

1. Details of Module and its structure

Module Detail	
Subject Name	Business Studies
Course Name	Business Studies 03 (Class XII, Semester - 1)
Module Name/Title	Principles of Management – Part 3
Module Id	lebs_10203
Pre-requisites	Knowledge about the Techniques of scientific management
Objectives	After going through this lesson, the learners will be able to understand the following: 1) Meaning of scientific management techniques 2) Techniques of scientific management
Keywords	Techniques of scientific management, Functional foremanship, Method study, Motion study, Time study, Fatigue study, Differential piece wage rate system, Mental revolution

2. Development team

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Techniques of Scientific Management

Introduction

The principle of scientific management only tells the philosophy behind the theory, but the important thing is to know how to implement these principles practically. Let us see the example of McDonald's, a fast food chain organization, follows scientific techniques in production, uniformity in different aspects, like standardized food and service, attire they follow are same irrespective of the any country in the world. It has now become a biggest chain restaurant of the world. There are different firms who apply the techniques of scientific management in their own way and result varies according to their application .

Meaning of techniques of scientific management:

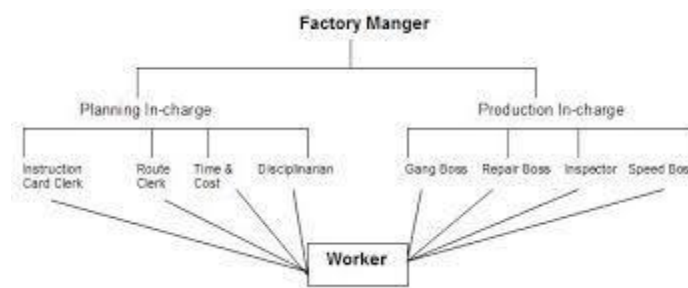
Practical application of principles of scientific management through different techniques to bring efficiency and effectiveness in the organization.

Techniques of scientific management

1) Functional Foremanship

Functional foremanship is an extension of the principle of division of work and specialization to the shop floor. In the factory system, the foreman represents the managerial figure with whom the workers are in face-to-face contact on a daily basis. 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. In fact, F.W. Taylor 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. Under the factory manager there was a planning in charge and a production incharge. Under planning in charge there are four personnel and these four personnel would draft instructions for the workers. Under Production incharge, personnel were responsible for timely and accurate completion of job, keeping machines and tools etc., ready for operation by workers,. 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.



Instruction card clerk: Drafts instruction for workers

- Route clerk: specify the route to workers
- Time and cost clerk: prepare time and cost sheet
- Disciplinarian: ensure discipline
- Role of Foreman under production incharge
- Speed boss: Timely and accurate completion of jobs
- Gang Boss: Keeps Machines and Tools ready
- Repair Boss: Ensure proper working condition of Machines
- Inspectors: Checking the quality of work

2) Standardization and Simplification of Work

Standardization refers to the process of setting standards for every business activity. These standards are the benchmarks.

- a) Taylor advocated that tools & equipments as well as working conditions should be standardized to achieve standard output from workers.
- b) It seems to ensure.
 - There is predetermined type, form, design, size, weight, quality of a product.

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- There is manufacture of identical parts and components.
 - Quality & standards in material have been maintained.
 - Standard of performance are established for workers at all levels.

Simplification aims at eliminating unnecessary varieties, sizes and dimensions.

1. It results in savings of cost of labour, machines and tools.
2. It implies reduced inventories, fuller utilization of equipment and increasing turnover.
3. Most large companies like Nokia,Toyota and Microsoft etc. have successfully implemented standardization and simplification.

This is evident from their large share in their respective markets.

For Example, a paper manufacturing company in USA reduced its varieties from 2000 to 200 which brought positive results for the company .





3) **Work study:**

It ensures maximum production at minimum cost and getting best contribution from every factor:
Time study + Motion study + Method study + Fatigue study.

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.

The objective of the whole exercise is to minimize the cost of production and maximize the quality and satisfaction of the customer.

For ex : For example, for production of shoes there can be labour intensive method and machine intensive method. To find out which one is best, management must evaluate the cost of production with both the methods and compare both the methods with the available resources of the company. The method which involves minimum cost and exploits maximum resources must be selected has the best method of production.





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. she/he can recharge his energy level for optimum contribution. There can be many causes for fatigue like long working hours, doing unsuitable work, having un cordial relations with the boss or bad working conditions etc. Such hindrances in good performance should be removed.

For example , if there are three shifts of work , if after one shift worker gets tired he can be assigned first and third shift and given rest interval in second shift .During one shift also small pauses of rest intervals can be given if it is observed that within a shift workers becomes more fresh with small breaks .



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. The main objective of motion study is to find and eliminate unfit motions among workers. Unnecessary movements are sought to be eliminated so that it takes less time to complete the job efficiently. On close examination of body motions, for example, it is possible to find out:

(i) Motions which are productive

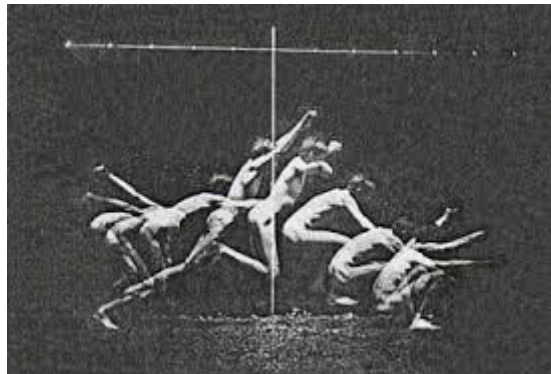
(ii) Motions which are unproductive

- a) In this study, movement of body and limbs required to perform a job are closely observed.
- b) The purpose of motion study is to eliminate useless motions and determine the best way of doing the job.
- c) 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.
- d) Motion study increases the efficiency and productivity of workers by cutting down all wasteful motions.

For example, while observing an average worker, if it is observed that worker has to bend frequently to pick up the tools from the tool box placed under his table, then a stool can be placed near his seat to keep the tool box so that worker does not waste his energy in bending again and again. Same energy he can use for improving his production or efficiency level.



"According to our time-and-motion studies, you handle your time very well but a lot of your motion is wasted."



Time Study

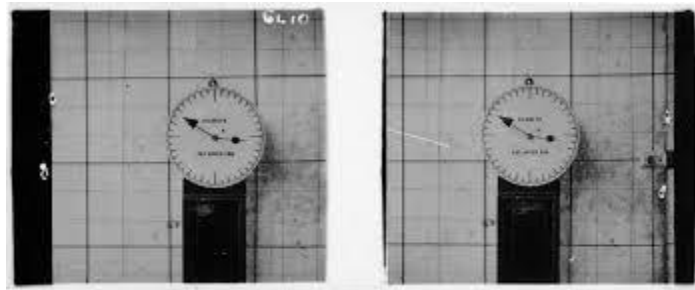
It determines the standard time taken to perform a well-defined job. Time measuring devices are used for each element of task. The standard time is fixed for the whole of the task by taking

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.

For example, on the basis of several observations it is determined that standard time taken by the worker to make one cardboard box is 20 minutes. So in one hour she/he will make 3 boxes. Assuming that a worker has to put in 8 hours of work in a shift and deducting one hour for rest and lunch, it is determined that in 7 hours a worker makes 21 boxes @ 3 boxes per hour. Now this is the standard task a worker has to do. Wages can be decided accordingly.

To conduct time study Taylor suggested observing an average worker when he is performing the job with a stop watch in hand and noting down the average time taken by the worker in completion of job. Taylor suggested repeating the same observations for 100 times and then taking out the average time. This time should be considered the average time for performance of the job. Keeping this time in mind the target for workers should be fixed and the workers who are able to achieve their targets in standard time are average workers.

Standard Time \times Working Hours = Fair Day's Work





Differential Piece Wage System

Taylor was a strong advocate of piece wage system. He wanted to differentiate between efficient and inefficient workers. 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. This technique of wage payment is based on efficiency of worker.

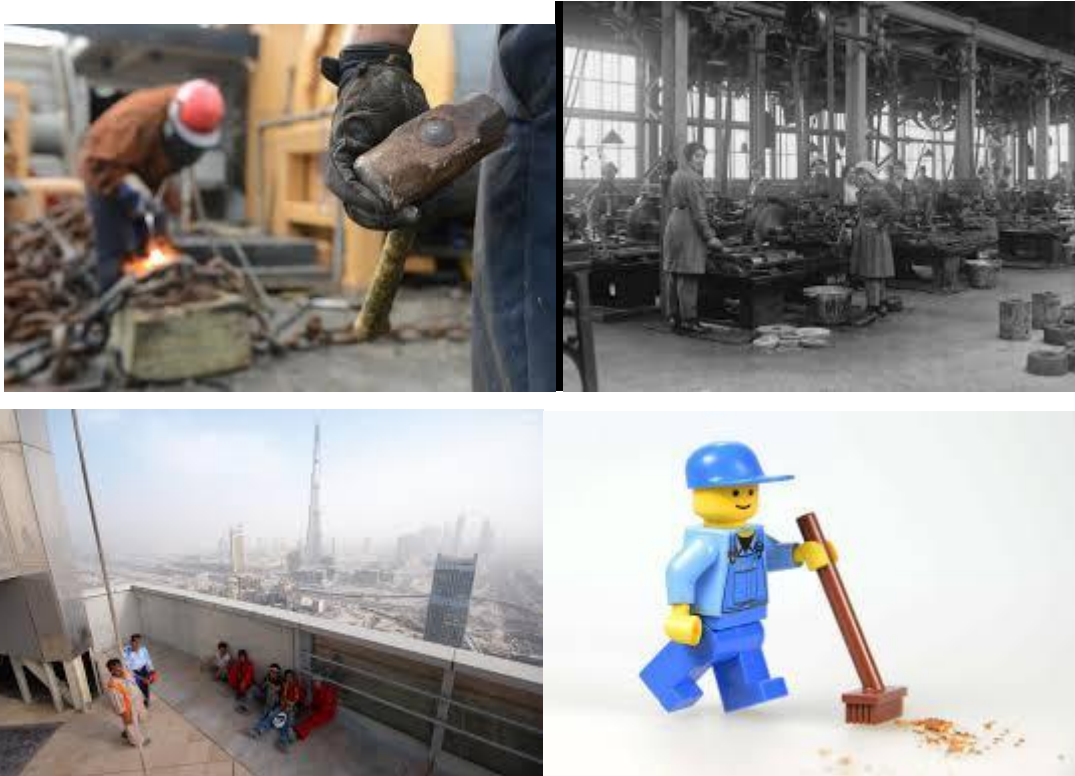
- a) The efficient workers are paid more wages than inefficient one.
- b) On the other hand, those workers who produce less than standard no. of pieces are paid wages at lower rate than prevailing rate i.e. worker is penalized for his inefficiency.
- c) This system is a source of incentive to workers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

For example, If the standard target is 10 units per day and standard rate is Rs. 50 per unit: The worker who is producing 10 units must be paid Rs. 500 (Standard rate * Standard output). The worker who is producing 12 units must be paid with a rate higher than standard rate say Rs. 60 per unit.

So he will receive $12 * 60 = \text{Rs. } 720$ (Higher output * Higher rate). The worker who is producing less than standard output must be taxed and penalized by paying less than standard rate say Rs. 40 per unit.

So he will receive $8 * 40 = \text{Rs. } 320$ (Lower output * Lower rate).

This difference in wages will motivate the workers to become efficient and earn more.



Summary

To conclude ,a company can achieve efficiency and productivity if it follows techniques of scientific management to select best method ,which can determine a fair day's work. Standards should be fixed and act as a yardstick to measure workers performance. Differential wage system will help to motivate workers to work efficiently.

According to him workers must contribute their might for company's growth and in return, management must share their success with workeRs. Taylor referred about the change in the mindset as **mental revolution**.





- A) Change in mental attitudes of workers and management towards each other.
- B) Co-operative between workers and management.
- C) Ruling out feeling of suspicion or prejudice from the minds of workers and management to adapt systematic thinking.

In the next module we will discuss the contribution of Henri fayol in the field of management.