

Welcome

HUT 310 Management for Engineers

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Module I-Topics

- 1. Introduction to management**
- 2. Management Defined**
- 3. Characteristic of Management**
- 4. Management as an art-profession**
- 5. Levels of managers and skill required**
- 6. Classical management theories**
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- 10. System approaches to Management**
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Introduction to management

- Every organization - business, political, cultural or social has goals to achieve.
- It is, therefore, necessary that steps should be taken to ensure that the goals are achieved as efficiently as possible.
- People who are responsible for taking these steps are known as *managers*, and their functions taken together may be called *management*.

Management defined

- **Management** can be defined as the *process* of reaching *organizational goals* by working *with and through people* and other organizational resources.
- *Management has the following characteristics.*
 1. *It is a process.*
 2. *It concentrates on reaching organizational goals.*
 3. *It reaches these goals by working with and through people and other organizational resources.*

Significance of Management

1. *It helps in achieving group goals* – Management creates team-work and coordination in the group.
2. *Optimum utilization of resources* – They provide training and guidance to employees so that they can make the best use of the available resources.
3. *Minimizes cost* – It gets maximum results through minimum input by proper planning and getting maximum output.
4. *Survival and growth* – It takes steps in advance to meet the challenges of changing environment.
5. *Development of the nation* – Efficient management leads to better economical production which helps in turn to increase the welfare of people.

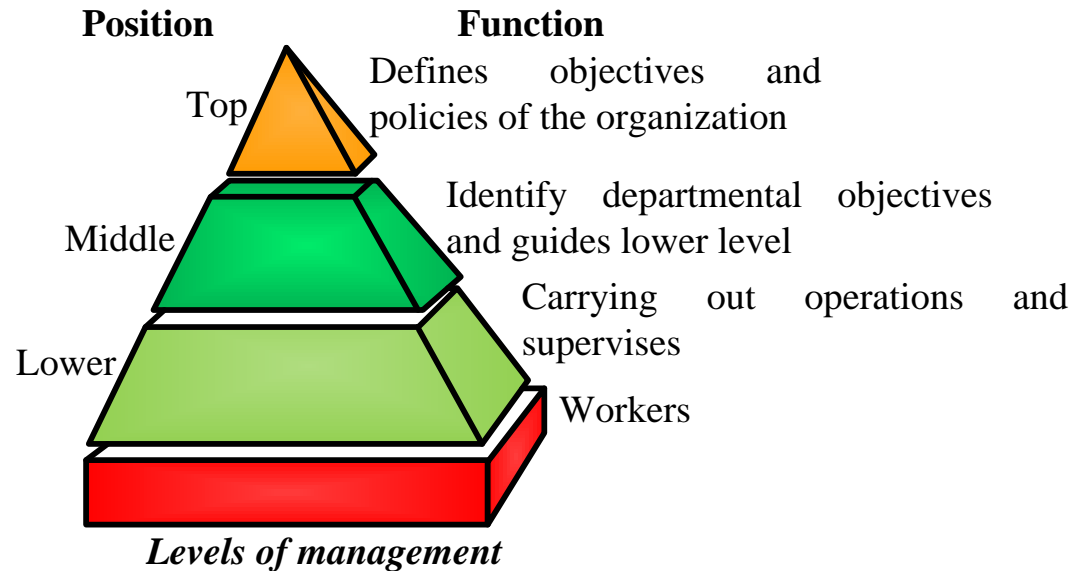
Characteristic of Management

1. *Management is intangible* – Management function cannot be physically seen but its presence can be felt.
2. *Management is goal oriented*
3. *Management is universal*
4. *Management is needed at all levels*
5. *Management is an ongoing process Management is dynamic* – Management is a dynamic and growth oriented function.
6. *Management is a group activity*
7. *Management is a system of authority*
8. *Management is multi-disciplinary*
9. *Management is a composite process*

Management – Science or Art

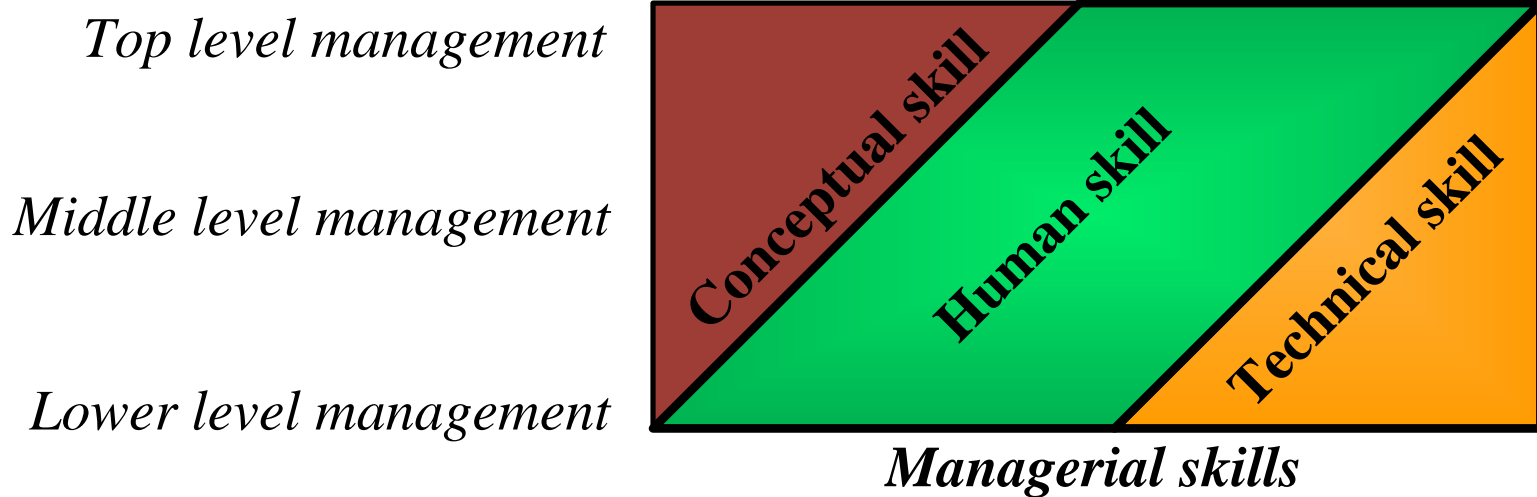
- **Art** – Art is skilful application of knowledge which entirely depends on the inherent capacity of a person which comes from within a person and is learned from practice and experience. In this sense, management is certainly an art.
- **Science** – **Science** may be described as a systematized body of knowledge, based on proper findings and exact principles and is capable of verification. In this sense, management is a science.

Levels of managers



1. ***Top level management*** – Top management consists of board of directors, managing directors, chief executives, general managers, etc.
2. ***Middle level management*** – Middle management consists of departmental heads, branch managers, etc.
3. ***Lower level management*** – Supervisory level consists of supervisors, superintendents, inspectors, etc.

Skill required by Managers



1. **Technical skills** – Technical skill refers to ability to use equipment, methods and techniques involved in performing specific tasks.
2. **Conceptual skills** – Conceptual skill is the ability to recognize the different functions of business and ability to guide the organizational efforts to achieve the goal of the enterprise.
3. **Human relational skills** – The ability of a manager to work with, understand, and motivate people in the organization is known as *human relational skill* or *interpersonal skills*. Human relational skills include *motivating skills* and *leadership skills*.

Categories of managers

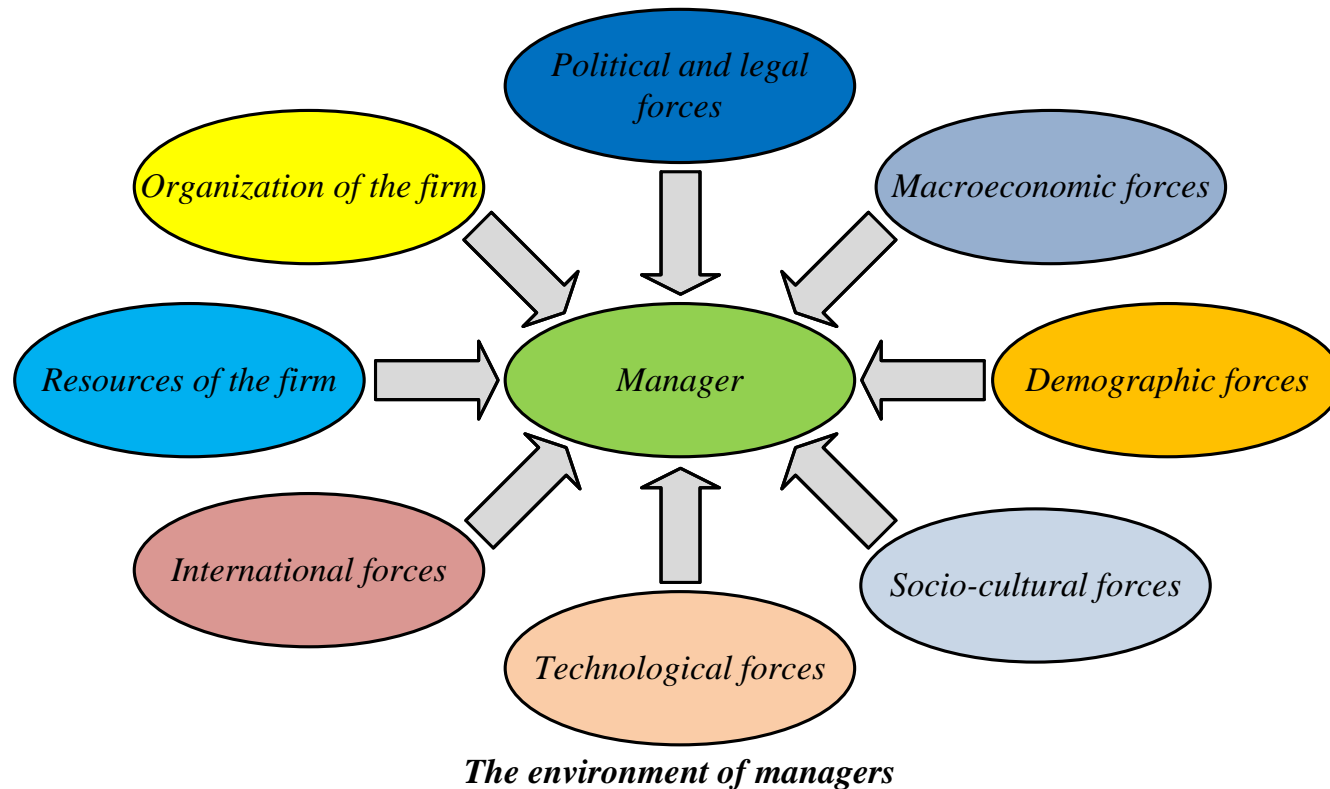
- The common way of differentiating between managers is to classify them into two broad categories viz., *functional managers* and *general managers*.

1. ***Functional managers*** – This group of managers is responsible for given functional area of the organization. Some of the major functional areas are :-

- a) *Marketing managers*
- b) *Financial manager*
- c) *Production manager*
- d) *Human Resource Manager*
- e) *Operational managers, etc.*

2. ***General Managers*** – General Managers manage a complete unit, such as a company, a subsidiary or an independent operating division

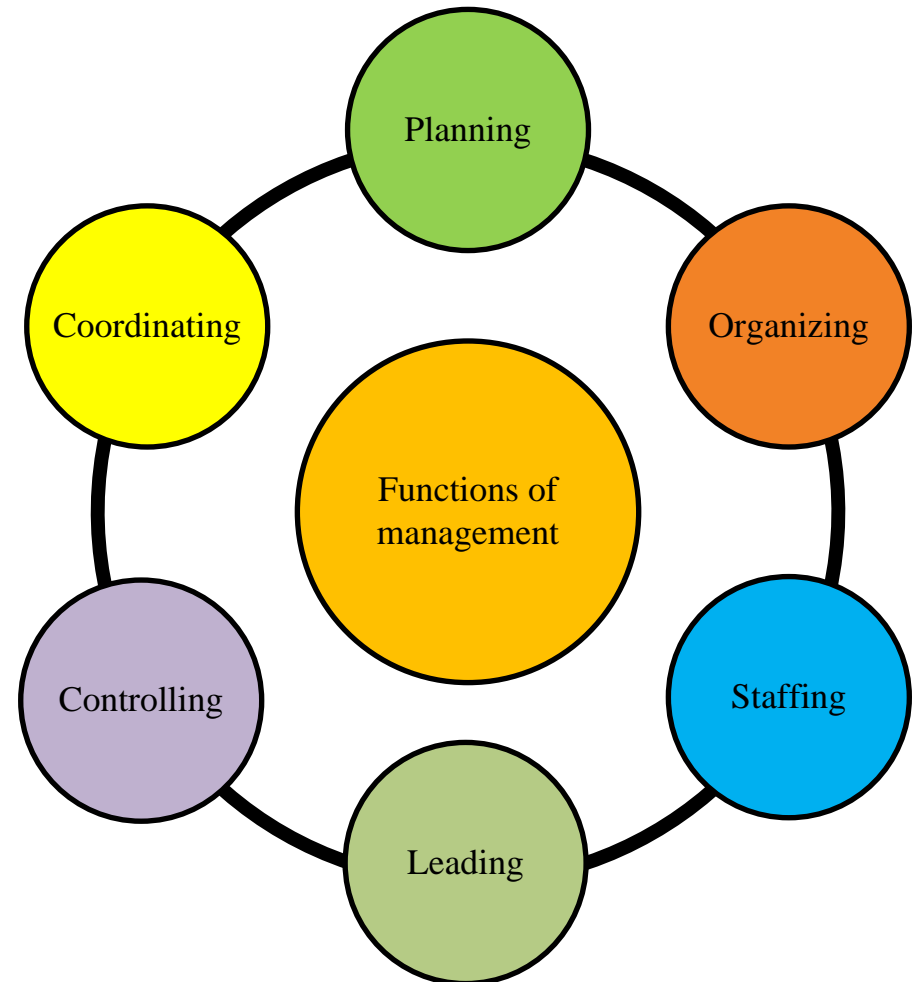
Internal and external environment of management



1. **Internal environment** – The *internal environment* constitutes everything inside the firm that might affect the ability of managers to pursue certain actions or strategies.
2. **External environment** – The *external environment* constitutes everything outside a firm that might affect the ability of the enterprise to attain its goals.

Functions of management

- The functions of management describe managers' jobs or activities.
- The managerial activities, grouped into :-
 1. ***Planning***
 2. ***Organizing***
 3. ***Staffing***
 4. ***Leading***
 5. ***Controlling*** and
 6. ***Coordinating***
- These functions are carried out by all managers, but the practices and methods must be adapted to the particular tasks, enterprises, and situation.



Functions of management

Planning function

- *Planning is the process of establishing goals and suitable course of action to achieve those goals.*
- The plans should consist of **goals**, **policies** (guidelines for decision making), **procedures** (details of actions), **rules** (a rule is a plan that lays down a required course of actions with regard to a situation) *methods, budgets, strategies* and *programmes*.
- Planning is necessary for proper utilization of resources (men, materials, machines, time and money) to achieve the objectives of the enterprise.

Organizing function

- *Organizing is a process of grouping the various activities to be done and assigning duties and responsibilities to people in groups or departments.*
- The process of organizing involves identifying and grouping of activities to be performed, defining and delegating authority, casting responsibility and establishing relationships to enable people to work together effectively in accomplishing organizational objectives.

Staffing function

- *Staffing involves manning the organization structure through proper and effective selection, appraisal and development of the employees to fill the roles assigned to the employers/workforce.*
- The objectives of staffing is to ensure that right type of people have been recruited for different positions.

Leading function

- Leading essentially involves activities like communicating with and motivating the employees.
- By effectively leading, managers look to secure the best and willing cooperation of individuals and groups to achieve the organizational goals.

Controlling function

- *Controlling can be defined as a process of setting standards, measuring actual performance, and taking corrective actions.*
- Controlling is a continuous process which measures the progress of operations and making sure that things are proceeding in the right direction as planned.

Coordinating function

- *Coordination can be defined as a process of harmonizing the different functions of the different departments of the enterprise (such as production, sales, etc.)*
- Coordinating also involves harmonizing the individual goals of the subordinates with the goals of the organization, regulate their activities and regulate their communications.

Management theories

- Management theories (*schools of management thought*) are theoretical frameworks for the study of management.
- Management theories are classified under :-
 1. ***Classical management approach (1880-1930)*** – It contains of mainly three theories, namely,
 - a) *Scientific management approach*,
 - b) *Administrative management approach* and
 - c) *Bureaucracy management approach*
 2. ***Neo-classical management approach (1930-1950)*** – Two branches contributed to the behavioral approach viz.,
 - a) *Human relation movement*
 - b) *Behavioral approach*
 3. ***Modern management approach (1950-onword)*** – Important modern management approaches are: -
 - a) *Contingency management theory*
 - b) *Systems approach*
 - c) *Theory Z approach* and
 - d) *Management science approach*.

Scientific Management

- *Scientific management is the result of applying scientific knowledge and scientific methods to the various aspects of management and various problems that arise from them.*
- The scientific management approach provides managers with a scientific basis for solving problems and making decisions.
- Scientific management grew from the works of five people , viz., ***F. W. Taylor, Henry Gantt, Harrington Emerson, Frank and Lillian Gilberth.***

Contributions of F.W. Taylor towards scientific management

- *Frederick W. Taylor* is known as the '*father of scientific management*'.
- In *Taylor's* view, if a work is analyzed scientifically it will be possible to find one best way to do it.
- The techniques which *Taylor* regarded as its *essential elements of scientific management* are : -
 1. *Scientific task and rate-setting* – Work study includes the following.
 - a) *Methods study* – Systematic recording and critical examination of ways of doing work to develop effective methods and reducing cost.
 - b) *Motion study* – Study of the movements in performing an operation with the purpose of eliminating useless motions.
 - c) *Time study* – To determine the proper time for performing the operation.
 - d) *Fatigue study*
 - e) *Rate-setting – Differential piece wage system* was suggested to obtain the best performance from the workers.
 2. *Planning the task* – Plan the production thoroughly so that there is no bottle neck and the work goes on systematically.

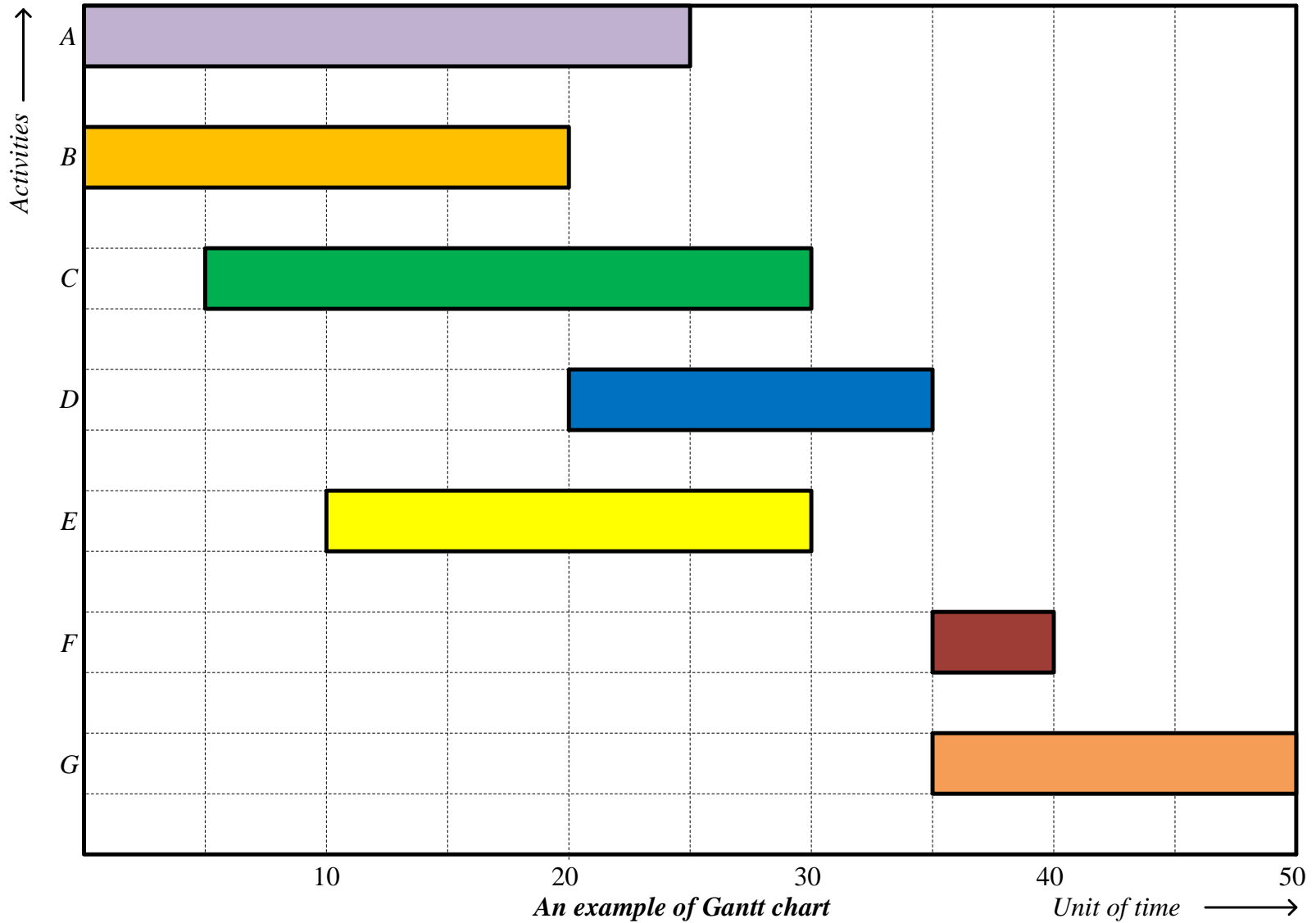
Contributions of F.W. Taylor towards scientific management

3. ***Selection and training*** – – Workers must be chosen on scientific basis considering their education, experience, skills, physical strength, etc.
4. ***Standardization*** – Scientific management aims at providing for a pre-determined standard for everything.
 - a) Standard product
 - b) Standard material
 - c) Standard tools and equipment –
 - d) Standardized working conditions
5. ***Specialization*** – Taylor advocated ***functional foremanship*** for achieving specialization. This technique was developed to improve the quality of work as single supervisor may not be an expert in all the aspects of the work. Therefore, workers are to be supervised by several specialists (foremen).
6. ***Mental revolution*** – – The technique of mental revolution involves a change in the attitude of workers and management towards each other.

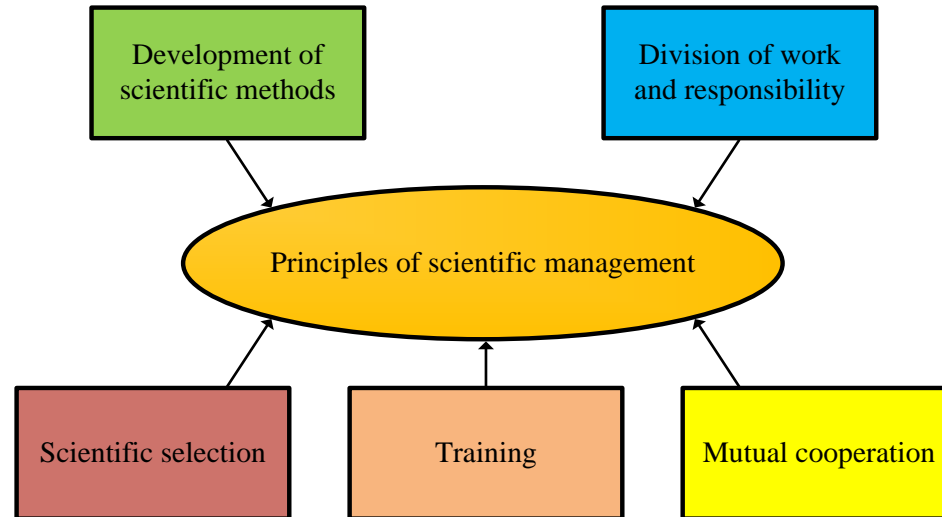
Contributions of Gantt

- **Henry.L.Gantt** worked under *Taylor* and was his close associate.
- Major contributions of *Gantt* are :-
 1. He improved upon *Taylor's differential piece rate system* and brought out his ***task and bonus plan***.
 - ❖ *Gantt's task and bonus plan* was so structured that the worker received a day's wage even if he doesn't complete the task. But if he completed the task in less than the prescribed time, he received a bonus.
 2. *Gantt* developed the daily balance chart, now known as ***Gantt's chart***. The chart shows the work progress against time.

Contributions of Gantt



Principles of scientific management



Principles of scientific management

1. **Analyze work scientifically** – To **develop the best way of doing** a job replacing the practice of old **rule of thumb** which is, depending on the practice of workers.
2. **Divide work and responsibility** so that management is responsible for planning work methods using scientific principles and workers are responsible for work.
3. **Select workers best suited to perform the specific tasks.**
4. **Provide guidelines for worker performance** – Train and develop each workman in the most efficient method for doing job.
5. **Achieve support and cooperation from workman** by arranging conditions, services, guidance and by giving them greater economic rewards

Benefits of scientific management

1. ***Benefits of division of labour*** – The work is simplified and is carried out in most economical and efficient manner.
2. ***Reduction in the cost of production***
3. ***Better quality products***
4. ***Provision of better working conditions*** – *Scientific management* provides a proper atmosphere of work to the workers.
5. ***Proper methods of selection and training of workers*** – Right type of man is selected for the right type of job.
6. ***Increased wages for efficient workers.***
7. ***Lesser production time***
8. ***Better utilization of resources***

Administrative management

- Administrative theory focused on the total organization.
- The most notable contributor was Henry Fayol.
- *Fayol's* work was concerned with the higher levels of the organization.
- ***Henry Fayol*** strongly felt that managers should be guided by certain principles and he developed the ***principles of management***.

Henri Fayol's principles of management

1. ***Division of labour*** – Division of work based on skills and interest of the workers.
2. ***Authority and responsibility*** – Authority without responsibility leads to irresponsible behavior whereas responsibility without authority makes the person ineffective.
3. ***Discipline*** – Discipline encourages employees to behave sensibly at work.
4. ***Unity of command*** – Employees should receive orders and instructions from one boss or supervisor only.
5. ***Unity of direction*** – There should be one plan and one head for each group of activities having the same objective.
6. ***Remuneration*** – Remuneration should be fair and provide satisfaction.
7. ***Degree of centralization*** – Centralization implies the concentration of decision making authority at the top management. According to *Fayol*, degree of centralization or decentralization depends on factors like size of business, experience of superiors, dependability and ability of subordinates, etc.
8. ***Equity of treatment*** – Manager should have fairness in treatment for all his subordinates.

Henri Fayol's principles of management

9. ***Stability*** – Stable workforce is an asset to the enterprise, because unnecessary labour is costly.
10. ***Initiative*** – Superiors should plan and encourage subordinates for the success of business.
11. ***Order*** – There should be proper, systematic and orderly arrangement of physical and social factors, such as land, raw materials, tools and equipments and employees respectively.
12. ***Scalar chain*** – There should be an unbroken line of authority and command at all levels from highest level (General Manager) to lowest ranks (workers).
13. ***Subordination of individual to general interest*** – The interests of one person should not take priority over the interests of the organization as a whole.
14. ***Espirit de corps*** – This principle emphasizes the need for team work among employees and shows the importance of communication in obtaining good team work.

Bureaucracy management approach

- '*Bureau*', is a *French* word meaning desk, or by extension, an office; thus, '*Bureaucracy*' is rule through a desk or office, that is, a form of organization built on the preparation and dispatch of written documents.
- *Bureaucratic theory* was developed by a *German* sociologist and political economist **Max Weber** (1864-1920).
- The organization has a well-defined line of authority.
- It has clear rules and regulations which are strictly followed. Often, public service with a large number of offices and employees like postal services are cited as examples of bureaucratic organizations.

Neo-classical management theories

- Neo-classical approach focused on the *factors that affect human behavior at work*.
- Particularly, two branches contributed to the behavioral approach viz.,
 1. *Human relation movement* and
 2. *Behavioral approach*.

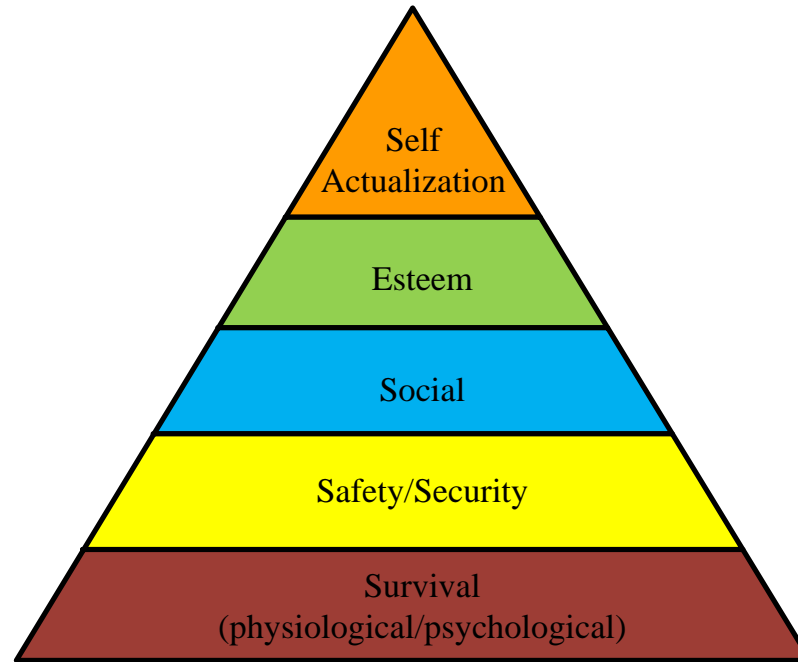
Human relation movement

- *Elton Mayo* is considered as the *father of the human relations movement*.
- The human relations movement grew from the *Hawthorne studies*.
- The *Hawthorne Studies* (or experiments) were conducted from 1927 to 1932 at the *Western Electric Hawthorne Works* in *Chicago*, where *Harvard Business School* Professor *Elton Mayo* examined productivity and work conditions.
- The studies grew out of preliminary experiments at the plant from 1924 to 1927 on the effect of light on productivity.
- Researchers were frustrated to discover that increasing light increased output, but reducing light also increased output.
- They found, in general, that the improvement in productivity was due to social factors as *morale*, *satisfactory interrelationships between members of a work group* (a sense of belonging), and *effective management*.

Behavioral approach

- Behavioral approach focused mainly on psychological needs as a means of achieving economic goals.
- Among the best-known contributors who helped behavioral approach were *Abraham Maslow* and *Douglas McGregor*.
- *Abraham Maslow* is well renowned for proposing the *Hierarchy of Needs Theory* in 1943 in his paper '*A theory of human motivation*'.
- *Douglas McGregor* advanced two beliefs for managers about human behavior - *Theory X and Theory Y*.

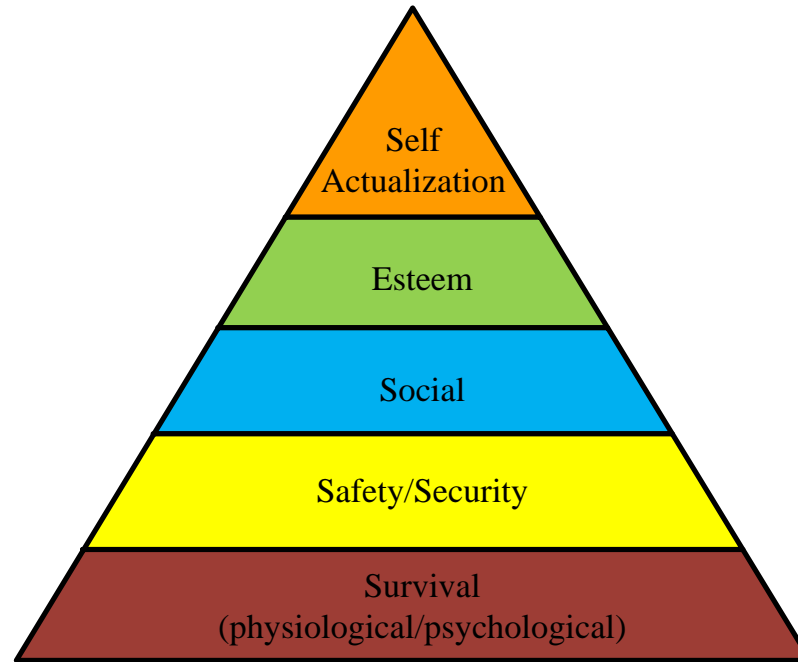
Maslow's needs hierarchy theory



Maslow's need hierarchy theory

- This theory is based on the assumption that there is a hierarchy of five needs within each individual. These five needs are as follows.
 1. ***Psychological needs*** – Psychological needs are the basic needs such as hunger, thirst and the need for shelter.
 2. ***Safety needs*** – Safety needs include physical, environmental and emotional safety and protection.
 3. ***Love needs* or *Belonging needs (social needs)*** – Social needs are the needs of the workers to belong and accepted by various groups.

Maslow's needs hierarchy theory



Maslow's need hierarchy theory

- 4. ***Esteem and status needs*** – Esteem needs to have competence, achievement, recognition, power, status, attention and admiration, etc. .
 - 5. ***Self actualization and fulfillment needs*** – These needs include the needs of the worker to get opportunities, to have situations to fulfill his potential, etc.
- According to the theory, once a given level is satisfied, a worker will be no longer motivated. The next higher level of need is to be activated in order to motivate the worker.

Theory X and Theory Y

- *Theory X and Theory Y* describe two very different attitudes toward workforce motivation.

<i>Theory X</i>	<i>Theory Y</i>
Theory X assumes human beings to be inherently distasteful towards work.	Theory Y assumes that for human beings, work is natural as play.
Theory X assumes that people do not have ambitions and try to avoid responsibilities.	Theory Y assumes that people have ambitions and are eager to take up responsibilities in jobs.
People have little capacity creativity.	Theory Y assumes that creativity is widely distributed.
Lack self-motivation.	People are self-directed.
Managers are result oriented.	Managers are welfare oriented.

- *McGregor* argued that most managers behave in accordance with *Theory X*. But he maintained that *Theory Y* is more appropriate and effective as a guide for managerial action.

Modern management theories

➤ Important modern management approaches are : -

1. *Contingency management theory,*
2. *Systems approach,*
3. *Theory Z approach* and
4. *Management science approach.*

Contingency management theory

- The contingency approach (*situational approach*) stresses the absence of a single best way to manage and emphasizes the need for managerial strategies based on all relevant facts.
- Each manager's situation must be viewed separately, a wide range of external and internal factors must be considered and then the focus should be on the action that best fits the given situation.

System approaches to Management



System approach to management

- Systems theory is an approach based on the concept that organizations can be visualized as *systems*.
- Every system has four major components/elements viz., *inputs*, *transformation processes*, *outputs* and *feedback*.
- A system can either be *open* or *closed*. An organization that interacts little with its external environment (outside environment) and therefore receives little feedback from it is called a closed system. An open system, in contrast, interacts continually with its environment.

Theory Z

- *William Quichi* made a comparative study of *American* and *Japanese* management practices and he developed *Theory Z*.

American organization	Japanese organization
Short-term employment.	Lifetime employment.
Individual decision making.	Collective decision making.
Individual responsibility.	Collective responsibility.
Rapid evaluation and promotion.	Slow evaluation and promotion.
Explicit control mechanisms.	Implicit control mechanisms.
Specialized career paths.	Non-specialized career paths.
Segmented concern for employee as an employee.	Holistic concern for employee as a person employee.

- *Theory Z* offers a hybrid management style which is a combination of *American* management style and a *Japanese* management style.

Management science

- The management science approach also known as *quantitative approach*.
- This approach gained momentum during the 2nd World War during which *operations research teams* were engaged to seek solutions to many complex problems of war.
- These teams constructed mathematical models to simulate real life problems.
- The quantitative approach to management makes use of scientific tools of several disciplines.
- Tools such as linear programming, queuing theory, simulation models, **CPM** (**Critical Path Method**), PERT (**Programme Evaluation Review Technique**), inventory control and quality control tools were extensively used in this approach.

Discussions

1. Give a brief account of the significance of the systems approach to the study of management.
2. Discuss the advantages and Limitations of system approach.
3. List four important interpersonal skills to be possessed by a manager.
4. Differentiate between management and administration.
5. Explain the various levels of management.
6. Discuss the nature and scope of management.
7. Explain the objectives and importance of management.
8. Describe the skills of a good manager.
9. Discuss the professionalization of management.
10. Define and describe the nature and goals of management. What are the functions of manager in your opinion? Explain.
11. Enumerate the various roles performed by managers as a part of their profession.
12. Distinguish between administration and management.
13. Is management a science or an art? Substantiate your response.
14. Define management.
15. Why management is called an art and science?
16. In the context of a car manufacturing firm, describe any four elements of the external environment.
17. Explanation about need for management.
18. Write any two points favour of management as a science and as an art.
19. List and elaborate five important roles of a manager.
20. List any four forces of the external environment.
21. Why the management of the organizations of the new era differ from old ones?
- 22. What are the different levels of management? (3) (April, 2022)**
- 23. What is scientific management? (3)(April, 2022)**
- 24. Explain the systems approach to management with a block diagram. (10) (April, 2022)**
- 25. How are changes in the external environment compensated in the systems approach? (4)(April, 2022)**
- 26. Explain Task and Responsibilities of a professional Manager. (8)(April, 2022)**
- 27. Explain the importance of management in an organisation. (6)(April, 2022)**