JOMO KENYATTA UNIVERSITY OF AGRICULTURE AND TECHNOLOGY

HRD 2104: ENTREPRENEURSHIP, INDUSTRY, NATIONAL ECONOMY

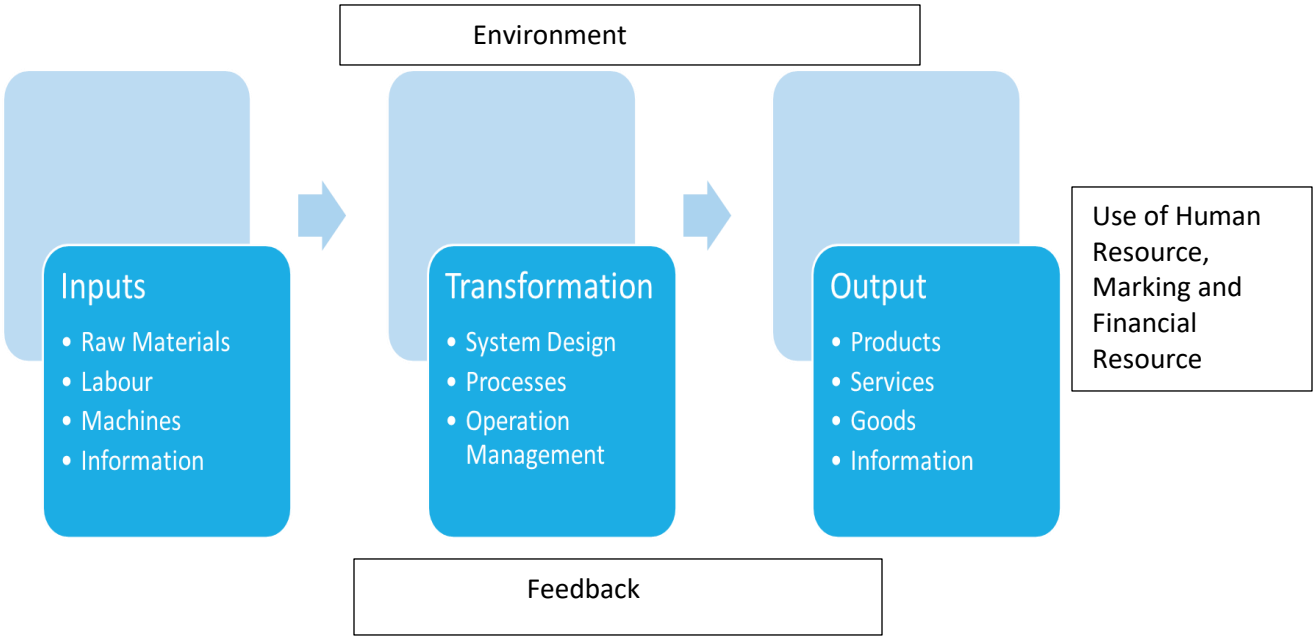
01.00: Lesson 2. Structure and Organization

Concept of Industrial Management

Industrial refers to the field of industry. Industry, on the other hand, involves the utilization of intricate and advanced techniques in the production of economic goods and services. Management, in its essence, encompasses the processes of planning, organizing, coordinating, controlling, motivating, and directing various activities within an organization.

Industrial management, specifically, pertains to the branch of engineering that focuses on the creation and administration of systems that effectively integrate people, materials, and energy in productive ways. It primarily deals with manufacturing operations and creates an environment that encompasses human resources, materials, finances, and information. By combining physical and mathematical sciences, humanities, and engineering, industrial management and engineering establish an approach that facilitates the planning, organizing, directing, controlling, and managing of activities within any industry.

This process involves the combination and transformation of various resources within the system, ultimately resulting in the creation of value-added products in a controlled manner. Industrial Engineering and Management aim to identify and resolve organizational issues by striving to establish an optimal allocation of management resources through the utilization of technologies.



Concept of Industrial Management – as a System approach.

Objectives of the Industrial Management

The objectives of Industrial Management

1. **Manufacturing Costs:**
   Efforts should be undertaken to achieve the following objectives:
   1) Decrease variable costs
   2) Decrease fixed costs
   3) Increase production volume
   4) Allocate fixed overheads based on scientific principles
2. **Machinery and Equipment:**
   1) Select and acquire machinery and equipment based on the production process
   2) Optimize the utilization of machinery and equipment
3. **Materials:**
   Specify materials in terms of units, rupee value, and space requirements.
4. **Manpower:**
   Align manpower closely with the objectives of selection, placement, training, rewarding, and utilization. These objectives are typically evaluated based on employee turnover rates, safety measures, industrial relations, absenteeism, etc.
5. **Manufacturing Services:**
   Establish appropriate objectives for the installation of essential facilities such as power, water supply, and material handling.
6. **Product Quality:**
   Maintain a proper balance between quality and cost, as well as quantity and time schedule.
7. **Manufacturing Schedule:**
   The objective of adhering to a time schedule directly impacts the cost, quality, and reputation of the business in terms of regularity of shipments.

Scope:

The field of Industrial Management encompasses the planning and coordination of various aspects within an industry. This includes departments such as Production, Inspection & Quality, Procurement, Store Management, and activities within the assembly line. In the production department, management involves the selection of materials, planning of processes, and routing, scheduling, and overall control of activities.

To illustrate this concept, let's consider an Educational Institution. Similar to an industry, the institution must carefully select its "raw materials," which are the students and faculty. Planning of courses, imparting instructions to students, conducting examinations, and ensuring a smooth flow of knowledge and information are all part of the management process. The institution must also continuously evaluate and upgrade its methods to provide relevant and meaningful knowledge to its students.

The principles of management play a crucial role in achieving these objectives efficiently and economically. They are equally applicable to service-providing organizations, enabling them to

offer the best services at minimal cost and with maximum effectiveness and efficiency. The scope of Industrial Management extends to all industrial and human activities, addressing the problems encountered in areas such as system designing, human factors, research and development, production planning and control, quality control, coordination with other departments, and dependent services and departments.

Importance of Industrial Management

The effective management of industries will result in advantages for different sectors of society. These include:

a) **Consumers** benefit from enhanced industrial efficiency, leading to improved product quality and availability at the right place, right price, right time, desired quantity, and desired quality.
b) **Investors** experience increased security for their investments, satisfactory market returns, and a positive reputation in society.
c) **Employees** receive fair wages, job security, better working conditions, and increased personal and job satisfaction.
d) **Suppliers** gain trust in management and timely payment of their bills.
e) **The community benefits** from economic and social stability.
f) **The Nation** attains growth and security due to enhanced productivity and a healthy industrial environment.

Departments of Industrial Management

1. Things to consider when forming the departments:

- Consider the potential future growth
- Consider suitable for productive system
- Consider the product
- Quality
- Time , Flexibility , customers

2. Applications of industrial management are summarized in the following departments of industry:
    1. Managing and arranging the location of facilities
    2. Design of Plant layouts
    3. Management of material handling systems
    4. Supply chain management.
    5. Production and Planning control
    6. Quality control & Total quality management
    7. Inventory & Materials management
    8. Maintenance management
    9. Operations management
    10. Labor management
    11.

Principles of Industrial Management

i. **The structure of an organization**

Managers design their firms in a way that aligns with the organization's mission and goals. Objectives should be clearly defined for the entire enterprise, each department, and every position within the organizational structure. Unity of objectives is essential to focus all efforts on achieving goals efficiently and cost-effectively.

ii. Specialization: Work division and departmentalization

- Work division refers to the extent to which tasks are divided into separate jobs.
- Specialization can enhance efficiency and performance, but excessive specialization can lead to decreased performance.
- Departmentalization involves grouping related activities into units.

iii. Chain of command

- It represents the line of authority from the top to the bottom of the organization, indicating who employees report to and seek help from.
- Effective communication at all levels is crucial for swift operations, and the hierarchy can change based on the task at hand.

iv. Management span(Wider, Narrow, Top down, line and

- It denotes the number of employees reporting to a manager.
- The number of employees under one manager impacts the managerial levels.
- The trend has been towards increasing the span of management due to downsizing.

v. Centralized and decentralized authority

- Centralized authority involves top managers making critical decisions.
- Decentralized authority empowers middle and first-line managers to make important decisions where the work is done.
- Decentralization fosters more input in decision-making and enhances employee commitment to executing decisions.

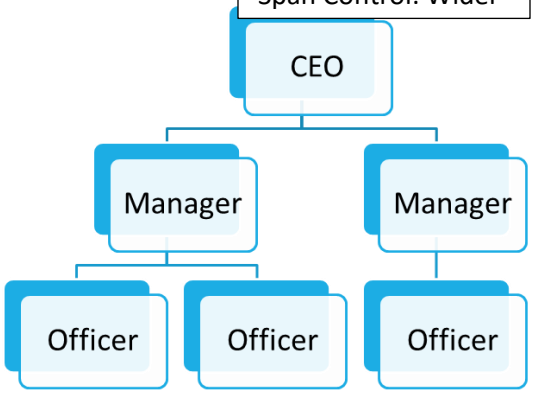
vi. Coordination

- The division of labor and departmentalization necessitate coordination among all departments.
- Coordination becomes challenging with wider spans of management and decentralization.

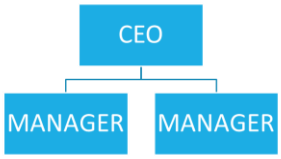
vii. Simplicity

The organizational structure should be simple with minimal levels. A large number of levels can hinder effective coordination.

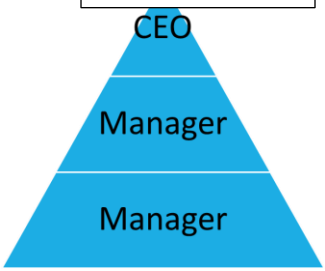
Span Control: Wider



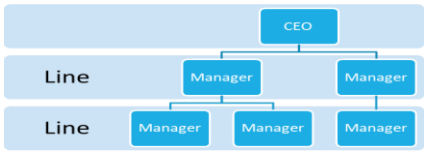
Narrow Span



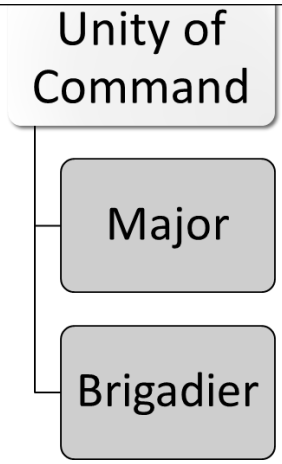
Top Down



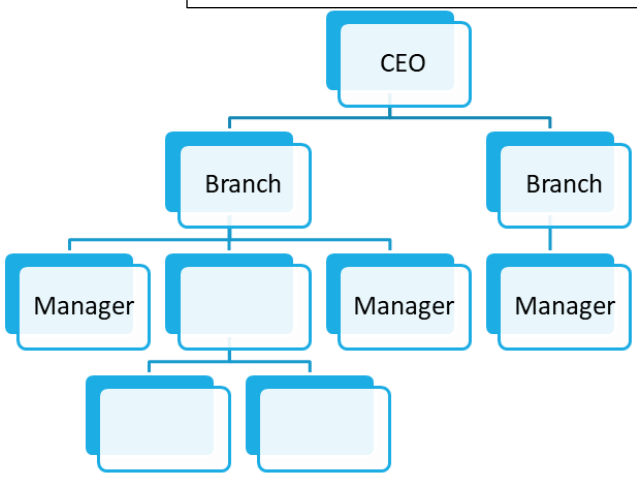
Line staff Function



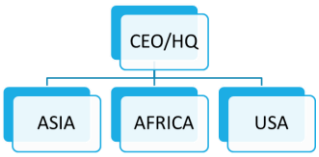
Unity Span of Control



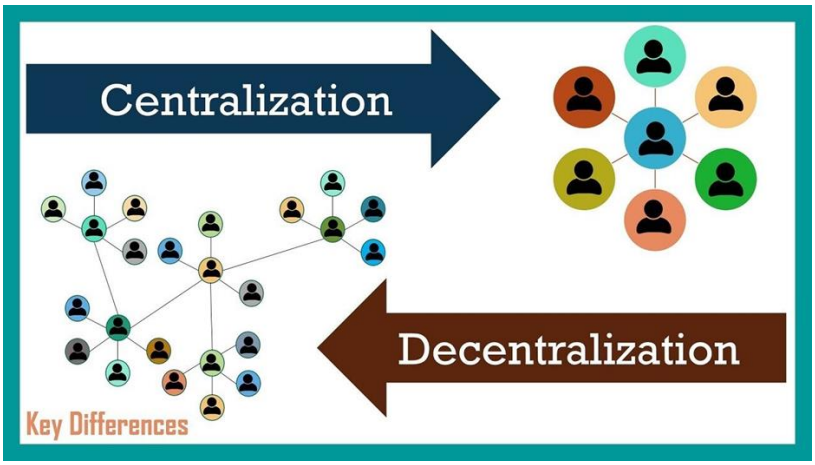
Functional Span of Control



Divisional Span of Control



(i) Centralized/Decentralized



Evolution of Industrial Management (Key personalities)

Date	Contribution	Contributor
1776	**Specialization of labour in manufacturing**	**Adam Smith**
1799	Interchangeable parts, cost accounting	Eli Whitney and others
1832	Division of labour by skill; assignment of jobs by skill; basics of time study	Charles Babbage
1900	**Scientific management time study and work study developed; dividing planning and doing of work**	**Frederick W. Taylor**
1900	Motion of study of jobs	Frank B. Gilbreth
1901	Scheduling techniques for employees, machines jobs in manufacturing	Henry L. Gantt
1931	Statistical inference applied to product quality: quality control charts	W.A. Shewart
1947	Linear programming	G.B. Dantzig, Williams & others
1950	Mathematical programming, on-linear and stochastic process	A. Charnes, W.W. Cooper

1960	**Organizational behaviour: continued study of people at work**	**L. Cummings, L. Porter**
1970	• **Integrating operations into overall** • **strategy and policy,** • **Computer applications to** • **manufacturing, Scheduling** • **and control, Material Requirement** • **Planning (MRP)**	**W. Skinner J. Orlicky and G.Wright**
1980	**Quality and productivity applications from Japan: robotics, CAD-CAM**	**W.E. Deming and J. Juran.**

Development of Industrial Management

Classical

Scientific management approach focuses on the application of scientific knowledge and methods to various aspects of management. It aims to maximize efficiency by making the best use of production resources.

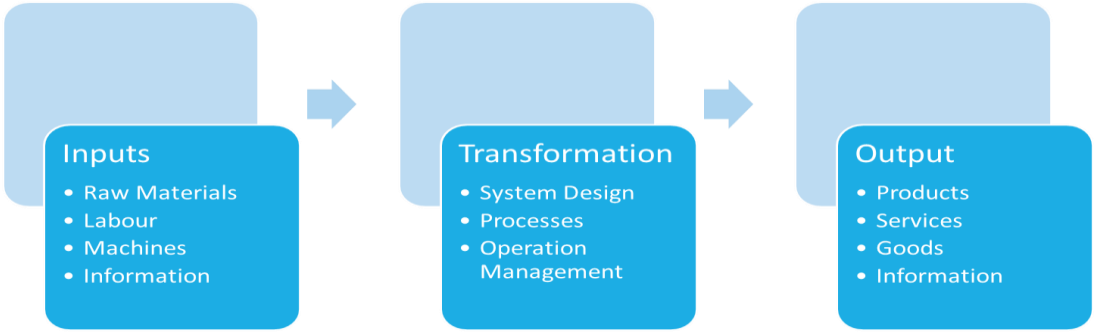
This approach emphasizes planning, standardizing, and improving human effort at the operative level to achieve maximum output with minimum input.

Neo Classical

The principles of scientific management include the development of science for each element of work, scientific selection and training of workers, division of labor, standardization of methods and procedures, use of time and motion study, differential wage system, cooperation between labor and management, and management by exception.

On the other hand, the administrative management approach was introduced by H. Fayol and his followers. Fayol is considered the "Father of Modern Management" and was the first to analyze the functions of management. He emphasized the importance of managerial ability at higher levels of management and technical ability at lower levels. Fayol also established the pattern of management and the pyramidal form of organization. This approach focuses on the process of management and divides the activities of an organization.

System Approach



The contingency approach to management has been greatly influenced by Joan Woodward, Fiedler, Lorsch, and Lawrence. This approach is based on the understanding that there is no one-size-fits-all solution to managerial problems. Instead, management principles and practices should be tailored to specific situations in order to achieve the best possible outcome. This means that process, behavioral, quantitative, and systems tools of management should be applied in a situational manner. The overall conceptual framework for contingency management consists of three main parts: the environment, management concepts, principles, and techniques, and the contingent relationship between these elements.

The operational approach to management has been embraced by renowned management writers Knootz, O'Donnell, and Weihrich. According to this approach, management is seen as a body of knowledge that can be universally applied to all levels of managing and all types of enterprises. The operational approach acknowledges that the challenges faced by managers and the environments they operate in can vary across different enterprises and levels. It also recognizes that the application of scientific principles by a skilled practitioner must take these variations into account when addressing practical problems.

Industry and Job Specification

Job analysis involves a series of methods used to identify the tasks and requirements of a job. This information is crucial for organizations to match the right employees with specific roles. By conducting job analysis, the analyst gains insight into the key responsibilities of the job, the manner in which they are carried out, and the essential human qualities necessary for successful job completion.

On the other hand, job evaluation is a structured approach to determining the value of a job compared to others within the organization. It aims to make a systematic comparison between

different roles to establish a fair pay structure. It is important to distinguish job evaluation from job analysis, as the latter involves gathering information about a job, which is essential for any job evaluation method to provide accurate data about the roles in question. Job evaluation typically begins with job analysis and concludes when the value of a job is determined to ensure equitable pay among different roles.

Problems of Industrial Management

- Problem of location
- Problem of selection of production method
- Problem of plant layout
- Problem of designing of product
- Problem of production and inventory control
- Problem of quality control
- Labour Problem
- Problem of cost control

References:

1. Management Theory and Practise By G.A. Cole
2. Essentials of Management by Koontz, H & O Donnee 7th Edition

Study Questions:

1) ***What is the importance of industrial management?***
2) ***What are the problems associated with industrial management?***
3) ***What is the scope of industrial management?***
4) ***Trace the evolution and historical development of Industrial Management highlighting the key personalities.***
5) ***What are the principles of Industrial Management in an organization?***
6) ***How is an industry organised? How is this set-up different for service organisation?***

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