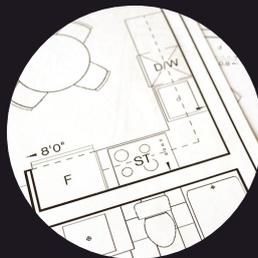




# INDUSTRIAL MANAGEMENT

*Fundamentals*

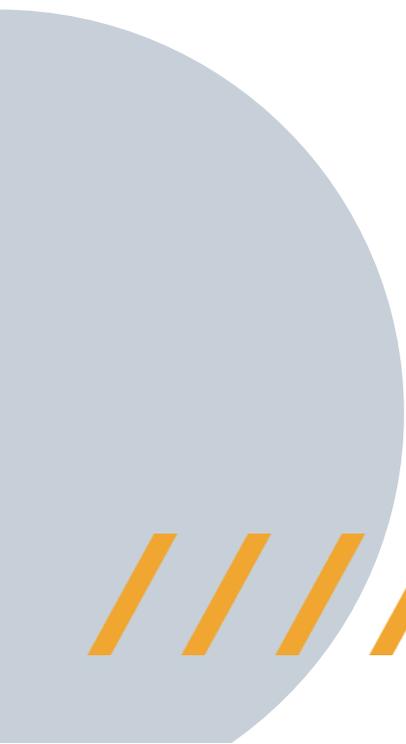


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INDUSTRIAL  
**MANAGEMENT**

*Fundamentals* 



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INDUSTRIAL MANAGEMENT : FUNDAMENTALS

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eISBN No: 9789670032344



First Published in 2021 by:  
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# PREFACE



This book's content is meant to provide a foundation for the study of industrial management. The contents included the concept of industrial management, organisational structures, and applications of industrial management. Following the Polytechnic syllabus for DJJ42022 Industrial Management, this book's objective is to introduce the fundamentals of industrial management.

The knowledge presented in this book is fundamental to industrial management, as well as students will gain a great deal from studying it. The impact of industrial management on society and daily life will also be clarified by reading this book.

Thank you.

CONCEPT OF  
INDUSTRIAL MANAGEMENT



# INTRODUCTION



Industrial Management is the combination of two words which is industrial and management. Industrial Management means referring to industry.

Industry can be defined as “the application of complex and sophisticated methods for the production of economic goods and services”.

The complex and sophisticated methods refer to the use of machines that improve the quantity and quality of production.

Management means planning, organizing, coordinating, controlling, motivating and directing various activities in an organization.

According to Henry Fayol “Management is to forecast and plan, to organize, to command, to coordinate and to control”.

However in simple working definition is “Management is a process used to achieve organizational goals”

# CONCEPT OF INDUSTRIAL MANAGEMENT



Industrial management is an organizational process that includes strategic planning, setting; objectives, managing resources, deploying the human and financial assets needed to achieve objectives, and measuring results.

Management also includes recording and storing facts and information for later use or for others in the organization.

The concept of management planning involves direction, planning, adjustment, control, and also cooperation.

Industrial management involves the study of the performance of machines as well as people.

Specialists are employed to keep machines in good condition and ensure the quality of its production.

The flow of materials through the plant is monitored to ensure that neither workers nor machines are idle.

Continuous inspection is made to keep output up to standard.

Charts are used for recording the accomplishment and performance of both workers and machines and for comparing them with sets of standards.

A careful account is kept for the cost of each operation.



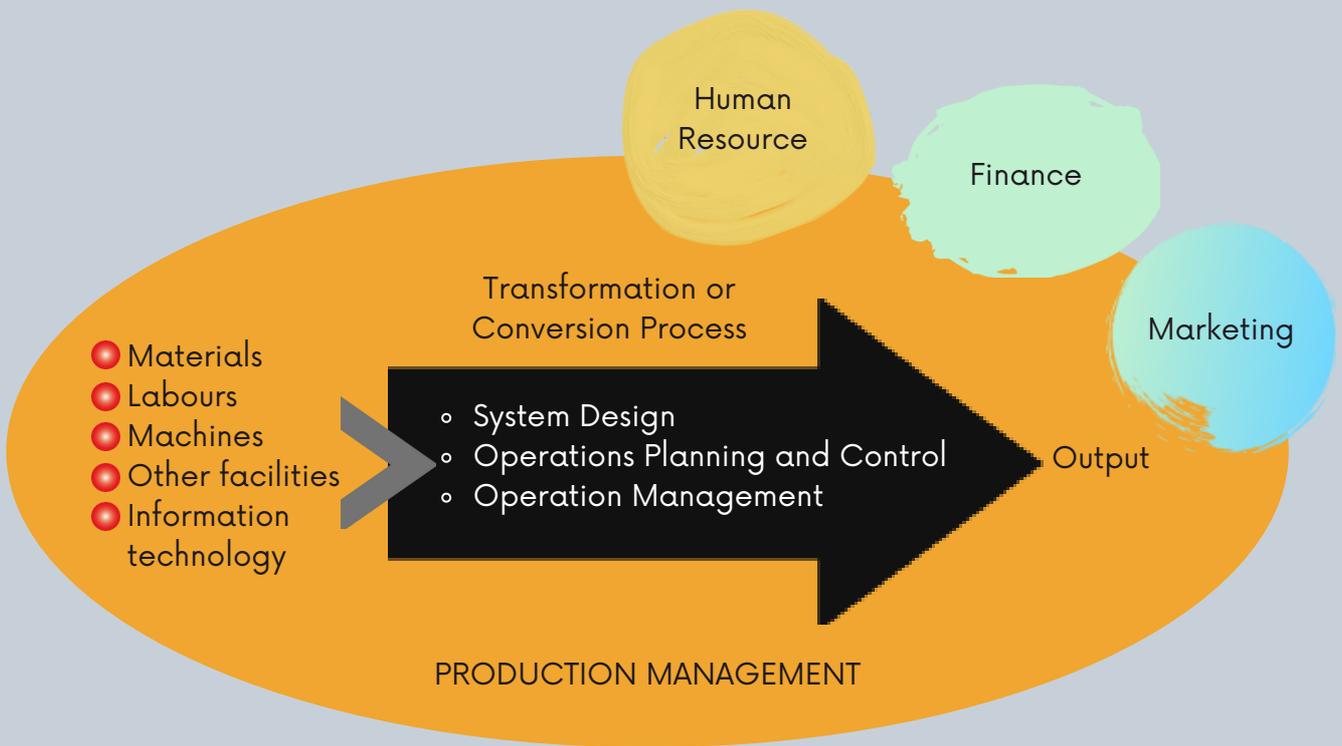


Figure 1.1 Concept of Industrial Management

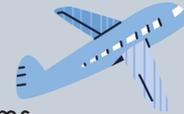
# DEVELOPMENT OF INDUSTRIAL MANAGEMENT



Begin in the middle of the eighteenth century when factories began to be built and laborers were employed to work with them.



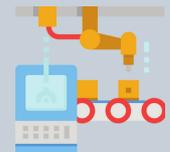
Better and cheaper transportation systems have become available.



Creating a larger market and greater organizational development.



Machine power began to replace human power. Lead to mass production of economical goods.



Create formal management practices.



Figure 1.2 Industrial Revolution

## "THE RESULT OF INDUSTRIAL REVOLUTION"

- Machine power began to substitute for human power.
- It lead to mass production of economical goods.
- Improved and less costly transportation systems became available which created larger market for goods.
- Larger organizations developed to serve larger markets.
- A need to understand work that had become complex was felt to improve plant efficiency.



The scientific management approach propounded by F.W. Taylor is based upon the following four principles :

**Science, Not Rule of Thumb** : This principle says that we should not get stuck in a set routine with the old techniques of doing work, rather we should be constantly experimenting to develop new techniques which make the work much simpler, easier and quicker.

**Harmony, Not Discord** : As per this principle, such an atmosphere should be created in the organization that labor (the major factor of production) and management consider each other indispensable. Taylor has referred to such a situation as a 'Mental Revolution'. Taylor firmly believed that the occurrence of a mental revolution would end all conflicts between the two parties and would be beneficial to both of them.

**Cooperation, Not Individualism** : According to this principle, all the activities done by different people must be carried on with a spirit of mutual cooperation. Taylor has suggested that the manager and the workers should jointly determine standards. This increases involvement and thus, in turn, increases responsibility. In this way we can expect miraculous results.

**Development of Each and Every Person to His / Her Greatest Efficiency and Prosperity** : According to this principle, the efficiency of each and every person should be taken care of right from his selection. A proper arrangement of everybody's training should be made. It should also be taken care that each individual should be allotted work according to his ability and interest. Such a caring attitude would create a sense of enthusiasm among the employees and a feeling of belongingness too.

**Frederick W Taylor principles of scientific management resulted in :**

- ➔ Use of scientific method to define "one best way" for a job to be done.
- ➔ Increased efficiency by selecting the right people for the job and training them to do it in one best way.
- ➔ Motivation to workers due to incentive wage plans.
- ➔ Separation of managerial work from operative work.
- ➔ The husband-wife pair of Gilbreths developed "time and motion" studies.
- ➔ Henry Ford introduced the division of labor in the factories.

## Human Relation Movement

The human relations movement grew from the Hawthorne studies. A group of Harvard researchers, headed by Elton Mayo, conducted a series of experiments on worker productivity in 1924 at the Hawthorne plant of Western Electric Company in Illinois. These experiments have come to be known as the Hawthorne studies.

The Harvard researches suggested that the way people were treated had an important impact on performance; individual and social processes played a major role in shaping worker attitudes and behavior. Therefore, management must recognize the importance of worker's needs for recognition and social satisfaction. Mayo termed this concept of the social man: individuals are motivated by social needs and good on-the-job relationships and respond better to work-group pressure than to management control activities.



Abraham Maslow



Douglas McGregor

Two of the best-known contributors who helped advance the human relations movement were Abraham Maslow and Douglas McGregor. Abraham Maslow (1908-1970), a practicing psychologist, observed that his patients are motivated by a sequence of needs, including monetary incentives, social acceptance, and others. He generalized his work and suggested a hierarchy of needs. Maslow's theory of "hierarchical needs" was a primary factor in the increased attention that managers began to give to the work of academic theorists.

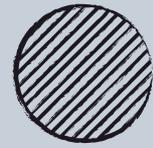
Douglas McGregor (1906-1970) advanced two beliefs for managers about human behavior- Theory X and Theory Y. Theory X takes a relative pessimistic and negative view of workers. Theory Y represents the assumptions that human relations advocates make. The point of Theory Y is that organizations can take advantage of the imagination and intellect of all its employees.

## Modern Trends

The development of Industrial management has given rise to a number of modern trends in Industrial management. Current innovative gadgets, especially in the zones of PCs, hardware, thermodynamics, and mechanics, have made programmed and self-loader machines a reality.

The advancement of such robotization is realizing a second modern upheaval and is causing huge changes in trade just as the manner in which work is sorted out. Such mechanical changes and the need to improve the profitability and nature of items in customary production line frameworks additionally changed modern administration rehearses.

# INDUSTRIAL MANAGEMENT VS. PRODUCTION MANAGEMENT



INDUSTRIAL MANAGEMENT	PRODUCTION MANAGEMENT
Industrial management deals with the analysis, design and control of productive systems which produces either a product or a service.	production management attempts to familiarize a person with concepts and techniques specific to the analysis and management of a production activity.
industrial management is concerned with designing system and providing expert information without actually operating the systems.	production management involves application of planning, organizing, directing and controlling the production process.



Table 1.1 Industrial Management vs. Production Management



# OBJECTIVES OF INDUSTRIAL MANAGEMENT



The ultimate objective of industrial management is to produce the right quantity of right quality goods at the right time. These are attained through :

(1) Manufacturing Costs : The unit cost of the product should be estimated carefully and every effort should be made to stick to the cost standards. For this purpose, the efforts should be made to segregate the costs into two-direct costs and variable costs. Efforts should be made for the following:

- i Reduction in the variable costs.
- ii Reduction in the fixed costs.
- iii Increase in the volume of production, spread over more production resulting absorption.
- iv The allocation of the fixed overheads should be made on scientific basis.

(2) Machinery and Equipment : The objectives in the area of machinery and equipment are divided into :

- i Selection and acquisition of machinery and equipment according to production process.
- ii Utilization of machinery and equipment.

The adequacy of the existing machinery should be considered and proper additions and replacements should be made according to the requirements. Efforts should also be made to increase the utilization rate of machinery through repair maintenance and maximum occupancy of the machines.

(3) Materials : The materials objectives must be prescribed in terms of units, money value and space requirements. The per unit materials costs should be specified and efforts should be made to increase the inventory turnover of all types of inventories-raw materials, work-in-progress and finished goods.

(4) Manpower : Manpower is an important as well as typical input in manufacturing activities. So the objectives of the production activities are as regards manpower must be closely allied with the objectives of selection, placement, training, rewarding and utilization of manpower. Usually, these objectives are considered in terms of employee turnover rates, safety measurements, industrial relations, absenteeism, etc.

# OBJECTIVES OF INDUSTRIAL MANAGEMENT



(5) Manufacturing Services: The provision of proper and adequate services directly affects the utilization of other inputs such as men, machines and materials. Proper objectives should be set for the installation of important facilities such as power, water supply, material handling, etc. In a condensed form, it can be stated that the objectives of the manufacturing activities are-to manufacture a quality product on schedule, at the lowest possible costs, with maximum asset turnover, to achieve consumer satisfaction. This statement is closely related to the ultimate and intermediate objectives of the production function.

(6) Product Quality : Generally, the product quality standards are often established by the product specifications or by the consumers. The manufacturing organization should try to translate such quality prescriptions into some measurable objectives. It should be noted that the product quality comes in conflict with the manufacturing cost objective and the manufacturing time-schedule. The maintenance of the quality should not result in increase in manufacturing costs or delay in the production. A proper balance must be maintained between quality and cost as well as quality and time-schedule.

(7) Manufacturing Schedule: There are many forces which compel side-tracking in the manufacturing activity. The time schedule should not be set for the shipment alone; it should be broken up into all the sub-systems like operating cycle time, inventory turnover rate, machine utilization rate, direct and indirect man-hours per unit, capacity utilization, machine and labor idle time, set-up, repair and maintenance time, etc. Time schedule objective directly affects the cost, quality and the goodwill of the business in terms of regularity of shipment.

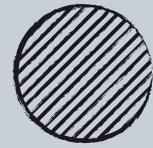


# ORGANIZATION

STRUCTURES



# INDUSTRIAL ORGANIZATION



A group of people who collaborate and coordinate their efforts to achieve set objectives is referred to as an organisation.

The organisational structure is the generally stable division of duties and legal framework that results in a pattern of interconnected work activities and permits the organisation to carry out, coordinate, and manage its work activities.

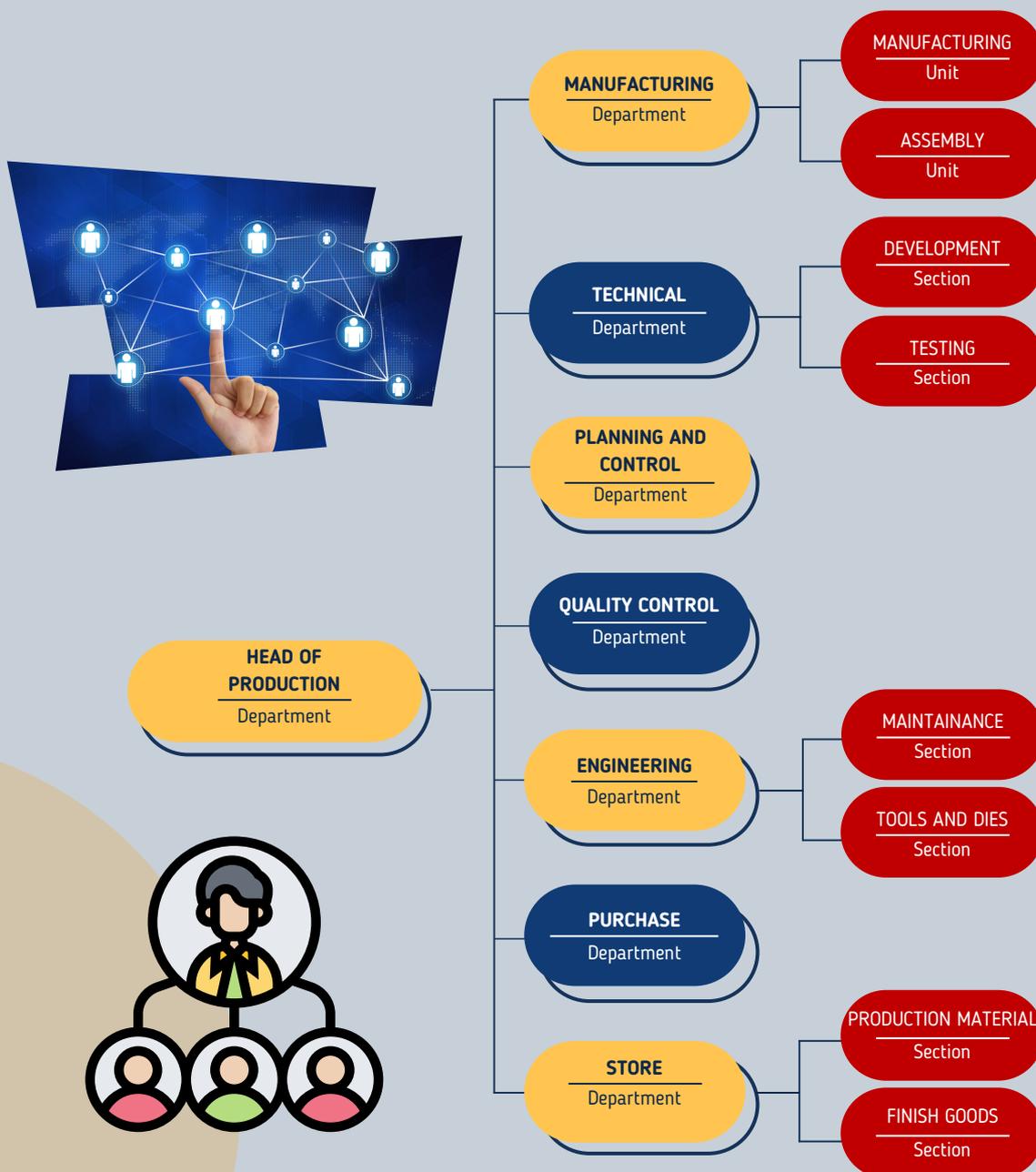


Figure 1.3 Example of a big manufacturing factory organization structure



When we talk about management of an industry, we should be clear about what is to be managed. There are various departments in a big organization engaged in various activities which play their own role in helping the production department meet its objectives.

Even in service organizations like banks, software companies, hospitals, etc. there are various departments which have to be managed through industrial management. Here we will be discussing the general organization of a big manufacturing factory which can be modified for any service industry also according to its needs.

### **1** Head of Production Department

Production head is the supreme officer of production organization. He is called work manager or general manager. He is the person who is responsible for all the functions of production department and all the other sub-divisions of production organization is controlled and directed by him.

### **2** Manufacturing Department

Manufacturing department is that portion of production organization where the actual activities or operations are performed for the transformation of raw material into finished goods. The head of this department is called production manager. The prime responsibility of production manager is to ensure the production according to the predetermined plan and directions received.

If the organization is diversified, meaning producing different types of product then in such a case the manufacturing department can be further divided in various sub-manufacturing departments like manufacturing unit, repairing unit, assembling unit, etc.



**3**

### Technical Department

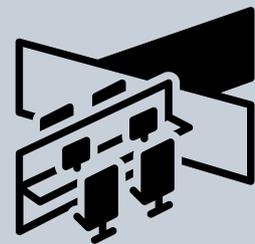
The primary task of technical department is to enhance the quality of finished goods by performing research and development on modern techniques of production. Technical director is the head of this department. Generally following sub-sections are included in this department :

- (i) Development section
- (ii) Design section
- (iii) Research section
- (iv) Testing section

**4**

### Planning and Control Department

The main function of this department is preparation of production plan and execution of that plan in order to achieve predetermined goals in a given period of time. This department also controls all the other department related to production. The head of this department is known as Production Controller.

**5**

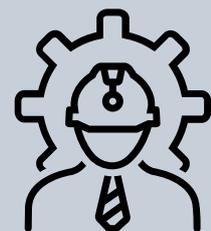
### Quality Control Department

Generally the function of quality control is performed by production planning and control department but some firms establish a separate quality control department to ensure the quality of their finished product. Chief Inspector is the head of this department. He has a group of inspectors under him. This department controls the quality at various level of production.

**6**

### Engineering Department

This department is headed by chief engineer. Maintenance of machinery of firm as well as continuous improvement in machines and tools used in production are included in the function of this department. Department also prepares various dies used in production.



7

### Purchase Department

Generally the purchase department works under the chief works manager. The main function of this department includes the purchase of raw material, machine tools and other necessary items used in production. This department evaluates the price and quality of purchased material at the point of purchase.

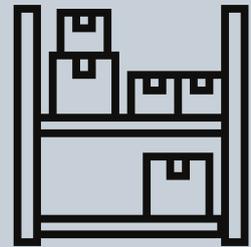
Various department send their requirement to purchase department which purchases the items at favorable price.



8

### Store Department

Each firm establishes a store department headed by chief store keeper to balance the demand and supply of raw material and finished goods. Availability of required type of material of required quality in adequate quantity, adequate and safe handling, disposal of scrape, measurement of material and record of entries related to store in related books are the various functions performed by the store department. Inventory management is also performed by them.



9

### Maintenance Department

Maintenance department is a main and necessary department of a manufacturing firm. Maintenance department looks after the various assets of the firm like machinery, building, vehicles, etc. Department is headed by Maintenance Manager.



1

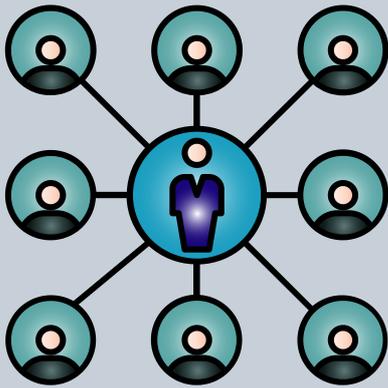
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### Security Department

This department is responsible for security in the industry. Department is headed by Security Director. Department formulates the security related rules and execute the rules at all the level in the concern. In case of any accident, investigation and analysis is done by this department and department also prepares necessary documents. Along with all above departments, some other departments are also established such as legal department, export-import department, Safety-Health and Environment department, etc. in a big manufacturing concern.



# TYPES OF ORGANIZATION CHART



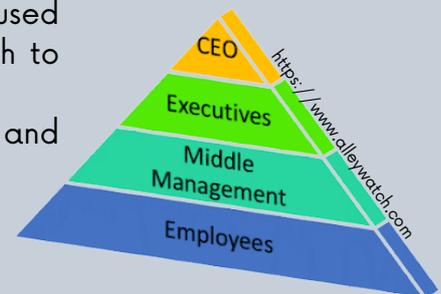
Organizational charts are essential for any company, strengthening connectivity and bolstering internal operations. They will aid in enhancing cooperation and teamwork across departments and the entire organization. Increase the flexibility of teams and information sharing. Organizational charts come in a variety of forms, just as there are numerous variations of administrative systems. Let's go over the seven various organizational system types and why each one should be taken into consideration.



## Hierarchical Organization Structure

A pyramid-shaped organizational chart is referred to as a hierarchical org-chart. It is the most widely used organizational structure. The influence axis runs from high to low.

For instance, the CEO or top manager, Staff at entry-level and lower levels, Every employee has a manager.



### Pros

- i Clarifies responsibility and jurisdictional norms
- ii Specifies to whom each employee relates or to whom inquiries regarding specific projects should be made;
- iii Encourages employees to advance by providing stable career paths and resources
- iv Give each worker a specialisation
- v Develop a sense of belonging among employees of the same unit.

### Cons

- i Because of more bureaucracy, work may be slowed or considerable revisions made.
- ii May influence employees to work for the department rather than the whole company
- iii Could give low-level employees the impression that they have no control and are unable to express their opinions to the company.

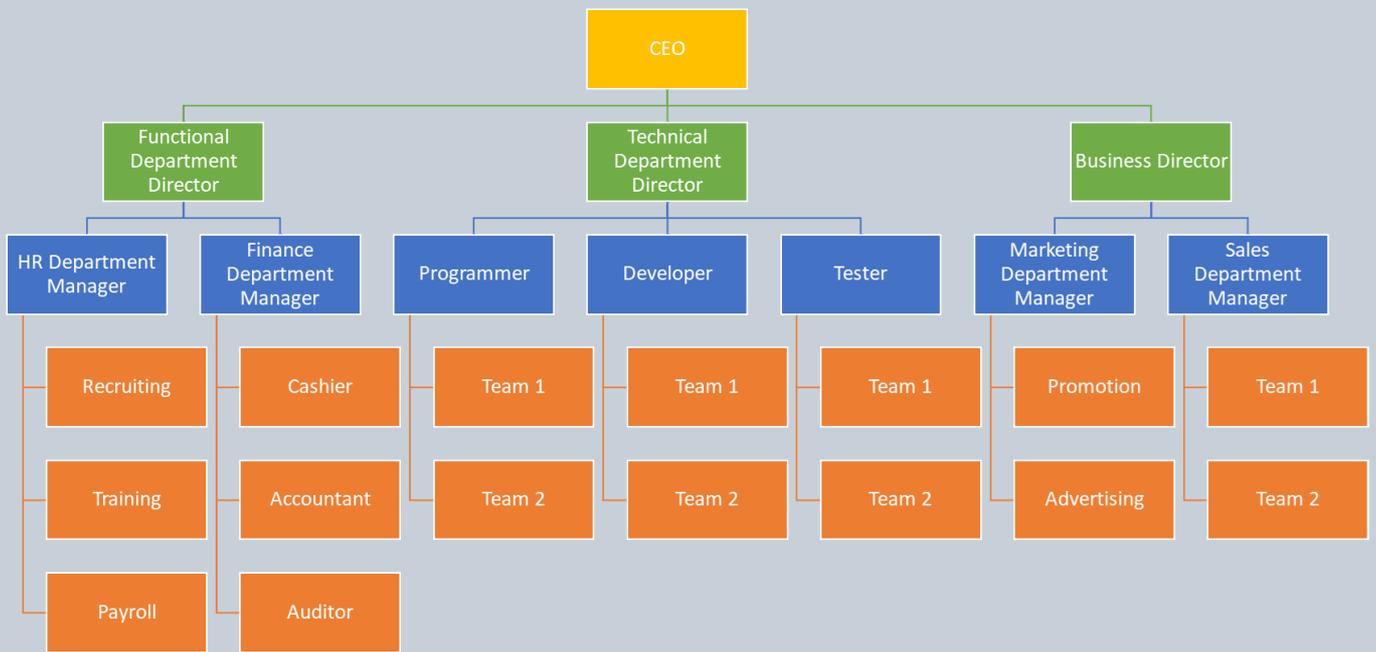
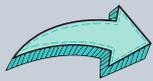


Figure 1.4 Hierarchical Organization Structure



## Functional Organization Structure

A functional organisational structure starts with roles and progresses down, with the Top having the highest level of responsibilities. This is similar to a hierarchy system. However, the primary factors used to classify employees are their areas of competence and status within the company. Each department has its own administration.

### Pros

- i Workers may focus on their job;
- ii Experience is encouraged;
- iii Assistance teams and programmes are independent.
- iv It may be scaled up successfully in any large company.

### Cons

- i A business could develop silos.
- ii Interdepartmental coordination limits and obstructs a company's processes and approaches for different markets or goods.

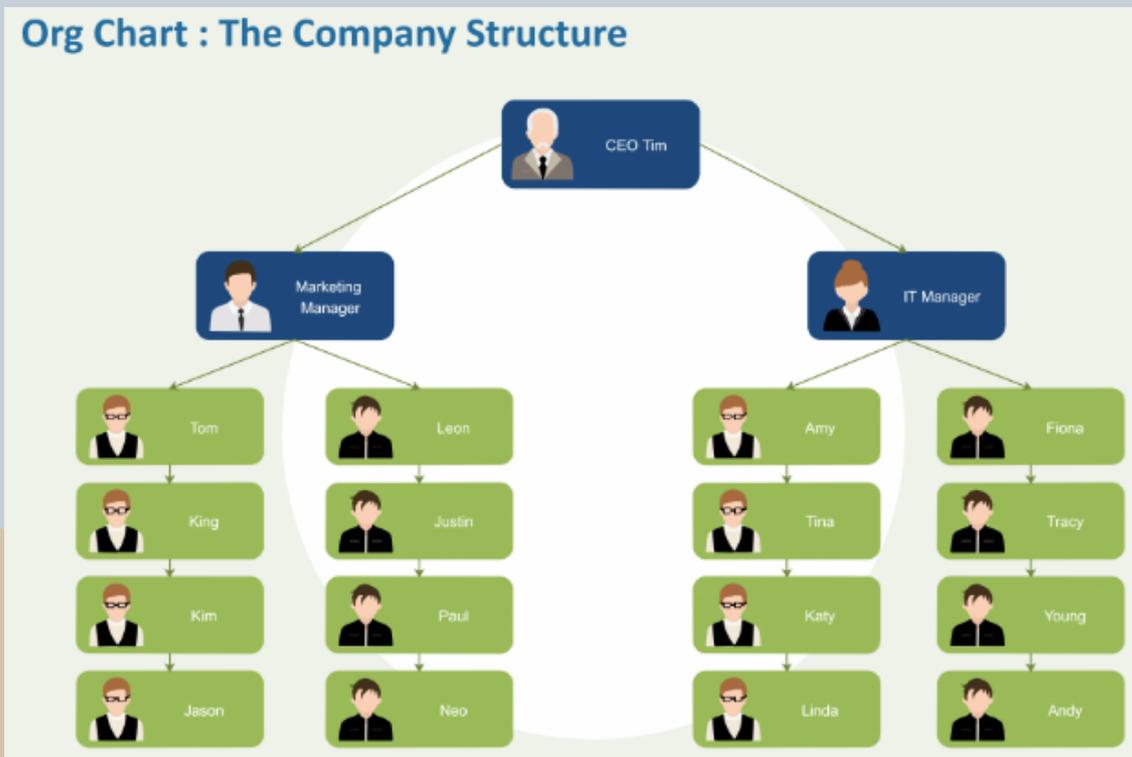
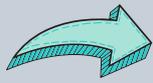


Figure 1.5 Functional Organization Structure



## Horizontal Or Flat Organization Structure

Industries with few employees at the top employee-management level benefit from a horizontal or flat hierarchical structure. Many startup firms utilize a horizontal organisational structure until they are large enough to develop several divisions. Nevertheless, some firms continue to operate under this structure since it encourages less oversight and greater employee interaction.

### Pros

It gives employees more responsibilities, encourages open communication, and speeds up the implementation of new ideas.

### Cons

When employees don't have a single boss to report to, it might lead to uncertainty. Staff members with more basic skills can be hired. When an organisation grows past the startup stage, managing it can be challenging.

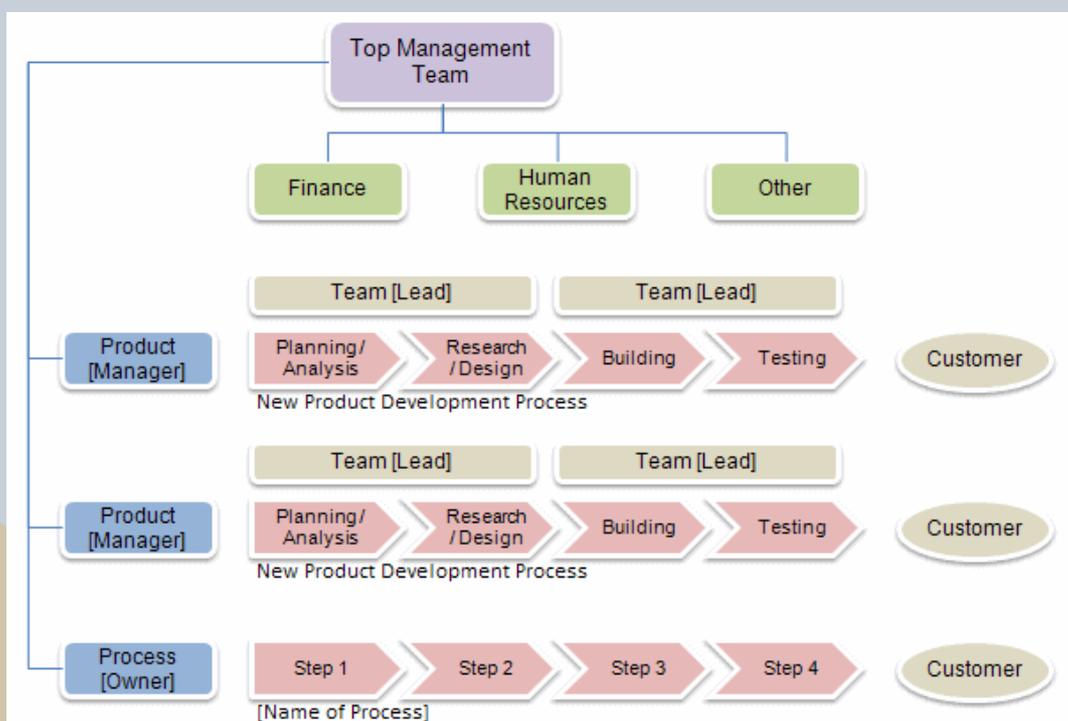
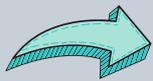


Figure 1.6 Horizontal Or Flat Organization Structure



## Divisional Organization Structure

In divisional corporate systems, the divisions of a corporation have control over their employees and effectively run their own businesses within the larger organisation. Each group may have a dedicated team for promotions, distribution, IT, etc. This model works best for large organisations because it empowers all of the departments to make decisions independently of a small group of leaders.

Depending on the company's focus, there are a few variations to be aware of.

- ✓ A divisional organisational structure based on the market
- ✓ An organisational structure based on products
- ✓ Geographic divisions within organisations

### Pros

- i Facilitates a quicker response to changes in the market or consumer needs
- ii Encourages democracy, freedom, and a customised approach

### Cons

- i Easily contribute to resources of the identical type
- ii A lack of clarity or efficiency in the leadership's coordination with its departments.
- iii It could lead to internal conflict inside a company.

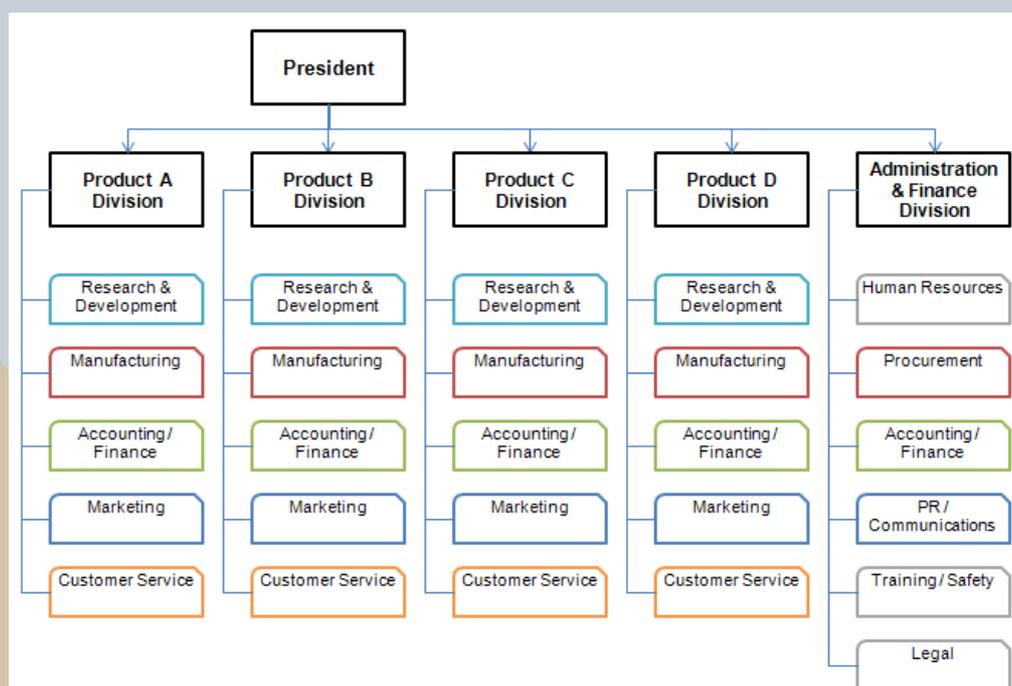
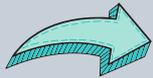


Figure 1.7 Divisional Organization Structure



## Matrix Organization Structure

Cross-functional teams are depicted on a map that resembles a hierarchical matrix map as they develop for particular activities. For example, an engineer may regularly contribute to the engineering division (headed by an engineering manager) yet work only during certain seasons (led by a project manager). The matrix organisational chart supports both for these positions and reporting relationships.

### Pros

- i Quickly enables managers to choose personnel in accordance with a project's requirements
- ii Provides a more dynamic understanding for the company
- iii Encourages employees to apply their skills in a variety of roles outside of their current ones.

### Cons

- i May change more frequently than other types of the organisational map, generating conflict between departmental and project managers.

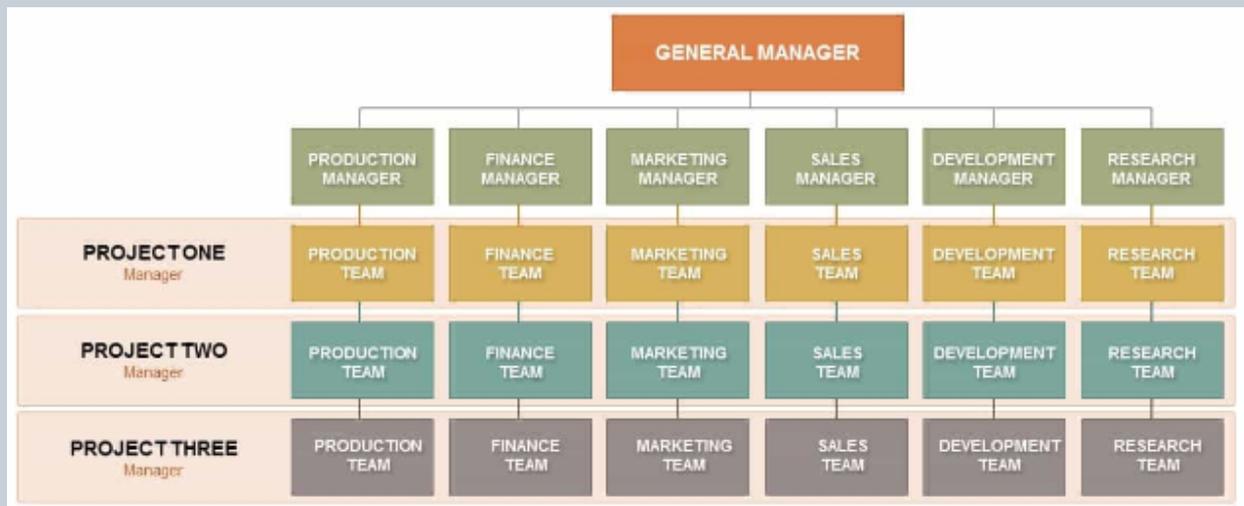
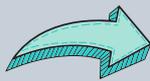


Figure 1.8 Matrix Organization Structure



## Team-based Organization Structure

It should not come as a surprise that a team-based organisational structure separates employees into departments. An organisational structure that emphasises teamwork, conflict resolution, and more worker autonomy is intended to challenge the conventional hierarchy.

### Pros

- i Breaks through obstacles to increase efficiency, accountability, and transparency
- ii Promotes a success-oriented mindset;
- iii modifies conventional career paths by enticing people to take a different path; values experience over seniority; requires limited leadership; plays well in agile scrum or tiger squad organisations.

### Cons

- i May change more frequently than other types of the organisational map, generating conflict between departmental and project managers.

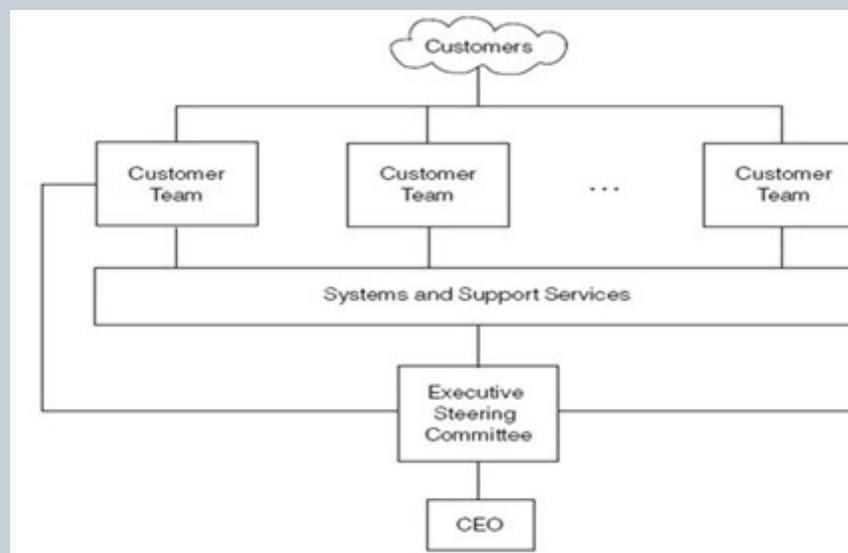
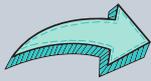


Figure 1.9 Team-based Organization Structure



## Network Organization Structure

Few businesses today have all of their resources under one roof, and it can be difficult to manage numerous suppliers, independent contractors, freelancers, off-site locations, and regional offices. A network organisational system gives meaning to the capital distribution. Additionally, it might specify a hierarchical-free organisational structure that depends more on connections and open communication.

### Pros

- i Take a look at the intricate network of links between on- and off-site businesses.
- ii Allows businesses to be flexible and adaptable
- iii Give every employee the ability to collaborate, act, and make decisions.
- iv Encourages customers and employees to value processes and workflows

### Cons

- i It could be harder for employees to understand who has the ultimate say when working with specialised off-site technologies.
- ii It can be excessively difficult

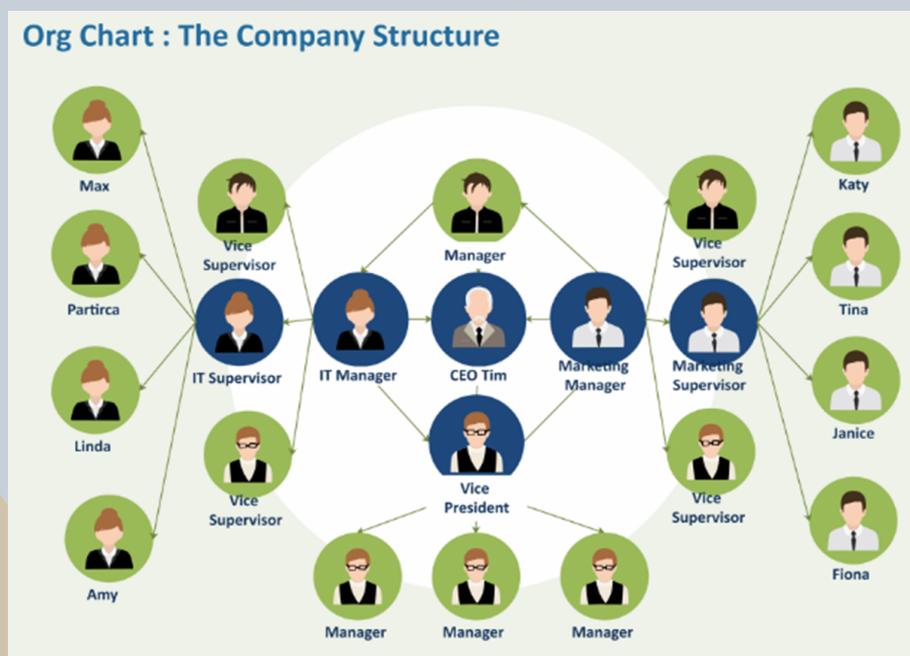


Figure 1.10 Network Organization Structure

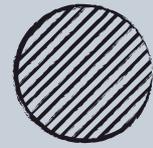
# INDUSTRIAL

MANAGEMENT APPLICATION



# APPLICATION AREA OF INDUSTRIAL MANAGEMENT

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## INTRODUCTION



Earlier, Industrial Management was mainly applied to manufacturing industries for improving methods of productions; to develop work standards or to formulate production control and wage policies.

Later on, it's use started in non-manufacturing activities such as construction and transportation, farm and air-line operation and maintenance, public utilities, government and military operations.

Today also, Industrial Management find major applications in manufacturing plants and industries.

A vertical photograph on the left side of the page shows an industrial facility, possibly a refinery or chemical plant, silhouetted against a bright orange sunset sky. The structure includes various pipes, ladders, and platforms.

In the present era of cut-throat competition at various stages of operations, an enterprise should produce goods and services keeping into consideration the requirements and satisfaction of the potential customer. The objective should be to produce goods at least costs and to the maximum satisfaction of the buyer. To meet this objective, application area of industrial management is in following areas:

### **01 Design and Development**

Product design and development depends heavily on inputs from the marketing function and several branches of engineering, e.g., plant engineering, manufacturing engineering, including production engineering. If the design of the production is not good from the production stand point, it may require costly adjustments to the production process in terms of equipment, material and man power. If the design is good, production costs may be low enough to substantially enhance a firm's profit making position. The key role of good and effective product design is rapidly becoming evident and firms prominent in competitive market tends to exploit details of design that reduce production costs or develop product features that allow it to appeal to a wider market.

### **02 Plant Layout and Material Handling**

The physical arrangement of manufacturing components and the equipment for handling the material during production process has considerable effect on cost of production. The material handling system and the plant layout should be most efficient for the given situation.

### **03 Method Study and Work Measurement**

Method study and measurement techniques are applied to find out the relationship between output of goods and services and input of human and material resources. If material including scrap and waste, can be accurately measured and controlled, it is possible to do so for labor component too. The problem associated with measuring labor efficiency are more difficult than with material, but they are not unmeasurable. The measurement should try to find the most appropriate method of performing various operation involved in a production system so as to obtain optimum use of resources and man-machine relationship in increasing productivity.

## 04 Production Forecasting

Forecasting is necessary if the business firm is its products and services. Sufficient time must be allowed to get inputs and transform them into output at right time and right place. Forecasts can be used as an analysis of past data, consideration of current events and future developments. These forecasts becomes the basis for the plants and schedules for buying, manufacturing, selling and other activities of the firm.

## 05 Production Planning and Scheduling

In order to coordinate different activities and operations of an organization, a master plan of activities and a schedule of their performance is needed. Careful planning anticipates the need for people, materials and equipment so that sufficient time between order and delivery of goods and services is available to make necessary changes, if required. The planning and scheduling of a firm perform a coordinated effort with resources and available time in attempting to utilize the full capacity to the firm to produce.

## 06 Proper Inventory Control

In order to coordinate different activities and operations of an organization, a master plan of activities and a schedule of their performance is needed. Careful planning anticipates the need for people, materials and equipment so that sufficient time between order and delivery of goods and services is available to make necessary changes, if required. The planning and scheduling of a firm perform a coordinated effort with resources and available time in attempting to utilize the full capacity to the firm to produce.

## 07 Quality Control

While planning, scheduling and inventory control are responsible for providing quantity and timing of production, quality control is responsible for providing quality. Quality must be designed and manufactured into the product. Although customers may desire higher quality, they may not be willing to pay the resulting price. In such a way quality standard should be set up that will be acceptable to the customers and yet economically feasible to the product. It is a matter of finding a balance between too much and too little quality.



## 08 Production Control

It is very necessary in today's highly competitive world that organization should invest its resources intelligently and carefully. A major part of these resources are utilized in production activities. Through it is the prime responsibility of production manager to control the quantity of the produced goods, proper Industrial Management avoids the situation of over-production and under-production. In case of over-production the resources which are scarce in nature will be wasted and in the situation of under production organization will be unable to meet the demand in the market. So both the situations will adversely effect the profitability of the company.

## 09 Method Analysis

There can be a number of ways in which some operation can be executed. Through Industrial Management we select the most efficient and economical method to perform the operation. Method analysis improves the productivity of the concern and minimizes the cost of production.

## 10 Motivate Workers

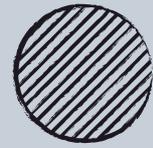
There can be a number of ways in which some operation can be executed. Through Industrial Management we select the most efficient and economical method to perform the operation. Method analysis improves the productivity of the concern and minimizes the cost of production.

## 11 Other Functions

Along with the above functions and responsibilities other important functions can be included in this list of functions.

Activities such as arrangement of efficient labor, attract funds, devise systems for coordinated efforts, to be in touch with modern production techniques, interaction with marketing, research and development departments, meeting environmental and other legislations etc.

# IMPORTANCE OF INDUSTRIAL MANAGEMENT



Earlier when the scope of business was limited and total production, total market and total demand was comparatively less, there was no acute need of industrial management. But now the world has been changed a lot. Now the enterprises are broader and more diversified. Today the world is of high production and competition. So the concept of industrial management is continuously developing and spreading. In the world of cut throat competition only those product can survive which can be proved to be the best. Now organizations are focusing on quality control, standardization and use of modern techniques in their production systems. The production function is based upon the effective plans that serves organization for achieving the organizational objectives. So we can say that the industrial management is the key function that plays a vital role in the success of organization.

THE RESULTS OF INDUSTRIAL MANAGEMENT ARE REFLECTED IN THE SERVING OF MANY INTERESTED PARTIES OF AN ORGANIZATION SUCH AS :

1

**THE CONSUMERS**

The consumers benefits from higher productivity, better and reliable quality, reasonable price, satisfactory service and timely delivery of goods.



2

**THE INVESTORS**

The investors get higher return on investment and their investments obtain capital appreciation also. Market value of securities is governed by the earning power and asset value of the business



3

**THE COMMUNITY**

When all business which are operating in the community are prosperous, due to industrial management, we have economic and social stability and the citizens of that community have pride and satisfaction.



4

**THE SUPPLIERS**

Small or large companies depend upon other companies as sources of raw materials, Components and services. We have effective co-operation, best inter communication and mutual confidence between the business buyers and their suppliers. The company and its suppliers can have enduring partnership for the satisfaction of both.



5

**THE EMPLOYEES**

The employees including the management get higher remuneration, stable employment, security of jobs, better working conditions and above all enhanced personal satisfaction through joy of achievement. High employee morale due to job satisfaction gives higher output.

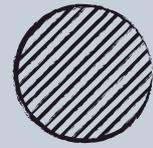


6

**THE NATION**

When all industries in the national economic system demonstrate industrial management, the entire national economy will accomplish all round security and prosperity

# PROBLEMS IN INDUSTRIAL MANAGEMENT



The job of industrial management is difficult because of changes in market, technology, attitude of people, government regulations, etc. The regular problems faced in industrial management are :

01



## Problem of Location

Main problem of industrial management is associated with the selection of plant location. While deciding for the location, industrial management has to keep in mind various aspects such as availability of efficient labor, nearness of the potential market, climate and weather conditions, etc. All the conditions can not be favorable at all the times.

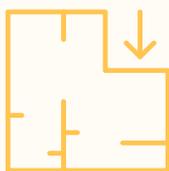
## Problem of Selection of Production Method

After selection of the location next main problem arises which is related to the selection of production method. There are various alternative method of production available to produce a particular product. Industrial management has to select the best method as per the requirement, sources available and quality of the method.

02



03



## Problem of Plant Layout

Main problem of industrial management is associated with the selection of plant location. While deciding for the location, industrial management has to keep in mind various aspects such as availability of efficient labor, nearness of the potential market, climate and weather conditions, etc. All the conditions can not be favorable at all the times.

## Problem of Designing of Product

After selection of labor, the next problem arises related to the designing of the product. Designing of product should be done carefully because frequent changes are not possible in the designed product. while designing the product, factors such as specific, identity, market demand, simplicity in production have to be considered.

04



## Problem of Production and Inventory Control

problem related to production and inventory control is also a major problem. Sufficient raw material for the production function and regular supply of finished product according to market demand are two major responsibilities of industrial management. The stock of raw material and finished goods should not be more than the requirement. To ensure this the industrial management is facilitated by various methods such as Economic Order Quantity (EOQ), Re-order point (ROP), ABC technique of Inventory Control, etc.

05



06



## Problem of Quality Control

Maintaining the quality of a product can be seen as another important problem of industrial management. To ensure the quality of finished product, industrial management ensures inspection activities at various level of production. Standardization is also done while keeping this problem in mind.

## Labor Problem

For effective and quality production, the need of efficient and skilled labor arises. The acquisition of efficient labor is also one of the problem of industrial management. After acquiring the labor, their training is also arranged by the industrial management. Industrial management should keep eyes on the production capacity of the labor and try to improve their overall performance. Various methods such as work measurement, work analysis, work supervision and motivational method of wage payment, etc. can be applied by industrial management for this purpose.

07



06



## Problem of Cost Control

Any product can survive in the market for long time when it is available at lower price than its competitors. That can be possible only by cost control. Cost can be controlled by reducing or eliminating the wastage at all level and by maintaining economy in production. Cost control is also one of the main problem of industrial management. Apart from all these above problems, sometimes industrial management has to deal with various problems such as pollution control, limited financial resources of the organization, government policies and regulation, etc.

# SCOPE OF INDUSTRIAL MANAGEMENT



The scope of industrial management can be discussed in two broad areas :

1

## Activities Relating to Industrial System Designing

The industrial management work starts as soon as the idea of production of a certain commodity comes in the mind of an entrepreneur. Primary task includes preparation of product profile with the help of experts of technological department and market surveys. Plant location and plant layout have to be decided. This activity concerns the production engineering and includes problem regarding design of tools and jigs, the design development installation of equipment and the selection of the optimum size of firm. All these areas require the technical expertise. The selection of an optimum plant location very much depends upon the decision taken regarding production engineering.

The next decision regarding production system design concerns the use of those techniques which are concerned with work environment and work measurement and includes problems like motion study, process analysis, layout the plant, materials handling and time study. Apart from these problems, the system designer should pay full attention to two other important problems such as :

- i Human factor, i.e., the impact of production system on the workers operating it and
- ii Research and development activities.

These two problems have a vital impact on industrial system designing



## 2

### Activities Relating to Analysis and control of Activities

The next problem after the designing of the industrial system is the analysis and control of the production system. It includes all decisions regarding production administration and therefore all functions of the management so far as they are applicable to the production system.

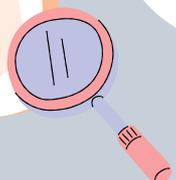
These form the subject matter of the industrial management. These activities are :

- i **Production Planning**: The first decision in this regard is production planning. It includes preparation of short-term production schedule, plan for maintaining the records of raw materials and finished and semi-finished stock, specifying how the production resources of the concern are to be employed over some future time in response to the predicted demand for products and services.
- ii **Production control**: After planning, the next managerial function is to control the production according to production plans ,because production plans cannot be activated unless they are properly guided and controlled. For this purpose, production manager has to regulate work assignment, review work progress and remove discrepancies, if any, in the the actual and planned performances.
- iii **Quality control**: the other important decision concerns quality control. Product quality refer to the composite product characteristics of engineering and manufacturing that determines the degree to which the product in use will meet the expectation of the customers. Quality control can be ensured through the techniques of inspection and statistical quality control.
- iv **Coordination with Other Departments**: No plan can be successful until and unless,, it gets an active support from rest of the departments of organization. For instance, marketing department provides the data related to estimated demand without which the production plan can not be prepared. So coordination with other departments is also included under the scope of industrial management.
- v **Dependent Services and Departments**: Various services and departments on which production plan is totally dependent is also included in the scope of industrial management such as standardization, simplification, inspection, specialization and quality control, inventory control, research and development, diversification, employee amenities, pollution control, etc.



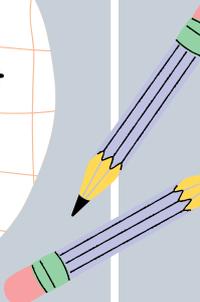
# REVIEW QUESTIONS

1 Define Industrial Management and explain its concept.



2 Trace the evolution and historical development of Industrial Management.

3 How is Industrial Management different from Production Management?



4 What are the various objectives of industrial management?

5 What are the application areas of industrial management?

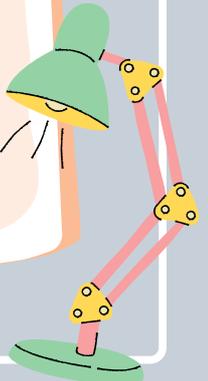
6 How is an industry organized? How is this set-up different for service organization?



7 What is the importance of industrial management?

8 What are the problems associated with industrial management?

9 What is the scope of industrial management?



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# INDUSTRIAL MANAGEMENT

## *Fundamentals*



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She started her career as a lecturer in the Mechanical Engineering Department in 2002 at Polytechnic Sultan Salahuddin Abdul Aziz Shah. She completed her Bachelor Degree in Engineering (Mechanical/System) from UPM and her Master Degree in Manufacturing Systems Engineering at UPM. She has 20 years of experience in teaching in the mechanical and manufacturing areas. Thus, she is also actively involved in teaching and learning development in her area of expertise.



This book's content is meant to provide a foundation for the study of industrial management. The contents included the concept of industrial management, organisational structures, and applications of industrial management. Following the Polytechnic syllabus for DJJ42022 Industrial Management, this book's objective is to introduce the fundamentals of industrial management.

The knowledge presented in this book is fundamental to industrial management, as well as students will gain a great deal from studying it. The impact of industrial management on society and daily life will also be clarified by reading this book.

*Thank You*

