

ORGANIZATIONAL STRUCTURES

Introduction

Any operating organization should have its own structure in order to operate efficiently. For an organization, the organizational structure is a hierarchy of people and its functions.

The organizational structure of an organization tells you the character of an organization and the values it believes in. Therefore, when you do business with an organization or getting into a new job in an organization, it is always a great idea to get to know and understand their organizational structure.

Depending on the organizational values and the nature of the business, organizations tend to adopt one of the following structures for management purposes.

Although the organization follows a particular structure, there can be departments and teams following some other organizational structure in exceptional cases.

Sometimes, some organizations may follow a combination of the following organizational structures as well.

organization
nest
organization
structure

Organizational Structure Types

Following are the types of organizational structures that can be observed in the modern business organizations.

Bureaucratic Structures

Bureaucratic structures maintain strict hierarchies when it comes to people management. There are three types of bureaucratic structures:

1 - Pre-bureaucratic structures

This type of organizations lacks the standards. Usually this type of structure can be observed in small scale, start-up companies. Usually the structure is centralized and there is only one key decision maker.

lacks standards
→ small scale, start-up

The communication is done in one-on-one conversations. This type of structures is quite helpful for small organizations due to the fact that the founder has the full control over all the decisions and operations.

2 - Bureaucratic structures

These structures have a certain degree of standardization. When the organizations grow complex and large, bureaucratic structures are required for management. These structures are quite suitable for tall organizations.

3 - Post-bureaucratic Structures

The organizations that follow post-bureaucratic structures still inherit the strict hierarchies, but open to more modern ideas and methodologies. They follow techniques such as total quality management TQM, culture management, etc.

Functional Structure

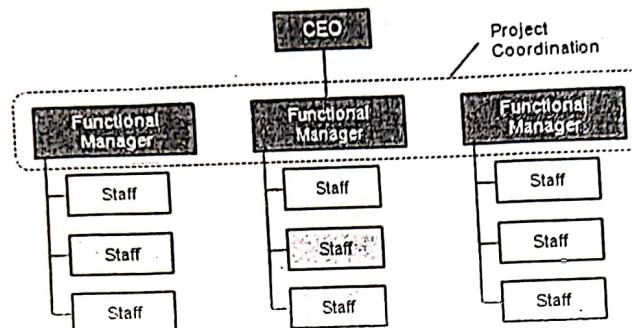
The organization is divided into segments based on the functions when managing. This allows the organization to enhance the efficiencies of these functional groups. As an example, take a software company.

Software engineers will only staff the entire software development department. This way, management of this functional group becomes easy and effective.

Functional structures appear to be successful in large organization that produces high volumes of

products at low costs. The low cost can be achieved by such companies due to the efficiencies within functional groups.

In addition to such advantages, there can be disadvantage from an organizational perspective if the communication between the functional groups is not effective. In this case, organization may find it difficult to achieve some organizational objectives at the end.

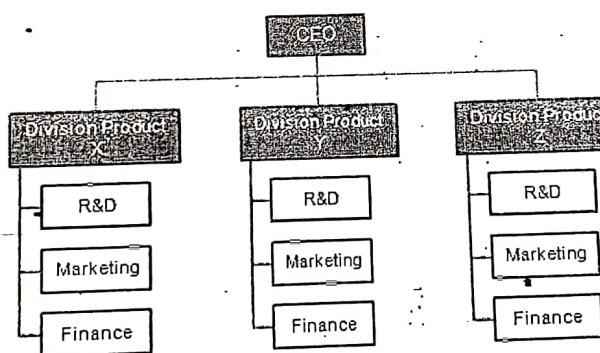


Divisional Structure

These types of organizations divide the functional areas of the organization to divisions. Each division is equipped with its own resources in order to function independently. There can be many bases to define divisions.

Divisions can be defined based on the geographical basis, products/services basis, or any other measurement.

As an example, take a company such as General Electric. It can have microwave division, turbine division, etc., and these divisions have their own marketing teams, finance teams, etc. In that sense, each division can be considered as a micro-company with the main organization.



Matrix Structure

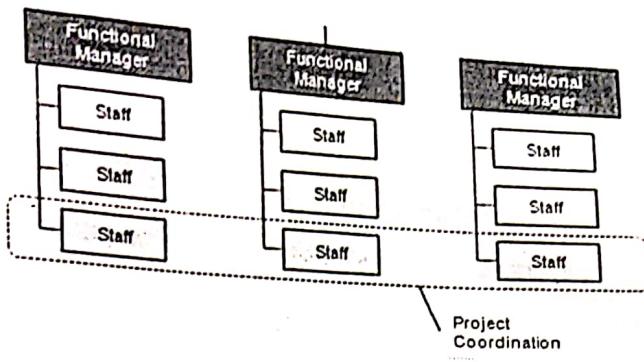
When it comes to matrix structure, the organization places the employees based on the function and the product.

The matrix structure gives the best of the both worlds of functional and divisional structures.

In this type of an organization, the company uses teams to complete tasks. The teams are formed based on the functions they belong to ex: software engineers and product they are involved in ex: Project A.

This way, there are many teams in this organization such as software engineers of project A, software engineers of project B, QA engineers of project A, etc.





Conclusion

Every organization needs a structure in order to operate systematically. The organizational structures can be used by any organization if the structure fits into the nature and the maturity of the organization.

In most cases, organizations evolve through structures when they progress through and enhance their processes and manpower. One company may start as a pre-bureaucratic company and may evolve up to a matrix organization.

Types of Ownership Structures

The most common ways to organize a business:

- Sole Proprietorship
- Partnership
- Limited partnership
- Limited Liability Company (LLC)
- Corporation (for-profit)
- Nonprofit Corporation (not-for-profit)
- Cooperative.

Sole Proprietorships and Partnerships

For many new businesses, the best initial ownership structure is either a sole proprietorship or -- if more than one owner is involved -- a partnership.

Sole Proprietorships

A sole proprietorship is a one-person business that is not registered with the state like a limited liability company (LLC) or corporation. You don't have to do anything special or file any papers to set up a sole proprietorship -- you create one just by going into business for yourself.

Legally, a sole proprietorship is inseparable from its owner -- the business and the owner are one and the same. This means the owner of the business reports business income and losses on his or her personal tax return and is personally liable for any business-related obligations, such as debts or court judgments.

Partnerships

Similarly, a partnership is simply a business owned by two or more people that haven't filed papers to become a corporation or a limited liability company (LLC). You don't have to file any paperwork to form a partnership -- the arrangement begins as soon as you start a business with another person. As in a sole proprietorship, the partnership's owners pay taxes on their shares of the business income on their personal tax returns and they are each personally liable for the entire amount of any business debts and claims.

Sole proprietorships and partnerships make sense in a business where personal liability isn't a big worry -- for example, a small service business in which you are unlikely to be sued and for which you won't be borrowing much money for inventory or other costs.

Limited Partnerships

Limited partnerships are costly and complicated to set up and run, and are not recommended for the average small business owner. Limited partnerships are usually created by one person or company (the "general partner"), who will solicit investments from others (the "limited partners").

The general partner controls the limited partnership's day-to-day operations and is personally liable for business debts (unless the general partner is a corporation or an LLC). Limited partners have minimal control over daily business decisions or operations and, in return, they are not personally liable for business debts or claims. Consult a limited partnership expert if you're interested in creating this type of business.

Corporations and LLCs

Forming and operating an LLC or a corporation is a bit more complicated and costly, but well worth the trouble for some small businesses. The main benefit of an LLC or a corporation is that these structures limit the owners' personal liability for business debts and court judgments against the business.

What sets the corporation apart from all other types of businesses is that a corporation is an independent legal and tax entity, separate from the people who own, control and manage it. Because of this separate status, the owners of a corporation don't use their personal tax returns to pay tax on corporate profits -- the corporation itself pays these taxes. Owners pay personal income tax only on money they draw from the corporation in the form of salaries, bonuses, and the like.

Like corporations, LLCs provide limited personal liability for business debts and claims. But when it comes to taxes, LLCs are more like partnerships: the owners of an LLC pay taxes on their shares of the business income on their personal tax returns.

Corporations and LLCs make sense for business owners who either 1) run a risk of being sued by customers or of piling up a lot of business debts, or 2) have substantial personal assets they want to protect from business creditors.

Nonprofit Corporations

A nonprofit corporation is a corporation formed to carry out a charitable, educational, religious, literary, or scientific purpose. A nonprofit can raise much-needed funds by soliciting public and private grant money and donations from individuals and companies. The federal and state governments do not generally tax nonprofit corporations on money they take in that is related to their nonprofit purpose, because of the benefits they contribute to society.

Cooperatives

Some people dream of forming a business of true equals -- an organization owned and operated democratically by its members. These grassroots business organizers often refer to their businesses as a "group," "collective," or "co-op" -- but these are often informal rather than legal labels. For example, a consumer co-op could be formed to run a food store, a bookstore, or any other retail business. Or a workers' co-op could be created to manufacture and sell arts and crafts. Most states do have specific laws dealing with the set-up of cooperatives, and in some states you can file paperwork with the secretary of state's office to have your cooperative formally recognized by the state. Check with your secretary of state's office for more information.

Scientific Management Theory and the Ford Motor Company

Overview

During the early 20th century, Frederick Winslow Taylor developed a number of management and organizational theories that led to significant breakthroughs in business practices. Since that era, levels of industrial manufacturing have grown exponentially throughout much of the world. Taylor's ideas have dramatically shaped modern methods of mass production and structural organization.

Around the same time that Taylor started experimenting with his theories, the prominent businessman Henry Ford was hard at work developing several of his now infamous automobiles. Ford named these cars alphabetically from A to S. According to *The Case Files: Henry Ford*, published by The Franklin Institute, Ford's most successful car was the Model T, which began production in 1908 (The Franklin Institute) – just a few years before Taylor published his seminal work, Principles of Scientific Management, in 1911. Implementing Taylor's theories, Ford Motor Company ultimately produced over 15 million Model Ts between 1908 and 1927: (ibid). As you will explore in greater detail later in this reading, Henry Ford's ambitious production efforts decreased the cost of production, which allowed for lower prices in the market place. Ford's goal was to create "a motor car for the great multitude" (ibid) and make automobile travel available and affordable for everyone. "When I'm through," he said, "just about everyone will have one" (ibid).

In this reading, we will explore how Frederick Winslow Taylor's scientific management theory enabled Ford to develop the assembly line and successfully realize his goal of bringing car travel to the masses.

Early History

In 1903, Henry Ford formed a business partnership with Alexander Malcomson, a coal dealer based in Detroit (The Franklin Institute). Together, they launched the Ford Motor Company, which drew from a diverse network of auto parts suppliers and manufacturers in order to mass-produce automobiles (ibid). At the close of its first year in production, the growing company netted \$36,000 (ibid).

In those early days of automobile manufacturing, during the assembly stage the body of the car would be fixed into a stationary position as workers brought and added individual parts and to the vehicle (The Franklin Institute). Each car was produced by teams of skilled laborers, and, working together, these groups collectively spent over 12 hours building each car (EyeWitness to History, 2005). This process was very expensive and time-consuming, thus making it impossible

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for Ford to mass-produce his cars at affordable prices. Ford soon sought ways to streamline this process and produce a larger volume of vehicles in a shorter amount of time. Ultimately, Ford hired management theorist Frederick Winslow Taylor to help map out possible solutions (The Franklin Institute).

Henry Ford Hires Frederick Winslow Taylor

Taylor's management theory was founded on the principle that individual workers would be more productive if they were assigned tasks that were properly suited to their personal capabilities and strengths. Taylor further argued that the elimination of unnecessary physical movement by workers would result in increased productivity. In the early days of 1908, the Model T was just coming into production. At that time the price of a Model T was \$825 (EyeWitness to History, 2005). The model T was popular among consumers, and by the end of 1908—the car's first year on the market—Ford had sold well over 10,000 units (*ibid*).

Even so, during that same year, Ford hired Taylor to observe his workers and determine the most-efficient and time-saving methods for increasing the company's productivity (The Franklin Institute). Ford studied Taylor's observations and, as 1908 progressed, began to incorporate Taylor's scientific management theory into his production techniques. Ford's first step was to evaluate the individual parts that were required to build the automobile—from the smallest to the largest components. Implementing Taylor's theory during the assembly stage, Ford determined that the larger parts of the car should remain stationary, while the smaller parts should be brought to the vehicle as needed. This strategy sped up the production process significantly, but not enough to meet Ford's ultimate goal of producing cars at peak levels of efficiency (*ibid*).

To further reduce his cars' building time, Ford had his laborers remain stationary in an assembly line as the body of the car was moved through individual workstations. Workers would pull the car, by rope, through one workstation after another, allowing each worker to perform his specified task before moving the car to the next station. This process was repeated until the car's construction was complete (EyeWitness to History, 2005).

As Ford continued to observe his new production process, he found even more areas that could be improved upon. For example, he noticed that certain tasks took longer on average to complete than others, leading him to recalibrate tooling methods in other areas to compensate for the longer wait times. Ford continued to improve and streamline the process, and by 1913 he introduced a completely power-driven assembly line in his newly opened factory in Highland Park, Michigan (The Franklin Institute). After only a few short years, Ford had managed to bring the average time of production for a Model T down to 93 minutes, and as



a consequence was able to lower the price down to \$575. By 1914, Ford had captured 48% of the automobile market (EyeWitness to History, 2005).

Cars for the Masses

Ford's entrepreneurial spirit knew no bounds—having realized that drastic reductions in prices would translate to a greater share of the automobile market (and thus higher profitability), he quickly moved to bring the prices of his motor carriages down to manageable levels that even the workers in his factories could afford. In the early days of 1914, Ford raised the wages that he was paying his workers from \$2.83 for a 9-hour day to \$5.00 for an 8-hour day (The Franklin Institute). As a result, Ford greatly improved worker morale and further grew his potential customer base. By 1924 the successes of Ford's practices were obvious, after just 16 years of implementing Taylor's scientific approach he had managed skillfully sell over 10 million cars (*ibid*).

The advancement of Ford's auto assembly line produced high quality vehicles at affordable prices which drew in customers from all walks of life. His assembly-line practices eventually spread to manufacturing processes across all industries, forever changing the ways in which products were mass-produced (Hutchison, 2005).

Conclusion

Henry Ford and Frederick Winslow Taylor's engineering breakthrough could not have come at a better time for the auto industry. Ford recognized the benefits that Taylor could bring to his operations and took full advantage of his expertise and strategies. As a result, the auto industry has continued to thrive throughout the 20th and 21st centuries, making use of new efficiencies and cost reductions, and leading to regular improvements to manufacturing processes across all industries.

Summary

- The assembly-line process enabled Ford to produce cars more quickly, and at more affordable rates.
- By 1924, as a result of his advanced production methods, Ford had sold 10 million Model Ts.
- Ford's assembly line resulted in a mass-market demand for automobiles and changed mass-manufacturing processes across many products and industries.

ENGINEERING

Principles of Scientific Management

1. Development of Science for each part of men's Job (replacement of rule of thumb)

- a. This principle suggests that work assigned to any employee should be observed, analyzed with respect to each and every element and part and time involved in it.
- b. This means replacement of odd rule of thumb by the use of method of enquiry, investigation, data collection, analysis and framing of rules.
- c. Under scientific management, decisions are made on the basis of facts and by the application of scientific decisions.

2. Scientific Selection, Training & Development of Workers

- a. There should be scientifically designed procedure for the selection of workers.
- b. Physical, mental & other requirement should be specified for each and every job.
- c. Workers should be selected & trained to make them fit for the job.
- d. The management has to provide opportunities for development of workers having better capabilities.
- e. According to Taylor efforts should be made to develop each employee to his greatest level and efficiency & prosperity.

3. Co-operation between Management & workers or Harmony not discord

- a. Taylor believed in co-operation and not individualism.
- b. It is only through co-operation that the goals of the enterprise can be achieved efficiently.
- c. There should be no conflict between managers & workers.
- d. Taylor believed that interest of employer & employees should be fully harmonized so as to secure mutually understanding relations between them.

4. Division of Responsibility

- a. This principle determines the concrete nature of roles to be played by different level of managers & workers.

- b. The management should assume the responsibility of planning the work whereas workers should be concerned with execution of task.
- c. Thus planning is to be separated from execution.

5. Mental Revolution

- a. The workers and managers should have a complete change of outlook towards their mutual relation and work effort.
- b. It requires that management should create suitable working condition and solve all problems scientifically.
- c. Similarly workers should attend their jobs with utmost attention, devotion and carefulness. They should not waste the resources of enterprise.
- d. Handsome remuneration should be provided to workers to boost up their moral.
- e. It will create a sense of belongingness among worker.
- f. They will be disciplined, loyal and sincere in fulfilling the task assigned to them.
- g. There will be more production and economical growth at a faster rate.

6.. Maximum Prosperity for Employer & Employees

- a. The aim of scientific management is to see maximum prosperity for employer and employees.
- b. It is important only when there is opportunity for each worker to attain his highest efficiency.
- c. Maximum output & optimum utilization of resources will bring higher profits for the employer & better wages for the workers.
- d. There should be maximum output in place of restricted output.
- e. Both managers & workers should be paid handsomely.

Techniques of Scientific Management

1. Time Study

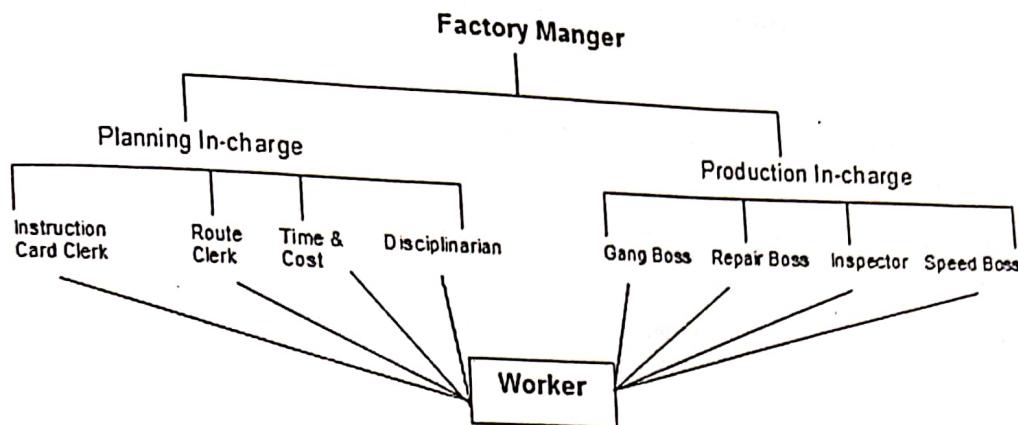
- a. It is a technique which enables the manager to ascertain standard time taken for performing a specified job.
- b. Every job or every part of it is studied in detail.
- c. This technique is based on the study of an average worker having reasonable skill and ability.
- d. Average worker is selected and assigned the job and then with the help of a stop watch, time is ascertained for performing that particular job.
- e. Taylor maintained that Fair day's work should be determined through observations, experiment and analysis by keeping in view an average worker.

$$\text{Standard Time} \times \text{Working Hours} = \text{Fair Day's Work}$$

a. Motion Study

- a. In this study, movement of body and limbs required to perform a job are closely observed.
- b. In other words, it refers to the study of movement of an operator on machine involved in a particular task.
- c. The purpose of motion study is to eliminate useless motions and determine the best way of doing the job.
- d. By undertaking motion study an attempt is made to know whether some elements of a job can be eliminated combined or their sequence can be changed to achieve necessary rhythm.
- e. Motion study increases the efficiency and productivity of workers by cutting down all wasteful motions.

b. Functional Foremanship



- a. Taylor advocated functional foremanship for achieving ultimate specification.
- b. This technique was developed to improve the quality of work as single supervisor may not be an expert in all the aspects of the work.
- c. Therefore workers are to be supervised by specialist foremen.
- d. The scheme of functional foremanship is an extension of principle pf specialization at the supervisory level.
- e. Taylor advocated appointment of 8 foramen, 4 at the planning level & other 4 at implementation level.
- f. The names & function of these specialist foremen are: -
 - Instruction card clerk concerned with tagging down of instructions according to which workers are required to perform their job
 - Time & cost clerk is concerned with setting a time table for doing a job & specifying the material and labor cost involved in it.
 - Route clerk determines the route through which raw materials has to be passed.
 - Shop Disciplinarians are concerned with making rules and regulations to ensure discipline in the organization.
 - Gang boss makes the arrangement of workers, machines, tools, workers etc.
 - Speed boss concerned with maintaining the speed and to remove delays in the production process.
 - Repair boss concerned with maintenance of machine, tools and equipments.

- Inspector is concerned with maintaining the quality of product.

c. Standardization

- a. It implies the physical attitude of products should be such that it meets the requirements & needs of customers.
- b. Taylor advocated that tools & equipments as well as working conditions should be standardized to achieve standard output from workers.
- c. Standardization is a means of achieving economics of production.
- d. It seems to ensure -
 - The line of product is restricted to predetermined type, form, design, size, weight, quality. Etc
 - There is manufacture of identical parts and components.
 - Quality & standards have been maintained.
 - Standard of performance are established for workers at all levels.

d. Differential Piece Wage Plan

- a. This tech of wage payment is based on efficiency of worker.
- b. The efficient workers are paid more wages than inefficient one.
- c. On the other hand, those workers who produce less than standard no. of pieces are paid wages at lower rate than prevailing rate i.e. worker is penalized for his inefficiency.
- d. This system is a source of incentive to workers who improving their efficiency in order to get more wages.
- e. It also encourages inefficient workers to improve their performance and achieve their standards.
- f. It leads to mass production which minimizes cost and maximizes profits.

e. Other Techniques

- a. Various other techniques have been developed to create ordeal relationship between management and workers and also to create better understanding on part of works.
- b. Those includes use of instruction cards, strict rules & regulations, graphs, slides, charts etc, so as to increase efficiency of workers.

6+3

→ Functions of management

- Planning
- Organising
- Controlling
- Directing
- Staffing

• Father of management → Peter Drucker

• Father of scientific mg't → F. N. Taylor

→ Management and Administration

Characteristic

Administrator

Management

- Status • Acts as owner • Acts as an agent
- Skills • Administrative • Technical skills
- skills

→ Role of management

- Interpersonal skills roles Figure head
- Leader
- Liaison

Resource allocator

Arbitrator

Entrepreneur

- Decision roles
- Negotiator

Levels of management

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Top management

- concept of design skills

Middle management

- Human skills

Front line / supervisory level management

- Technical Skills



Development of management thought

Early management

Modern management

Father of administrative mg^t. → Henry Fayol.

Definitions of management by experts

Peter F. Drucker (Father of modern mg^t). →

mg^t is a multipurpose organ that manages a business, manages a manager and manages workers and work.

Henry Fayol

mg^t is conduct of affairs of business moving towards its objective through a

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obj

5. J. K

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2. Ap

3. Lt

4. Dts

goal

= ft.

continuous process of improvement
and optimisation of resources.

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3. Mary Parker.

- Mgt. is the art of getting things done through people.

4. George. R. Terry.

- Mgt. is a process consisting of planning, organising, actuating and controlling performed to determine and accomplish the objectives of by use of people & resources.

5. F.W. Taylor.

- Mgt. is knowing exactly what you want meant to do & then seeing that they do it the best & cheapest ways.

→ Characteristics of Management

1. It should be stable.
2. Applicable to all kinds of organisation.
3. It should be transparent.
4. Its approaches have to be clear and goal oriented.
5. It should be simple & effective.

It should be responsive to many external elements like economical, technological, social, political & ethical factors that affect areas of operation.

It should provide conductive atmosphere for work.

> Functions of management

> Development of mg^t thought

Evolution of mg^t can be divided into

2 parts

Early mg^t | Psychological dev^t
 | Scientific mg^t
 | Administrative mg^t
 | Human rel^t mg^t

→ Ele.

(a) &

(b)

Eg:

Modern mg^t | Behavioural approach
 | System approach
 | Quantitative approach
 | Contingency approaches

Plan
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Instructi
card clu

→ Scientific management

- The concept of Scientific mg^t was introduced by F.W. Taylor.
- Taylor's contribution can be described in 2 parts:
 - Elements & tools of scientific mg^t.
 - Principles of scientific mg^t.

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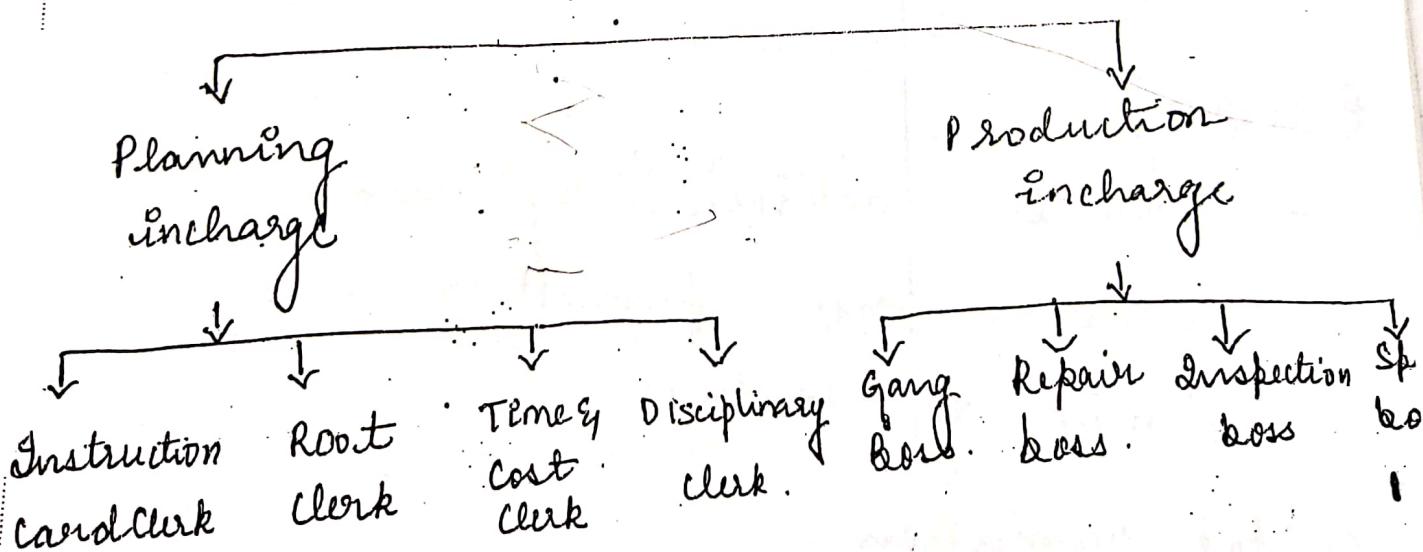
→ Elements & tools of scientific mg^t

(a) Separation of planning & doing

(b) Functional foremanship

- 8 persons are involved to direct the activities of worker.

Eg: Factory manager



1) Job analysis

- The best way of doing things can be determined by time - motion - fatigue.

2) Standardisation

- The following things should be fixed in advance or maintained in advance.
- Instruments
- Machines
- Period of work

Scientific selection & training of workers

Financial incentives

- Differential piece rate system

Economy

- can be achieved by making resources more productive & by eliminating wastage.

Mental evolution

- depends on co-operation between orgt. & workers

→ Principles of scientific mg.

- Replacing rule of thumb with ~~signs~~ science
- Taylor emphasised on organised knowledge should be applied which should replace rule of thumb.
- Harmony in group action / co-operation
- Division of work & responsibility
- Maximum output
- Scientifically train & develop workers

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other followers of scientific mg^t

- Henry Gantt
 - Gantt chart, graphic methods & controlling
 - Importance of time & cost in planning work
- Frank Bunker, Lillian Evelyn
- Finding best way of doing
- concentrated on problems of workers

Critical analysis of Scientific mg^t

- only concentration on low level
- differential rate system
- No concentration on workers problems

Types of ownership

- sole proprietorship
- Partnership
- Private limited
- Societies
- Corporation

Proprietorship

- Single individual ✓
- only employee ✓
- Bank accounts
- Doesn't need recognition with state agency ✓
- If operated by other person

Merit:

- Ease & cost of formation
- Requiring many license
- use of profits

Demerit:

- Unlimited liability
- Loses everything if business fails
- Limited financing
- Limited skills
- Limited life span

2. Partnership

- Two or more.
- Dual agreement.
- Owners may divide work.

a) General Partnership - unlimited liability

b) Limited Partnership - either of them

"Articles of Partnership"

legal document.

Merits:

- Ease of organisation.
- Combined knowledge & skills
- Little govt. regulations
- Availability of financing
- Better decision making.

Demerits:

- Sharing of profits
- Limited lifespan
- Unlimited lifespan
- Each partner is responsible for actions of all others

3. Private limited

- Small business entity
- Limits owner liability to their share
- Limits no. of Shareholders (50) to 50

merits:

Ownership

Legal formalities

Minimum share capital

Management & decision making

Disclosing info

Minimum no. of share holders = 2

5. ✓

dismerits:

Registration process

Decision ^{Division} of ownership

Compliance formalities

winding up - time consuming & costly

a)

b)

Society

Social interaction

Benefit of society

Not for profit

✓

merits:

Social Service

Tax advantage

Easy formation - 10

State assistance

Perpetual existence

Limited liability

Open membership

dismerits:

- lack of secrecy
- lack of business acumen
- lack of interest
- corruption
- Lack of mutual interest

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5. Corporation

- can be sold or take control by others.
- Board of directors.

a) Public Corporation (stock exchange)

b). Private Corporation (small business)

joining a corporation "Articles of Incorporation".

Merits:

- limited liability
- Unlimited lifespan
- Great sources of funding
- Easy transfer of ownership

owner/stockholder can only lose the amount invested.

Demerit

- Double taxation (entity, shareholders)
- legal entity created by state whose assets and liabilities are separate from owners

Organisational Structure

Forms of organisation:

Line organisation 1)

Line & staff organisation 2)

Functional organisation

Project Organisation

Matrix organisation

Committee Organisation

Mark who all were the pencil producers operated on a market in a small town. He was producing hand made pencils. The cost of production was 10/- per month, he was selling them for 25/- per pencil. He was able to sell all he produced in every month. His price was say, too high for poor people & only rich could afford them. People used to say 'I would love to buy a pencil from you but the price is too high for me' to mark.

Elements of cost

1. Variable cost.
 2. Overhead cost / Fixed cost.
1. Variable cost - it varies with volume of production.
 2. Fixed cost - The cost is fixed irrespective of production.

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Parameters of variable cost:

- Direct material cost.
- Direct labour cost.
- Expenses.

Parameters of fixed cost:

- Factory overhead.
- Administration overhead.
- Selling overhead.
- Distribution overhead.

FASD

* The selling price of a product is denoted as

a) (Direct material cost + Direct labour cost + direct expenses) \rightarrow This is called as Prime cost.

(Prime cost + Factory overhead)
= Factory cost

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Cost of Production = (Factory cost + office & administrative overhead).

) Cost of goods sold = (Cost of production + opening finished stock - closing finished stock)

Eg: Z
is

Sunk
It is

Cost of Sales = (Cost of goods sold + selling & distribution overhead.)

Assume
3 years

Sales = (Cost of sales + Profit.)

not

Selling price per unit = Sales per quantity sold.

should
equip
factory

part

10/2/19

→ kinds

1. Sim

2. Non

1. Sim

2. Non

Total

of 8

Marginal Cost

Benefits of mass production can be seen
in marginal cost.

cost of producing product of volume V_1
units be X_1 .

Then the cost of producing products of
volume $V_1 + 1$ units is X_2 .

$X_2 - X_1$ = the cost of production of additional
units
↳ marginal cost

units with expense incurred
the production volume X_1
which is known as marginal cost of
production.

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Eg: The marginal cost of producing a 25 unit
is 45.

Sunk cost

It is a part cost of can equipment

Assume equipment is purchased for 1 lac
3 years back if replaced this value is
not 1 lac, its present market value
should be taken as the present value of the
equipment for further analysis. So the
purchase value of the equipment in its
part is known as sunk cost.

10/2/19

Kinds of interest

1. Simple interest..

2. Compound interest.

1. Simple interest.

It is directly proportional to time &
total interest. It is payable at the end
of specified period usually 1 year.

$$I = P \times n \times i$$

here,
 $I \rightarrow$ Simple interest amount.

$P \rightarrow$ Principal amount.

$i \rightarrow$ rate of interest.

$n \rightarrow$ no. of years in a period.

Total simple interest in the entire amount

$$S = P + I = P(1 + ni)$$

Interest computed in this is known as simple interest & the factor $(1 + ni)$ is called Interest factor.

- Q. If Rs 2000 is borrowed for 2 years at 9% interest rate, the interest earned will be?

$$I = P \times n \times i$$

$$= 2000 \times 2 \times 9$$

$$= \frac{36000}{100}$$

$$I = 360$$

There are two types of simple interest -

1) Ordinary S.I.
2) Exact S.I.

(i) Ordinary Simple Interest

Usually the unit of time

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for this interest period is taken as 1 year & the resulting interest rate is rate / year.

When it is required to compute the interest due for a fraction of 1 year & it is often the practise to consider 360 days in a year.

Thus if 50 days then $\frac{50}{360}$ of 1 year.

(ii) Exact Simple Interest.

If the interest is calculated on the basis of 365 days in a year. The result is called Exact Simple Interest.

2. Compound Interest.

When the interest due at the end of the period becomes part of the principal & itself earns interest along with the principal it is called Compound interest.

Generally the formula for C.I. is;

$$S = P(1+i)^n$$

where $S \rightarrow$ compound amount.

The factor $(1+i)^n$ is called

compound amount factor (CAF).

If the interest is paid more than once in a year say semi annually, quarterly or monthly, the formula for CAF is

$$CAF = \left(1 + \frac{i}{m}\right)^{n \times m}$$

→ Present

Pes

$i \rightarrow$ interest rate /year -

$n \rightarrow$ no. of years in the period

$m \rightarrow$ no. of periods /year ..

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Q. Calculate the compound amount when

Rs 2000 were lent at 9% interest for 3 yrs

being compounded annually.

'Sol' :-

$$S = P (1+i)^n$$

$$= 2000 \left(1 + \frac{9}{100}\right)^3$$

$$S = 2694.5$$

what,

30 sep

100 ru

later

• C.A

Q. A person deposits a sum of Rs 20K at
the interest rate of 10% compounded

annually for 10 years
maturity value after 10 years?

Sol:-

$$S = P \cdot (1 + r)^n$$
$$= 2000 \left(1 + \frac{10}{100}\right)^{10}$$

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$$S = 51,874.8$$

→ Present worth

People who wish to determine the value at the present time of the sum of money which will be available at

For eg:- Suppose a person purchases Rs 100 bond. The bond states that 10 yrs from the date of purchase, the govt will pay the holder of the bond Rs 100. How much rupees the bond be worth, at the time of receipt?

Naturally it could be worth just what was paid in it say 30 rupees thus 30 rupees is said to be present value of 100 rupees which was to be received 10 yrs later.

• CAF is used to determine future value of present capital.

The future value of present capital of Rs 2450. The same thing expressed in the reverse way, it means that the present value of Rs 2450 at 7% interest, years back is Rs 2000/-

Present worth factor is,

$$PWF = \frac{1}{(1+i)^n}$$

PWF \rightarrow present worth factor

$$P = S \left(\frac{1}{(1+i)^n} \right)$$

S \rightarrow future capital

P \rightarrow present worth

Determine the present value of Rs 5000/- due to after 5 years at 9% CI rate.

$$\text{Sol}^-: P = 5000 \left[\frac{1}{(1 + 9/100)^5} \right]$$

$$P = 3249.65$$

2. A person wishes to make a future sum of 1 lakh for his son's education after 10 yrs from now. What is the single payment that he should deposit now so that he gets the desired amount after 10 yrs? The bank gives 15% interest rate compounded annually.

Sol:-

$$P = S \left[\frac{1}{(1+i)^n} \right]$$

$$= 1,00,000 \left[\frac{1}{(1 + 15/100)^{10}} \right]$$

$$P = 24718.47$$

3. A person deposits 1 lakh in a bank for his son's education who will be admitted to professional after 6 yrs. The bank pays 10% interest rate compounded annually. Find the future amount of the deposited money at the time of admitting his son to professional course.

Sol:- $P = S \left(\frac{1}{(1+i)^n} \right)$

$$S = P (1+i)^n$$

$$= 1,00,000 \left(1 + \frac{10}{100}\right)^6$$

$$S = 1,77,156.$$

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- 4). A person needs a sum of 2 lakh for his daughter's marriage which will take place 15 yrs from now. Find the amount of money that he should deposit now in the bank given 11% interest compounded annually?

Sol:- $P = S \left[\frac{1}{(1+i)^n} \right]$

$$= 2,00,000 \left[\frac{1}{(1 + 11/100)^{15}} \right]$$

$$P = 41,800$$

- 5). A person who is just 30 yrs old is planning his retire life. He plans to invest an equal sum of 10k at the end of every year for next 30 yrs starting from the end of next year. The bank gives 12% interest rate compounded annually. Find the maturity value of his account when he is 60 yrs old.

$$\text{soln: } P = S \left[\frac{1}{(1+i)^n} \right]$$

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$$S = P (1+i)^n$$

$$= 10,000 (1 + 12/100)^{30}$$

$$S = 299599.2212$$

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