Evolution of Management Principles

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In tracing the history of management, one comes across various schools of thought that have outlined principles to guide management practices. These schools of thought may be divided into 6 distinctive phases:

1. Early Perspectives

2. Classical Management Theory (F.W Taylor, Henri Fayol, Max Weber)

3. Neo Classical Theory - Human Relations Approach (Developed between 1920s to 1950s; Robert Owen, Marry Follet, Elton Mayo, etc)

4. Behavioural Science Approach - Organisational Humanism (Chris Argyris; Douglas McGregor, Abraham Maslow and Fredrick Herzberg)

5. Management Science/Operational Research

6. Modern Management

Classical Management Theory

CLASSICAL MANAGEMENT THEORY

- Rational economic view, scientific management, administrative principles, and bureaucratic organisation characterise this phase.
- While the **Rational economic view** assumed that people are motivated by economic gains primarily;
- **Scientific management of F.W Taylor** and others emphasised one best way of production etc;
- **Administrative theorists** personified by **Henri Fayol** etc looked at the best way to combine jobs and people into an efficient organisation;
- **Bureaucratic organisation theorists led by Max Weber** looked at ways to eliminate managerial inconsistencies due to abuse of power which contributed to ineffectiveness. This was the era of the industrial revolution and factory system of production. Large scale production would not have been possible without adherence to the principles governing organising production based on division of labour and specialisation, relationship between man and the machine, managing people and so on.

PRINCIPLES OF MANAGEMENT: THE CONCEPT

- A managerial principle is a **broad and general guideline** for decision making and behaviour. For example, while deciding about promotion of an employee one manager may consider seniority, whereas the other may follow the principle of merit.
- One may distinguish principles of management from those of pure science.
- **Management principles are not as rigid as principles of pure science.**
- They deal with human behaviour and, thus, are to be applied creatively given the demands of the situation. Human behaviour is never static and so also technology which affects business. Hence all the principles have to keep pace with these changes.
- **Principles vs Techniques of Management:**

  Techniques are procedures or methods, which involve a series of steps to be taken to accomplish desired goals. Principles are guidelines to take decisions or actions while practicing techniques.

NATURE OF PRINCIPLES OF MANAGEMENT

1. Universal Applicability
2. General guidelines
3. Formed by practice and experimentation
4. Flexible
5. Mainly behavioural
6. Cause and effect relationships
7. Contingent

Taylorism –

F.W Taylor

Principles of Scientific Management

TAYLOR'S SCIENTIFIC MANAGEMENT

- **'Rule of Thumb'** vs **'Scientific Management'**
- **Taylor emerged as the 'Father of Scientific Management'.**
- **Taylor proposed scientific management as opposed to rule of thumb.**
- He broke up human activity into small parts and found out how it could be done effectively, in less time and with increased productivity. It implies conducting business activities according to standardised tools, methods and trained personnel in order to increase the output, improve its quality and reduce costs and wastes.
- In the words of Taylor, ***"Scientific management means knowing exactly what you want men to do and seeing that they do it in the best and cheapest way. The Bethlehem Steel company where Taylor himself worked achieved three-fold increase in productivity by application of scientific management principles.***

Taylor's Principles of Scientific Management

1. Science not Rule of Thumb

2. Harmony, Not Discord

3. Cooperation, Not Individualism

4. Development of Each and Every Person to His or Her Greatest Efficiency and Prosperity

(i) Science not Rule of Thumb:

- Taylor pioneered the introduction of the **method of scientific inquiry** into the domain of management practice.
- As different managers would follow their indigenous rules of thumb, it is but a statement of the obvious that all would not be equally effective.
- Taylor believed that there was ***only one best method to maximise efficiency***. This method can be developed through study and analysis. The method so developed should substitute 'Rule of Thumb' throughout the organisation.
- Scientific method involved investigation of traditional methods through work-study, unifying the best practices and developing a **standard method**, which would be followed throughout the organisation.
- According to Taylor, even a small production activity like loading pigs of iron into boxcars can be scientifically planned and managed. This can result in tremendous saving of human energy as well as wastage of time and materials. **The more sophisticated the processes, greater would be the savings.**
- In the present context, the use of internet has brought about dramatic improvements in internal efficiencies and customer satisfaction.

(ii) Harmony, Not Discord:

- Factory system of production implied that managers served as a link between the owners and the workers. Since as managers they had the mandate to ·get work done' from the workers, it should not be difficult for you to appreciate that there always existed the possibility of a kind of class-conflict, the mangers versus workers.
- Taylor recognised that this conflict helped none, the workers, the managers or the factory owners.
- He emphasised that there should be **complete harmony between the management and workers.** Both should realise that each one is important.
- *To achieve this state, Taylor called for* ***complete mental revolution on the part of both management and workers.***
- It means that management and workers should transform their thinking. In such a situation even trade unions will not think of going on strike etc. Management should share the gains of the company, if any, with the workers. At the same time workers should work hard and be willing to embrace change for the good of the company. Both should be part of the family.
- According to Taylor, ***'Scientific management has for its foundation the firm conviction that the true interests of the two are one and the same; that prosperity for the employer cannot exist for a long time unless it is accompanied by prosperity for the employees and vice versa'.***
- **Japanese work culture is a classic example** of such a situation. In Japanese companies, paternalistic style of management is in practice. There is complete openness between the management and workers. If at all workers go to strike they wear a black badge but work more than normal working hours to gain the sympathy of the management.

(iii) Cooperation, Not Individualism:

- There should be complete cooperation between the labour and the management instead of individualism.
- **This principle is an extension of principle of 'Harmony not discord'.**
- **Competition should be replaced by cooperation.** Both should realise that they need each other.
- For this, management should not close its ears to any constructive suggestions made by the employees. They should be rewarded for their suggestions which results in substantial reduction in costs. They should be part of management and, if any important decisions are taken, workers should be taken into confidence.
- At the same time workers should desist from going on strike and making unreasonable demands on the management. In fact when there will be open communication system and goodwill there will be no need for even a trade union. Paternalistic style of management, whereby the employer takes care of the needs of employees, would prevail as in the case of Japanese companies.
- According to Taylor, there should be an almost **equal division of work and responsibility between workers and management.** All the day long the management should work almost side by side with the workers helping, encouraging and smoothing the way for them.

(iv) Development of Each and Every Person to His or Her Greatest Efficiency and Prosperity:

- **Industrial efficiency depends to a large extent on personnel competencies.**
- As such, scientific management also stood for **worker development**.
- Worker training was essential also to **learn the 'best method'** developed as a consequence of the scientific approach.
- Taylor was of the view that the concern for efficiency could be built in right from the process of employee selection. Each person should be scientifically selected. Then work assigned should suit her /his physical, mental and intellectual capabilities. To increase efficiency, they should be given the required training. Efficient employees would produce more and earn more. This will ensure their greatest efficiency and prosperity for both company and workers.

Techniques of Scientific Management

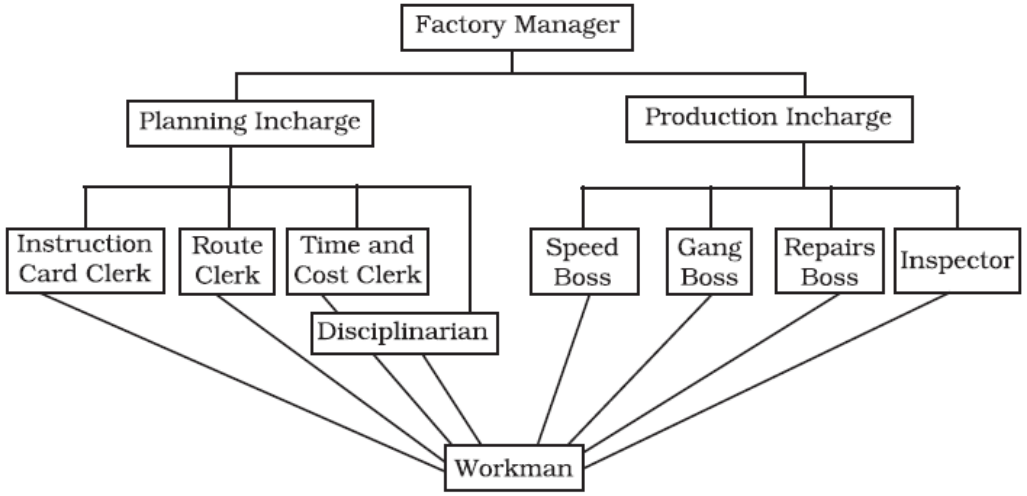
1. Functional Foremanship
2. Standardisation and simplification of work
3. Scientific Study of Work
4. Differential Piece Wage System
5. Mental Revolution

1. Functional Foremanship

- In the factory system, the foreman represents the managerial figure with whom the workers are in face-to-face contact on a daily basis.
- Generally, the foreman is the **lowest ranking manager** and **the highest ranking worker.** He is the pivot around whom revolves the entire production planning, implementation and control. Thus, Taylor concentrated on improving the performance of this role in the factory set-up.
- In fact, he identified a list of qualities of a good foreman/ supervisor and found that no single person could fit them all. This prompted him to suggest **functional foremanship through eight persons**.
- Taylor advocated **separation of planning and execution functions.** This concept was extended to the lowest level of the shop floor. It was known as **functional foremanship**.
- Functional foremanship is an extension of the principle of division of work and specialisation to the shop floor.
- Foremen should have intelligence, education, tact, grit, judgment, special knowledge, manual dexterity, and energy, honesty and good health. Since all these qualities could not be found in a single person so Taylor proposed eight specialists. Each specialist is to be assigned work according to her /his qualities. For example, those with technical mastery, intelligence and grit may be given planning work. Those with energy and good health may be assigned execution work.

Functional Foremanship (Contd.)

- Under the **factory manager there was a planning incharge and a production incharge.**
- **Under planning incharge four personnel** namely instruction card clerk, route clerk, time and cost clerk and a disciplinarian worked. These four personnel would draft instructions for the workers, specify the route of production, prepare time and cost sheet and ensure discipline respectively.
- **Under Production in charge,** personnel who would work were speed boss, gang boss, repair boss, and inspector. These respectively were responsible for timely and accurate completion of job, keeping machines and tools etc., ready for operation by workers, ensure proper working condition of machines and tools and check the quality of work.
- Each worker will have to take orders from these eight foremen in the related process or function of production.



2. STANDARDISATION & SIMPLIFICATION OF WORK

- According to Taylor, scientific method should be used to analyse methods of production prevalent under the rule of thumb. The best practices can be kept and further refined to develop a standard which should be followed throughout the organisation. This can be done through work-study techniques which include time study, motion study, fatigue study and method study. It may be pointed out that even the contemporary techniques of business process including reengineering, kaizen (continuous improvement) and benchmarking are aimed at standardising the work.

- **Standardisation** refers to the process of setting standards for every business activity; it can be standardisation of process, raw material, time, product, machinery, methods or working conditions. These standards are the benchmarks, which must be adhered to during production. The objectives of standardisation are:

- (i) To reduce a given line or product to fixed types, sizes and characteristics.
- (ii) To establish interchange ability of manufactured parts and products.
- (iii) To establish standards of excellence and quality in materials.
- (iv) To establish standards of performance of men and machines.

- **Simplification** aims at eliminating superfluous varieties, sizes and dimensions while standardisation implies devising new varieties instead of the existing ones. Simplification aims at eliminating unnecessary diversity of products. It results in savings of cost of labour, machines and tools. It implies reduced inventories, fuller utilisation of equipment and increasing turnover.

3. Scientific Study of Work

(i) METHOD STUDY

- The objective of method study is to find out **one best way of doing the job**.
- To determine the best way there are several parameters. **Right from procurement of raw materials till the final product is delivered to the customer every activity is part of method study.**
- Taylor devised the concept of ***assembly line*** by using method study. **Ford Motor Company** used this concept very successfully. Even now auto companies are using it.
- The objective of the whole exercise is to minimise the cost of production and maximise the quality and satisfaction of the customer. For this purpose many techniques like process charts and operations research etc are used.
- For designing a car, the assembly line production would entail deciding the sequence of operations, place for men, machines and raw materials etc. All this is part of method study.

3. Scientific Study of Work (Contd.)

(ii) MOTION STUDY

- Motion study refers to the study of **movements like lifting, putting objects, sitting and changing positions etc.**, which are undertaken while doing a typical job.
- Unnecessary movements are sought to be eliminated so that it takes less time to complete the job efficiently.
- For example, Taylor and his associate Frank Gailberth were able to **reduce motions in brick layering from 18 to just 5**. Taylor demonstrated that **productivity increased to about four times** by this process.
- On close examination of body motions, for example, it is possible to find out:

(i) Motions which are productive.

(ii) Motions which are incidental (e.g., going to stores).

(iii) Motions which are unproductive.

Taylor used stopwatches and various symbols and colours to identify different motions. Through motion studies, Taylor was able to design suitable equipment and tools to educate workers on their use. The results achieved by him were truly remarkable.

3. Scientific Study of Work (Contd.)

(iii) TIME STUDY

- It **determines the standard time taken to perform a well-defined job**.
- **Time measuring devices** are used for each element of task.
- The standard time is **fixed** for the whole of the task by taking several readings.
- The method of time study will depend upon volume and frequency of the task, the cycle time of the operation and time measurement costs.
- The objective of time study is to determine **the number of workers to be employed; frame suitable incentive schemes and determine labour costs**.

(iv) FATIGUE STUDY

- A person is bound to feel tired **physically and mentally** if she/he does not rest while working.
- The rest intervals will help one to regain stamina and work again with the same capacity. This will result in increased productivity.
- Fatigue study seeks to determine the **amount and frequency of rest intervals in completing a task**.
- There can be many causes for fatigue like long working hours, doing unsuitable work, having uncordial relations with the boss or bad working conditions etc. Such hindrances in good performance should be removed.

4. DIFFERENTIAL PIECE WAGE SYSTEM

- Taylor was a strong advocate of piece wage system.
- He wanted to differentiate between **efficient and inefficient workers.**
- The **standard time and other parameters** should be determined on the basis of the workstudy.
- The workers can then be classified as efficient or inefficient on the basis of these standards. He wanted to reward efficient workers. So he introduced different rate of wage payment for those who performed above standard and for those who performed below standard.
- For example, it is determined that standard output per worker per day is 10 units and those who made standard or more than standard will get Rs. 50 per unit and those below will get Rs. 40 per unit. Now an efficient worker making 11 units will get l lx50= Rs. 550 per day whereas a worker who makes 9 units will get 9x40 = Rs. 360 per day.
- According to Taylor, the difference of Rs. 190 should be enough for the inefficient worker to be motivated to perform better.

5. MENTAL REVOLUTION

- Mental revolution involves a change in the attitude of workers and management towards one another from competition to cooperation.
- Both should realise that they require one another.
- Both should aim to increase the size of surplus.
- Management should share a part of surplus with workers.
- Workers should also contribute their might so that the company makes profits.
- This attitude will be good for both of them and also for the company.
- In the long run only worker’s well-being will ensure prosperity of the business.

Case 1:

Anshul owns a small scale factory where utility items are prepared from waste material like paper made items, paper and cloth bags, decorative material etc. Over the past few weeks, he was observing that the productivity of one of his very efficient worker, Ramdas, is going down. So he decides to probe into the matter and confronts Ramdas one day. On being asked, Ramdas shares with Anshul that he has deliberately slowed down in his work as many of the less efficient workers often pull his leg saying that there is no need for him to be more efficient when everybody is being paid at the same rate. Taking a lesson from this insight, Anshul decides to implement an incentive bonus plan so as differentiate between efficient and inefficient workers.

In context of the above case:

Name and explain the incentive bonus plan that Anshul may implement so as differentiate between efficient and inefficient workers.

Case 1: Answer

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Answer:

Differential Piece Wage System is the incentive bonus plan that Anshul may implement so as differentiate between efficient and inefficient workers.

Differential Piece Wage System is a performance based wage system which was introduced by Taylor so as to distinguish between the workers who were able to achieve the standard or performed above standard from those who performed below standard. For example, it is determined that standard output per worker per day is 10 units and those who made standard or more than standard will get ~~Rs. 40 p~~er unit and those below will get Rs. 30 per unit. Now an efficient worker making 11 units will get 11 x 40 = Rs. 440 per day whereas a worker who makes 9 units will get 9 x 30 = Rs. 270 per day. According to Taylor, the difference of Rs. 170 should be enough for the inefficient worker to be motivated to perform better.

Case 2

Enigma Coolers are the leading manufacturers in their area. They have decided to increase the productivity of their workers. For this they have chalked out a plan. They will be hiring operational managers who to work at the lower level of management. They have decided to keep eight managers over a single worker. Thus every worker will have to report to all these eight managers.

(1) Which technique of scientific management is followed here?

(2) What will be the benefit?

Answer:
The technique of Scientific Management which is used here is **Functional Foremanship.**
The benefit will be that every worker cannot have all the qualities like intelligence, special knowledge, energy, honesty, etc. Individually each of the functional foremen like gang boss, speed boss, etc. will look after all these qualities.

Case 3:

Borosil Ltd. has decided to become the market leader in selling water bottles. The company decides to take care of all the departments. The top management decides to set standards for all the business activities right from the purchase of raw material to manufacturing and packaging of the water bottles.

Which scientific technique of management is used here? Name three advantages of this technique.

Case 3: Answers

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Which scientific technique of management is used here? Name three advantages of this technique. 4

Answer:

The scientific technique used is **'Standardization'.**

The three advantages of standardization are:

1. Standards of performance of men and machine can be established.
2. Standards of excellence and quality in materials can be established.
3. Machines and their components of standard size can be interchanged over different areas and conditions.

Case 4:

‘Work is Worship’ is a leading construction company. The organisation has grown from strength to strength because of its innovative ideas and scientific approach of working. Ten years back the organisation went through a revolution.

All the operations and activities were properly noticed and the standard time taken to perform them was noted. This took a few months and now the company could find out the amount of workers required and the number of days to be involved in the various manufacturing processes.

A year later they moved to another level by considering the stress involved in the lives of the workers. The amount and frequency of rest intervals in finishing a particular task were noted. This helped the company in optimizing the rest intervals for the workers so that their outputs could be increased.

After six more months the company decided to reward the efficient workers. A different rate of wage payment was decided for those workers who performed above the standard. The standard was decided. This led to a revolutionary change in the perspective of the workers who now started giving their full efforts in order to increase their wages.

Which concept of management has been discussed in the above case? Name the three types of this management concept highlighted above. Also identify the lines where these types have been indicated.

Case 4: Answers

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Which concept of management has been discussed in the above case? Name the three types of this management concept highlighted above. Also identify the lines where these types have been indicated. 4

Answer:

The concept of management which is discussed above in the whole case is **Techniques of Scientific Management.**
The various types of techniques used are:

1. **Time Study.** All the operations and activities were properly noticed and the standard time taken to perform them was noted.
2. **Fatigue Study.** The amount and frequency of rest intervals in finishing a particular task were noted.
3. **Differential Piece Wage System.** A different rate of wage payment was decided for those workers who performed above the standard.

PRINCIPLES OF MANAGEMENT

Evolution of Management Principles

In tracing the history of management, one comes across various schools of thought that have outlined principles to guide management practices. These schools of thought may be divided into 6 distinctive phases:

1. Early Perspectives;

2. Classical Management Theory;

3. Neo Classical Theory - Human Relations Approach;

4. Behavioural Science Approach - Organisational Humanism;

5. Management Science/Operational Research;

6. Modern Management

EARLY PRESPECTIVES

The first known management ideas were recorded in 3000-4000 B.C. One Pyramid built by Egyptian ruler Cheops required work to be done by 100,000 men for over twenty years in 2900 B.C. It covered 13 acres of land and measured 481 meters in height. The stone slabs had to be moved thousands of kilometres of distance. As folklore goes, even the sound of a hammer was not heard in the villages in the vicinity of the site of these pyramids. Such monumental work could not be completed without adherence to principles of sound management.

CLASSICAL MANAGEMENT THEORY

Rational economic view, scientific management, administrative principles, and bureaucratic organisation characterise this phase.

- While the rational economic view assumed that people are motivated by economic gains primarily;
- scientific management of F.W Taylor and others emphasised one best way of production etc;
- administrative theorists personified by Henri Fayol etc looked at the best way to combine jobs and people into an efficient organisation;
- bureaucratic organisation theorists led by Max Weber looked at ways to eliminate managerial inconsistencies due to abuse of power which contributed to ineffectiveness. This was the era of the industrial revolution and factory system of production. Large scale production would not have been possible without adherence to the principles governing organising production based on division of labour and specialisation, relationship between man and the machine, managing people and so on.

NEO CLASSICAL THEORY - HUMAN RELATIONS APPROACH

This school of thought developed between 1920s to 1950s felt that employees simply do not respond rationally to rules, chains of authority and economic incentives alone but are also guided by social needs, drives and attitudes. Hawthorne Studies at GEC etc., were conducted then. It was quite natural that in the early phases of the industrial revolution, the emphasis was on development of techniques and technology. The attention to the human factor was the salient aspect of this school of thought. This attention was to serve as a precursor to the development of behavioural sciences.

BEHAVIOURAL SCIENCE APPROACH - ORGANISATIONAL HUMANISM

Organisational behaviourists like Chris Argyris; Douglas McGregor, Abraham Maslow and Fredrick Herzberg used the knowledge of psychology, sociology and anthropology to develop this approach. The underlying philosophy of organisational humanism is that individuals need to use all of their capacities and creative skills at work as well as at home.

MANAGEMENT SCIENCE/OPERATIONAL RESEARCH

It emphasises research on operations and use of quantitative techniques to aid managers to take decisions.

MODERN MANAGEMENT

It sees modern organisations as complex systems and underlies contingency approach and use of modern techniques to solve organisational and human problems.

PRINCIPLES OF MANAGEMENT:

THE CONCEPT

A managerial principle is a broad and general guideline for decision-making and behaviour. For example, while deciding about promotion of an employee one manager may consider seniority, whereas the other may follow the principle of merit.

One may distinguish principles of management from those of pure science. Management principles are not as rigid as principles of pure science. They deal with human behaviour and, thus, are to be applied creatively given the demands of the situation. Human behaviour is never static and so also technology. which affects business. Hence all the principles have to keep pace with these changes.

NATURE OF PRINCIPLES OF MANAGEMENT

By nature is meant qualities and characteristics of anything. Principles are general propositions, which are applicable when certain conditions are present. These have been developed on the basis of observation and experimentation as well as personal experiences of the managers. Depending upon how they are derived and how effective they are in explaining and predicting managerial behaviour, they contribute towards the development of management both as a science and as an art. Derivation of these principles may be said to be a matter of science and their creative application may be regarded as an art.

These principles are guidelines to action. They denote a cause and effect relationship. While functions of management viz., Planning, Organising, Staffing, Directing and Controlling are the actions to be taken while practising management, Principles help managers to take decisions while performing these functions. The following points summarise the nature of principles of management.

(i) Universal applicability: The principles of management are intended to apply to all types of organisations, business as well as non-business, small as well large, public sector as well as private sector, manufacturing as well as the services sectors. However, the extent of their applicability would vary with the nature of the organisation, business activity, scale of operations and the like. For example, for greater productivity, work should be divided into small tasks and each employee should be trained to perform his /her specialised job. This principle is applicable to a government office where there is a daily / despatch clerk whose job is to receive and send mail or documents, a data entry operator whose task is to input data on the computer, a peon and an officer etc. This principle is also applicable to a limited company where there are separate departments like Production, Finance, Marketing and Research and Development etc. Extent of division of work, however, may vary from case to case.

(ii) General guidelines: The prin-ciples are guidelines to action but do not provide readymade, straitjacket solutions to all managerial problems. This is so because real business situations are very complex and dynamic and are a result of many factors. However, the importance of principles cannot be underestimated because even a small guideline helps to solve a given problem. For example, in dealing with a situation of conflict between two departments, a manager may emphasise the primacy of the overall goals of the organisation.

(iii) Formed by practice and experi-mentation: The principles of management are formed by experience and collective wisdom of managers as well as experimentation. For example, it is a matter of common experience that discipline is indispensable for accomplishing any purpose. This principle finds mention in management theory. On the other hand, in order to remedy the problem of fatigue of workers in the factory, an experiment may be conducted to see the effect of improvement of physical conditions to reduce stress.

(iv) Flexibile: The principles of management are not rigid prescriptions, which have to be followed absolutely. They are flexible and can be modified by the manager when the situation so demands. They give the manager enough discretion to do so. For example, the degree of concentration of authority (centralisation) or its dispersal (decentralisation) will depend upon the situations and circumstances of each enterprise. Moreover individual principles are like different tools serving different purposes, the manager has to decide which tool to use under what circumstances.

(v) Mainly behavioural: Management principles aim at influencing behaviour of human beings. Therefore, principles of management are mainly behavioural in nature. It is not that these principles do not pertain to things and phenomenon at all, it is just a matter of emphasis. Moreover, principles enable a better understanding of the relationship between human and material resources in accomplishing organisational purposes. For example, while planning the layout of a factory, orderliness would require that workflows are matched by flow of materials and movement of men.

(vi) Cause and effect relationships: The principles of management are intended to establish relationship between cause and effect so that they can be used in similar situations in a large number of cases. As such, they tell us if a particular principle was applied in a particular situation, what would be its likely effect. The principles of management are less than perfect since they mainly apply to human behaviour. In real life, situations are not identical. So, accurate cause and effect relationships may be difficult to establish. However, principles of management assist managers in establishing these relationships to some extent and are therefore useful. In situations of emergencies, it is desirable that someone takes charge and others just follow. But in situations requiring cross-functional expertise, such as setting up of a new factory, more participative approach to decision-making would be advisable.

(vii) Contingent: The application of principles of management is contingent or dependent upon the prevailing situation at a particular point of time. The application of principles has to be changed as per requirements. For example, employees deserve fair and just remuneration. But what is just and fair is determined by multiple factors. They include contribution of the employee, paying capacity of the employer and also prevailing wage rate for the occupation under consideration.

SIGNIFICANCE OF PRINCIPLES OF MANAGEMENT

The principles of management derive their significance from their utility. They provide useful insights to managerial behaviour and influence managerial practices. Managers may apply these principles to fulfil their tasks and responsibilities. Principles guide managers in taking and implementing decisions. It may be appreciated that everything worthwhile is governed by an underlying principle.

(i) Providing managers with useful insights into reality: The principles of management provide the managers with useful insights into real world situations. Adherence to these principles will add to their knowledge, ability and understanding of managerial situations and circumstances. It will also enable managers to learn from past mistakes and conserve time by solving recurring problems quickly. As such management principles increase managerial efficiency. For example, a manager can leave routine decision-making to his subordinates and deal with exceptional situations which require her /his expertise by following the principles of delegation.

(ii) Optimum utilisation of resources and effective administration: Resources both human and material available with the company are limited. They have to be put to optimum use. By optimum use we mean that the resources should be put to use in such a manner that they should give maximum benefit with minimum cost. Principles equip the managers to foresee the cause and effect relationships of their decisions and actions. As such the wastages associated with a trial-and-error approach can be overcome. Effective administration necessitates impersonalisation of managerial conduct so that managerial power is used with due discretion. Principles of management limit the boundary of managerial discretion so that their decisions may be free from personal prejudices and biases. For example, in deciding the annual budgets for different departments, rather than personal preferences, managerial discretion is bounded by the principle of contribution to organisational objectives.

(iii) Scientific decisions: Decisions must be based on facts, thoughtful and justifiable in terms of the intended purposes. They must be timely, realistic and subject to measurement and evaluation. Management principles help in thoughtful decision-making. They emphasise logic rather than blind faith. Management decisions taken on the basis of principles are free from bias and prejudice. They are based on the objective assessment of the situation.

(iv) Meeting changing environment requirements: Although the principles are in the nature of general guidelines but they are modified and as such help managers to meet changing requirements of the environment. You have already studied that management principles are flexible to adapt to dynamic business environment. For example, management principles emphasise division of work and specialisation. In modem times this principle has been extended to the entire business whereby companies are specialising in their core competency and divesting non-core businesses. In this context, one may cite the decision of Hindustan Lever Limited in divesting non-core businesses of chemicals and seeds. Some companies are outsourcing their non-core activities like share-transfer management and advertising to outside agencies. So much so, that even core processes such as R&D, manufacturing and marketing are being outsourced today.

(v) Fulfilling social responsibility: The increased awareness of the public, forces businesses especially limited companies to fulfill their social responsibilities. Management theory and management principles have also evolved in response to these demands. Moreover, the

interpretation of the principles also assumes newer and contemporary meanings with the change in time. So, if one were to talk of 'equity' today, it does not apply to wages alone. Value to the customer, care for the environment, dealings with business associates would all come under the purview of this principle.

(vi} Management training, education and research: Principles of management are at the core of management theory. As such these are used as a basis for management training, education and research. You must be aware that entrance to management institutes is preceded by management aptitude tests. Do you think that these tests could have been developed without an understanding of management principles and how they may be applied in different situations? These principles provide basic groundwork for the development of management as a discipline. Professional courses such as MBA (Master of Business Administration}, BBA (Bachelor of Business Administration} also teach these principles as part of their curriculum at the beginner's level.

TAYLOR'S SCIENTIFIC MANAGEMENT

PRINCIPLES OF SCIENTIFIC MANAGEMENT

- In the earlier days of the Industrial Revolution, in the absence of an established theory of factory organisation, factory owners or managers relied on personal judgment in attending to the problems they confronted in the course of managing their work. This is what is referred to as 'rule of thumb'. Managing factories by rule of thumb enabled them to handle the situations as they arose but suffered from the limitation of a trial and error approach. For their experiences to be emulated, it was important to know what works and why does it work.
- For this, there was Principles of Management a need to follow an approach that was based on the method of science - defining a problem, developing alternative solutions, anticipating consequences, measuring progress and drawing conclusions.
- In this scenario, Taylor emerged as the 'Father of Scientific Management'. He proposed scientific management as opposed to rule of thumb. He broke up human activity into small parts and found out how it could be done effectively, in less time and with increased productivity. It implies conducting business activities according to standardised tools, methods and trained personnel in order to increase the output, improve its quality and reduce costs and wastes.
- In the words of Taylor, "Scientific management means knowing exactly what you want men to do and seeing that they do it in the best and cheapest way. The Bethlehem Steel company where Taylor himself worked achieved three-fold increase in productivity by application of scientific management principles. Therefore, it would be in order to discuss these principles.

(i) Science not Rule of Thumb:

- Taylor pioneered the introduction of the method of scientific inquiry into the domain of management practice.
- We have already referred to the limitations of the rule of thumb approach of management. As different managers would follow their indigenous rules of thumb, it is but a statement of the obvious that all would not be equally effective.
- Taylor believed that there was only one best method to maximise efficiency. This method can be developed through study and analysis. The method so developed should substitute 'Rule of Thumb' throughout the organisation.
- Scientific method involved investigation of traditional methods through work-study, unifying the best practices and developing a standard method, which would be followed throughout the organisation.
- According to Taylor, even a small production activity like loading pigs of iron into boxcars can be scientifically planned and managed. This can result in tremendous saving of human energy as well as wastage of time and materials. The more sophisticated the processes, greater would be the savings.
- In the present context, the use of internet has brought about dramatic improvements in internal efficiencies and customer satisfaction.

(ii) Harmony, Not Discord:

- Factory system of production implied that managers served as a link between the owners and the workers. Since as managers they had the mandate to ·get work done' from the workers, it should not be difficult for you to appreciate that there always existed the possibility of a kind of class-conflict, the mangers versus workers.
- Taylor recognised that this conflict helped none, the workers, the managers or the factory owners.
- He emphasised that there should be complete harmony between the management and workers. Both should realise that each one is important.
- *To achieve this state, Taylor called for complete mental revolution on the part of both management and workers.*
- It means that management and workers should transform their thinking. In such a situation even trade unions will not think of going on strike etc. Management should share the gains of the company, if any, with the workers. At the same time workers should work hard and be willing to embrace change for the good of the company. Both should be part of the family.
- According to Taylor, 'Scientific management has for its foundation the firm conviction that the true interests of the two are one and the same; that prosperity for the employer cannot exist for a long time unless it is accompanied by prosperity for the employees and vice versa'.
- Japanese work culture is a classic example of such a situation. In Japanese companies, paternalistic style of management is in practice. There is complete openness between the manage-ment and workers. If at all workers go to strike they wear a black badge but work more than normal working hours to gain the sympathy of the management.

(iii) Cooperation, Not Individualism:

- There should be complete cooperation between the labour and the management instead of individualism.
- This principle is an extension of principle of 'Harmony not discord'. Competition should be replaced by cooperation. Both should realise that they need each other.
- For this, management should not close its ears to any constructive suggestions made by the employees. They should be rewarded for their suggestions which results in substantial reduction in costs. They should be part of management and, if any important decisions are taken, workers should be taken into confidence.
- At the same time workers should desist from going on strike and making unreasonable demands on the management. In fact when there will be open communication system and goodwill there will be no need for even a trade union. Paternalistic style of management, whereby the employer takes care of the needs of employees, would prevail as in the case of Japanese companies.
- According to Taylor, there should be an almost equal division of work and responsibility between workers and management. All the day long the management should work almost side by side with the workers helping, encouraging and smoothing the way for them.

(iv) Development of Each and Every Person to His or Her Greatest Efficiency and Prosperity:

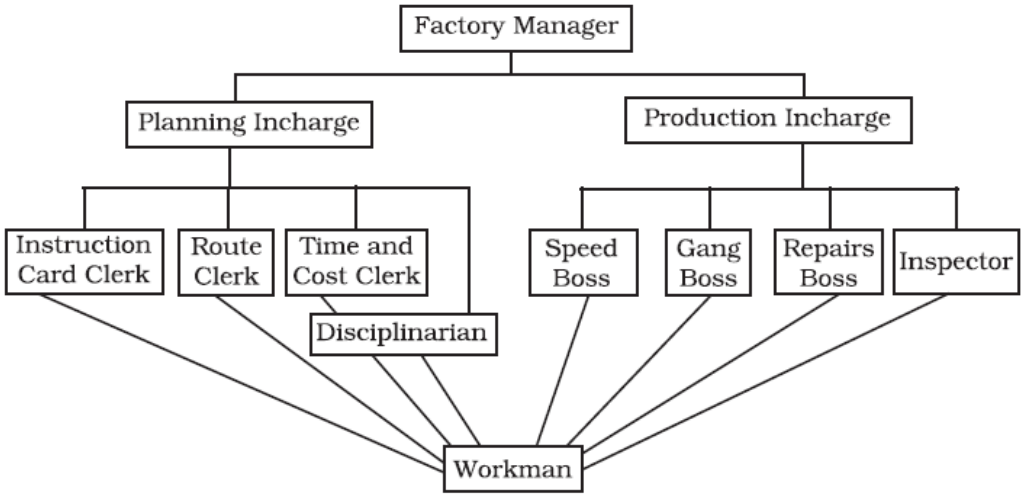
- Industrial efficiency depends to a large extent on personnel competencies. As such, scientific management also stood for worker development. Worker training was essential also to learn the 'best method' developed as a consequence of the scientific approach. Taylor was of the view that the concern for efficiency could be built in right from the process of employee selection. Each person should be scientifically selected. Then work assigned should suit her /his physical, mental and intellectual capabilities. To increase efficiency, they should be given the required training. Efficient employees would produce more and earn more. This will ensure their greatest efficiency and prosperity for both company and workers.

TECHNIQUES OF SCIENTIFIC MANAGEMENT

Functional Foremanship

- In the factory system, the foreman represents the managerial figure with whom the workers are in face-to-face contact on a daily basis.
- Generally, the foreman is the lowest ranking manager and the highest ranking worker. He is the pivot around whom revolves the entire production planning, implementation and control. Thus, Taylor concentrated on improving the performance of this role in the factory set-up.

- In fact, he identified a list of qualities of a good foreman/ supervisor and found that no single person could fit them all. This prompted him to suggest functional foremanship through eight persons.
- Taylor advocated separation of planning and execution functions. This concept was extended to the lowest level of the shop floor. It was known as **functional foremanship**. Under the factory manager there was a planning incharge and a production incharge. Under planning incharge four personnel namely instruction card clerk, route clerk, time and cost clerk and a disciplinarian worked. These four personnel would draft instructions for the workers, specify the route of production, prepare time and cost sheet and ensure discipline respectively. Under Production in charge, personnel who would work were speed boss, gang boss, repair boss, and inspector. These respectively were responsible for timely and accurate completion of job, keeping machines and tools etc., ready for operation by workers, ensure proper working condition of machines and tools and check the quality of work.
- Functional foremanship is an extension of the principle of division of work and specialisation to the shop floor.



- Each worker will have to take orders from these eight foremen in the related process or function of production.
- Foremen should have intelligence, education, tact, grit, judgment, special knowledge, manual dexterity, and energy, honesty and good health. Since all these qualities could not be found in a single person so Taylor proposed eight specialists. Each specialist is to be assigned work according to her /his qualities. For example, those with technical mastery, intelligence and grit may be given planning work. Those with energy and good health may be assigned execution work.

STANDARDISATION AND SIMPLIFICATION OF WORK

- Taylor was an ardent supporter of standardisation. According to him scientific method should be used to analyse methods of production prevalent under the rule of thumb. The best practices can be kept and further refined to develop a standard which should be followed throughout the organisation. This can be done through work-study techniques which include time study, motion study, fatigue study and method study. It

may be pointed out that even the contemporary techniques of business process including reengineering, kaizen (continuous improvement) and benchmarking are aimed at standardising the work.

- **Standardisation** refers to the process of setting standards for every business activity; it can be standardisation of process, raw material, time, product, machinery, methods or working conditions. These standards are the benchmarks, which must be adhered to during production. The objectives of standardisation are:

(i) To reduce a given line or product to fixed types, sizes and characteristics.

(ii) To establish interchange ability of manufactured parts and products.

(iii) To establish standards of exce-llence and quality in materials.

(iv) To establish standards of perfor-mance of men and machines.

- **Simplification** aims at eliminating superfluous varieties, sizes and dim-ensions while standardisation implies devising new varieties instead of the existing ones. Simplification aims at eliminating unnecessary diversity of products. It results in savings of cost of labour, machines and tools. It implies reduced inventories, fuller utilisation of equipment and increasing turnover.

METHOD STUDY

- The objective of method study is to find out one best way of doing the job.
- There are various methods of doing the job. To determine the best way there are several parameters. Right from procurement of raw materials till the final product is delivered to the customer every activity is part of method study.
- Taylor devised the concept of assembly line by using method study.
- Ford Motor Company used this concept very successfully. Even now auto companies are using it.
- The objective of the whole exercise is to minimise the cost of production and maximise the quality and satisfaction of the customer. For this purpose many techniques like process charts and operations research etc are used.
- For designing a car, the assembly line production would entail deciding the sequence of operations, place for men, machines and raw materials etc. All this is part of method study.

MOTION STUDY

- Motion study refers to the study of movements like lifting, putting objects, sitting and changing positions etc., which are undertaken while doing a typical job.
- Unnecessary movements are sought to be eliminated so that it takes less time to complete the job efficiently.

- For example, Taylor and his associate Frank Gailberth were able to reduce motions in brick layering from 18 to just 5. Taylor demonstrated that productivity increased to about four times by this process.
- On close examination of body motions, for example, it is possible to find out:

  (i) Motions which are productive

  (ii) Motions which are incidental (e.g., going to stores)

  (iii) Motions which are unproductive. Taylor used stopwatches and various symbols and colours to identify different motions. Through motion studies, Taylor was able to design suitable equipment and tools to educate workers on their use. The results achieved by him were truly remarkable.

TIME STUDY

- It determines the standard time taken to perform a well-defined job.
- Time measuring devices are used for each element of task.
- The standard time is fixed for the whole of the task by taking several readings.
- The method of time study will depend upon volume and frequency of the task, the cycle time of the operation and time measurement costs.
- The objective of time study is to determine the number of workers to be employed; frame suitable incentive schemes and determine labour costs.

FATIGUE STUDY

- A person is bound to feel tired physically and mentally if she/he does not rest while working.
- The rest intervals will help one to regain stamina and work again with the same capacity. This will result in increased productivity.
- Fatigue study seeks to determine the amount and frequency of rest intervals in completing a task.
- For example, normally in a plant, work takes place in three shifts of eight hours each. Even in a single shift a worker has to be given some rest interval to take her /his lunch etc. If the work involves heavy manual labour then small pauses have to be frequently given to the worker so that she/he can recharge her /his energy level for optimum contribution.
- There can be many causes for fatigue like long working hours, doing unsuitable work, having uncordial relations with the boss or bad working conditions etc. Such hindrances in good performance should be removed.

DIFFERENTIAL PIECE WAGE SYSTEM

- Taylor was a strong advocate of piece wage system.
- He wanted to differentiate between efficient and inefficient workers.

- The standard time and other parameters should be determined on the basis of the work-study.
- The workers can then be classified as efficient or inefficient on the basis of these standards. He wanted to reward efficient workers. So he introduced different rate of wage payment for those who performed above standard and for those who performed below standard.
- For example, it is determined that standard output per worker per day is 10 units and those who made standard or more than standard will get Rs. 50 per unit and those below will get Rs. 40 per unit. Now an efficient worker making 11 units will get l lx50= Rs. 550 per day whereas a worker who makes 9 units will get 9x40 = Rs. 360 per day.
- According to Taylor, the difference of Rs. 190 should be enough for the inefficient worker to be motivated to perform better.