

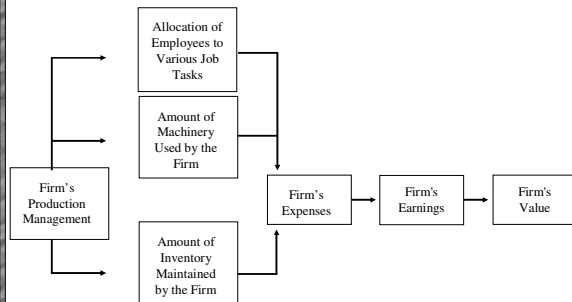
Chapter 9

Improving Productivity & Quality

Learning Objectives

- 1 Identify the key resources used for production.
- 2 Identify the factors that affect the plant site decision.
- 3 Describe how various factors affect the design and layout decision.
- 4 Describe the key tasks that are involved in production control.

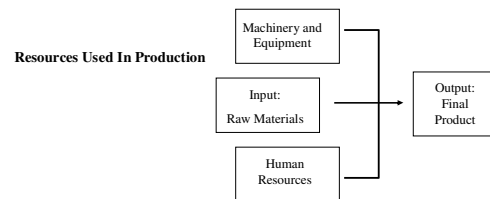
Operations Management



Production

Production Process: a series of tasks in which resources are used to produce a product or service.

Production Management: the management of the process.



Combining Resources for Production



Work station

An area in which one or more employees are assigned a specific task.



Assembly line

Sequence of work stations in which each work station is designed to cover specific phases of the production process.

Factors Affecting the Site Decision



Cost of Workplace Space



Cost of Labor



Tax Incentives



Source of Demand



Access to Transportation



Supply of Labor


Design and Layout

Design: The size and structure of the plant.

Layout: Arrangement of the machinery and equipment within the factory or office.

Factors Affecting Design

Site Characteristics

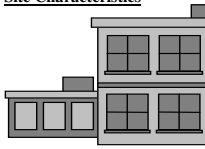


Factors Affecting Design

Production Process

Product layout
Fixed position layout
Flexible manufacturing

Site Characteristics



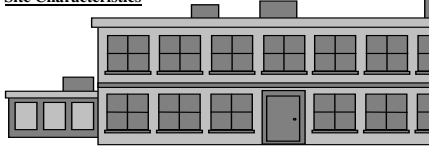
Factors Affecting Design

Production Process

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Fixed position layout
Flexible manufacturing

Product Line

Site Characteristics



Factors Affecting Design

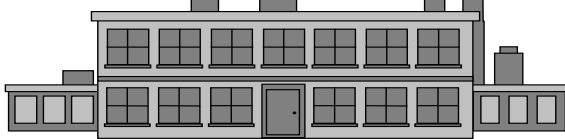
Production Process

Product layout
Fixed position layout
Flexible manufacturing

Desired Production Capacity

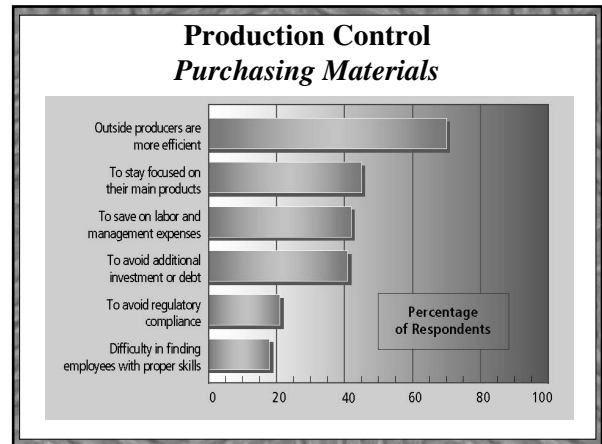
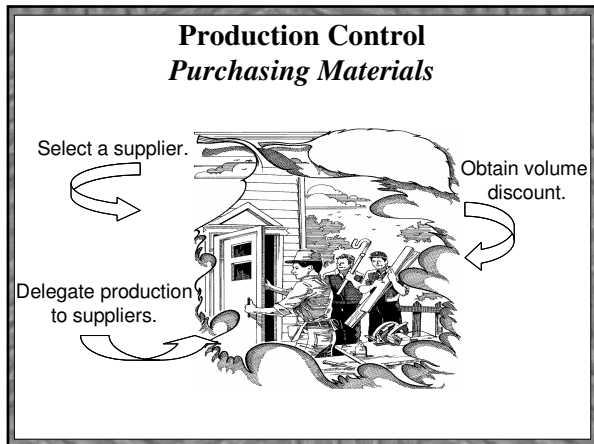
Product Line

Site Characteristics



Five Tasks in Production Control

1. Purchasing materials
2. Inventory control
3. Routing
4. Scheduling
5. Quality control

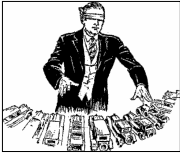


Production Control *Inventory Control*

Inventory control: process of managing inventory at a level that minimizes costs.

This requires control of:

- Materials inventory.
- Work-in-process inventory.
- Finished goods inventory.



Can't work with blinders.

- ### Production Control *Materials Inventory*
- Carrying costs
 - Costs of maintaining inventories.
 - Order costs
 - Costs involved in placing orders.
 - Just-in-time (JIT) system
 - Reduces inventory to a minimum by frequently ordering of materials.
 - Materials requirements planning (MRP)
 - Ensures materials are available when needed.

- ### Production Control *Routing Process*
- Represents the sequence of tasks necessary to complete the production of a product.
 - There is a need to periodically review to determine if things can be improved upon.

- ### Production Control *Scheduling*
- ☑ Production Schedule: a plan for the timing and volume of production tasks.
 - ☑ Techniques used in scheduling:
 - Gantt chart
Expected timing for each task in the process.
 - PERT chart
Schedules tasks to minimize delays in the process.

Production Control Quality Control

- ☑ Process of determining whether the quality of a product or service meets the desired quality level.
- ☑ Identify improvements that may be needed in the production process.

Total Quality Management(TQM)

Total quality management: program which improves production quality and efficiency by allowing employees to take more responsibility in the entire process

- Developed by W. Edwards Deming.
- Initially used extensively in Japan.
- Stresses the need for the firm to measure quality from the customer's point of view.
- The goal, increasing customer satisfaction.

TQM and Three Key Guidelines

- ❶ Provide managers and other employees with the education and training for them to excel in their jobs.
- ❷ Encourage employees to take responsibility and to provide leadership.
- ❸ Encourage all employees to search for ways to improve the production process.

TQM Steps

- ❶ Specify desired quality level.
- ❷ Achieve desired quality level.
- ❸ Control quality level.

TQM and Specifying the Desired Quality Level

- Define quality.
- Determine resources needed.
- Assess demand for products.
- Determine quality level.

TQM and Achieving the Desired Quality Level

- Organize employee teams.
- Use higher-quality raw materials.
- Train employees to achieve quality.

TQM and Controlling the Quality Level By

- Computers.
- Employees.
- Sampling.
- Monitoring complaints.
- Surveys.
- Correcting deficiencies.

Two Ways to Evaluate Achievement of Efficiency

- 1 **Benchmarking:** evaluating performance by comparison to some specified level (benchmark).
- 2 **Stretch targets:** efficiency goals that cannot be achieved under present conditions.

Methods for Improving Efficiency

- Technology: new machinery, automation.
- Economies of scale: striving to reduce cost by increasing volume.
- Restructuring: either by reengineering or downsizing.



Economies of Scale and Costs

Fixed costs:

Operating expenses that do not change with the volume produced.

Variable costs:

Operating expenses that vary directly with the volume produced.

Efficiency and Break-Even Point

Break-even point: the volume at which total revenue equals total cost.

