

UNIT-III

Industrial Productivity: Meaning and Definition, Importance
-Factors Influencing Productivity–Rationalization–Aspects
of Rationalization–Scientific Management–Automation–
Benefits–Rationalization in India

What is Productivity?

- Productivity is a measure of how well resources are utilized to produce output
- It relates output to input in any system, where some value addition is performed on the input resource
- $$\text{Productivity} = \frac{\text{Output Obtained}}{\text{Input Expended}}$$

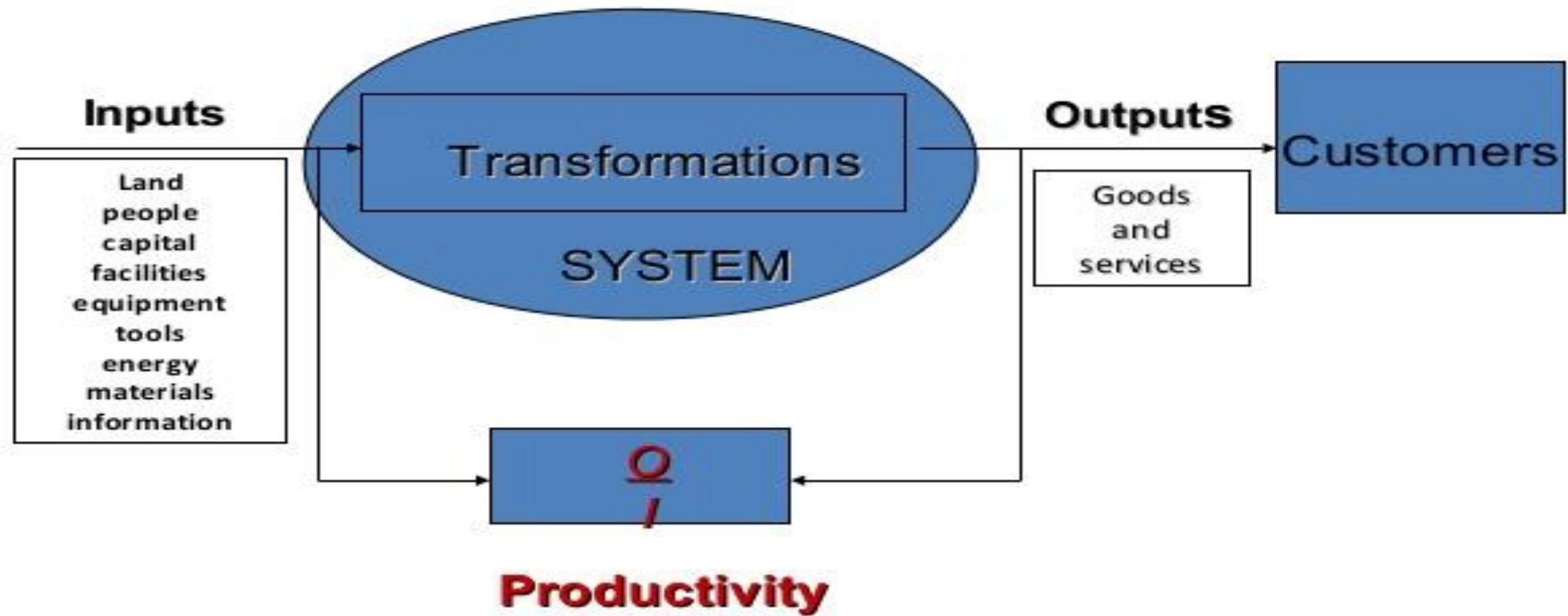
Productivity

The Ratio between “ Output of Work “ and “Input of Resouces “
used in the “Process of Creating Wealth”--- ILO.



It is the ratio between the amount Produced (Output) and the amount of Resources (Input) used in Production by eliminating Waste.

Systems Concept



CONCEPTS OF PRODUCTIVITY

Five Concepts of Productivity :

1. Technical Concept
2. Social Concept
3. Economic Concept
4. Management Concept
5. Intregrated Concept

TECHNICAL CONCEPTS

The term Productivity is a broad concept which involves two major aspects :

$$\text{Productivity} = \text{Output/Input}$$

Output = Product of an operation, or Result of special interest.

Input = Resources Consumed in the production , or Delivery of output.

TECHNICAL CONCEPTS

Drawbacks/problems with Technical Concept :

A. Increase in productivity with poor quality of Output.

B. Increase Labour Productivity due to labor reduction may lead to Labor-Management Conflict.

Overcome : The concept of Productivity as a broad Social Concept has been introduced.

SOCIAL CONCEPTS

Productivity is, above all, an attitude of mind. It seeks to continually improve what already exists. It is based on the belief that One can do things better today than yesterday and better tomorrow than today.

-Asian Productivity Organization.

Summary :

- A. An innate wish of everyone to make tomorrow better than today.
- B. Aims to achieve a better quality of life for all.

ECONOMIC CONCEPTS

Refers to one's ability to create more value for Customer.

For most business Organization, the economic goal and basis for Existance is value Creation.

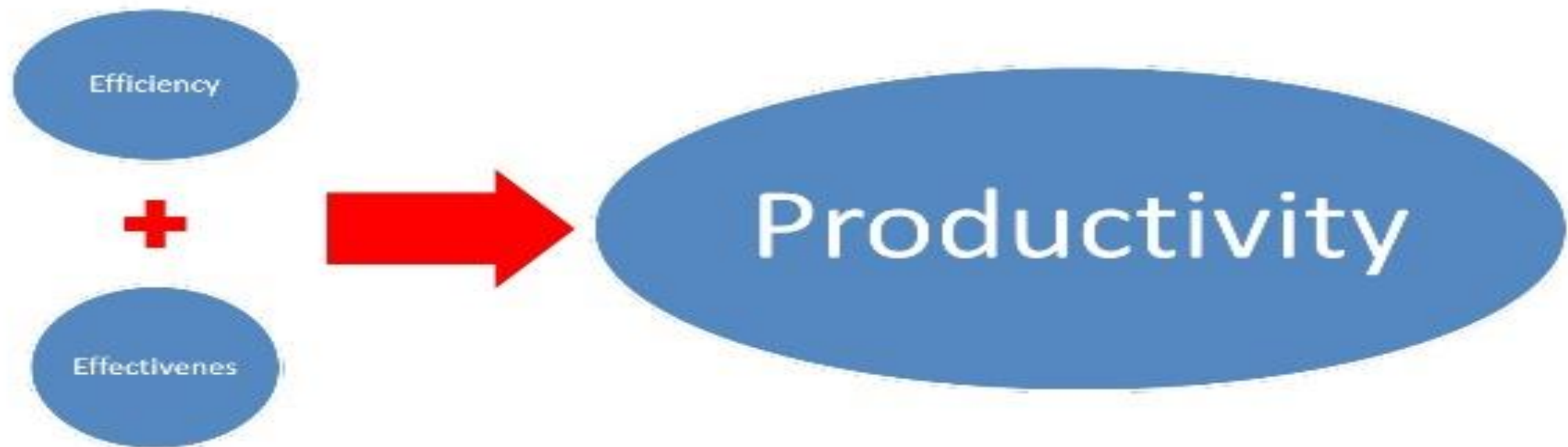
Economic gains is measured in terms of Value added – Increase in Inputs or Improvement in Productivity.

In most cases, Increases in value added are attained through Expansion in Capital and Labor.

However, a productivity driven growth model focuses on Resource Efficiency and Output superiority to create higher value to customers.

Hence. A long-term sustainable growth in the Economy cannot depend on Expansion strategy alone.

MANAGEMENT CONCEPTS



MANAGEMENT CONCEPTS

Productivity is , actually, *Doing the Right Things Right.*

In this Concept, Management need to provides a working Definition to manage and improve productivity at micro or Organization Levels.

EFFICIENCY vs EFFECTIVENES

Efficiency

(Doing the right Things)

Machines can compressed
100000 Tablet/Hour

Effectiveness

(Doing things Right)

90000 Tablet = Good
10000 Tablets = Defective

EFFICIENCY vs EFFECTIVENES

EFFECIENCY vs EFFECTIVENESS

Efficiency:

- Getting the maximum output with minimum input (objective performance)
- Takes into consideration the present state
- Doing things consistently
- Focuses on the process

Effectiveness:

- Measures if actual output meets desired output
- Takes into consideration the long term strategy
- Having desires or innovative ways of working
- Focuses on the results

INTEGRATED PRODUCTIVITY

Productivity = Output/Input

- » As an Objectives ▶ Social Concept.
- » As a Means ▶ Technical Concept.
- » Need to adopt a long term strategy of Productivity-driven Economic Growth ▶ Economic Concept.
- » Improve the quality of Labor and Capital ▶ Management Concept.

Factors affecting Productivity

Ineffective time due to management

- Marketing policy which demands unnecessarily large number of products.
- No standardization of components between as well as within products.
- Failing to meet customer's requirement from the beginning.
- No plan for flow of work.
- Improper supply of material, equipment.
- Improper maintenance of plant and machines.
- Insufficient safety measures.
- Improper working conditions resulting in interrupted work.

Ineffective time within the control of worker

- Taking time off without good cause: by lateness, by idling at work etc.
- Careless workmanship causing scrap or rework.
- Failing to observe safety standards.

Factors affecting Productivity

Work content added due to process

- Incorrect machine (and/or hand tool) used
- Process not operated properly
- Non-optimal layout with wasted movements.
- Working methods of operation causing wasted movements, time and efforts.

Work content added due to the product

- The product or its components are designed such that it is impossible to use most economical manufacturing processes.
- Excessive variety or lack of standardization.
- Incorrect quality standards.

Rationalization:

Rationalization is the reorganization of a company in order to increase its operating efficiency.

This sort of reorganization may lead to an expansion or reduction in company size, a change of policy, or alteration of strategy pertaining to particular products offered.

Similar to a reorganization, a rationalization is more widespread, encompassing strategy as well as structural changes.

Rationalization is necessary for a company to increase revenue, decrease costs and improve its bottom line.

Product Rationalization:

Product rationalization is an important part of managing a product's lifecycle. If products are not rationalized, their numbers continue to increase, adding complexity and increased support costs to the company's bottom line.

- * Product and applications rationalization are two forms of rationalization.
- * Rationalization is done by a company to improve its operations.
- * Company rationalization often entails a change of policy, alternation of products, and it may lead to reducing or adding employees.
- * Often rationalization occurs when a company is seeking to improve its bottom line and improve revenue.

Applications Rationalization:

Engaging in applications rationalization, especially during mergers and acquisitions, helps companies reduce costs, operate more efficiently and focus on supporting deal objectives, legal and regulatory issues, systems and process integration and business continuity.

Most businesses accumulate a vast information technology application portfolio over time, especially when companies grow and do not fully integrate operations and assets with each transaction.

Many applications do not support the company's objectives after each merger or acquisition and need revision to support the new business.

Rationalization of Markets:

In terms of market structure, financial models, theories and technologies that embody these concepts have the force to rationalize markets.

Why Rationalisation?

- Conservation and proper utilisation of resources
- Eliminating unnecessary product varieties
- standardization of products in terms of design, quality, etc
- Eliminating idle capacity
- Replace old machinery

Aspects of rationalization:

Standardization:

One of the essential elements of rationalization is the standardisation that eliminates varieties of products that are unnecessary in the scheme of things, cross weights, and expenses on the competitive advertisement.

Specialization:

Another vital element of rationalization is a specialization that results in fair division of labour and efficient use of the available resources like human resources and machinery

Combination:

As the name suggests, rationalization is a planned strategy that utilizes all the available resources to eliminate waste. It integrates various types of weak and inept units for large scale production.

Simplification:

The rationalization element simplification results in high production with reduced costs and it ultimately leads to increased sales.

Mechanization:

The element mechanization is targeted to replace human resources with machines. It is necessary to boost the efficiency and speed of production because of automated processes.

Modernization:

Rationalization emphasizes on modernization because after a specific time it is imperative to replace old equipment with new ones if a company is interested in boosting its efficiency and productivity. It is modern and advanced innovations as well as techniques that can help a company to take a step forward and that too in the right direction

Research:

The process of rationalization involves proper marketing research that aids in taking the steps needed to know and meet the demands of people.

The advantages of rationalization:

1. Rationalization helps in the standardization of processes that simplify the manufacturing method and eliminates waste
2. It helps in introducing new techniques as well as the latest equipment and machinery that boosts productivity
3. Rationalization aids in avoiding unhealthy competition
4. Enhances the creditworthiness of weaker and inefficient units by integrating them with strong ones
5. Improves market stability
6. The process of rationalization offers higher remuneration and good security to the workforce
7. One of the advantages of rationalization is that it provides the workforce with a chance to develop their efficiency levels
8. It provides the workforce with better working conditions
9. As rationalization lowers the production cost, the consumers can avail of the benefits via reduced prices.
10. The improvement in technique leads to qualitative and standardized products to the consumer
11. Rationalization assist in increasing the standard of living in a society
12. It reduces wasteful competition and helps in conserving resources
13. Rationalization decreases the coat of production, and this helps the companies to compete in foreign markets

Disadvantages of rationalization:

The process of rationalization involves more capital expenses and that too without the guarantee of adequate returns

Raising funds for the process of rationalization from external sources is difficult

Rationalization needs further research and development to continue with the process of improvements, and it is not possible to keep with it every time

The rationalization is about being fair and equitable, but it is unable to determine the sharing ratio between employers and employees

Rationalization promotes mechanization and modernization, and that leads to unemployment of workers because of automated processes

It is a common belief that the human resources that are deployed after the process of rationalization will have to work doubly hard to compete with each other as well as automated processes

Even when working harder the workers feel that they are given nominal income compared to the workload they are handling

The method of modernization and mechanization is becoming more important than improving the living conditions of the workforce

SCIENTIFIC MANAGEMENT

F W Taylor is recognized as the father of scientific management, who attempted to introduce a rational and systematic approach to management.

Emphasis is given to planning, standardising and improving human efficiency at the different operation levels, in order to maximise output with minimum input.

Principles / Elements of Scientific Management

1. Scientific task setting
2. Planning
3. Study of the different works / activities
4. Scientific selection and training of workers
5. Standardising
6. Differential piece-rate system of wages
7. Functional organisation
8. Mental revolution
9. Cost accounting

1. *Scientific task setting*

Standard task is the quantity of work which an average worker can perform under ideal standardised conditions in one day, generally called 'a fair day's work', which for every worker should be fixed after a scientific study.

2. Planning

Planning is the heart of Scientific management as per Taylor. He wanted to set up a Planning Department for every enterprise.

Thus "what to do, when to do, where to do and how to do" is planned before the commencement of the project.

3. Study of work

It is the critical examination of all the factors governing the operational efficiency of any specific activity. Study is conducted regarding the movement of the worker, time taken, fatigue, etc.

Thus the best method of doing a job and the standard time required for its completion is determined.

4. Scientific selection and training of workers

A systematic way for the selection of workers is to be followed, depending upon the nature of work to be done.

Every job must be entrusted to the best worker considering his skill, experience and trainings undergone.

Before appointment the workers are to given an induction training. Proper trainings to update their knowledge in the latest techniques are also to be conducted when ever needed.

5. *Standardisation*

Standardisation of performance, tools, equipments, materials, working conditions, etc. is necessary as per scientific management.

Workers are to be provided with the required tools, materials and the environment, so that the works are executed with the optimum no. of workers, expenditure and time.

The steps involved in STANDARDISATION

1. Establishing standards
2. Appraising performance
3. Taking corrective measures

6. Differential piece-rate system of wages

Financial incentives helps to ensure efficiency and speed of work done by the workers.

A worker is to be rewarded depending upon the efforts put by him for the betterment of the enterprise. This will encourage each and every worker to be committed to the company.

7. Functional Organisation

Planning and production activities are to be separated under different managers. Depending upon the functions the organisational set up is to be divided.

8. Mental Revolution

Scientific management aims at revolutionising the minds of both the workers and the management in such a way that the workers start feeling that the enterprise is their own and they put their heart and soul in the work assigned to them. Management and workers should have mutual respect and work in co-operation.

9. Cost Accounting

It is a direct offspring of scientific management. Right from the first stage of production to the last stage, cost accounting enables the management to plan, organise and to direct the production and marketing of the products in a manner by which it helps in reducing the production and distribution cost and increasing the profit of the enterprise.

Weakness of Scientific Management

Scientific Management is confined to increasing the production and profit of the enterprise and is devoid of human element, the health and welfare of the workers.

Sometimes it gives birth to the workers' trade union movements.