PRINCIPLES OF MANAGEMENT AND PROFESSIONAL ETHICS

CHAPTER - 1

Prerequisite: Nil

Aim:

The students are expected to learn the basics of management functions and realize the ideal characteristics of a manager. The impetus of this subject is to make the students familiarize with the professional skills required to be an effective manager.

Objectives:

The course should enable the students to:

1. Knowledge on the principles of management is essential for all kinds of people in all kinds of organizations.

2. Have a clear understanding of the managerial functions like planning, organizing, staffing, leading and controlling.

Outcomes:

At the end of the course the student should be able to:

1. Helps to examine situations and to internalize the need for applying ethics principles, values to tackle various situations.

2. Develop a responsible attitude towards the use of computers as well as the technology.

3. Able to envision the societal impact on the products / projects they develop in their career.

4. Analyze the professional responsibility and empowering access to information in the workplace.

MCQ - PRE TEST

1- Management is a creative and _____ process.
(A) Continuous
(B) Technical
(C) Democratic
(D) None of the above

2- The old control technique(s) which was (were) used through years is (are)
(A) Unity of policies
(B) Break-even analysis
(C) Budgetary control
(D) All of the above

3- Which type of strategies do professional managers help organizations in chalking out?
(A) Multi-disciplinary
(B) Corporate
(C) Managerial
(D) All of the above

4- Management exists at the ___ level of the organization.
(A) Lower
(B) Middle
(C) Top
(D) All of the above

5- Limitation(s) of control is (are)
(A) External factors
(B) Fixing of responsibility
(C) Variation and its causes
(D) All of the above

6- Management is said to be the combination of
(A) Arts, science and profession
(B) Arts, science and engineering
(C) Arts, commerce and science
(D) Arts, commerce and engineering

7- ___ is supposed to be immutable, unchanging and eternal.
(A) Policy
(B) Vision
(C) Mission
(D) All of the above

8- The summary of important trends in retailing are
(A) Market concentration
(B) Global players vs. local players
(C) Non store retailing
(D) all of the above

9- Costliness of the _____ is the overriding factor determining the extent of decentralization.
(A) Decision
(B) Staffing
(C) Both (A) and (B)
(D) None of the above

10- Positive motivation makes people willing to do their work in the best way they can and improve their _____.

(A) Productivity
(B) Personality
(C) Performance
(D) All of the above

11- The objective(s) in corporate governance is (are)
(A) Shareholders value maximization
(B) Growth
(C) Stability
(D) all of the above

12- The heart of administration is the ___ function.
(A) Directing
(B) Organizing
(C) Controlling
(D) Cooperating

13- The different A's of the service sector are
(A) Acceptability, awareness, adaptability
(B) Acceptability, awareness, availability
(C) Adaptability, awareness, availability
(D) Acceptability, adaptability, availability

14- Fredrick Winslow Taylor's Mechanism of Scientific Management includes
(A) Scientific task setting
(B) Planning the task
(C) Standardization of tools and equipment
(D) All of the above

15- Direction is a _____ function performed by all the managers at all levels of the organization.
(A) Managerial
(B) Organizational
(C) Both (A) and (B)
(D) None of the above

16- Retailing category (ies) based on ownership arrangement would be
(A) Super Markets
(B) Consumer Durables Stores
(C) Departmental Stores
(D) All of the above

17- ___ is a tool for corporate governance.
(A) Training
(B) Recruitment
(C) Communication
(D) Consulting

18-Horizontal coordination takes place ___ .
(A) Upwards
(B) Downwards
(C) Sideways
(D) Any of the above

19-The internal environment factor(s) that influence management is (are)
(A) Labor
(B) Machines
(C) Place
(D) All of the above

20-What articulates the long-term goals of an enterprise?
(A) Policies
(B) Vision statement
(C) Both (A) and (B)
(D) None of the above

1.1 Introduction to Management

Management is not a hard science. Unlike chemistry or algebra where a right answer (often) exists, management is fluid, and subjective, and there are divergent perspectives on how to employ its principles. "Management" is essential for an organized life. Good management is the backbone of successful organizations. Managing life means getting things done to achieve life's objectives and managing an organization means getting things done with and through other people to achieve its objectives. Management involves coordinating and overseeing the most activities of others so that their activities are completed effectively & efficiently.

Management is a set of principles relating to the functions of planning, organizing, directing and controlling, and the application of these principles in harnessing physical, financial, human, and informational resources efficiently and effectively to achieve organizational goals.

1.2 Definition of Management

Management is a process of designing and maintaining an environment in which individuals, working together in groups, accomplish their aims effectively and efficiently.

Many management thinkers have defined management in their own ways.

For example,

- According To Harold Koontz " Management is the art of getting things done through others and with formally organised groups."
- According to George R. Terry "Management Is a distinct process consisting of planning, organising, actuating and controlling; utilising in each both science and art, and followed in order to accomplish pre- determined objectives."
- According to Massie & Douglas " Management is the process by which a co-operative group directs actions towards common goals."

1.2.1 Definition implies

- Management is a process of carrying out the essential functions of planning, organizing, staffing, leading & controlling.
- Management applies to every kind of organization, whether it is government, profit making or non-profit making organizations.

- It applies to managers at all levels in the organization.
- The aim of all managers is the same : to create surplus.
- Managing is concerned with productivity, this implies effectiveness & efficiency.

1.3 Management as a Process

Management is considered as a process as it comprises a series of interrelated functions which lead to achievement of organization goals. Management as a process has the following implications.

- Social Process
- Integrated Process
- Continuous Process
- Interactive Process

The elements of Management Process are Planning, Organising, Staffing, Directing and controlling.

1.3.1 Planning

It is the basic function of management. It involves defining jobs, establishing strategies for achieving those goals & developing plans to integrate & coordinate activities. According to KOONTZ, "Planning is deciding in advance – what to do, when to do & how to do. It bridges the gap from where we are & where we want to be". A plan is a future course of actions. It is an exercise in problem solving & decision making. Planning is determination of courses of action to achieve desired goals. Thus, planning is a systematic thinking about ways & means for accomplishment of predetermined goals.

Planning is the systematic process of making decisions about goals and activities the organization will pursue. To make a decision about the direction of an organization, the planning phase must begin with analyzing the environment. Without a solid understanding of the context, the manager would have no basis to provide future direction. The context gives a manager a point of reference for improvement, opportunity, and learning from past mistakes. For this reason, the planning function should begin with analysis. This analysis should consider both the internal factors such as culture, values, and performance of team members as well as the external factors such as competitive environment, legal regulations, economy, technology, social values, and demographics.

The second component of planning is to use this analysis of the environment to build goals, activities, and objectives. For a major organization this might be the vision and mission statement of the organization. For a smaller organization this could be a year end, or season end goal. Some consider planning that point in your day or month that you step away from your desk, and think about the direction of your organization. This requires you to reflect on your organization's past, and determine how that impacts the direction going forward.

1.3.2 Organizing

It is the process of bringing together physical, financial and human resources and developing productive relationships amongst them for achievement of organizational goals. It involves arranging & structuring work to accomplish the organization goals. According to Henry Fayol, "To organize a business is to provide it with everything useful or its functioning i.e. raw material, tools, capital and personnel's". To organize a business involves determining & providing human and non-human resources to the organizational structure.

Organizing as a process involves:

• Identification of activities.

• Classification of grouping of activities.

• Assignment of duties.

• Delegation of authority and creation of responsibility.

• Coordinating authority and responsibility relationships.

1.3.3. Staffing

It is the function of manning the organization structure and keeping it manned. Staffing has assumed greater importance in recent years due to advancement of technology, increase in size of business, complexity of human behaviour etc. According to Koontz & O'Donnell, "Managerial function of staffing involves manning the organization structure through

proper and effective selection; appraisal & development of personnel to fill the roles assigned in the structure". Staffing involves:

• Manpower Planning (estimating manpower in terms of searching, choosing the person and giving the right place).
• Recruitment, selection & placement.
• Training & development.
• Remuneration.
• Performance appraisal.
• Promotions & transfer.

1.3.4. Directing

It is that part of managerial function which actuates the organizational methods to work efficiently for achievement of organizational purposes. It is considered the life-spark of the enterprise which sets it in motion the action of people because planning, organizing and staffing are the mere preparations for doing the work. Direction is that inert-personnel aspect of management which deals directly with influencing, guiding, supervising, motivating subordinates for the achievement of organizational goals. Direction has following elements:

• Supervision
• Motivation
• Leadership
• Communication

1. **Supervision**- implies overseeing the work of subordinates by their superiors. It is the act of watching & directing work & workers.
2. **Motivation-** means inspiring, stimulating or encouraging the subordinates with zeal to work. Positive, negative, monetary, non-monetary incentives may be used for this purpose.
3. **Leadership-** may be defined as a process by which a manager guides and influences the work of subordinates in desired direction.

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

1.3.5. Controlling

It implies measurement of accomplishment against the standards and correction of deviation if any to ensure achievement of organizational goals. The purpose of controlling is to ensure that everything occurs in conformities with the standards. An efficient system of control helps to predict deviations before they actually occur. Controlling is the process of checking whether or not proper progress is being made towards the objectives and goals and acting if necessary, to correct any deviation therefore controlling has following steps:

1. Establishment of standard performance.
2. Measurement of actual performance.
3. Comparison of actual performance with the standards and finding out deviation if any.
4. Corrective action.

1.4 Development of Management thought:

During the last hundred years, management has become more scientific discipline with certain standardised principles and practices. The evolution of management thought during this period can be studied in three parts.

- .Early classical approach: Represented by, scientific management, administrative management & bureaucracy.
- neo-classical approach: Represented by human relations & behavioural approach.
- Modern approach: Represented by quantitative approach , system approach and contingency approach.

1.4.1 Early classic approaches -Scientific management

Frederick Winslow Taylor (1856-1915) is considered to be the father of scientific management. He exerted a great influence on the development of management thought through his experiments and writings.

Taylor made several important contributions which are classified under scientific management.

- Time and motion study

  Since Taylor had been a machinist himself, employees would cut their piece rate as soon as there was a rise in production. The real trouble, Taylor thought, was that no one knew how much work it was reasonable to expect a man to-do. He started time and motion study, under which each motion of a job was to be timed with the help of a stop watch and shorter & fewer motions were to be developed, the best way of doing a job was found. This replaced the old rule of thumb knowledge of the workman.

- Differential payment

  Taylor introduced a new payment plan called the differential piece work, in which he linked incentives with production. Under this plan a worker received a low price rate if he produced the standard number of pieces and high rate if he surpassed the standard. Taylor thought that the attraction of a high price rate would motivate workers to increase production.

- Drastic Reorganization of Supervision:

  Taylor suggested two new concepts.
  Separation of planning and doing
  Functional foremanship

  The worker himself used to select his tools and decide the order in which the operations were to be performed. The foreman simply told the worker that jobs to perform, not how to do them. Taylor suggested that the work should be planned by a foreman and not by the worker. Foremen as there are special functions involved

in doing a job and each of these foremen should give orders to the worker on his speciality.

- Scientific Recruitment & Training

  He said that the management should develop and train every worker to bring out his best faculties and to enable him to do a higher, more interesting and more profitable class of work than he has done in the past.

- Intimate Friendly Cooperation Between the Manager and Workers:

  Taylor said that for the above suggestions to succeed " a complete mental revolution" on the part of management and labour was required. Taylor believed that management and labour had a common interest in increasing productivity.

His principles and concepts were refined and enlarged by several of his followers, notable among them being Henry L.gantt and the gilberts.

Gantt introduced two new features.

- Every worker who finished a day's assigned workload was to win a 50 percent bonus for that day.
- Foremen too were to earn a bonus for each worker who reached the daily standard, plus an extra bonus if all the workers reached it.

1.4.1.1 Limitations of Scientific Management:

- It is based upon one best way and is applicable for simpler organizations than that for today's dynamic and complex organization.
- It focuses on individual performance than group efforts and divides the workers into efficient and inefficient categories.
- It is focused on specialization and repetition of jobs to increase productivity which reduces innovation and creativity and promotes monotony.
- It neglects human factors because it motivates workers to work for monetary benefits rather than human resource development and resources.

- There is no scope for creativity of employees because they are developed by managers which promotes frustration.

1.4.2 Administrative Management

While Taylor is considered as the father of scientific management, Henry Fayol (1841-1925) is considered as the father of administrative management theory .He was a French mining engineer turned and leading industrialist & successful manager.

Fayol provided a broad analytical framework of the process of administration. He wrote that all the activities of business enterprises could be divided in to six groups.

- Technical
- Commercial
- Financial
- Accounting
- Security
- Managerial.

Fayol also presented 14 principles of management as general guides to the management process and management practice.

- Division of Work:

  Improves the efficiency through a reduction of waste, increased output, and simplification of job training.

- Authority and Responsibility:

  Authority: the right to give orders and the power to extract obedience

  Responsibility: the obligation to carry out assigned duties

- Discipline:

  Respect for the rules that govern the organization.

- Unity of Command:

  An employee should receive orders from one superior only.

- Unity of Direction:

  Grouping of similar activities that are directed to a single goal under one manager.

- Subordination of Individual Interest to the General Interest:

  Interests of individuals and groups do not take precedence over the interests of the organization as a whole.

- Remuneration of Personnel:

  Payment should be fair and satisfactory for employees and the organization.

- Centralization:

  Managers retain final responsibility – subordinates maintain enough responsibility to accomplish their tasks.

- Scalar chain (line of authority):

  The chain of command from the ultimate authority to the lowest.

- Order:

  People and supplies should be in the right place at the right time.

- Equity:

  Managers should treat employees fairly and equally.

- Stability of Tenure of Personnel:

  Managerial practices that encourage long-term commitment from employees create a stable work force and therefore a successful organization.

- Initiative:

  Employees should be encouraged to develop and carry out improvement plans.

- Esprit de Corps:

  Managers should foster and maintain teamwork, team spirit, and a sense of unity among employees.

1.4.3 Difference Between Management & Administration

BASIS	MANAGEMENT	ADMINISTRATION
Meaning	Management means getting the work done through & with others	Administration is concerned with the formulation of objectives, plans, policies of the organization.
Level	Management is relevant at Middle & Lower Level or Management	Administration is relevant at top level Management.
Nature	It is an executing function	It is a decision making function
Skills	Technical & Human Skills	Conceptual & Human skills
Applicability	It is applicable to business concerns. i.e.profit making organization.	It is applicable to non business concerns i.e. clubs, schools, hospitals etc.
Process	Management decides who should do it and how it is to be done.	Administration decides what is to bedone & when it is to be done.

Influence	The decisions are influenced by opinions, values, beliefs of managers.	The decisions are influenced by public opinion, government policies, custom etc.
Function	Management is a doing function because managers get work done by their subordinates.	Administration is a thinking functions because plans & policies are determined under it.

1.5 Levels of Management:

In any organization all those who are responsible for the work of others are known as managers. Though their primary task remains the same – getting the things done by others. Wide variance exists with regard to authority & responsibility of managers. These differences are largely due to the differences in the levels of management. We normally visualize a company's management as a pyramid.

1.5.1 Top level Management

Top management constitutes the highest level in the management hierarchy. This level consists of a small group of executives who are the senior most in the organization. Top management has the maximum source of authority & it establishes goals & policies for the enterprise.

Top Management consist of

1. CEO (Chief Executive Officer)
2. COO (Chief Operating Officer)
3. BOD (Board of Directors)
4. CFO (Chief Finance Officer)
5. Chairman
6. President
7. Vice President
8. M.D. (Managing Director)

Functions of Top Management

1. To lay down the objectives of the enterprise.
2. To prepare strategic plans & policies for the enterprise.
3. To assign jobs to different individuals working at middle level.
4. To arrange all the finance required to carry on day to day activities.
5. Top level management is responsible for the survival & growth of the organization.
6. It makes liaison with the outside world like government, suppliers, media, public etc.7. It reviews the performance and controls the activities of all departments.

1.5.2 Middle level Management

Middle level constitutes the execution level of the organization i.e. the departmental heads. They are responsible to the top management for the efficient function of their department & for executing the plans & policies made by the top level.

Middle level consists of heads of the various departments.

- Purchase Manage
- Finance Manager
- Human Resource
- Executive Officer
- Plant Superintendent

Functions of Middle Level Management

- They act as a linking pin between the top & lower level management.
- They organize all the resources & activities of their department.
- They execute & implement the plans of the organization in accordance with the policies of the top management.
- They select, appoint & train employees of their department.
- They evaluate the performance of their subordinates & prepare performance appraisal reports.
- They offer various incentives to employees so that they perform to the best of their ability & ensure higher productivity.

1.5.3 Lower Level management

Lower Level Management can also be termed as Supervisory Management/Operational Management/First-time Management.

It refers to the lowest level in the hierarchy of the organization. It is directly concerned with the control over the performance of the operative employees. They devote more time on the supervision of workers. Their authority & responsibility is limited.

It consist of

- Foreman
- Supervisors
- Sub-department Executives
- Clerks

Functions of Lower Level Management

- To represent the problems or grievances of workers before the middle level management.
- To plan & organize the activities of their unit.
- To provide training to workers.

- To maintain good working conditions & developing healthy relations between superior & subordinate.
- To communicate with workers, listen to their suggestions & motivate them to take initiative.
- To maintain discipline among the workforce.
- To maintain standard of quality, ensure steady flow of output & minimize wastage.

1.6 Managerial Skills

A skill is an individual's ability to translate knowledge into action. In order to be able to successfully discharge his roles, a manager should possess four major skills. These are conceptual skill, human relations skill, technical skill and design skill.

1.6.1.Conceptual skill:

Conceptual skill deals with ideas. The conceptual skill refers to the ability of a manager to take a broad and farsighted view of the organization and its future, his ability to think in abstract, his ability to analyze the forces working in a situation, his creative and innovative ability and his ability to assess the environment and the changes taking place in it.

1.6.2.Technical skill:

The technical skill is the manager's understanding of the nature of the job that people under him have to perform. It refers to a person's knowledge and proficiency in any type of process or technique. In a production department this would mean an understanding of the technicalities of the process of production.

1.6.3.Human relations skill:

Human relations skill is the ability to interact effectively with people at all levels. This skill develops in the manager sufficient ability (a) to recognize the feelings and sentiments of others; (b) to judge the possible actions to, and outcomes of various courses of action he may undertake; and (c) to examine his own concepts and values which may enable him to develop more useful attitudes about himself.

1.6.4.Design Skill:

Design Skill involves the ability to solve problems of the organisation. Top and middle level management must have the ability to see more than a problem. They must have in addition the skill of good design engineering working out a practical solution to the problem. Managers must be able to develop a workable solution to the problem.

1.7 Managerial Roles:

The term managerial roles refer to specific actions or behaviours expected of and exhibited by a manager. (Think of the different roles you play—such as student, employee, student organization member, volunteer, sibling, and so forth—and the different things you're expected to do in these roles.) When describing what managers do from a roles perspective, we're not looking at a specific person per se, but at the expectations and responsibilities that are associated with being the person in that role—the role of a manager.

The interpersonal roles are ones that involve people (subordinates and persons outside the organization) and other duties that are ceremonial and symbolic in nature. The three interpersonal roles include figurehead, leader, and liaison. The informational roles involve collecting, receiving, and disseminating information. The three informational roles include monitor, disseminator, and spokesperson. Finally, the decisional roles entail making decisions or choices. The four decisional roles include entrepreneur, disturbance handler, resource allocator, and negotiator.

1.7.1 Interpersonal Roles

The ones that, like the name suggests, involve people and other ceremonial duties. It can be further classified as follows

• Leader – Responsible for staffing, training, and associated duties.

• Figurehead – The symbolic head of the organization.

• Liaison – Maintains the communication between all contacts and informers that compose the organizational network.

1.7.2 Informational Roles

Informational Roles are related to collecting, receiving, and disseminating information.

• Monitor – Personally seek and receive information, to be able to understand the organization.

• Disseminator – Transmits all import information received from outsiders to the members of the organization.

• Spokesperson – On the contrary to the above role, here the manager transmits the organization's plans, policies and actions to outsiders.

1.7.3 Decisional Roles Roles

That revolves around making choices.

• Entrepreneur – Seeks opportunities. Basically they search for change, respond to it, and exploit it.

• Negotiator – Represents the organization at major negotiations.

• Resource Allocator – Makes or approves all significant decisions related to the allocation of resources.

• Disturbance Handler – Responsible for corrective action when the organization faces disturbances.

1.8 MCQ-POST TEST

1. Which term best describes the process of obtaining, deploying, and utilizing a variety of essential resources to contribute to an organization's success?

A) Planning

B) Organizing

C) Staffing

D) Management

2. Which title is given to an individual who is in charge of and coordinates the activities of a group of employees engaged in related activities within a unit of an organization?

A) Manager

B) Employee

C) Vender

D) Contractor

3. Which management function involves setting goals and objectives and creating specific plans for completing them?

A) Planning

B) Organizing

C) Controlling

D) Leading

4. Which management function involves setting goals and objectives and creating specific plans for completing them?

A) Planning

B) Organizing

C) Controlling

D) Leading

5. Which part of the management process includes measuring results,comparing results to expectations, and taking corrective action to bring results in line?

A) Planning

B) Organizing

C) Leading

D) Controlling

6. Which level of management is responsible for establishing a vision for the organization, developing broad plans and strategies, and directing subordinate managers?

A) First level managers

B) Middle managers

C) Executive managers

D) Second level managers

7. Which level of management is responsible for implementing programs that are intended to carry out the broader objectives of an organization set by executives?

A) Supervisory managers

B) Middle managers

C) First level managers

D) Chief financial managers

8. Which type of managers are responsible for reporting to middle managers?

A) Employees

B) Managers

C) Executive managers

D) Second level managers

9. Which management principle states that each individual should report to only one boss in order to avoid conflict and/ or confusion?

A) Division of command

B) Chain of command

C) Unity of direction

D) Unity of command

10. Which management principle states that orders and instructions should flow down from top to bottom or from a higher level manager to a lower one?

A) Division of work

B) Chain of command

C) Unity of direction

D) Unity of command

11. Which management principle states that work should be divided so that each person will perform a specialized portion?

A) Division of work

B) Chain of command

C) Unity of direction

D) Unity of command

12. What two major end results are managers seeking on a daily basis?

A) A product or service

B) Management and efficiency

C) Energy and utilities

D) Facilities and equipment

13. Which influential thought leader is known as the father of scientific management?

A) Dale Carnegie

B) Frederick W. Taylor

C) W. Edwards Deming

D) Peter F. Ducker

14. A manager who possesses knowledge of the processes, equipment, and potential problems of an industry would possess what type of managerial skill?

A) Technical

B) Administrative

C) Interpersonal

D) Organizational

15. The ability of a manager to interface and work effectively with individuals and groups is descriptive of what type of managerial skill?

A) Technical

B) Administrative

C) Interpersonal

D) Organizational

16. In management, the various roles that managers are called on to perform are defined in which process?

A) Management process

B) Executive process

C) Business process

D) Supervisory process

17. The purpose of _____ is to control all recruitment and personnel needs of the organization.

(A) Planning

(B) Staffing

(C) Controlling

(D) Organizing

18. In what order do managers typically perform the managerial functions?

(A) Organizing, planning, controlling, directing

(B) Organizing, directing, planning, controlling

(C) Planning, organizing, directing, controlling

(D) Planning, organizing, controlling, directing

19. Motivating members of the organization to work in the best interests of the organization is defined as:

(A) Organizing

(B) Planning and decision making

(C) Controlling

(D) Directing

20. Monitoring and correcting ongoing activities that facilitate goal attainment is defined as:

(A) Organizing

(B) Planning and decision making

(C) Controlling

(D) Directing

CONCLUSION:

1.Gained the knowledge of managerial functions.

2. Understood the levels of management.

3.Discussed about the different managerial roles and skills.

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CHAPTER- 2

PLANNING AND FUNCTION

Prerequisite : N/A

Aim:

The students are expected to learn the basics of management functions and realize the ideal characteristics of a manager. The Impetus of this subject is to make the students familiarize with the professional skills required to be an effective manager.

Objectives:

The course should enable the students to:

1. To understand global business and diversity.

2. Students will also gain some basic knowledge on the international aspect of management.

Outcomes:

At the end of the course the student should be able to:

1. Develop a responsible attitude towards the use of computers as well as the technology.

2. Able to envision the societal impact on the products / projects they develop in their career.

2.1 Planning Function of Management

Planning is deciding in advance what to do and how to do. It is one of the basic managerial functions. Planning involves selecting missions and objectives and deciding on the actions to achieve them; it requires decision making, that is, choosing a course of action from among alternatives Planning bridges the gap from where we are to where we want to go.

2.1.1 The Elements Of Planning

The planning function requires to make decisions about four fundamental elements of plans:

1 Objectives: Objectives are statements of future conditions, that a manager hopes to achieve. All sets of objectives have three characteristics: priority, timing, and measurement. The prase priority of objectives implies that at a given time, accomplishing one objective is more important than accomplishing others. Time dimensions imply that an organization's activities are guided by different objectives, depending on the duration of the action being planned.

Effective planning requires measurement of objectives. A variety of measurements exists to quantify objectives in the eight areas that management expert Peter Drucker suggests: market standing, innovations, productivity, physical and financial resources, profitability, manager performance and responsibility, worker performance and attitude, social responsibility.

2 Actions: Actions are the means, or specific activities, planned to achieve the objectives. The terms strategies and tactics refer to planned courses of action.

3 Resources: Resources are constraints on the course of action. It also involves budgeting - identifying the sources and levels of resources that can be committed to the courses of action. Management can select the type of budget that best suits the planning needs of the organization.

4 Implementation: Implementation involves the assignment and direction of personnel to carry out the plan. The three approaches to implementation are authority, persuasion, and policy.

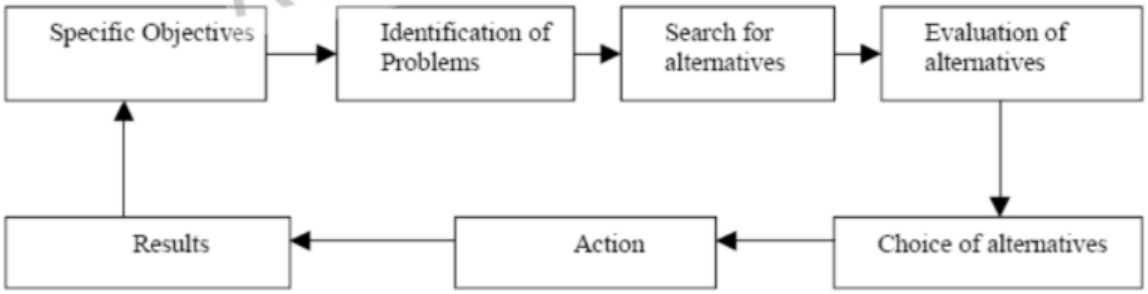
2.2 Managerial Decision-Making:

Decision-making is the selection based on some criteria from two or more possible

Alternatives.

2.2.1 Decision Making Process:

There are 7 key steps involved in Decision making process.



1. Specific Objective
2. Problem Identification
3. Search for Alternatives
4. Evaluation of alternatives
5. Choice of alternatives
6. Action
7. Results

Specific Objective: The need for decision making arises in order to achieve certain specific objectives. The starting point in any analysis of decision making involves the determination of whether a decision needs to be made.

Problem Identification: A problem is a felt need, a question which needs a solution. A good decision is dependent upon the recognition of the right problem. The objective of problem identification is that if the problem is precisely and specifically identified, it will provide a clue in finding a possible solution. A problem can be identified clearly, if managers go through diagnosis and analysis of the problem. Diagnosis: Diagnosis is the process of identifying a problem from its signs and symptoms. A symptom is a condition or set of conditions that indicates the existence of a problem. Diagnosing the real problem implies knowing the gap between what is and what ought to be, identifying the reasons for the gap and understanding the problem in relation to higher objectives of the organization. Analysis: Diagnosis gives rise to analysis. Analysis of a problem requires: • Who would make the decision? • What information would be needed? • From where the information is available? Analysis helps managers to gain an insight into the problem.

Search for Alternatives: A problem can be solved in several ways; however, all the ways cannot be equally satisfying. Therefore, the decision maker must try to find out the various alternatives available in order to get the most satisfactory result of a decision. A decision maker can use several sources for identifying alternatives:

• His own past experiences

• Practices followed by others and

• Using creative techniques.

Evaluation of Alternatives: After the various alternatives are identified, the next step is to evaluate them and select the one that will meet the choice criteria. /the decision maker must check proposed alternatives against limits, and if an alternative does not meet them, he can discard it. Having narrowed down the alternatives which require serious consideration, the decision maker will go for evaluating how each alternative may contribute towards the objective supposed to be achieved by implementing the decision.

Choice of Alternative: The evaluation of various alternatives presents a clear picture as to how each one of them contribute to the objectives under question. A comparison is made among the likely outcomes of various alternatives and the best one is chosen.

Action: Once the alternative is selected, it is put into action. The actual process of decision making ends with the choice of an alternative through which the objectives can be achieved.

Results: When the decision is put into action, it brings certain results. These results must correspond with objectives, the starting point of the decision process, if a good decision has been made and implemented properly. Thus, results provide indication whether decision making and its implementation is proper.

2.2.2 Factors affecting the decision making process

The decision situation – Elements of change, risk and uncertainty are common in a decision situation and recognizing and making sense of these elements are the main challenges that decision makers face

The decision makers – Different people approach decision making in different ways. Individuals are unique in terms of their personalities, abilities, beliefs and values. There are therefore many issues around who is involved in decision making process

Time – A decision is made at a particular time in a particular set of circumstances. The decision situation can change very rapidly which will affect the decision making

People affected by the decision – People likely to be affected will have an influence on the outcome of a decision 5. Decision criteria – The criteria that are established and used to evaluate alternative courses of action in decision making will affect the outcome of a decision.

2.2.3 Characteristics of Decision Making

1. Decision making implies that there are various alternatives and the most desirable alternative is chosen to solve the problem or to arrive at expected results. It implies choice

2. Decision making is continuous and a dynamic process.

3. It involves inbuilt risk and uncertainty as it relates to the future

4. It is a time consuming activity as various aspects need careful consideration and various steps are required to be followed.

5. Decision-making is goal-oriented.

2.2.4 Importance of decision making

- Better utilization of resources
- Helps to face challenges and problems effectively
- Helps to achieve objectives
- Increases efficiency
- Facilitates innovation

2.2.5 Limitations of decision making

- Time consuming
- Compromised decisions
- Biased Decision
- Limited analysis
- Uncertain future

2.3 TYPES OF DECISIONS:

a) Programmed and Non-Programmed Decisions

b) Strategic, Tactical and Operational Decisions

2.3.1 Programmed and Non-Programmed Decisions:

i) Programmed decisions: Programmed decisions are routine and repetitive and are made within the framework of organizational policies and rules. These policies and rules are established well in advance to solve recurring problems in the organization. Programmed decisions have short-run impact. They are, generally, taken at the lower level of management.

ii) Non-Programmed Decisions: Non-programmed decisions are decisions taken to meet non-repetitive problems. Non-programmed decisions are relevant for solving unique/

unusual problems in which various alternatives cannot be decided in advance. A common feature of non-programmed decisions is that they are novel and non-recurring and therefore, readymade solutions are not available. Since these decisions are of high importance and have long-term consequences, they are made by top level management.

2.3.2 Strategic, Tactical and Operational Decisions: Organizational decisions may also be classified as strategic or tactical.

i) Strategic Decisions: Basic decisions or strategic decisions are decisions which are of crucial importance. Strategic decisions a major choice of actions concerning allocation of resources and contribution to the achievement of organizational objectives. Decisions like plant location, product diversification, entering into new markets, selection of channels of distribution, capital expenditure etc are examples of basic or strategic decisions.

ii) Tactical Decisions: Routine decisions or tactical decisions are decisions which are routine and repetitive. They are derived out of strategic decisions. The various features of a tactical decision are as follows:

• Tactical decision relates to day-to-day operation of the organization and has to be taken very frequently.

• Tactical decision is mostly a programmed one. Therefore, the decision can be made within the context of these variables.

• The outcome of tactical decisions is of short-term nature and affects a narrow part of the organization.

• The authority for making tactical decisions can be delegated to lower level managers because: first, the impact of tactical decisions is narrow and of short-term nature and Second, by delegating authority for such decisions to lower-level managers, higher level managers are free to devote more time on strategic decisions.

iii) Operational decisions: These are day to day decisions made by junior managers that are simple and routine. This could involve the regular ordering of supplies or the creation of a staff rota. They are decisions regarding the day-to-day functions of a business. These decisions are considered operational decisions and they are subordinate to strategic and

tactical decisions. While these decisions are the responsibility of low-level managers, good decision making is crucial here since such decisions focus on productivity, quality control and employee performance. Moreover, operational decisions can be broken down into:

1) Short term planning needs like ordering supplies, establishing work priorities and enlisting temporary help
2) Medium term planning like hirinng and firing personnel, purchasing equipment, training individuals and modifying procedures
3) Long term planning like replacing subcontractors, redesigning production facilities and modifying capacity

2.4 Decision making under various circumstances

The conditions for making decisions can be divided into three types. Namely

a) Certainty,

b) Risk and

c) Uncertainty

Decision Making under Certainty In this environment, the decision maker knows with certainty the consequences of selecting every course of action or decision choice. In this type of decision problems the decision maker presumes that only one state of nature is relevant for his purposes. He identifies this state of nature, takes it for granted and presumes complete knowledge as to its occurrence. For example, suppose a person has Rs 5,00,000 to invest for a one year period. One alternate is to open a savings account paying 4% interest and another is to invest in a government treasury paying 9% interest. If both investments are secure and guaranteed, then there is a certainty that the treasury note will be the better investment. The various techniques for solving problems under certainty are i) System of equations ii) Linear programming iii) Inventory models iv) Break even analysis

Decision Making under Risk The future conditions are not always made in advance. In real life most managerial decisions are made under risk decisions, that is, some information is available but it is insufficient to answer all the questions about the outcome. So a decision maker has to make probability estimates of these outcomes. In decision making under risk one assumes that there exist a number of possible future states of

nature. Each has a known (or assumed) probability of occurring, and there may not be one future state that results in the best outcome for all alternatives Examples of future states and their probabilities are as follows:

• Alternative weather (weather) will affect the profitability of alternative construction schedules; here, the probabilities of rain and of good weather can be estimated from historical data.

Decision Making under Uncertainty At times a decision maker cannot assess the probability of occurrence for the various states of nature. Uncertainty occurs when there exist several (i.e., more than one) future states of nature but the probabilities of each of these states occurring are not known. In such situations the decision maker can choose among several possible approaches for making the decision. A different kind of logic is used here, based on attitudes toward risk. Such situations arise when a new product is introduced in the market or a new plant is set up.

2. 5 Managing Information System:

To the managers, Management Information System is an implementation of the organizational systems and procedures. To a programmer it is nothing but file structures and file processing. However, it involves much more complexity.

The three components of MIS provide a more complete and focused definition, where System suggests integration and holistic view, Information stands for processed data, and Management is the ultimate user, the decision makers.

Management information system can thus be analyzed as follows −

Management

Management covers the planning, control, and administration of the operations of a concern. The top management handles planning; the middle management concentrates on controlling; and the lower management is concerned with actual administration.

Information

Information, in MIS, means the processed data that helps the management in planning, controlling and operations. Data means all the facts arising out of the operations of the concern. Data is processed i.e. recorded, summarized, compared and finally presented to the management in the form of MIS report.

System

Data is processed into information with the help of a system. A system is made up of inputs, processing, output and feedback or control. Thus MIS means a system for processing data in order to give proper information to the management for performing its functions.

Definition

Management Information System or 'MIS' is a planned system of collecting, storing, and disseminating data in the form of information needed to carry out the functions of management.

Objectives of MIS

The goals of an MIS are to implement the organizational structure and dynamics of the enterprise for the purpose of managing the organization in a better way and capturing the potential of the information system for competitive advantage.

Following are the basic objectives of an MIS −

- Capturing Data − Capturing contextual data, or operational information that will contribute in decision making from various internal and external sources of organization.
- Processing Data − The captured data is processed into information needed for planning, organizing, coordinating, directing and controlling functionalities at strategic, tactical and operational level. Processing data means −
    - making calculations with the data
    - sorting data

    - classifying data and
    - summarizing data
- Information Storage − Information or processed data need to be stored for future use.
- Information Retrieval − The system should be able to retrieve this information from the storage as and when required by various users.
- Information Propagation − Information or the finished product of the MIS should be circulated to its users periodically using the organizational network.

2.6 Decision Support System:

Decision support systems (DSS) are interactive software-based systems intended to help managers in decision-making by accessing large volumes of information generated from various related information systems involved in organizational business processes, such as office automation system, transaction processing system, etc.

DSS uses the summary information, exceptions, patterns, and trends using the analytical models. A decision support system helps in decision-making but does not necessarily give a decision itself. The decision makers compile useful information from raw data, documents, personal knowledge, and/or business models to identify and solve problems and make decisions.

Characteristics of a DSS

- Support for decision-makers in semi-structured and unstructured problems.
- Support for managers at various managerial levels, ranging from top executive to line managers.
- Support for individuals and groups. Less structured problems often requires the involvement of several individuals from different departments and organization level.
- Support for interdependent or sequential decisions.
- Support for intelligence, design, choice, and implementation.
- Support for variety of decision processes and styles.
- DSSs are adaptive over time.

Benefits of DSS

- Improves efficiency and speed of decision-making activities.
- Increases the control, competitiveness and capability of futuristic decision-making of the organization.
- Facilitates interpersonal communication.
- Encourages learning or training.
- Since it is mostly used in non-programmed decisions, it reveals new approaches and sets up new evidences for an unusual decision.
- Helps automate managerial processes.

Components of a DSS

Following are the components of the Decision Support System −

- Database Management System (DBMS) − To solve a problem the necessary data may come from internal or external database. In an organization, internal data are generated by a system such as TPS and MIS. External data come from a variety of sources such as newspapers, online data services, databases (financial, marketing, human resources).
- Model Management System − It stores and accesses models that managers use to make decisions. Such models are used for designing manufacturing facility, analyzing the financial health of an organization, forecasting demand of a product or service, etc.

  Support Tools − Support tools like online help; pulls down menus, user interfaces, graphical analysis, error correction mechanism, facilitates the user interactions with the system.

Types of DSS

Following are some typical DSS's −

- Status Inquiry System − It helps in taking operational, management level, or middle level management decisions, for example daily schedules of jobs to machines or machines to operators.
- Data Analysis System − It needs comparative analysis and makes use of formula or an algorithm, for example cash flow analysis, inventory analysis etc.
- Information Analysis System − In this system data is analyzed and the information report is generated. For example, sales analysis, accounts receivable systems, market analysis etc.
- Accounting System − It keeps track of accounting and finance related information, for example, final account, accounts receivables, accounts payables, etc. that keep track of the major aspects of the business.
- Model Based System − Simulation models or optimization models used for decision-making are used infrequently and creates general guidelines for operation or management.

2.7 Strategic Planning:

Strategic planning is the art of creating specific business strategies, implementing them, and evaluating the results of executing the plan, in regard to a company's overall long-term goals or desires. It is a concept that focuses on integrating various departments (such as accounting and finance, marketing, and human resources) within a company to accomplish its strategic goals. The term strategic planning is essentially synonymous with strategic management.

Strategic Planning Process

The strategic planning process requires considerable thought and planning on the part of a company's upper-level management. Before settling on a plan of action and then determining how to strategically implement it, executives may consider many possible options. In the end, a company's management will, hopefully, settle on a strategy that is most likely to produce positive results (usually defined as improving the company's

bottom line) and that can be executed in a cost-efficient manner with a high likelihood of success, while avoiding undue financial risk.

The development and execution of strategic planning are typically viewed as consisting of being performed in three critical steps:

1) Strategy Formulation
2) Strategy Implementation
3) Strategy Evaluation

Benefits of Strategic Planning

The volatility of the business environment causes many firms to adopt reactive strategies rather than proactive ones. However, reactive strategies are typically only viable for the short-term, even though they may require spending a significant amount of resources and time to execute. Strategic planning helps firms prepare proactively and address issues with a more long-term view. They enable a company to initiate influence instead of just responding to situations.

Among the primary benefits derived from strategic planning are the following:

1. Helps formulate better strategies using a logical, systematic approach

2. Enhanced communication between employers and employees

3. Empowers individuals working in the organization

2.8 Organizational strategy:

Organizational strategy is a dynamic long-term plan that maps the route towards the realization of a company's goals and vision.

An organizational strategy is the sum of the actions a company intends to take to achieve long-term goals. Together, these actions make up a company's strategic plan. Strategic plans take at least a year to complete, requiring involvement from all company levels. Top management creates the larger organizational strategy, while middle and lower management adopt goals and plans to fulfill the overall strategy step by step.

2.9 Business Portfolio Matrix:

A portfolio matrix is a chart used to define products in terms of both the growth in their industry and their specific market share.

To create a portfolio matrix, first draw a diagram with four squares. The vertical axis of the chart is for growth in the industry, and the horizontal axis is for the market share of the specific product within that industry. Then, each product being analyzed is placed on the matrix in terms of their specific market share versus industry growth.

MCQ - POST TEST

1. Rearrange the steps in the decision- making process logically.

A. Identification of a problem

B. Identification of decision criteria

C. Allocation of weights to criteria

D. Development of alternatives

E. Analysis of alternatives

F. Selection of an alternative

G. Implementation of the alternative

a. GFEDCBA

b. CDBAFEG

c. ABCDEFG

d. GCDABEF

2. State true or false.

i. Managers when plan, organise, lead and control are called decision makers.

a. True

b. False

3. Which of the following is an assumption of rationality to rationale decision making?

a. Preferences are clear

b. Final choice will maximise payoff

c. The problem is clear and unambiguous

d. All of the above

4. _____ is accepting solutions that are "good enough".

a. Bounded rationality

b. Satisficing

c. Escalation of commitment

d. None of the above

5. Making decisions on the basis of experience, feelings and accumulated judgement is called _____.

a. Decision making

b. Structured problems

c. Intuitive decision making

d. None of the above

6. Which of this is not mentioned in decision-making matrix?

a. Analytic

b. Behavioural

c. Directive

d. Performance management

7. Which software provides key performance indicators to help managers monitor efficiency of projects and employees?

a. Management Information System

b. Business Performance Management

c. Enterprise Application Software

d. Online analytical Processing

8. _____ is a rule of thumb that managers use to simplify decision making.

a. Sunk - costs

b. Framing

c. Heuristics

d. None of the above

9. State true or false.

i. Availability bias is when decision makers tend to remember events that are most recent.

a. True

b. False

10. A decision for repetitive or routine problems for which the responses have been already been decided and been known to the person who will make the decision is called:

a. programmed.

b. non programmed.

c. strategic.

d. professional.

11. Non programmed decisions are most likely to be made by:

a. middle management.

b. lower management.

c. top management.

d. supervisory management.

12. A decision made before the occurrence of an external or internal change is called a _____ decision.

a. reactive.

b. proactive.

c. intuitive.

d. systematic.

13. A decision based primarily on an almost unconscious reliance on the decision maker's experience without a conscious rational analysis having been made is called:

a. systematic.
b. programmed.
c. non programmed.
d. intuitive.

14. _____ decision making is an organized, exacting, data-driven process.

a. systematic.
b. programmed.
c. non programmed.
d. intuitive.

15. The first step in decision making is to:

a. establish priorities.
b. establish specific goals and objectives.
c. identify and define the problem.
d. determine courses of the problem.

16. Problems are usually of the following type(s):

a. crisis problems.
b. routine problems.
c. problems of failing to take advantage of opportunities.
d. all of the above.

17. _____ refers to the seriousness of a problem's effects.

a. urgency.
b. impact.
c. growth tendency.
d. none of the above.

18. The concept that a manager's freedom to make totally rational decisions is restricted by internal and external environmental factors and by the manager's own characteristics and decision-making ability is called:

a. bounded rationality.
b. values.
c. objective rationality.
d. A & B.

19. Several studies have examined the effect of selected personality variables on the decision making process. These studies generally have focused on _____ variables.

a. personality.
b. situational.
c. interactional.
d. all of the above.

20. A group brought together from different functions and levels of an organization to consider ways in which the organization's activities could be improved is called a(n):

a. quality team.
b. process improvement team.
c. task team.
d. unit team.

CONCLUSION:

1.Gained the knowledge of planning function.

2. Understood the decision making process.

3. Discussed about the Managerial information system (MIS) , Decision Support System (DSS) , strategies of planning and organizing, and Business portfolio matrix.

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CHAPTER - 3
ORGANIZING FUNCTION

Pre-requisites: To have a basic knowledge on Management.

Aim:

The students are expected to learn the various methods and features of Organizing functions of Principles and Management. The inputs of the subject is to make students familiarize with the professional skills required to be an effective manager.

Objectives :

The course should enable the students to :

- To gain the knowledge on the generalizing functions and its types
- To have a clear understanding of the different types of organizing functions of Principles and Management and Professional Ethics.

Outcomes :

At the end of the course student should be able to:

1. Helps to examine the situations and internalize the need for applying ethics principles, values to tackle various situations.
2. Develop a responsible attitude towards the use of computers as well as the technology.
3. Able to envision the social impact on the products / projects they develop in their career.
4. Analyse the professional responsibility and empowering access to information in the workplace.

Pre-Test - MCQ Type

1. Organization structure designates relationships of

A) Formal Reporting
B) Informal reporting
C) Authority
D) Dynamism

Answer : A

2. Organization structure is reflected in the

A) Organization hierarchy
B) Organization chart
C) Departments
D) Span of control

Answer : B

3. Organization structure identifies

A) Non-departmentalization
B) Individualism
C) Grouping
D) complexity

Answer : C

4. Designs of systems are included in the organization structure to ensure

A) Coordination
B) Integration
C) Communication
D) All of the above

Answer : D

5. The definition of organizational structure have key components of types

A) 2
B) 3
C) 4
D) 5

Answer : B

6. _____ is the process of collecting job related information.

A) Job analysis
B) Job design
C) Methods of collecting job data
D) None of the above

Answer : A

7. State true or false

Job description and job specification are the two sets of data in the job analysis process.

A) True
B) False

Answer : A

8. Which of the following details is mentioned in job specification?

A) Materials and forms used
B) Location
C) Hazards
D) Physical skills

Answer : D

9. In line organisation, the business activities are divided into following three types

A) Accounts, Production, Sales
B) Production, Quality, Sales
C) Production, Quality, Maintenance
D) Production, Maintenance, Sales

Answer : A

10. In which of the following organisation structure, each specialist is supposed to give his functional advice to all other foremen and workers

A) Line organisation
B) Functional organisation
C) Line and staff organisation
D) All of the above

Answer : B

11. Which organisation structure is generally followed by big steel plants?

A) Line organisation
B) Functional organisation
C) Line and staff organisation
D) All of the above

Answer : C

12. If the span of control is narrow, a number of managers would be required in each unit of the organization and there would be many managerial levels or layers, such an organizational structure is referred to as

A) Flat structure
B) Tall structure
C) Matrix structure
D) Project structure

Answer : B

13. Repeated use plans or standing plans include

A) Objectives and policies
B) Procedures and methods
C) Rules
D) All of the above

Answer : D

14. Span of controls means that

A) An organization consists of various departments
B) Each person's authority is clearly defined
C) Every subordinate has one superior
D) A manager can supervise only a limited number of subordinates

Answer D

15. Organising process includes one of the following:

A) Grouping of activities
B) Prescribing disciplinary action
C) Determining objectives
D) Prescribing work schedule

Answer : A

16. One of the following is not an importance of organising:

A) Role clarity
B) Performance appraisal
C) Adaptation to change
D) Growth and expansion

Answer : B

17. Organisation structure establishes relationships between

A) organisation and environment.
B) people, work and resources.
C) organisation and society.
D) suppliers and customers.

Answer : B

18. Decentralisation implies all of the following except

A) Giving more power to subordinates
B) Giving more freedom to subordinates
C) Giving more rewards and incentives to subordinates
D) None of the above

Answer : C

19. Centralisation implies all of the following except

A) Lot of authority concentration at the top level
B) Lot of control at the top level
C) Lot of skill concentration at the top level
D) None of the above

Answer : C

20. The following element is not an integral part of an effective organising effort

A) Responsibility
B) Authority
C) Delegation
D) None of the above

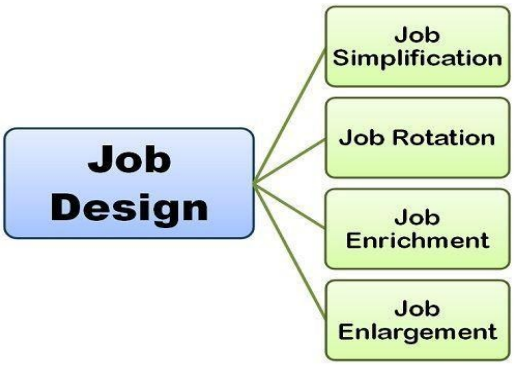
Answer : D

3.1 Job Design

Definition: The Job Design means outlining the task, duties, responsibilities, qualifications, methods and relationships required to perform the given set of a job. In other words, job design encompasses the components of the task and the interaction pattern among the employees, with the intent to satisfy both the organizational needs and the social needs of the jobholder

The objective of a job design is to arrange the work in such a manner so as to reduce the boredom and dissatisfaction among the employees, arising due to the repetitive nature of the task.

There are several important methods and techniques that the management uses while designing the jobs. These are:



3.1.1. Job Simplification

Definition: The Job Simplification means breaking the job into relatively easier sub-parts with the intention to enhance the individual's productivity by minimizing the physical and mental efforts required to perform a complex job.

Once the complex task is divided into the relatively easier tasks, each task is assigned to the individuals who perform these over and over again. By doing the same thing again and again, the employees gain proficiencies in the jobs assigned to them and as a result, the profitability of the organization increases.

Under the job simplification method, the organization saves its training cost, as a very low level of skills is required to perform the simplified jobs. Also, the job speed increases, as the individual is required to perform a small portion of the previously larger and complex job.

But however, by performing the same task again and again, the employees may feel boredom and may resist the monotony. This may lead to an increase in the employee

absenteeism, mistakes and accidents, etc. Due to these negative consequences, the overall productivity may get adversely affected, and the organization may suffer losses as a whole.

Thus, an organization cannot resort to the job simplification every time to reap the economic benefits. It must look at the organizational conditions prevailing at the time of designing the job.

3.1.2 Job Rotation

Definition: Job Rotation is the management technique wherein an employee is shifted from one job role to the other, with the purpose of familiarizing him with all the verticals of an organization.

Generally, the management trainees who are a fresher in the business world are shifted to different job positions to make them understand the functions of business more precisely. The purpose of a job rotation is to reduce the monotony of work and let an employee acquire multi skills required for performing different tasks in the organization.

Advantages of Job Rotation :

- Reduces the monotony of work
- Broadens one's knowledge and skills
- Helps the management to explore the hidden talent of an individual
- Helps an individual to realize his own interest
- Helps in creating the right employee job fit
- Developing a wider range of experience

Disadvantages of Job Rotation :

- Reduces uniformity of work
- Fear of performing another task effectively
- Frequent interruptions in the work
- Misunderstanding between the team members or union.
- Difficulty in coping with other team members
- Fear of getting more tedious or a hectic work

The job rotation is beneficial for both the employer and the employee. The employer can identify the vertical where the employee is giving his best and can also place him in the position of a person who has left because of the retirement, transfer, termination or any other reason.

Likewise, an individual also gets a chance to realize his efficiency and explore his own interest. Through job rotation, an employee acquires several skill sets which are necessary at different points of time.

3.1.3 Job Enrichment

Definition: The Job Enrichment is the job design technique used to increase the satisfaction among the employees by delegating higher authority and responsibility to them and thereby enabling them to use their abilities to the fullest.

In other words, job enrichment is the opportunity given to the employees to explore their abilities when some tough task is assigned to them. The job enrichment is the vertical restructuring of moral excellence in which more authority, autonomy, control is given to the employees to perform a given set of a job. This concept is in contrast to the job enlargement which considers the horizontal restructuring, where more and more tasks get added, and the challenge remains the same.

Thus, job enrichment is characterized by the different range of tasks and challenges having varying levels of difficulties. The organization can realize benefits through this job design technique in any of the following ways:

- With an increase in the employee morale, the more motivated, he gets to produce top results and hence, the profitability of the firm increases.
- When the employees bear more responsibility for their work and results, it becomes quite easy for the organization to operate.
- By giving authority to the employees to perform higher level jobs, the company is preparing its employees to occupy those high-level positions in the near future.
- Also, with the job enrichment, the number of levels in the management may reduce, thereby minimizing the complexity of the organization.

The purpose behind the job enrichment is to motivate the employees to use their abilities which remained unused during their course of action. Also, through job enrichment, the monotony breaks and the employees get the opportunity to do something new, which ultimately results in the increased satisfaction levels.

3.1.4 Job Enlargement

Definition: The Job Enlargement refers to the horizontal expansion of jobs wherein more and more activities, and tasks are added to the existing job scope at the same level in the organization.

In other words, job enlargement means increasing the scope of duties and responsibilities of an individual by adding the related activities to his existing job profile and generally without any change in his authority and his level in the hierarchy in the organization.

The purpose behind the job enlargement is to increase the employee flexibility and reduce the monotony that occurs gradually over a period of time. Often, the employees are not required to get the training for the task-related activities because he is already aware of that and is doing for quite some time. But however, if the activity added is new for an employee and is not related to his existing job nature, then a proper training should be given to him in order to acquaint himself with the new job conditions.

Thus, job enrichment is a job design technique which is used to broaden the scope of the employee's activities with the intent to increase his responsibility and duties and minimize the boredom that he may be facing with his existing job duties. But however, the employee can consider this approach as a negative step taken by the management; wherein he is required to do more tasks or activities for the same amount of pay.

While designing the job, the following aspects are to be taken into the consideration:

1. The foremost requirement for a job design is to define clearly the task an individual is supposed to perform. A task is the piece of work assigned to the individual and who has to perform it within the given time limits.
2. The management must decide on the level of motivation that is required to be enforced on an individual to get the work completed successfully. Thus, the managers must design the jobs that motivate their employees.
3. The managers must decide critically on the amount of resources that needs to be allocated to perform a particular type of a job. Thus, the efforts should be made to make an optimum utilization of organizational resources while designing the job so that the organization does not suffer any dilemma due to the shortage of its resources.
4. When the jobs are assigned to the individual, he agrees to do it because of the rewards attached to it. Thus, the manager must include in the job design the compensation, bonuses, incentives, benefits and other remuneration methods for the employees.

Thus, the job should be designed with the intent to find a fit between the job and its performer, such that the job is performed efficiently, and the performer experiences satisfaction while performing it and gives his best efforts towards its completion.

3.2 DEPARTMENTALIZATION

When two or more people work together to achieve a group result, it is an organization. After the objectives of an organization are established, the functions that must be performed are determined. Personnel requirements are assessed and the physical resources needed to accomplish the objectives determined. These elements must then be coordinated into a structural design that will help achieve the objectives. Finally, appropriate responsibilities are assigned.

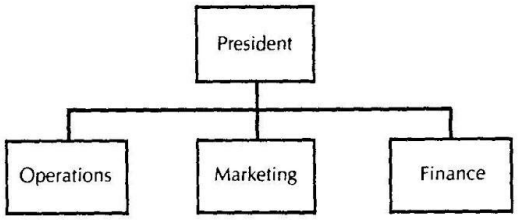
Determining the functions to be performed involves consideration of division of labor; this is usually accomplished by a process of departmentalization.

Definition :

Grouping related functions into manageable units to achieve the objectives of the enterprise in the most efficient and effective manner is departmentalization. A variety of means can be utilized for this purpose. The primary forms of departmentalization are by function, process, product, market, customer, geographic area, and even matrix (also called project organization). In many organizations, a combination of these forms is used.

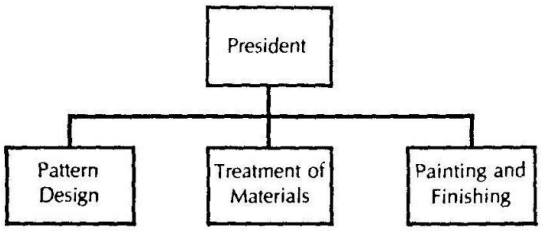
1. FUNCTION

Perhaps the oldest and most common method of grouping related functions is by specialized function, such as marketing, finance, and production (or operations). Sometimes this form of departmentalization may create problems if individuals with specialized functions become more concerned with their own specialized area than with the overall business. An example of departmentalization by function appears in Figure below.



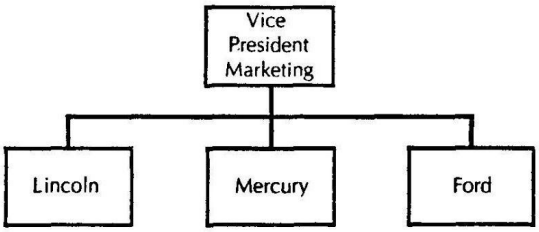
2. PROCESS

Departmentalization can also take place by process. This type of departmentalization, which often exists in manufacturing companies, is illustrated in Figure below.



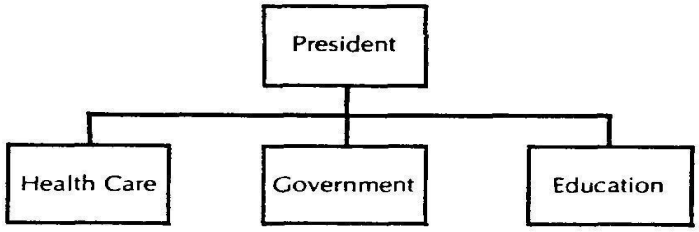
3. PRODUCT

Whenever specialized knowledge of certain products or services is needed, departmentalization by product may be best. This usually occurs in large diversified companies. This form of departmentalization is illustrated in Figure below.



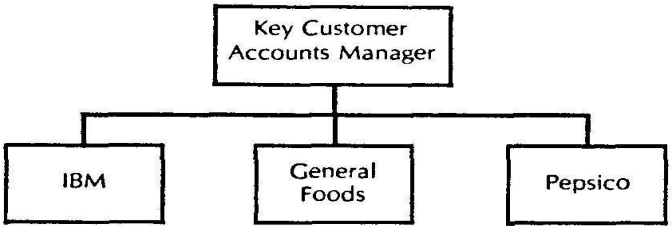
4. MARKET

When a need exists to provide better service to different types of markets, departmentalization by market may be the appropriate form. An example of a business serving nonprofit markets, which uses the market form of departmentalization, is shown in Figure below.



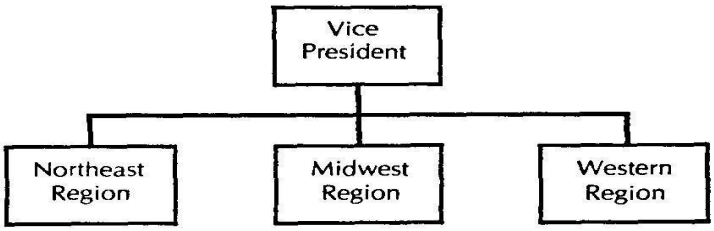
5. CUSTOMER

Sometimes key or major customers warrant departmentalization by the customer. This is often the case in banks. See Figure below.



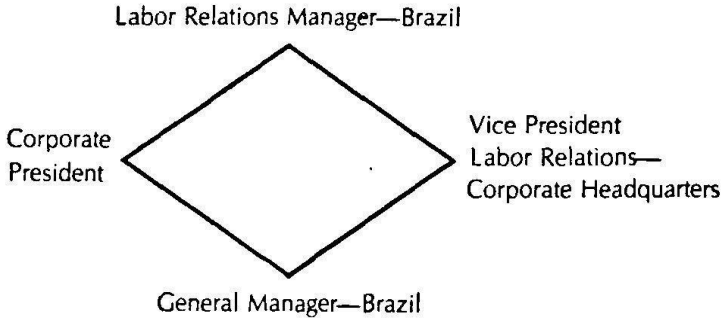
6. GEOGRAPHIC AREA

When organizations are spread throughout the world or have territories in many parts of a country, departmentalization by geographic area may provide better service to customers and be more cost effective. A typical example for this form of departmentalization. is shown in Figure below.



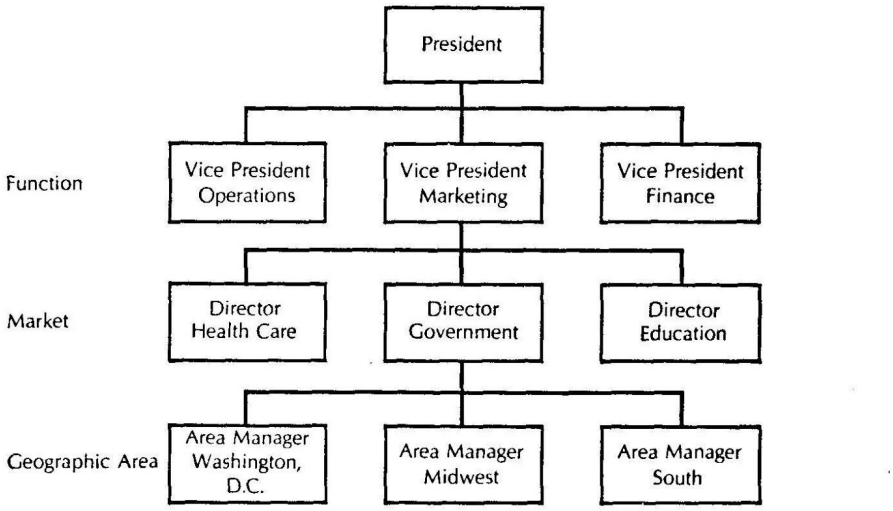
7. MATRIX (PROJECT ORGANIZATION)

Departmentalization by matrix, or project, has received considerable use in recent years, particularly in such industries as aerospace (e.g., NASA). In this method, personnel with different backgrounds and experiences that bear on the project are assembled and given the specific project to be accomplished within a certain time period. When the project is completed, these specialized personnel return to their regular work assignments. An example of this form is illustrated in Figure below; it often takes the shape of a diamond.



8. COMBINATION APPROACH

Many organizations, particularly large, physically dispersed and diversified organizations, utilize several different forms of departmentalization. Figure is an organizational chart showing the use of several forms of departmentalization.



3.3 Span of control

It is very important to understand the span of control and organizational structure when describing an organization. Simply, span of control refers to the number of subordinates under a manager's direct control. As an example, a manager with five direct reports has a span of control of five. Too many or too few direct reports is a good metric to view the efficiency of an organization, as long as it is looked at in the context of the company's organizational structure.

Expanding On the Concept of Span of Control :

While we are addressing a span of control, let's also broaden our understanding to see it in the context of the organizational levels of hierarchy.

Width: Organization structures can be described as wide (with a larger span of control) or narrow (with a smaller span of control.)

Height: As there are levels of management, or hierarchy, an organization may be tall (with many levels) or flat (with fewer levels.)

Flat organizations have a 'wide' span of control and Tall organizations have a 'narrow' span of control. While there are pros and cons with both tall and flat structures, a company's structure must be designed to suit the business (the customer and markets) and in a way that fits with the workforce's capability.

3.3.1 Characteristics of a Flat Organizational Structure (Wide Span of Control)

Advantages :

- Encourages delegation. Managers must better delegate to handle larger numbers of subordinates, and grant opportunities for subordinates to take on responsibilities
- Agile. Improves communication speed and quality
- Reduces costs. More cost effective because of fewer levels, thus requiring fewer managers
- Helps prevent the workforce from disengaging by focusing on empowerment, autonomy and self-direction

Disadvantages :

- High managerial workload comes with high span of control
- Role confusion more likely
- May cultivate distrust of management

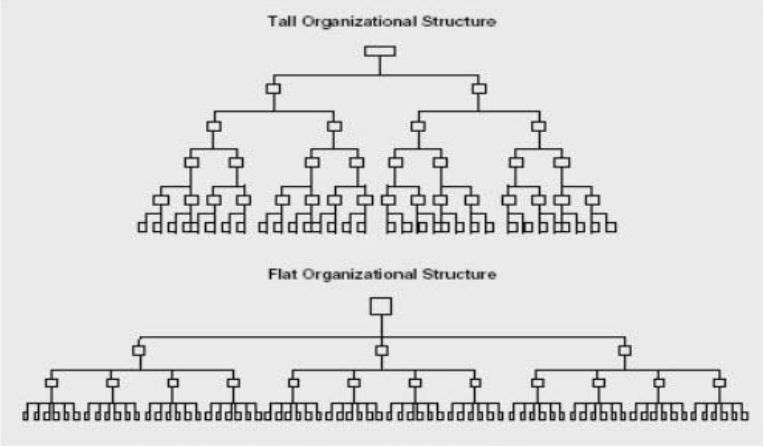
3.3.2 Characteristics of a Tall Organizational Structure (Narrow Span of Control)

Advantages :

- More rapid communication between small teams
- Groups are smaller and easier to control/manage
- There's a greater degree of specialization and division of labor
- More and better opportunities for employee promotion

Disadvantages :

- Communication can take too long, hampering decision-making
- Silos may develop and prevent cross-functional problem solving
- Employees may feel lost and powerless



Conclusion

As you can see, an organization's structure dictates the span of control assigned to managers. Whether you choose a 'tall' or 'flat' structure should depend on the business and how to best serve customers.

3.4 DELEGATION

As shown earlier, the process of managing begins with the establishment of objectives. Once the objectives have been established, the functions that must be accomplished are considered. Then the work to be performed or the responsibilities to be assigned are determined. This means it is necessary to know the personnel and physical resources needed to accomplish the objectives of the enterprise. Thus, when the functions, personnel, and other resources are grouped together by some means of departmentalization into a logical framework or organizational structure, the process of delegation begins.

Delegation is the process that makes management possible. Why? Because management is the process of getting results accomplished through others.

DELEGATION PROCESS, AUTHORITY, AND ACCOUNTABILITY

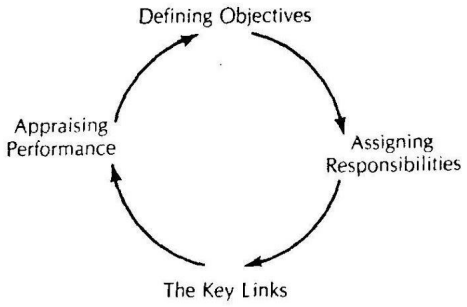
At the moment a job becomes too complex, too diverse, or too voluminous for one person, the need for delegation arises. In its simplest form, imagine the sole administrator with objectives and with no time to accomplish them. Means allowing, the manager can create a new job, hire an employee, and assign the accomplishment of the objectives to the new employee.

To meet these responsibilities, the new employee must also have the authority to achieve them. Thus, authority is delegated along with the responsibility. The manager, however, is still ultimately responsible. By assigning some of his or her responsibilities, the manager transfers or creates accountability. If the employee does not exercise the responsibility properly, the manager can always withdraw the authority. Delegation without control is abdication.

In practice, the process of management works in conjunction with the process of delegation. Since management is the process of getting results through others, delegation facilitates that process by assigning responsibilities, delegating authority, and exacting accountability by employees.

The delegation process works as follows. The manager has certain defined objectives (i.e., results) to accomplish at the end of the budget period. He or she assigns the responsibilities (i.e., duties to be performed) to key employees, along with the commensurate authority to go with those responsibilities. Thus, the accomplishment of the assigned responsibilities should equal the defined objectives.

The manager then develops standards of performance with each key employee (i.e., the conditions that should exist when a job is done well). These standards should be developed mutually to be effective. In essence, these standards of performance become the accountability of each employee for the budget period. The successful accomplishment of the standards of performance should equal the assigned responsibilities. The process continues with the appraisal of key subordinates rated against the agreed-upon standards of performance and closes with evaluation and feedback to the beginning of the next budget cycle, when the process begins all over again. See Figure below.



3.4.1 RISKS IN DELEGATION

The sheer volume of management responsibilities necessitates delegation. There is somewhat of a paradox in this situation, however, because delegation involves taking risks. Among the risks of delegation are loss of control, reverse delegation, and even loss of a job.

- **LOSS OF CONTROL**

In giving over authority to another, the manager loses some control over the proper completion of a project. The manager who has lived by the adage "If you want it done right, do it yourself' may find it difficult to delegate tasks for which he or she will ultimately be held accountable.

The key to successful delegation is assigning the right responsibilities to the right person. Of course, one never knows who the right persons are until one meets and works with them, but it must realistically be assumed that a given organization, department, or section employs at least some competent, willing, and responsible individuals. This assumption does not address itself to the fact that it is nearly impossible today for the manager to be technically superior to all employees. A staff that is not utilized effectively because of a manager's failure to delegate is a major loss to an organization, a waste of human resources.

- **REVERSE DELEGATION**

An important consideration for the manager who tries to do everybody's job is that he or she does so at the expense of the job for which he was hired--managing. An interesting analogy that underscores the value of delegation for management's sake is the "monkey-on-the-back" analogy, which claims that managers spend far more time with their employees than they even faintly realize. This habit occurs especially when a problem is brought to the manager's attention. In encounters with employees, the manager's use of simple phrases, such as "send me a memo on that," or "let me think about that and I'll let you know," or "just let me know what I can do," causes the "monkey" (problem) to jump onto the manager's back.

The manager assumes the responsibility for handling the task that was delegated to the employee in the first place, and when the employee reaches an impasse, the manager takes the next step. This is reverse delegation, and many employees are adept at it. Naturally, there will be situations in which the next step is justified, but unless the manager wants endless lines at the office door, he or she should avoid the casual and repeated use of those phrases that permit employee problems to ride on the manager's back. in fact, this principle of delegation is that accountability to a superior cannot be delegated.

A solution to this problem is to encourage initiative in employees. Employees should not have to wait until told to do something; nor should they have to ask. They should practice the completion of assigned tasks. By keeping the responsibility where it belongs, the manager will increase discretionary time to manage and can still handle system-imposed tasks. To develop initiative in employees early is one of the ways to develop a new generation of capable managers.

- **LOSS OF JOB**

The foregoing discussion brings to mind another risk in delegation from management's viewpoint. Is it possible to delegate one's self right out of a job? Suppose a subordinate develops so much initiative that he or she becomes superior to the boss. This is a threatening problem for the manager. The employee would be very happy if his or her development resulted in promotion, but what if the promotion means the manager's job?

Consensus among theorists suggests that the employee should be given the opportunity to perform to as high a level of responsibility as possible if this improves the group's performance. The manager should then endeavor to reward that person accordingly, even if it means helping that person to land a better lob outside the organization. To neglect and waste the talents of any individual is as criminal as the misuse of company funds or equipment.

In practice, we have all heard stories from individuals who feel more competent dim their managers. Thus it would seem that the best safeguard a manager has in preserving his or her position is to be a good manager and to prepare for his or her own advancement.

3.4.2 TECHNIQUES OF DELEGATION

The art of delegation often depends on a given situation. Plans change and people differ, but this does not imply that the employee should have to be notified on a daily basis of what is needed. Nor does it imply that there are not some generally accepted techniques that can facilitate the process of delegation, as discussed below. More suggestions are detailed in the list of do's and don'ts.

- **DEFINITION OF RESPONSIBILITIES AND AUTHORITY**

A clear definition of responsibilities and the authority to accomplish them constitute the foundation of the art of delegation. Whenever possible, these responsibilities should be stated in writing. The employee should also have a good idea of how the job fits into the total picture and why it is important. The manager should also encourage questions and be completely approachable. This practice, in combination with exhibiting confidence and trust by allowing subordinates to pursue goals without undue reporting, constant checking, and other exaggerated forms of control, will create a supportive climate and help to build an effective working relationship.

- **PERFORMANCE RATING**

Once the employee understands the job, that person should be made aware of how performance will be measured. This step in the management process has already been mentioned.

By and large, and within reason, managers receive the type and level of job performance they expect or informally accept over a period of time. In fact, low expectations tend to breed low performance and the opposite is true of high expectations. The failure to confront lower than desired levels of performance is tantamount to acknowledging them as acceptable; high expectations mean setting challenging but achievable goals. The focus should be on results that are motivating and attainable.

The manager should establish a system for setting objectives and set up a procedure for periodically reporting progress toward these objectives. Consideration of less-experienced employees demands more frequent consultation and, possibly, reporting. The manager who is committed to delegating authority should avoid switching back and forth in delegation, thereby causing only confusion and stagnation among employees

- **AWARENESS OF LIMITATIONS**

It may seem self-evident, but delegation cannot be used when the individual does not welcome additional responsibility. Knowing who wants greater responsibility or promotion is as important as knowing who is qualified for a job. It is often difficult for successful executives, who owe their success to a driving desire for greater responsibility and recognition, to understand others who seem to lack that motivation.

In essence, the manager-employee relationship is one of interdependence. A major goal of delegation is to reduce dependence on the manager, but the manager incurs a certain responsibility to the employee in delegation. The manager is responsible for helping the assistant discover how best to develop his or her abilities in order to meet future responsibilities.

Managers can develop employees through the art of delegation and should practice this art judiciously. With effective delegation, a manager can multiply his or her effectiveness and, through others, achieve the results expected.

3.4.3 PARITY OF AUTHORITY AND RESPONSIBILITY

An important principle of organization as well as management is that authority should equal responsibility. This principle is known as the parity of authority and responsibility and ensures that work will be performed with a minimum amount of frustration on the part of personnel. By not delegating authority equal to responsibility, a manager will create employee dissatisfaction and generally waste energies and resources.

3.4.4 SCALAR PRINCIPLE

This concept is generally referred to as the chain of command. It means that there should be a clear definition of authority in the organization and that this authority flows, one link at a time, through the chain of command from the top to the bottom of the organization. Communication in the organization is through channels. Following this principle generally results in clarification of relationships, less confusion, and improved decision-making.

3.5 Decentralization

Decentralization is the process by which the authority in an organization is delegated to the lower level managers. With this decentralized authority comes the responsibility to the managers. It is just the opposite of centralization, where the authority lies in the hand of a few people at the helm. In centralization, most of the decisions are made by the top level managers.

But in the case of decentralized authority, lower level managers can take their decisions on matters realizing to their specific area of work with certain freedom as long as the decisions are in sync with the overall goal and strategy of the organization. However the static decisions and policies are made by the top level management in this case also. Authority to coordinate and control also remains with the top level managers.

Factors that decide the degree of decentralization :

- Size and scope of operations of an organization
- Degree of control required
- Management by exception required or not
- Nature of the business and the growth
- Quality of top level managers
- Level of diversity in products and services

Implications of Decentralization :

- Less burden on top level executives
- Subordinates get a chance to take decisions independently and learn
- Operations can be coordinated at lower levels
- Ease of expansion
- Increased motivation to work
- Greater efficiency and output
- Diversification of activities
- Maintenance of secrecy
- Lower level managers get ready for emergencies
- Effective control is there, hence quick decisions can be made

Disadvantages of Decentralization :

- Coordination becomes slightly difficult to maintain
- No specialization
- No uniform action
- Equitable distribution of work is not there

3.6 Chain of command and the authorities

The chain of command represents levels of authority, and it's easy to see by viewing your company's chain of command who has direct reports and how many people an individual is responsible for. This is a hierarchy that is intentional and developed early in the company's inception to help distribute power and responsibilities, keep employees aware of company news and create a system for sharing knowledge.

A chain of command also provides every employee with a supervisor or manager who they can turn to if they have questions or need help to solve a problem. The level of accountability that a chain of command establishes helps each employee to be responsible for their own work, but also have someone who assumes some of the responsibility as they are in a position of authority and have the means to encourage, motivate and support their team.

3.6.1 Traditional chain of command structure

The chain of command is a very traditional way of structuring a company's authority levels. It's common to see the same chain of command structure at various organizations, from customer-based businesses to government entities.

A business owner or CEO holds the position at the top of a chain of command because they hold the top position at the company. The next level down usually includes senior executives or individuals who are in vice president roles over a part of the organization. These individuals report directly to the owner or CEO.

Under the upper management level, you may find individual managers or supervisors who are responsible for an entire department or group of employees. These employees

would appear under the middle-management level and at the bottom of the chain of command to represent that their authority figure is their direct supervisor. It's also common to find several ways to break down the hierarchy even further, depending on how large a company is, how many departments it has and more. There may be more management levels or less, depending on business needs.

The important thing to remember is that the farther at the bottom of the hierarchy your position is, the less authority you may have. Those at the top of the hierarchy possess more control over organizational developments and are in the position to make important decisions. They also carry more accountability and responsibility for the company's success and all the individuals who fall under them in the chain of command.

While there is a traditional structure to a chain of command, you may find the language used in a company's hierarchy to differ from one business to another. Some companies use traditional terms like superior and subordinate to describe members of a company's hierarchy, while others use team member, employee or actual job titles.

3.6.2 Advantages and disadvantages to a chain of command

As with most things at a company, there are certain advantages and disadvantages to having a chain in command in place. Consider these pros and cons when deciding on building a chain of command or following your current one:

Advantages to a chain of command :

Here are just some of the advantages you can expect from having a chain in command in place:

- **Increased efficiency**: When an employee has just one person to report to, they will likely work together closely, resulting in faster communication and the ability to solve problems quickly. For instance, imagine a team member who is working on solving a customer issue. Their direct supervisor probably has a better understanding of their department's operations and how best to solve the issue. Rather than an employee going to the next higher manager, their supervisor can provide them with valuable guidance quickly. The supervisor can escalate the problem to upper management if they need to.

- **Clear direction:** When there isn't a chain of command in place, an employee may receive conflicting directions and instructions from various members of management. A chain of command helps eliminate confusion or having to decide which manager to listen to when proceeding on a task or project.
- **Stability**: It's natural for employees to have questions throughout the day or need some guidance on their work. It's also important that they have work goals and someone who is there to support them. Having a chain of command provides stability so they can experience these things. An employee will know exactly who they should approach for feedback or help, and therefore, feel more in control of their role and more stable in the workplace. With a chain of command, an employee also comes to understand what their manager's expectations are and which situations require a manager to get involved.
- **Accountability**: With a chain of command in place, supervisors and managers have a close working relationship with their direct reports and are more aware of their responsibilities and what projects they are working on at any given time. This can lead to more accountability and increased productivity, as employees have someone guiding them to success.
- **Structured responsibility:** Each employee that appears in a chain of command has their own set of responsibilities. With a chain of command in place, everyone is aware of what their job entails and what they have to do to meet goals and help the company succeed.
- **Outside understanding**: Certain titles carry a certain weight with individuals outside of the organization. For example, an upset customer may want to speak with a senior manager because they understand that this person has more ability to solve their problems.

Disadvantages to having a chain of command :

As great as a chain of command could be, there are some disadvantages to having one in the workplace. The disadvantages include:

- **Less collaboration**: It's possible for an organization with a chain of command to have less collaboration in the workplace because those at the top of the hierarchy set the rules and standards and they expect everyone else to comply. While middle

managers and employees may have some say in decisions or have some autonomy in their work, it's the authority figures who approve everything and choose how the company operates. Also, if the chain of command is respected, an employee may never have the chance to get to know those above their direct superior.

- **Slow communication**: If a question, concern or idea has to go up several steps of the chain of command so that upper management can address or approve it, it can take some time. This can affect how quickly employees can do things like complete their project or resolve a customer issue.
- **Decreased employee empowerment**: Without a chain of command, it's likely that an organization values employee empowerment and giving their staff the ability to make decisions related to their work or a particular situation. A chain of command can decrease this employee authority.
- **More competition:** With a chain of command, decision-making managers could feel in competition with their fellow managers because they may feel protective over their employees and want to exert control over their team. This could lead to a culture of distrust among peer managers.

3.6.3 Flat chain command

A flat chain of command is when a manager has a lot of control within an organization. They may have a lot of individuals and teams reporting to them, and so the chain of command of that organization looks more flat or horizontal. Usually with these types of hierarchies, there are fewer middle managers and employees hold a lot of power and control themselves, particularly over their own work and environments.

You can find a flat chain of command in any kind or size of organization, but it's common for smaller businesses to have this type of hierarchy because there are fewer employees at the organization. There may be the business owner or founder, followed by a middle manager and then the group of employees.

3.6.4 Vertical chain command

A vertical chain of command has more steps and levels to its hierarchy than a flat chain of command. Each manager is typically only responsible for managing a few associates, so their level of control is more narrow and usually confined to their department.

With a vertical chain of command, you may notice that the company's rules, processes and procedures are more fixed, and they come from the top leaders of the organization who then give other managers the responsibility of disseminating information.

3.7 Organizational structure

The primary formal relationships for organizing, as discussed earlier, are responsibility, authority, and accountability. They enable us to bring together functions, people, and other resources for the purpose of achieving objectives. The framework for organizing these formal relationships is known as the organizational structure. It provides the means for clarifying and communicating the lines of responsibility, authority, and accountability.

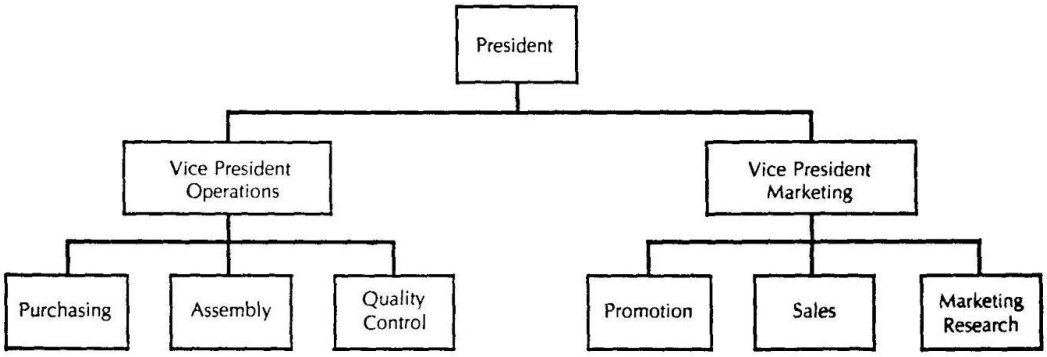
3.7.1 MAJOR TYPES OF ORGANIZATIONAL STRUCTURE

Although there are a number of variations of organizational structure, we shall discuss line and staff organizations and committee organization here.

1. **LINE ORGANIZATION**

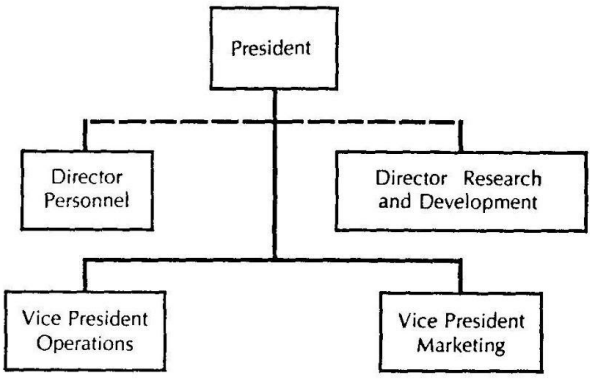
The line organization is the simplest organizational structure. It is the "doing" organization, in that the work of all organizational units is directly involved in producing and marketing the organization's goods and services. There are direct vertical links between the different levels of the scalar chain. Since there is a clear authority structure, this form of organization promotes greater decisionmaking and is simple in form to understand.

On the other hand, managers may be overburdened when they have too many duties. Figure below illustrates a simple line organization.



2. LINE AND STAFF ORGANIZATION

When staff specialists are added to a line organization to "advise; "serve;" or "support" the line in some manner, we have a line and staff organization. These specialists contribute to the effectiveness and efficiency of the organization. Their authority is generally limited to making recommendations to the line organization. Sometimes this creates conflict. However, such conflict can be reduced by having staff specialists obtain some line experience, which will tend to make them better understand the problems facing the line managers they support. Such functions as human resources management and research and development are typical staff functions. Figure below provides an example of such a structure.



3. COMMITTEE ORGANIZATION

When a group of people is formally appointed to consider or decide certain matters, this type of structure is a committee. Committees can be permanent (standing) or temporary and usually supplement line and staff functions. Sometimes ad hoc or temporary committees are set up to deal with a specific problem. Once this committee makes its recommendations, it is dissolved. On the other hand, permanent committees usually act in an advisory capacity to certain organizational units or managers. For example, committees are used to a large extent in universities. They may report to a dean or department chair. Certain committees, called plural committees, have the authority to order, not only to recommend. These committees are usually reserved for a very high level,

such as the board of directors. An example is an executive committee of the board for compensation or for succession planning.

Although committees have a number of advantages, they also have a number of disadvantages, particularly being excessively time consuming. Hence they should be managed effectively.

3.7.2 ORGANIZATIONAL STRUCTURE AND ENVIRONMENT AND TECHNOLOGY

Most studies that have been conducted on the relationship between organizational structure and the environment have concluded that the best organizational structure is contingent to some degree on the conditions in the environment. Several studies have also shown a relationship between technology and structure. In fact, these researchers even suggest that technology itself determines structure. These studies and others have led to a contingency approach to organizational structure.

Post test - MCQ Type

1. The following is (are) the objective(s) for studying the work system.

A) Increasing productivity
B) Developing manpower effectiveness
C) Both (A) and (B)
D) None of the above

Answer : C

2. For recording rate of change ____ is preferred.

A) Horizontal dial
B) Circular dial
C) Inclined dial
D) None of the above

Answer : B

3. Jobs are set of

A) Micromotions
B) Elements
C) Tasks
D) None of the above

Answer : C

4. The following factor(s) to be discussed for an effective job design.

A) Environmental
B) Organisational
C) Behavioural
D) All of the above

Answer : D

5. The following is not a method of Job Design.

A) Job rotation
B) Job enlargement
C) Job enrichment
D) Job analysis

Answer : D

6. In hospitals, the following type of departmentation is common

A) By function
B) By committee
C) By geographical region
D) All of the above

Answer : A

7. The department can be created

A) By function
B) By product
C) By process
D) All of the above

Answer: D

8. Departmentation is a process where

A) Tasks are grouped into jobs
B) Jobs are grouped into effective work groups
C) Work groups are grouped into identifiable segments
D) All of the above

Answer: D

9. Departmentation leads to grouping of

A) Activities
B) Personnel
C) Both 'A' and 'B'
D) None of the above

Answer: C

10. The number of subordinates that report directly to a single supervisor is

A) span of supervision
B) span of activity
C) span of business
D) span of organizing

Answer : A

11. Few subordinates report directly to the manager is _____

A) wide span of management
B) large span of management
C) small span of management
D) narrow span of management

Answer : D

12. Rules, duties and responsibilities or workers are given writing in

A) formal organization
B) informal organization
C) business or organization
D) strategic organization

Answer : A

13. Divisional structure leads to conflict in

A) resource allocation.
B) marketing management.
C) motivation.
D) planning process.

Answer : A

14. Which one of the following does not follow the scalar chain?

A) Informal organisation
B) Functional structure
C) Formal organisation
D) Divisional structure

Answer : A

15. ___ is the process of grouting similar activities together and creating departments.

A) Division of work
B) Departmentalisation
C) Delegation
D) Centralisation

Answer : B

16. ___ cannot be delegated.

A) Authority
B) Responsibility
C) Accountability
D) Both (a) and (b)

Answer : C

17. passing of authority to make the decisions to the lowest possible level in the organisational hierarchy is known as

A) Accountability
B) Responsibility
C) Decentralization
D) Authority

Answer : C

18. Vertical hierarchy and old departmental boundaries are virtually eliminated through

A) Horizontal Structure
B) Matrix Structure
C) Geographic structure
D) Virtual Structure

Answer : A

19. The formalization technique followed in an organic approach is said to be

A) Low
B) High
C) Condition dependent
D) No specialization

Answer : A

20. To maintain direct contacts among departments, there's a need of some

A) Manager integrator
B) Team leader role
C) Special liaison role
D) Task force

Answer : C

Conclusion :

1. Gained the knowledge on organizational structures and its various types

2. Understood its various structures and further classification.

3. Discussed about the different managerial roles and skills.

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CHAPTER -4
ENGINEERING ETHICS

Prerequisite : Nil

Aim:

The students are expected to learn the basics of management functions and realize the ideal characteristics

of a manager. The impetus of this subject is to make the students familiarize with the professional skills

required to be an effective manager.

Objectives:

The course should enable the students to:

1. Knowledge on the principles of management is essential for all kinds of people in all kinds of organizations.

2. Have a clear understanding of the managerial functions like planning, organizing, staffing, leading and controlling.

Outcomes:

At the end of the course the student should be able to:

1. Helps to examine situations and to internalize the need for applying ethics principles, values to tackle various situations.

2. Develop a responsible attitude towards the use of computers as well as the technology.

3. Able to envision the societal impact on the products / projects they develop in their career.

4. Analyze the professional responsibility and empowering access to information in the workplace.

MCQ - PRE TEST

1-A situation in which an engineer's loyalty and obligations may be compromised because of self-interests or other loyalties and obligations.

a. Conflict of interest

b.Conceptual issue

c.Concern of interest

d.Interaction rules

2-The general and abstract concepts of right and wrong behavior culled from philosophy, theology, and professional societies.

a.Ethics

b.Morals

c.Etiquette

d.Law

3-Expected sets of behavior (etiquette, law, morals, and ethics) between the engineer, other individuals, and society as a whole.

a.Conceptual issue

b.Interaction rules

c.Legal rights

d.Application issue

4-Engineering Ethics is the set of behavioral standards that all engineers are expected to follow.

a.True

B.false

5-Legal rights are

a.The system of rules established by authority, society, or custom

b.The lack of clarity as to whether a particular act violates a law, rule or policy

c.The ”just claims” given to all humans within a government’s jurisdiction

d.The act of informing authorities of harmful, dangerous, or illegal activities

6-A moral theory that seeks to create the best for most people.

a.Whistle blowing

b.Utilitarianism

c.Morals

d.Rights analysis

7-Ethics is a ---------- science

a.Positive

b.Negative

c.Normative

d.Theoretical

8-In India ---------- is still illegal.

a. Active euthanasia

b. Passive euthanasia

c. Involuntary euthanasia

d. Nonvoluntary euthanasia

9-The Hippocratic Oath is an oath historically taken by:

a. Physicians

b. Lawyers

c. Corporates

d. Teachers

10-'Digital divide' is related to:

a. Cyber ethics

b. Business ethics

c. Medical ethics

d. Professional ethics

11-Universal happiness is related with

a. Evolutionary theory

b. Emotivism

c. Utilitarianism

d. Cognitivism

12-Business ethics is also called:

a. Organizational ethics

b. Capital ethics

c. Industrial ethics

d. Corporate ethics

13---------- is the philosophical examination, from a moral standpoint, of particular issues in private and public life which are matters of moral judgment.

a. Positive ethics

b. Applied ethics

c. Normative ethics

d. Metaethics

14---------- is the method of resolving moral problems by the application of theoretical rules.

a. Casuistry

b. Analysis

c. Research

d. Heuristic

15- The method for jurisprudence and Applied ethics is:

a. Analysis

b. Research

b. Heuristic

d. Casuistry

16- In ethics Casuistry means:

a. Case-based analysis

b. Cased- based reasoning

c. Case- based investigation

d. Case- based explanation

17- The word casuistry derives from the Latin noun:

a. Case

b. Casue

c. Cassu

d. Casus

18- Identify the ethical position which accepted casuistry as a useful method.

a. Absolutism

b. Prescriptivism

c. Utilitarianism

d. None of these.

19- Who among the following criticized utilizing casuistry as a method for applied ethics?

a. Pope Francis

b. G. E. Moore

c. J. S. Mill

d. Bentham

20---------- is a branch of applied ethics that studies the philosophical, social and legal issues arising in medicine and the life sciences.

a. Medical ethics

b. Bioethics

c. Legal ethics

d. Practical ethics

4.1ENGINEERING ETHICS:

Engineering is the process of developing an efficient mechanism which quickens and eases the work using limited resources, with the help of technology. Ethics are the principles accepted by the society, which also equate to the moral standards of human beings. An engineer with ethics, can help the society in a better way.

Hence the study of Engineering ethics, where such ethics are implemented in engineering by the engineers, is necessary for the good of the society. Engineering Ethics is the study of decisions, policies and values that are morally desirable in engineering practice and research.

4.1.1Morals:

The word “Morality” originates from the Latin word “mos” meaning “custom”. Morals are the principles or habits with respect to right or wrong of one’s own conduct. They are not imposed by anyone. Morals are what you think is good and bad personally.

Though morals are not imposed, they can be understood as the preaching of our inner self. Depending on a few factors, our mind filters things as good or bad. These are the ideas that help frame our personality so that we can distinguish between what is right and what is wrong.

A moral is the code of conduct that you develop over time and set for yourself to follow, just like

- Being good to everyone
- Speaking only the truth
- Going against what you know is wrong
- Having chastity
- Avoid cheating
- Being a nice human being etc.

Morals are always defined by one’s own personality. Morals can be changed according to one’s beliefs as they are completely dependent on one’s perception towards the ethical values.

4.1.2Ethics:

The word “Ethics” originates from the Greek word “ethos” meaning “character”. Ethics are a set of rules or principles that are generally considered as standards or good and bad or right and wrong, which are usually imposed by an external group or a society or a profession or so.

Ethics can be understood as the rules of conduct proposed by a society or recognized with respect to a particular class of human actions or a particular group or culture. Ethics are dependent on others' definitions. They may or may not vary from context to context.

4.2. SENSES OF ENGINEERING ETHICS:

There are two different senses (meanings) of engineering ethics, namely the Normative and the Descriptive senses. The normative sense includes:

(*a*) Knowing moral values, finding accurate solutions to moral problems and justifying moral judgments in engineering practices,

(*b*) Study of decisions, policies, and values that are morally desirable in the engineering practice and research, and

(*c*) Using codes of ethics and standards and applying them in their transactions by engineers. The descriptive sense refers to what specific individual or group of engineers believe an act, without justifying their beliefs or actions.

4.3. Variety Of Moral Issues:

A moral issue can be understood as an issue to be resolved not only by considering the technical stuff but also by keeping moral values in mind. To be more precise, let us consider the definition in general.

“Moral issue is a working definition of an issue of moral concern is presented as any issue with the potential to help or harm anyone, including oneself.”

4.3.1. Types of Moral Issues:

There are mainly two types of Moral issues that we mostly come across while keeping the ethical aspects in mind to respond. They are −

Micro-ethics

This approach stresses more on the problems that occur on a daily basis in the field of engineering and its practice by engineers.

Macro-ethics

This approach deals with social problems which are unknown. However, these problems may unexpectedly face the heat at both regional and national levels.

4.3.2Examples

Let us now understand a few examples related to moral issues.

Example 1

After a recent collapse of a structure in which many people died, an Engineer came to know about a bridge which is marginally safe. He informed his superior who asked him to stay calm and not to discuss with anyone, while waiting for the next year budget sessions to get some financial help for the repair required. What should the engineer do?

Example 2

What should an Engineer who observes his colleague copying confidential information unauthorized, do immediately? If he chooses to stop his friend, what if this gets repeated without his notice? If he chooses to report the management, what if his friend loses the job? Which is morally correct?

Example 3

An engineer who develops a proto-type for the project, loses it due to a mishap exactly the day before the submission. Is it morally correct to outsource the prototype of the project and reduce the risks of job insecurity? What should he do?

These are the few examples just to understand the kind of moral dilemmas. There might be one or more correct answers at times. There can be some other way around to deal with the issue, which one can't easily notice. However, the decisions have to be made by

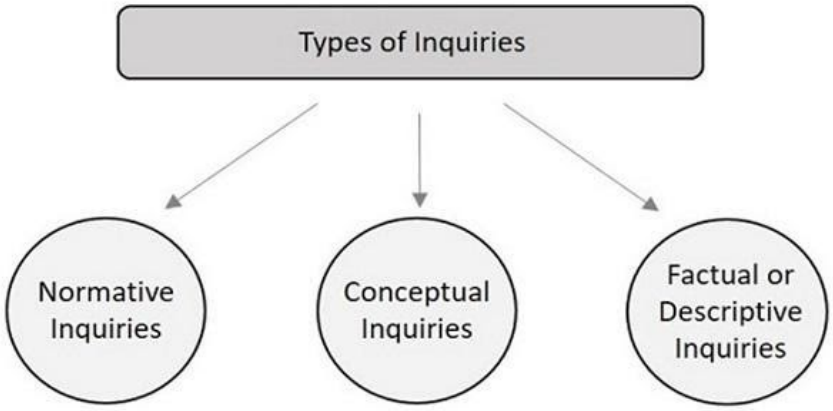
following a slow and clear process in order to avoid further problems and also to solve this in a manner that leads to no regrets.

4.4. Types of Inquiries:

The issues can be resolved by following an investigation procedure, step by step in order to have a clear understanding towards the issue. Here we have three different types of inquiries.

Judging the issues has to be followed by a systematic procedure to avoid any flaws. Engineering ethics involves investigations into values, meanings and facts. Following are the different types of inquiries made for this.

- Normative inquiries
- Conceptual inquiries
- Factual or descriptive inquiries



4.4.1. Normative Inquiries

Normative Inquiry refers to the description that describes what one ought to do under a specific circumstance. This is the expected ideal response, which might differ from what one believes to be right or wrong.

This list identifies and justifies the morally desirable nature for guiding individuals or groups. This includes the responsibility of engineers to protect the public safety and how they should respond under such dangerous practices. Normative inquiries also quote the laws and procedures that affect the engineering practice on moral grounds. They refer to

the thought process where the moral rights are to be implemented in order to fulfill their professional obligations.

4.4.2. Conceptual Inquiries

Conceptual Inquiry refers to the description of the meaning of concepts, principles and issues related to engineering ethics. The ethics that an engineer should possess to protect the safety, health and welfare of the public, etc. are described under conceptual inquiries.

It describes what safety is and mentions the marginal issues of safety along with the precautions an engineer should take to avoid risk. Conceptual inquiries mention the moral aspects of bribery and how its effects, along with the professional ethics and professionalism.

4.4.3. Factual and Descriptive Inquiries

Factual Inquiry or the descriptive inquiry help to provide the facts for understanding and finding solutions to the value based issues. The engineer has to conduct factual inquiries by using scientific techniques.

This helps in providing the information regarding the business realities such as engineering practice, history of engineering profession, the effectiveness of professional societies, the procedures to be adopted when assessing risks and psychological profiles of engineers.

Let us now go through the concept of Moral dilemma that a person faces when confronted with a situation.

4.5. Moral Dilemmas

Whenever a person is faced with a moral dilemma, the issue is to be solved with a stepwise approach as this will generate a better output. The steps include the following −

4.5.1. Identification

The step of identification involves the following −

- The issue has to be thoroughly understood.
- The duties and the responsibilities of the persons involved are to be clearly known.

- The moral factors related to the issue are to be understood.
- The conflicting responsibilities, the competing rights and the clashing ideas involved are to be identified.

4.5.2. Ranking

The considerations in the issue are to be listed down. Then they have to be ranked according to the priorities. The moral aspect has to be considered to rank the issues. The advantages of a single person should never be given any importance unless any moral reason is there behind it. No partiality is allowed.

4.5.3. Inquiries

The inquiry of details involved in the issue is to be completely made. All the facts related to the issue are brought into light. Considering the alternative courses of action for resolving and tracing, full implications are also needed.

4.5.4. Discussions

Discussions are to be made with other members, as different minds look at the issue in different views to give different solutions. The complete analysis of a problem gives chances to different viewpoints, perspectives and opinions from which a better solution can be drawn.

4.5.5. Final Solution

After analyzing different perspectives and considering the facts and reasons on the basis of truths and understanding the flaws which lead to the issue, a final solution has to be drawn out. This solution will add value to the whole analysis, in all aspects.

4.6. Moral Autonomy

Moral Autonomy is the philosophy which is self-governing or self-determining, i.e., acting independently without the influence or distortion of others. The moral autonomy relates to the individual ideas whether right or wrong conduct which is independent of ethical issues. The concept of moral autonomy helps in improving self-determination.

Moral Autonomy is concerned with the independent attitude of a person related to moral/ethical issues. This concept is found in moral, ethical and even in political philosophy.

4.6.1. Moral Autonomy – Skills Needed

In this section, let us discuss the skills needed for moral autonomy.

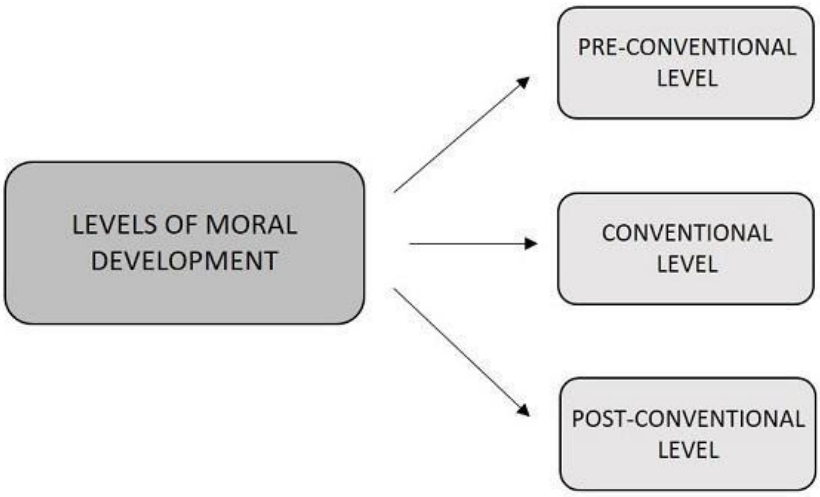
- Ability to relate the problems with the problems of law, economics and religious principles − It is essential to have the ability to analyze a problem and find the relation with the existing law or the topic of issue with the existing principles on that topic. The ability to distinguish between both of them and finding the moral reasons.
- Skill to process, clarify and understand the arguments against the moral issues − If the issue is against some moral values or the ethical values to be followed in the society, then clarity should be maintained about the differences and similarities. Both of these differences and similarities are to be judged based on why they are a matter of concern and in what aspect.
- Ability to suggest the solutions to moral issues on the basis of facts − If the moral issues are not fulfilling and need to be, then the solutions are to be suggested according to the moral issues based on the facts and truths of the issue. These suggestions must be consistent and must include all the aspects of the problem. No partiality is to be allowed in any such aspect.
- Must have the imaginative skill to view the problems from all the viewpoints − After having known about the facts and illusions of the issue, a clear understanding is attained in viewing the problem in all kinds of viewpoints. This enables one to be able to suggest a proper alternative solution.
- Tolerance while giving moral judgment, which may cause trouble − When the whole analysis is made considering all the viewpoints of the issue, the final output might be or might not be pleasing to the persons involved. Hence while declaring the judgment or the decisions taken, a detailed description of the actions done should be given, while the actions ought to be done should be presented in a better way, to ensure others that the decisions have been taken without any partialities towards any party.

- Tolerance while giving moral judgment, which may cause trouble − When the whole analysis is made considering all the viewpoints of the issue, the final output might be or might not be pleasing to the persons involved. Hence while declaring the judgment or the decisions taken, a detailed description of the actions done should be given, while the actions ought to be done should be presented in a better way, to ensure others that the decisions have been taken without any partialities towards any party.

4.7. Lawrence Kohlberg's Theory

Kohlberg proposed that people progress in moral reasoning based on their ethical behavior. He postulated this theory based on the thinking of younger children throughout their growing period as adults. He conveyed that younger children make judgment based on the consequences that might occur and the older children make judgment based on their intuitions.

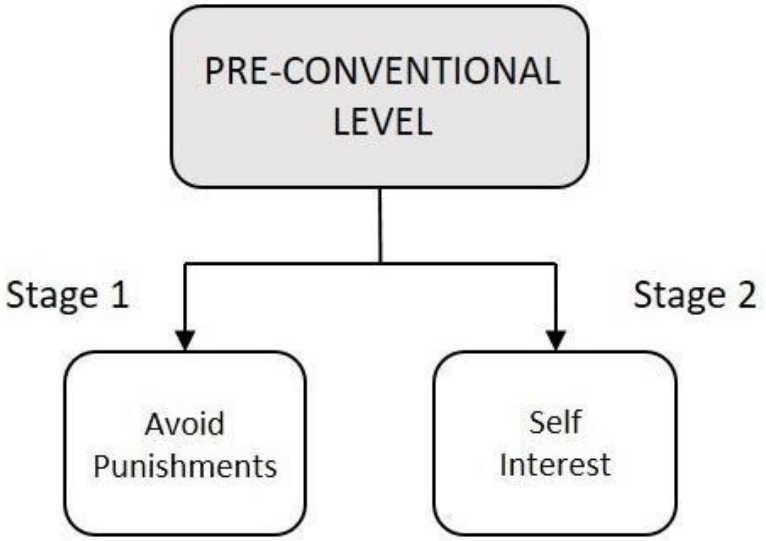
He believed that there are six stages of moral development which are further classified into three levels. The following illustration shows the different levels.



The process being discussed here is about the judgment made by the thinker about the protagonist in a given situation. The steps of the thinking process show the moral development of the thinker.

4.7.1. Pre-conventional Level

This can be understood as the first level of moral thinking, which is generally found at Elementary school level. The thinker at this stage tends to think and behave based on the direct consequences that might occur. There are two sub-stages in this.



4.7.1.1. Avoid Punishments

A thinker at this stage generally thinks and believes that the judgments are to be made as per the socially acceptable norms as they are said so by some higher official (a teacher or a parent). This is a child-like obedience, in order to avoid punishments.

These thoughts are based on the idea that the protagonist should not disobey the law or rules.

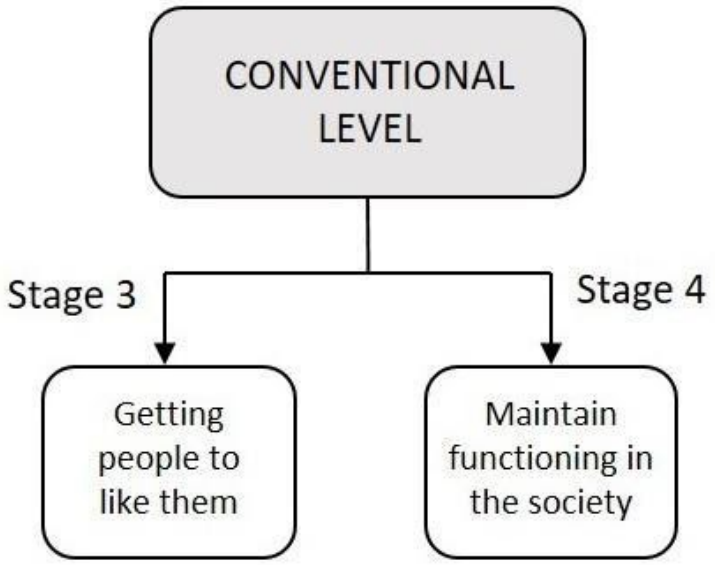
4.7.1.2. Self–interest

A thinker at this stage, shows interest in making decisions according to the rewards they get in exchange. This second stage is characterized by a view that right behavior means acting in one's own best interests.

In this stage, they tend to follow the rules of authority because they believe that this is necessary to ensure positive relationships and societal order.

4.7.2. Conventional Level

This can be understood as the second level of moral thinking, which is generally found at the primary and high school level. The thinker at this stage tends to think and behave based on the want to please others. There are two sub-stages in this.



4.7.2.1. Getting people to like them

At this stage, the ideas of the society are considered. This level can be that where the protagonist behaves on account of the moral grounds which people decide for decision making. This decision may or may not support the law. Whatever the result is, the thinking process is based on how to impress others or society and on how to please the people around.

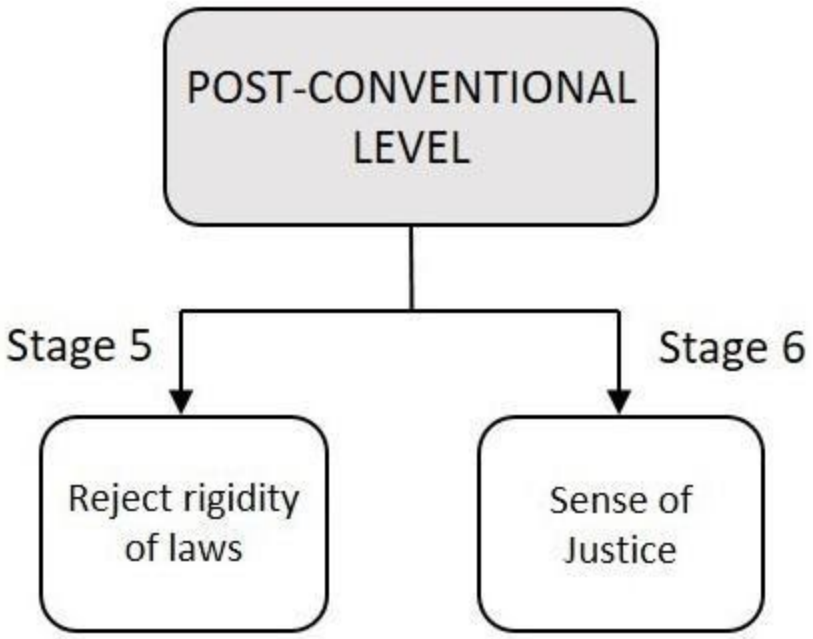
4.7.2.2. Maintain functioning in society

A thinker at this stage, considers to follow the rules for the good of the society. The moral grounds on how people in the society will consider the job done will be the priority, because the thinker believes that a social order is maintained by abiding by the rules.

Hence a thinker sticks to the idea that the protagonist should follow the moral values. The thinker's behavior is driven by authority while his thinking conforms to the social order.

4.7.3. Post-Conventional Level

This can be understood as the third level of Moral thinking, which is generally found after the high school level. The thinker at this stage tends to think and behave based on a sense of justice. There are two sub-stages in this.



4.7.3.1. Reject rigidity of laws

At this level, the thinker uses his moral thinking skills at a commendable pace. He starts to feel for the protagonist based on moral grounds. He also might have an opinion that the rules have to be changed according to humanitarian values. The thinker rejects the rigidity of the existing laws and rules at this stage.

4.7.3.2. Sense of justice

This is the pinnacle stage of Moral development where the thinker feels a sense of justice for the protagonist. The thinker has great moral values that he keeps himself free from the external factors that might influence his thinking process.

These are the three main sections of moral development proposed by Lawrence Kohlberg. Let us now try to have some detailed idea on this with an example.

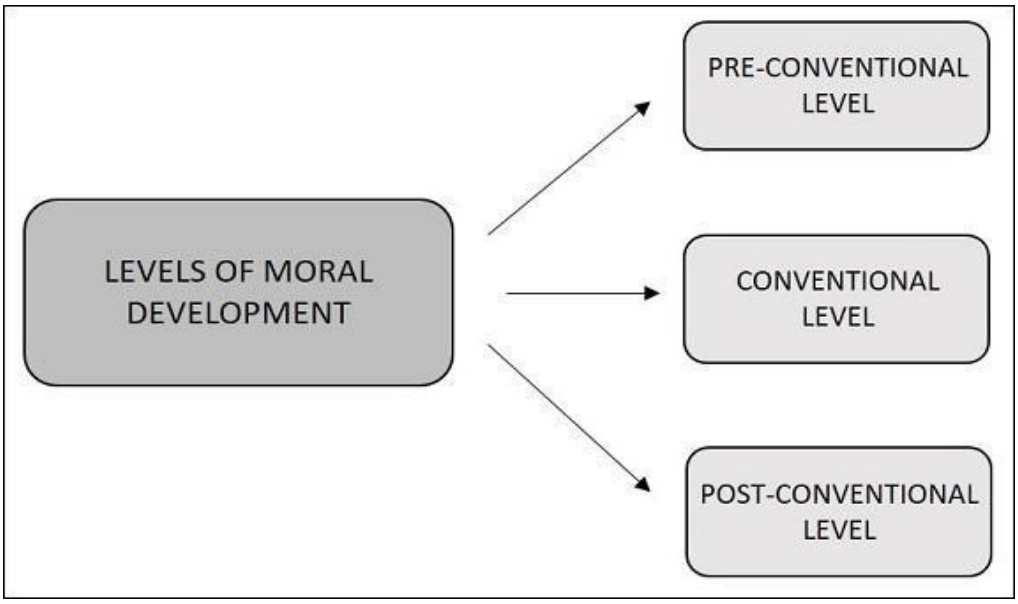
4.8. Gilligan's Theory

This is an advancement of Kohlberg's theory. It had been observed that Kohlberg's theory was proposed based on the moral thinking of privileged white men and boys. Hence this theory was popularized by taking both male and female thinking capabilities into account.

Carol Gilligan, a psychological theorist was born on Nov 28, 1936 in New York city. She pursued her doctorate degree in Social Psychology from Harvard University. Gilligan was a research assistant for Lawrence Kohlberg, but she eventually became independent and criticized some of his theories.

Carol Gilligan opines that Kohlberg's theories are biased upon the male thinking process. According to Gilligan, Kohlberg seemed to have studied only privileged men and boys. She believed that women face a lot of psychological challenges and they are not moral widgets. The women's point of view on moral development involves caring which shows its effect on human relationships.

Hence she proposed a theory which has the same three stages of Kohlberg but with



different stages of moral development. Let us understand the stages in detail.

Though the names of the stages are the same, the stages differ in this method. The moral development in Gilligan's theory are based on pro-social behaviors such as Altruism, caring and helping and the traits such as honesty, fairness and respect.

4.8.1. Pre-conventional Level

- A person in this stage cares for oneself to ensure survival.
- Though the person's attitude is selfish, this is the transition phase, where the person finds the connection between oneself and others.

4.8.2. Conventional Level

- In this stage, the person feels responsible and shows care towards other people.
- Carol Gilligan believes that this moral thinking can be identified in the role of a mother and a wife. This sometimes leads to the ignorance of the self.

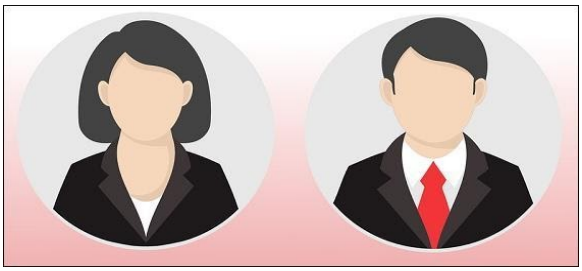
4.8.3. Post-conventional Level

- This is the stage, where the principle of care for self as well as others, is accepted.
- However, a section of people may never reach this level.

According to Carol Gilligan's theory of moral development, changes occur due to the change of self rather than critical thinking. It was stated that the post-conventional level of Kohlberg is not attained by women. But Carol Gilligan researched and found that the post-conventional level of thinking is not being easy for women to go through because they care for the relationships.

4.8.4. Levels of Thinking

Carol Gilligan states that the post-conventional level of moral thinking can be dealt based on the two types of thinking. Gilligan's theory is based on the two main ideas, the



care-based morality (usually found in women) and the justice-based morality (usually found in men).

4.8.5. Care-based Morality

Care-based morality is the kind of thinking found in women. This is based on the following principles.

- More emphasis is given to inter-connected relationships and universality.
- Acting justly focuses on avoidance of violence.
- Women with this are usually interested in helping others.
- More common in girls because of their connections to their mothers.
- Because girls remain connected to their mothers, they are less inclined to worry about issues of fairness.

4.8.6. Justice-based Morality

Justice-based morality is the kind of thinking found in men. This is based on the following principles.

- They view the world as being composed of autonomous individuals who interact with one another.
- Acting justly means avoiding inequality.
- Individuals with this are usually interested in protecting individuality.
- Thought to be more common among boys because of their need to differentiate between themselves and their mothers.
- Because they are separated from their mothers, boys become more concerned with the concept of inequality.

Carol Gilligan's theory can be better understood if explained with an example.

4.8.7. Example of Gilligan's Theory

In order to understand Gilligan's theory, a popular example is usually considered. A group of moles give shelter to a porcupine. But they are being continuously stabbed by the porcupine's quills. Now, what should they do?

The Preconventional level of thinking states that to think for the good of oneself, either the moles or the porcupine only can live there. The other has to leave the place.

According to the Conventional level of thinking, which brings a transition, from self to the good of others and which might even lead to sacrifice, either the moles or the porcupine has to sacrifice and again this leads to a stage where only moles or the porcupine can live in the burrow.

According to the Post-conventional level of thinking, which states that the good of both the parties has to be considered, both the moles and the porcupine come to an agreement that both will have separate places in the same burrow, where they limit to behave themselves and will not cause any trouble to other. This helps both of them to live in the same place with peace.

The researchers found that the solution to this scenario is different with different individuals; gender also plays an important role. The thinkers were observed viewing the problem in two different perspectives, the care-based and the justice-based.

In a Justice-based perspective, the solution to the problem is viewed as a conflict between two individual groups. Only one of them can have the property. Either moles or the porcupine will get the place in the burrow. Hence the solution to the dilemma, is not a resolution of the conflict, it is a verdict.

In a Care-based perspective, the approach differs. The problem is viewed as a difficult situation faced by both the parties together, rather than a fight between both of them. Hence the solution is sought in a way around the problem or to remove the problem completely. The solution may sound compromising but not damaging. The relationship will still be the same, after the resolution.

Researchers found that Justice-based perspective is predominant among males while Care-based prospective is among females.

4.9. Consensus and Controversy

The moral judgment may lead to conflicts if they are not delivered properly without hurting the feelings of the persons involved. There are two stages after the judgement. The stages are described below −

4.9.1. Consensus

This is that state where people come into agreement with the judgement given by getting convinced with the moral reasons. This will leave the persons with a feel that justice has been done, the verdict may favor any party.

4.9.2. Controversy

This is that state where the persons involved in an issue are not satisfied by the verdict and might feel that it was decided on partial interests. This will leave the people with a sense of dissatisfaction that justice was not done, which might lead to another conflict.

4.10. Profession

Profession means a job or an occupation, that helps a person earn his living. The main criteria of a profession involves the following.

- Advanced expertise − The criteria of a profession is to have sound knowledge in both technical aspects and liberal arts as well. In general, continuing education and updating knowledge are also important.
- Self-regulation − An organization that provides a profession, plays a major role in setting standards for the admission to the profession, drafting codes of ethics, enforcing the standards of conduct and representing the profession before the public and the government.
- Public good − Any occupation serves some public good by maintaining high ethical standards throughout a profession. This is a part of professional ethics where each occupation is intended to serve for the welfare of the public, directly or indirectly to a certain extent.

4.11. Professionals

A person who is paid for getting involved in a particular profession in order to earn a living as well as to satisfy the laws of that profession can be understood as a Professional. The definition of a professional is given differently by different experts in the field. Let us see the following definitions −

- *"Only consulting engineers who are basically independent and have freedom from coercion can be called professionals."* − Robert L. Whitelaw
- "Professionals have to meet the expectations of clients and employers. Professional restraints are to be imposed by only laws and government regulations and not by personal conscience." − Samuel Florman
- *"Engineers are professionals when they attain standards of achievement in education, job performance or creativity in engineering and accept the most basic moral responsibilities to the public as well as employers, clients, colleagues and subordinates."* - Mike martin and Ronald Schinzinger

4.11.1. Models of Professional Engineers

An engineer who is a professional, has some tasks to perform by which he acts as any of the following, which can be termed as Models of Professional Engineers.

- Savior − A person who saves someone or something from any danger is called a Savior. An engineer who saves a group of people or a company from a technical danger can also be called a Savior. The Y2K problem that created problems for computers and computer networks around the world was solved by engineers who were the saviors.
- Guardian − A person who knows the direction towards a better future is known to be the Guardian for the same. An engineer who knows the direction in which there is scope for the technology to develop can also be called a Guardian. This engineer provides the organization with innovative ideas for technological development.
- Bureaucratic Servant − A person who is loyal and can solve problems when they occur using his own skills, is a Bureaucratic servant. An engineer who can be a loyal person to the organization and also the one who solves the technical problems the company encounters, using his special skills can be termed as a Bureaucratic servant. The company relies on his decision-making capability for the future growth.
- Social Servant − A person who works for the benefit of the society without any selfish interest and does not work on any business grounds, is called a Social servant. An engineer who receives a task as part of the government's concern for the society considering the directives laid by the society and accomplishes the assigned tasks can be termed as a Social Servant. He knows what the society needs.

- Social Enabler or Catalyst − A person who makes the society understand its welfare and works towards the benefits of the people in it, is a Social Enabler. An engineer who plays a vital role in a company and helps company along with society to understand their needs and supports their decisions in work can be termed as a Social Enabler or Catalyst. This person quickens the procedure and helps maintain good environment in the company.
- Game Player − A person who plays a game according to the rules given is a Game player in general. An engineer who acts as neither a servant nor a master, but provides his services and plans his works according to the economic game rules in a given time, can be termed as a Game player. He is smart enough to handle the economic conditions of the company.

4.12. Professionalism

Professionalism covers comprehensively all areas of practice of a particular profession. It requires skills and responsibilities involved in the engineering profession. Professionalism implies a certain set of attitudes.

The art of Professionalism can be understood as the practice of doing the right thing, not because how one feels but regardless of how one feels. Professionals make a profession of the specific kind of activity and conduct to which they commit themselves and to which they can be expected to conform. Moral ideals specify virtue, i.e., desirable features of character. Virtues are desirable ways of relating to other individuals, groups and organizations. Virtues involve motives, attitudes and emotions.

According to Aristotle, virtues are the “acquired habits that enable us to engage effectively in rational activities that define us as human beings.”

4.12.1. Professional Ideals and Virtues

The virtues represent excellence in core moral behavior. The essentials for any professional to excel in the profession are behavior, skills and knowledge. The behavior shows the moral ideology of the professional.

The moral ideals specify the virtue, i.e., the desirable character traits that talk a lot about the motives, attitude and emotions of an individual.

- Public spirited virtues
- Proficiency virtues
- Teamwork virtues
- Self-governance virtues

The virtues mentioned above show the professional responsibility of an individual. Hence, the professionalism that comes in with these virtues is called Responsible Professionalism. Let us now understand each virtue in detail.

4.12.2. Public-spirited Virtues

An engineer should focus on the good of the clients and the public at large, which means no harm should be done intentionally. The code of professional conduct in the field of engineering includes avoiding harm and protecting, as well promoting the public safety, health and welfare.

Maintaining a sense of community with faith and hope within the society and being generous by extending time, talent and money to professional societies and communities, an engineer can maintain the public-spirited virtue. Finally, justice within corporations, government and economic practices becomes an essential virtue that an engineer should always possess.

4.12.3. Proficiency Virtues

These refer to the virtues followed in the profession according to the talent and intellect of an engineer. The moral values that include this virtue are competence and diligence. The competence is being successful in the job being done and the diligence is taking care and having alertness to dangers in the job. Creativity should also be present in accomplishing the assigned task.

4.12.4. Teamwork Virtues

These virtues represent the coordination among team members which means working successfully with other professionals. These include cooperative nature along with loyalty

and respect towards their organization, which makes the engineers motivate the team professionals to work towards their valuable goals.

4.12.5. Self-governance Virtues

These virtues are concerned with moral responsibilities which represent integrity and self-respect of the person. The integrity actually means the moral integrity which refers to the actions, attitude and emotions of the person concerned during his professional period.

The self-governance virtues center on commitment, courage, self-discipline, perseverance, self-respect and integrity. The truthfulness and trustworthiness which represent his honesty are the crucial moral values to be kept up by a professional.

4.13. Theories about right action Self-interest Customs and religion Uses of ethical theories:

Ethics is that branch of philosophy that deals with morality. An engineer with ethics is a person who is expected to possess moral integrity with rich ethical values. The ethics are mainly divided into two categories depending upon the morality of humanity. They are −

4.13.1. Consequential Ethics

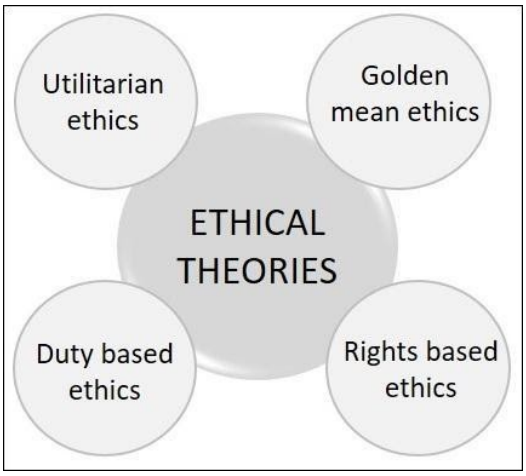
The Consequential ethics are values the outcome of which determine the morality behind a particular action. A lie which saves a life, comes under this.

4.13.2. Non-consequential Ethics

The non-consequential ethics are values followed where the source of morality comes from the standard values. The moral law which states that a lie is a lie, and shouldn't be done, though it ends in a good deed can be taken as an example of non-consequential ethics.

4.13.3. Types of Ethical Theories

Depending upon the ethics a person is intended to follow, four theories were postulated by four different philosophers. These theories help to create the fundamentals of obligation suitable and applicable to professional and personal conduct of a person in his everyday life.



Let us discuss each theory in detail.

4.13.4. Golden Mean

The Golden Mean ethical theory was proposed by Aristotle. According to this theory, the solution to a problem is found by analyzing the reason and the logic. A “Mean value of solution” which will be between the extremes of excess and deficiency.

For example, the solution to the problem of environment pollution is neither by avoiding industrialization and civilization, nor by neglecting the environment completely. A mean solution that will work towards controlling the pollution and protecting the environment will also help.

4.13.5. Problem in Application

The application of this theory varies from one person to another with their powers of reasoning and the difficulty in applying the theory to ethical problems.

4.13.6. What is the Golden Mean?

The Golden Mean virtue can be understood as the virtue of reaching a proper balance between extremes in conduct, emotion, desire and attitude. This theory phrased by Aristotle states that virtues are tendencies to find the golden mean between the extremes of too much (excess) and too little (deficiency) with regard to particular aspects of our lives.

The most important virtue is practical wisdom, i.e., morally good judgment, which enables one to discern the mean for all the other virtues. There are internal goods such as products, activities and experiences that should never clash with the external goods such as money, power, self-esteem and prestige. The standards of excellence enable internal goods to be achieved. The external goods when extremely concerned, though by individuals or by organizations, threaten the internal goods.

4.13.7. Rights-based Ethical Theory

The Rights based ethical theory was proposed by John Locke. According to this theory, the solution to a problem is by realizing that every person has a right to live. Live and let live is the philosophy behind this theory. The rights of a person towards life, health, liberty, possession, etc. are taken care of under this theory.

For example, any action in terms of Capital punishment, Jails, Income taxes and Medical charges etc. come under this category.

4.13.8. Problem in Application

One rights of a person may be in conflict with rights of the other.

4.13.9. What does it mean?

Rights-based ethics is the recognition of human dignity at its most basic form. The ethics refer to the basic human rights whether they are positive or negative. Everyone has a right to live, liberty and the pursuit of happiness. Beauchamp and Childress, authors and ethical theorists, have defined the term "right" to be a "justified claim that individuals and groups can make upon other individuals or upon society; to have a right is to be in a position to determine by one's choices, what others should do or need not do."

The natural law states that human laws are defined by morality and not by some authority. This law is derived from the belief that human morality comes from nature. Any action done by a person that would prevent a fellow being from living a good and happy life, is considered immoral or unnatural. Any law should have some morals. Moral duty is the obligation to act based on ethical beliefs.

4.14. Duty-based Ethical Theory

The duty-based ethical theory was proposed by Immanuel Kant. According to this theory, every person has a duty to follow which is accepted universally, with no exceptions.

An example of this can be expecting all to be honest, kind, generous and peaceful.

Problem in Application

The universal application of this theory can be misleading.

4.14.1. What are these ethics?

Kant observed that everyone is bound to follow some moral laws. It is the choice we make to be morally sound though we have chances to do anything. This theory can also be called as Deontological theory or the Absolutist theory. According to this, it is our duty to obey the categorical imperative rules. To have good will, is to perform one's duty for the sake of duty and for no other reason.

The categorical imperative law states that "Act only according to that maxim by which you can at the same time will that it should become a universal law."

There are four virtues that come under this law, which have to be discussed here.

4.14.2. Prudence

The quality of prudence states that every individual has a life that should be respected and every individual has duties which should be done without any exception. One should always be cautious to perform one's duties.

4.14.3. Temperance

Temperance is the voluntary self-restrain from the attractions. The temptations that might lead to the violation of duties and ethics have to be restrained. No false promises are to be made as they contradict the principles of duties.

4.14.4. Fortitude

Fortitude is the sense of having tolerance. No perfection can be maintained if happiness alone is sought and no happiness is achieved if perfection alone is sought. Both may or may not go with each other.

4.14.5. Justice

Every individual is a human being with a set of intrinsic values and morals. Truth and fairness are the aspects one should always bear in mind. People should be treated as separate individuals but never as a mere means of existence.

A free will and a will under moral laws are one and the same. We are free only when we act in accordance with our own best natures, while we are slaves whenever we are under the rule of our passions and wills. There should be a universally valid will, under which everyone can be free.

4.14.6. Utilitarian Ethics

The Utilitarian ethics was proposed by John Stuart. According to this theory, the happiness or pleasure of a greatest number of people in the society is considered as the greatest good. According to this philosophy, an action is morally right if its consequences lead to happiness of people and wrong if they lead to their unhappiness.

An example of this can be the removal of the reservation system in education and government jobs, which can really benefit the talented. But this can have an impact on the rights of the minorities.

Problem of Application

Qualification of the benefits can be difficult.

What are these ethics?

Consider the cost-benefit analysis in engineering. A typical cost-benefit analysis identifies the good and bad consequences of some action or policy in a monetary aspect. It weighs the total good against total bad and then compares the results to similar tallies of the consequences of alternative actions or rules. This supports the idea of maximizing benefits against cost.

There are two main types of Utilitarianism.

They are −

4.14.7. Act Utilitarianism

The Act Utilitarianism focuses on each situation and the alternative actions possible in the situation. Act Utilitarianism states that “A particular action is right if it is likely to produce the higher level of good for the most people in a given situation, compared to alternative choices that might be made.”

In accordance with this theory, the good done is only considered but not the way how it is done. For example, looting the richer to feed the poor, can satisfy and make a group of poor people, happy. But looting is not a way of morality. Hence act-utilitarianism seems to justify the wrong-doing.

4.14.8. Rule Utilitarianism

The Rule Utilitarianism states that “Right actions are those required by rules that produce the higher level of good for the most people.” We need to consider a set of rules, where they interact with each other. This was developed to clear the problem that occurs with act-utilitarianism.

Engineers with ethics should follow the rule-utilitarianism considering the point, “Act as faithful agents or trustees of employers”. So, engineers should abide by it even when an exception might happen to be beneficial. Like in the above example, one should seek the help of law and order to prove the guilt of richer and let see that the poor get benefitted.

4.14.9. Formulation of Ethical Theories

After having gone through the various ethical theories, one can understand that these ethical theories have to be formulated considering the following points −

- The concepts of the theory formulated must be coherent.
- The tenets of the theory should never contradict the other.
- The theory should never be defended upon false information.
- The theory should guide in specific situations comprehending all aspects possible.
- The theory should be compatible with an individual's moral convictions in any situation.

Uses of Ethical Theories

4.14.10. Ethical theories help in the following areas −

- Understanding moral dilemmas.
- Justifying professional obligations and ideas.
- Relating ordinary and professional morality.

4.15 MCQ-POST TEST

1-The word ethics stands for . . . .

a) Substances

b) Properties of chemicals

c) Study of molarity

d) Understanding human nature

2-Name the world's largest retailer is . . .

a) Proctor and Gamble

b) Wal-Mart

c) Liver Brothers

d) Dashang Group

3- Which country has a more collectivist culture . . . .

a) USA

b) Japan

c) India

d) China

4-The technique which is used in shadow pricing is . . . .

a) Accounting

b) Business Ethics

c) Management

d) Economics

5- The second stage of moral development . . . .

a) Principled

b) Conventional

c) Pre conventional

d) Both A and C

6-Factor that affects ethical and unethical behaviour . . . .

a) Ethical dilemma

b) Diversity

c) Teamwork

d) Open communication

7-The major types of ethical issues include except . . . .

a) Communication issues

b)Systematic issues

c) Corporate issues

d) Individual issues

8-Total number of essential components of Moral reasoning are . . . .

a) 3

b) 4

c) 5

d) 8

9-Capitalist Justice stands for . . . .

a) Benefits should be distributed according to the value of the contribution the individual makes to a society

b) Benefits should not be distributed according to the value of the contribution the individual makes to a society

c) Benefits should be distributed according to employer judgement

d) none of these

10-The principle of John Rawls assumes that a productive society will incorporate inequalities .

a) Principle 1

b) Principle 2

c) Part a of principle 2

d) Part b of principle 2

11-The following is an alternative to moral principles . . . .

a) Virtue Ethics

b) Logic Ethics

c) Real Ethics

d) A and C

12-Total number of stages of moral development proposed by Carol Gilligan . . . .

a) Two

b) Three

c) Four

d) Five

13-What is meant by the phrase CSR?

a) Corporate Social Responsibility

b) Company Social Responsibility

c) Corporate Society Responsibility

d) Company Society Responsibility

14- Values and ethics shape the-

a) Corporate unity

b) Corporate discipline

c) Corporate culture

d) Corporate differences

15- The moral principles, standards of behaviour, or set of values that guide a person's actions in the workplace is called-

a) Office place ethics

b) factory place ethics

c) behavioural ethics

d) workplace ethics

16- Which of the following factors encourage good ethics in the workplace?

a) Transparency

b) fair treatment to the employees of all levels

c) both (a) and (b)

d) bribe

17-. Which of the following are ethical issues in financial markets-?

a) Churning

b) Illegal dividend payment

c) creative accounting

d) none of these

18- The trading of a public company's stock or other securities like bonds or stock options by individual with possession of material, non-public information about the security is called-

a) Insider trading

b) online trading

c) offline trading

d) direct trading

19-. Which of the following methods are used in creative accounting?

a) Off balance sheet financing

b) Abuses of accounting concepts and conventions

c) Manipulating assets and liabilities

d) Over and under valuation of inventories

20- The short-term focus on company finances is sometimes known as-

a) Glaucoma management

b) Retina management

c) Myopic management

d) None of these

CONCLUSION:

1.Gained the knowledge of ethical functions.

2. Understood the scenes of engineering ethics.

3.Discussed about the kohlberg and gilligan's theory.

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CHAPTER -5

ENGINEER'S RESPONSIBILITY FOR SAFETY

Prerequisite : Nil

Aim:

The students are expected to learn the basics of management functions and realize the ideal characteristics of a manager. The impetus of this subject is to make the students familiarize with the professional skills required to be an effective manager.

Objectives: The course should enable the students to:

1. Knowledge on the principles of management is essential for all kinds of people in all kinds of organizations.

2. Have a clear understanding of the managerial functions like planning, organizing, staffing, leading and controlling.

Outcomes:

At the end of the course the student should be able to:

1. Helps to examine situations and to internalize the need for applying ethics principles, values to tackle various situations.

2. Develop a responsible attitude towards the use of computers as well as the technology.

3. Able to envision the societal impact on the products / projects they develop in their career.

4. Analyze the professional responsibility and empowering access to information in the workplace.

5.1.ENGINER'S RESPONSIBILITY FOR SAFETY

5.1.1.Safety and Risk

Safety is the freedom from risk. If you want to increase safety, you must first consider risk. Risk is the "probability or threat of damage, injury, liability or loss, or any other negative occurrence that is caused by external or internal vulnerabilities, and that may be avoided by preemptive action" (Business Dictionary). Note that risk can be avoided by preemptive action. Herein lies the message we want to make sure all drivers understand. Behavior modification can increase safety. This is due to the fact that safety and risk have an inverse relationship. When one goes up, the other goes down. To increase safety, you need to decrease risk.

5.2.Assessment of safety and risk

A safety risk assessment is a systematic procedure for identifying and managing hazards. It encompasses thorough examination of the entire work environment, processes and equipment to determine any hazard to the health of the employees in the short or long term and implementing remedies.

Safety risk assessments are essential for protecting employees, businesses and complying with the law. Assessments promote employee awareness regarding workplace hazards, aide in identifying personnel at risk, determine existing control measures and thier adequacy, prevent illness and injuries, and prioritize hazards and their control measures.

Safety risk assessments are usually conducted at the beginning of a new project, when a new or renovated machine or new or an amended process is to be implemented, when a machine is relocated, appointment of new employees, introduction of new raw materials or on receipt of new information about a product.

Safety assessments consist of the following stages:

- Identifying a hazard
- Collecting information and analyzing risk associated with it
- Determining how to remove or reduce its effect by completely eliminating the process or equipment
- Replacement with a better equipment or process
- Using advanced technology or design and physically isolating processes or direct contact of user by the use of appropriate collective or personal protective equipment

5.3.Risk benefit analysis

A **risk–benefit ratio** is the ratio of the risk of an action to its potential benefits. **Risk–benefit analysis** is analysis that seeks to quantify the risk and benefits and hence their ratio.

Analyzing a risk can be heavily dependent on the human factor. A certain level of risk in our lives is accepted as necessary to achieve certain benefits. For example, driving an automobile is a risk most people take daily, also since it is mitigated by the controlling factor of their perception of their individual ability to manage the risk-creating situation. When individuals are exposed to involuntary risk (a risk over which they have no control), they make risk aversion their primary goal. Under these circumstances individuals require the probability of risk to be as much as one thousand times smaller than for the same situation under their perceived control (a notable example being the common bias in the perception of risk in flying vs. driving).

5.3.1.Evaluations of future risk can be:

- **Real future risk**, as disclosed by the fully matured future circumstances when they develop.

- **Statistical risk**, as determined by currently available data, as measured actuarially for insurance premiums.
- **Projected risk**, as analytically based on system models structured from historical studies.
- **Perceived risk**, as intuitively seen by individuals.

5.3.2.Medical Research

For research that involves more than minimal risk of harm to the subjects, the investigator must assure that the amount of benefit clearly outweighs the amount of risk. Only if there is a favorable risk–benefit ratio may a study be considered ethical.

The Declaration of Helsinki, adopted by the World Medical Association, states that biomedical research cannot be done legitimately unless the importance of the objective is in proportion to the risk to the subject. The Helsinki Declaration and the CONSORT Statement stress a favorable risk–benefit ratio.

5.4.Reducing risk

Risk reduction is one of the four main risk management techniques to be used in conjunction with other techniques to help an individual or organization effectively manage the risk of loss.

Risk reduction refers to the way an insurance company or organization can reduce its financial losses by implementing measures that reduce the financial impacts of potential losses.

Techniques can be things that will prevent certain risks from arising, minimizing the frequency or number of times that risk can actually happen, or even minimizing the damage caused when a loss inevitably does occur.

Some examples of common and effective risk reduction practices include:

- Installing security systems or alarms to reduce the frequency of crime losses.
- Installing sprinklers and smoke detectors to reduce the amount of damage a fire loss can cause.

Risk reduction is also sometimes called loss mitigation.

Risk reduction is a risk management technique that involves reducing the financial consequences of a loss. This encompasses a whole range of things including reducing the severity of a loss, reducing its frequency, or making it less likely to occur overall.

There are a number of ways that an insurance company can practice risk reduction. Here are just three of them:

The insurance company may require the owner of a property covered for theft and vandalism to install a better security system. These preventative measures will serve as a warning to would-be criminals and decrease the likelihood of a loss occurring. This lowers the probability of the insurance company having to pay for losses.

If a client is covered for fire, their insurer might also suggest replacing materials that are no longer fireproof or to install sprinklers and smoke detectors on-premises. These steps will not necessarily prevent a fire from starting but will go a long way to reduce the financial loss caused by the fire.

An insurance company may also ask an employer whose business it covers to upgrade the safety standards in their workplace or on their job sites. Safety measures that prevent employees from suffering a serious injury will save the insurer from financial losses incurred through liability coverage.

Insurance companies are highly motivated to encourage and incentivize their customers to implement risk reduction practices because there are high costs associated with handling claims. On top of paying out for property or liability claims, even processing and investigating claims can be an expensive affair.

5.5.The three mile Island and chernobyl case studies

The principles established by the *Reactor Safety Guide* were given an unexpected test in 1979 when Three Mile Island Unit 2 near Harrisburg, Pennsylvania, suffered a severe accident. Through the failure of an important valve to operate correctly, cooling water to the core was lost, parts of the core were melted and the rest of it destroyed, and a large quantity of fission products was released from the primary reactor system to the interior of the containment structure. The equipment failure was exacerbated by reactor operator error, as the emergency core cooling system was deactivated by operator action because of a misinterpretation of the type of accident that was occurring. Fortunately, the containment vessel of the reactor building fulfilled its function, and only a small amount of

radioactivity was released, demonstrating the wisdom of incorporating this structure into a rigorous design. All the same, a severe accident had occurred.

Many investigations of the Three Mile Island accident followed. Recommendations differed among them, but a common thread was that the human element was a much more important factor and higher risk to the safe operations of a nuclear power plant than had been recognized. The human element pertained not only to the operating staff but also to the management of nuclear plants and even the NRC itself. As a result, following the accident many changes in operator training and in technical and inspectorate staffing were implemented, just as a number of hardware enhancements were introduced. It is generally believed that these changes have been effective in reducing the likelihood of the occurrence of accidents as severe as that at Three Mile Island. As a side issue to this, however, the operating costs of nuclear power plants have escalated sharply as more and more highly trained people have been added to the operating staff.

The significance of the human element, particularly as it relates to plant management and rigorous high-level regulatory decision making, was borne out again by the Chernobyl disaster of 1986. One of the four reactors in a nuclear power station approximately 100 km (60 miles) north of Kiev, Ukraine (then part of the Soviet Union), exploded and caught fire as the result of an ill-conceived experiment (a test to quantify how long the steam turbines would run while coasting to a stop if the reactor was abruptly shut down). Before the event was brought under control, an estimated 25 percent of the radioactive contents of the reactor had been released in a high cloud plume. Approximately116,000 people had to be evacuated, and a large area surrounding the plant received fallout so great that it could not be farmed or pastured as a result of this accident. Significant levels of radiation were detected as far north as Scandinavia and as far west as Switzerland.

In September 2005 the Chernobyl Forum, comprising seven United Nations organizations and programs, the World Bank, and the governments of Belarus, Russia, and Ukraine, published a three-volume, 600-page report assessing the impact of the accident on public health. Approximately 50 emergency workers had died of acute radiation sickness shortly after the accident, and 9 children had died from thyroid cancer because of radiation exposure. From among the 200,000 emergency workers who were present at the site in the first year following the accident, the people who were evacuated, and the 270,000 residents of the most heavily contaminated areas, an additional 3,940 people were likely to die from cancer during a prolonged period after the accident.

Investigation of the Chernobyl accident placed the largest blame, as with the Three Mile Island mishap, on poor management both at the plant and within the government bureaucracy. Because these accidents primarily resulted from human failings rather than from some intrinsic factor, most experts have continued to believe that nuclear energy can be a safe source of power. There is, however, a condition on the conclusion that nuclear power is by and large a safe form of power. The facilities for generating this power must be

designed, built, and operated to high standards by knowledgeable, well-trained professionals, and a regulatory mechanism capable of enforcing these standards must be in place.

5.5.1.Mitigating measures

5.5.1.1.Systems and structures

Mitigating measures, also referred to as safety systems, are systems and structures that prevent accidents from proceeding to a catastrophic outcome in the event they do occur. Two of the principal mitigating measures, described in the section Reactor design and components, are the safety rod systems that quickly put the reactor into a subcritical state and prevent a supercritical accident and the containment structure that prevents radioactive materials from being released into the atmosphere. Other significant mitigating measures include the emergency core-cooling system, whose purpose is to provide sufficient cooling of the core and fuel region within the vessel upon a loss of reactor coolant, and the emergency power system, which is designed to supply electrical power to support systems in the event that the normal supply is disrupted. Emergency power systems are necessary so that detectors, circulating pumps, valves, and other critical components continue to operate as necessary to remove decay heat. An extreme mitigating measure is the evacuation of personnel who might otherwise be heavily exposed in a reactor installation.

According to PRA studies, three categories of events are primarily responsible for the risks associated with LWRs—namely, station blackout, so-called transient without scram, and loss of cooling. In station blackout, a failure in the power line to which the station is connected is postulated. The proposed emergency defense is a secondary electrical system, typically a combination of diesel generators big enough to drive the pumps and a battery supply sufficient to run the instruments. In transient without scram, the assumed

event is an insertion of positive reactivity—for example, through an undesired withdrawal of the shim rods. The protective safety system response in this case is the rapid and automatic insertion of the safety rods. In loss of coolant, the event is assumed to be caused by a mechanical failure of the normal cooling system such that a certain amount of the coolant is lost. The emergency response is activation of an emergency core-cooling system. In all such measures, proper operator action and proper functioning of the appropriate backup system are paramount aspects of emergency response.

Other reactor designs pose different types of risk. For example, neither the pool-type liquid-metal reactor (LMR) nor the high-temperature gas-cooled reactor (HTGR) is at major risk with regard to loss of coolant flow and perhaps not with regard to station blackout. However, the LMR and perhaps the HTGR are at some risk from events that might cause air or water to enter the coolant system. The hazard is that reactor materials, sodium or graphite, could chemically react with air and water, causing what is known as an exothermic reaction that releases large amounts of heat in addition to the decay heat already existing within the core region. The hazard is greater with sodium in the LMR than it is with graphite in the HTGR.

CONCLUSION:

1.Gained the knowledge of ethical functions.

2. Understood the scenes of engineering ethics.

3.Discussed about the kohlberg and gilligan's theory.

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