and other related matters about a product with the producer as well as customer.
- **Risk Taking:** Middlemen have to bear the risk of distribution like risk from damage or spoilage of goods etc. when the goods are transported from one place to another or when they are stored in the god-owns.

(2) Types of Distribution Channels:

Broadly, Channel of distribution is of two types viz., (1) Direct Channel (2) Indirect Channel.

1. Direct Channel or Zero Level Channels:
When the producer or the manufacturer directly sells the goods to the customers without involving any middlemen, it is known as direct channel or zero level channel. It is the simplest and the shortest mode of distribution. Selling through post, internet or door to door selling etc. are the examples of this channel. For example, Mc Donalds, Bata, Mail order etc.

Methods of Direct Channel are:
(a) Door to door selling

(b) Internet selling

(c) Mail order selling

(d) Company owned retail outlets

(e) Telemarketing

2. Indirect Channels:
When a manufacturer or a producer employs one or more middlemen to distribute goods, it is known as indirect channel.

Following are the main forms of indirect channels:

(a) Manufacturer-Retailer-Consumer (One Level Channel):
This channel involves the use of one middleman i.e. retailer who in turn sells them to the ultimate customers. It is usually adopted for speciality goods. For example Tata sells its cars through company approved retailers.

Manufacturer→ Retailer→ Consumer
(b) Manufacturer-Wholesaler-Retailer-Customer (Two level channels):
Under this channel, wholesaler and retailer act as a link between the manufacturer and the customer. This is the most commonly used channel for distributing goods like soap, rice, wheat, clothes etc.

Manufacturer→ Wholesaler→ Retailer→ Customer
(c) Manufacturer-Agent-Wholesaler-Retailer-Consumer (Three level channels):
This level comprises of three middlemen i.e. agent, wholesaler and the retailer. The manufacturers supply the goods to their agents who in turn supply them to wholesalers and retailers. This level is usually used when a manufacturer deal in limited products and yet wants to cover a wide market.

(3) Factors Determining Choice of Channels of Distribution: (Following are the main factors which help in determining the channels of distribution):

1. Product Related Factors:
(a) Nature of Product:
In case of industrial goods like CT scan machine, short channels like zero level channel or first level channel should be preferred because they are usually technical, expensive, made to order and purchased by few buyers. Consumer goods Ike LCD, refrigerator can be distributed through long channels as they are less expensive, not technical and frequently purchased.

(b) Perishable and Non- Perishable Products:
Perishable products like fruits or vegetables are distributed through short channels while non perishable products like soaps, oils, sugar, salt etc. require longer channels.

(c) Value of Product:

In case of products having low unit value such as groceries, long channels are preferred while those with high unit value such as diamond jewellery short channels are used.

(d) Product Complexity:
Short channels are preferred for technically complex goods like industrial or engineering products like machinery, generators like torches while non complex or simple ones can be distributed through long channels.

2. Company Characteristics:
(a) Financial Strength:
The companies having huge funds at their disposal go for direct distribution. Those without such funds go for indirect channels.

(b) Control:
Short channels are used if management wants greater control on the channel members otherwise a company can go in for longer channels.

3. Competitive Factors:
Policies and channels selected by the competitors also affect the choice of channels. A company has to decide whether to adopt the same channel as that of its competitor or choose another one. For example, if Nokia has selected a particular channel say Big Bazaars for sale of their hand sets, other firms like Samsung and LG have also selected similar channels.

4. Market Factors:
(a) Size of Market:
If the number of customers is small like in case of industrial goods, short channels are preferred while if the number of customers is high as in case of convenience goods, long channels are used.

(b) Geographical Concentration:
Generally, long channels are used if the consumers are widely spread while if they are concentrated in a small place, short channels can be used.

(c) Quantity Purchased:
Long channels are used in case the size of order is small while in case of large orders, direct channel may be used.

5. Environmental Factor:
Economic factors such as economic conditions and legal regulations also play a vital role in selecting channels of distribution. For example, in a depressed economy, generally shorter channels are selected for distribution.

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8) Operationlizing change through performance management

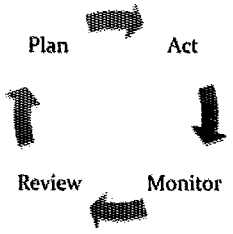
Performance management is the process of creating a work environment or setting in which people are enabled to perform to the best of their abilities. Performance management is a whole work system that begins when a job is defined as needed. It ends when an employee leaves your organization.

Performance management (PM) is a set of activities that ensure goals are met in an effective and efficient manner. Performance management can focus on the performance of an organization, a department, an employee, or the processes in place to manage particular tasks. Performance management standards are generally organized and disseminated by senior leadership at an organization, and by task owners.

Performance management is a much broader and a complicated function of HR, as it encompasses activities such as joint goal setting, continuous progress review and frequent communication, feedback and coaching for improved performance, implementation of employee development programmes and rewarding achievements.

*Capgemini's **definition:** "PM is a structured approach to enhance the ability of companies and its employees to deliver on strategic objectives"*

It is **a systematic assessment of the performance of an employee** and using the assessment to better the performance over time. *Performance Management Cycle as follows:*



Performance management is commonly misconstrued with **performance appraisal**, which is a process of evaluating the performance of the workforce and includes **feedback/review** on an employee job performance.

The term performance management gained its popularity in early 1980's when total quality management programs received utmost importance for achievement of superior standards and quality performance. Tools such as job design, leadership development, training and reward system received an equal impetus along with the traditional performance appraisal process in the new comprehensive and a much wider framework. Performance management is an ongoing communication process which is carried between the supervisors and the employees through out the year. The process is very much cyclical and continuous in nature.

A performance management system includes the following <u>actions/functions</u>.

- Developing clear job descriptions and employee performance plans which includes the key result areas (KRA') and performance indicators.
- Selection of right set of people by implementing an appropriate selection process.
- Negotiating requirements and performance standards for measuring the outcome and overall productivity against the predefined benchmarks.
- Providing continuous coaching and feedback during the period of delivery of performance.
- Identifying the training and development needs by measuring the outcomes achieved against the set standards and implementing effective development programs for improvement.
- Holding quarterly performance development discussions and evaluating employee performance on the basis of performance plans.
- Designing effective compensation and reward systems for recognizing those employees who excel in their jobs by achieving the set standards in accordance with the performance plans or rather exceed the performance benchmarks.
- Providing promotional/career development support and guidance to the employees.
- Performing exit interviews for understanding the cause of employee discontentment and thereafter exit from an organization.

<u>5 key components</u> of successful PM

Leadership and Governance:
One of the top drivers for PM is implementing strategy, while respondents indicate that the management team can improve in inspiring the organization and provide a clear vision. Companies that invest in communication and have engagement from the management team, achieve greater success in engaging the organization in implementing strategy.

Priorities and Measures:
There is an increased focus on risk management and its effects on performance. Many companies are struggling with the integration, but companies that have succeeded reports increased margins compared to their competitors. Companies struggle with cascading KPIs further down from the corporate level. A lack of cascading can result in unclear and faulty priorities and a PM framework that fails to set directions throughout the organization.

Information and Insight

The study reveals that respondents experience limited access to critical information. The information presented lacks focus and does not reflect key business drivers. Respondents express that they can improve their decision-making process from ambition to action.

Processes and Systems

Capgemini experience that companies have invested in one or several BI/PM systems, but often the problem is not the system itself but how it is used. To achieve the expected business benefits, BI/PM investments need to be aligned with the overall strategy, and top management needs to be in the front seat related to implementation and establishing a performance culture.

Capabilities and Culture

Information and knowledge sharing is something all strive for and find difficult to succeed at. The study shows that companies invest in governance models and IT systems for knowledge sharing, but still struggle. As people are strong drivers of information and knowledge sharing, hence important to create and foster a culture of collaboration and teamwork.

Benefits of Performance Management

1. It supports to provide data to find the skills and knowledge gaps of employees in order to improvise them through trainings, coaching and mentoring systems.
2. It motivates employees to take new challenges and innovate through structure process.
3. It provides new opportunities to employees for their growth and development in their professional careers
4. It defuses the grievances and conflicts among team members through proper performance evaluation system.
5. It assesses the employee's performance fairly and accurately against the performance targets and standards.
6. Employees would enable to provide better results because of clarity on their performance targets.
7. Performance management system provides the platform to discuss, develop and design the individual and department goals thorough discussion among manager and their subordinates.
8. The under performer can be identified through performance reviews and can raise their skills levels objectively. It quantifies the learning needs through individual development plans or performance improvement plans as well.

- Increased strategic goal achievement
- Create a performance culture
- Improvements in risk management
- Increased sales and customer satisfaction
- Effective profitability analysis, predictive analysis and management reporting
- Increased focus on efficiency and reducing cost
- Robust foundation for decision making and planning

-The end-

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