Garment Production Management

Week 1

Introduction to Production and Operations Management

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Course Description

The main focus of this course is:

- Study production management principles tailored to the garment manufacturing business
- Manufacturing strategies and production planning
- Production systems, layout planning, work measurement, inventory control, and technology management
- Production management challenges and strategic decision making
- Effective planning, execution, and control of facilities

Lecture Learning Outcomes

1. Understand operations and production management concepts
2. Understand the difference between operations and production management
3. Describe the benefits of production/operation management
4. Identify different production systems
5. Analyze the difference between production systems

Introduction

Outline

- Introduction to Operations Management
- Historical Enablers to Operations management
- Functions and Activities in Operations Management
- Introduction to Production Management
- Benefits of Production Management
- Classification of Production Systems

Introduction to operations management

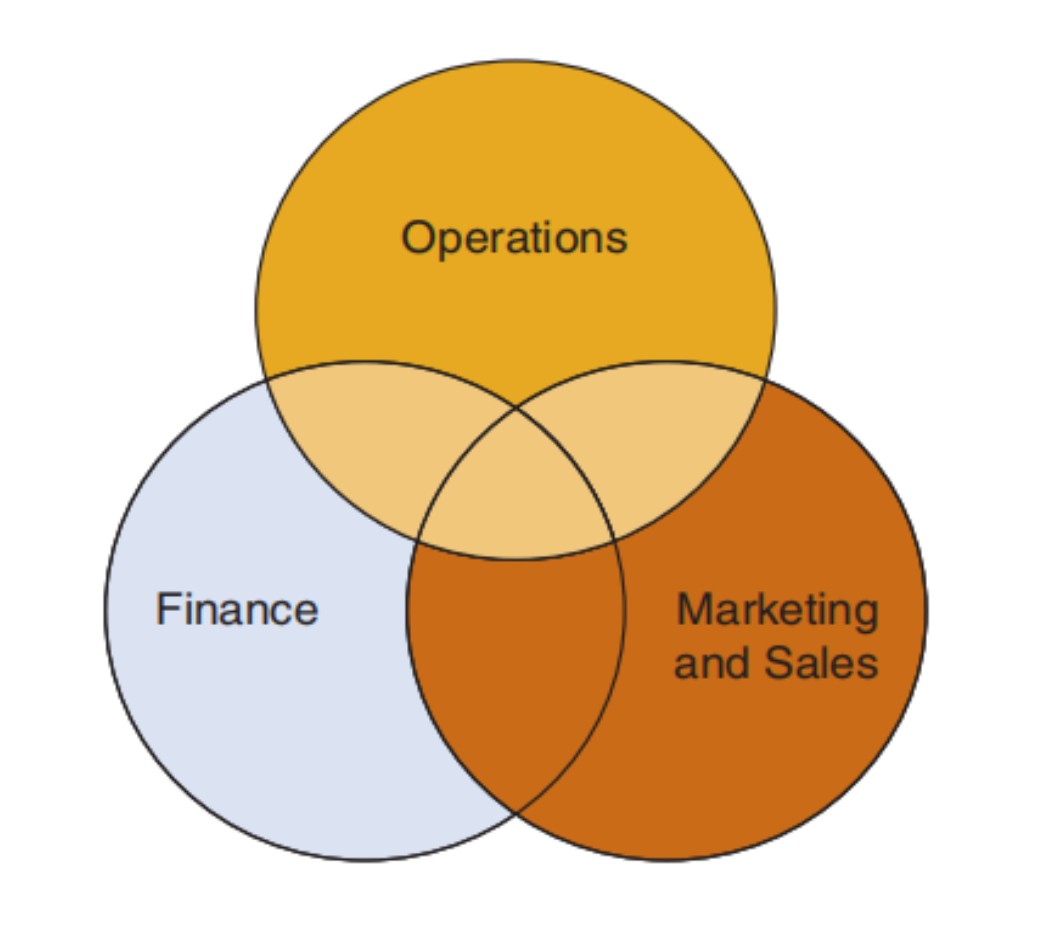
Operations management

- Management of systems or processes that create goods and/or provide services [1]
- Responsible for managing the core activities in an organization

Supply chain

- Sequence of activities and organizations involved in producing and delivering goods/services
- Operations and supply chains are related activities

Introduction to Operations Management



Operations

- It is part of a business organization responsible for producing goods and delivering services

Figure 1: Three basic functions of business organizations

Source: Stevenson, W. J., & Sum, C. C. (2014). *Operations management* (Vol. 8). New York, NY: McGraw-Hill/Irwin. pp. 10. url: https://encrypted-tbn2.gstatic.com/images?q=tbn:ANd9GcR-qRNtV2zc1HpFO9do5aufLkaAj9Iisp8eVcnOKCFOq8sQww8L

Historical Enablers

The Industrial Revolution [Late 1700s and early 1800s]

- Began in **Great Britain**, quickly spread to other **European countries** and to **United States**

Post Civil War

- Production capacity increased tremendously **(hand labor replaced by machine)**

Scientific Management of Work [1909]

- The principles of Scientific Management book by **F.W. Taylor**

Human Relations Movement [1927 until 1932]

- To improve relationships between workers and management
- **Authoritarian and Participatory** Management theories emerge in 1960s

Historical Enablers

Operations Research [during WWII]

- To solve complex and very difficult strategical and tactical problems

Service Revolution [After WWII]

- A shift from production management to operations management

Computer Revolution

- Transform operations management in different aspects.
- E.g. Forecasting accuracy, inventory control, simulation of production systems and other to solve business problems

Operations Management

Scope of operations management:

- Product and Service Design
- Process Selection
- Technology Selection and Management
- Design of Work Systems
- Location Planning
- Facility & Layout Planning
- Product/ Service Quality Improvement

Operations Management

Facilities in Business Operations

- Warehouses
- Factories
- Processing centers
- Offices
- Distribution centers
- Retail outlets

Functions and Activities

- **Forecasting:** Anticipating actual demand for future
- **Capacity planning:** Balance resource and demand
- **Location Planning:** Evaluate potential site for a business
- **Procurement:** Purchasing of materials, accessories, supplies, and equipment
- **Facilities and layout Planning:** Effective use of workers and equipment
- **Scheduling:** Improve resource efficiency & customer satisfaction

Functions and Activities (cont..)

- **Inventory Management:** Avoid stockouts & excess inventory
- **Information management:** Control the flow of information
- **Quality Assurance:** Comply to requirements (standards and customer needs)
- **Employee management:** Training, motivation and involvement
- **Production, Distribution and Delivery:** Follow up production and delivery of products
- **Customer Relationship Management:** Customer services and feedback

Process Management

- A key dimension of operations management
- Plays a central role in all business management activities
- Core business activities require a continuous process of:
  - Planning
  - Organizing
  - Controlling

Aspects of Operations Management

Business processes:

- **Upper-management processes:** Govern the operation of the entire organization
  - E.g. Organizational governance & Organizational strategy
- **Operational processes:** Core processes that make up the value stream
  - E.g. purchasing, production and/or service, marketing, and sales
- **Supporting processes: S**upport the core processes
  - E.g. Accounting, Human resources (HR), and Information technology(IT)

Decision making in Operations Management

Key decisions

What: What resources will be needed, and in what amounts?

When

- When will each resource be needed?
- When should the work be scheduled?
- When should materials and other supplies be ordered?
- When is corrective action needed?

Where: Where will the work be done?

How:

- How will the product or service be designed?
- How will the work be done (organization, methods, equipment)?
- How will resources be allocated?

Who: Who will do the work?

Production Management

Production Management

Production:

- Conversion of one form of material into another to create or enhance the utility of the product to the user
- It is a value addition process
- A process through which raw materials are converted into finished product
- It transforms inputs (raw materials, labor, money, management, etc.) into outputs (goods and services)

Production Management Cont…

Production Management:

- Application of management principles to the production function [3]
- Effective planning, organizing, directing, & controlling the conversion of inputs into finished products
- It includes responsibility for:
  - Product and Process Design
  - Planning and Control of Capacity and Quality
  - Organization and Supervision of the Workforce

Production Management Cont…

- **Responsibilities of production manager** [6 M's]
  - **Men:** Employee or manpower management
  - **Machines:** Machine and equipment management to enhance utilization
  - **Methods:** Manufacturing methods, processes and production systems
  - **Materials:** Material utilization and optimization
  - **Money:** Production cost control and financial savings
  - **Management of Process:** Plan and control the manufacturing process

Production Management

Objectives

It deals with decision-making related to the production process

- Produce goods or services (Quality and Quantity)
- Delivered products/ services as per the agreed deadline (Time)
- Produced at a minimum cost (Cost)

Benefits of Production Management

- Good quality products at affordable price **(Customers)**
- Increase productivity ➔ increase profitability ➔returns on investment (**Organizations)**
- Better productivity of workers ➔ job satisfaction and improve morale **(Employees)**
- Enduring relationship among companies and their suppliers **(Suppliers)**
- Economic and social stability for the community **(Society)**
- Welfare & prosperity of a nation through effective

  economical use of natural resources **(Nation)**

Production Vs. Operations Management

Production Management

- Manage the conversion of raw materials into finished products
- Focus only on organizations producing goods
- Ensures right product quality in the right quantity at the best price and right time

Operations Management

- Manage all activities of an organization manufacturing of goods and delivering services
- Focus on organizations producing goods & delivering services
- Best utilization of the organizational resources to meet the customer's wants and needs and business goals

Production Systems

Classifications of Production Systems

- A set up that consists of machines and equipment, facilities to transform inputs in to final outputs through Processes and technology
- Focus on system aspects of production
- Combines three important components
  - Input (Man, machine, equipment and tools, & money)
  - Conversion process
  - Output (Goods and services)

Classifications of Production Systems

Production systems are broadly classified as intermittent and continuous

The classification depends on:

Volume of production: The quantity produced at one production cycle

Variety of products: How flexible is the production system to produce variety of styles.

Flow of production: Measures the continuity of production run (continuous or regular intervals)

Classifications of Production Systems

Intermittent Production:

- Production start and end at regular intervals
- Production in smaller scale
- Produce variety of products
- Flexibility of production
- Made to order production
- Example: Designer clothing business tailored to individual customers

Classifications of Production Systems

Continuous Production:

- Uninterrupted production with continuous supply of inputs/raw materials
- Made to stock anticipating future demand
- Highly automated and expensive production system
- Due to volume production, per unit cost is low
- Better equipment and raw material utilization
- High standardization
- **Examples:** Chemical processing plant, Cement production, Ready made garment businesses

Intermittent Production

Job Shop (unit production)

- High variety of products: different products may require different functions
- Low volume: Suitable for small order sizes
- High flexibility: General purpose machineries
- High cost per unit: Due to low utilization efficiency

Batch Production:

- Produced in batches with medium volume
- Medium Variety of products
- Medium flexibility of the production system
- Less cost per unit compared to job shop

Job Shop

Advantages

- A wide variety of products to customers
- Workers are more skilled
- Limited resources and workers make management easier
- Process flexibility and creativity to generate unique output

Disadvantages

- High cost of production due to small-scale production
- Longer lead time due to setup changes
- Under-utilization of equipment
- Highly skilled manpower required

Batch Production

Advantages

- General-purpose machines
- Risk can be compensated among production batches
- Better resource utilization
- Compared to unit production Per-unit cost is lesser

Disadvantages

- Requires specific machines and fixtures
- High cost of raw material sourcing
- High work-in-progress (WIP)
- longer lead time due to set up changes

Continuous Production

Mass Production

- High production volume
- Low variety
- Low Flexibility
- Low Cost per unit

Continuous or Flow Production

- Very high volume
- Very low variety
- Very low Flexibility
- Very low Cost per unit

Mass Production

Advantages

- Less cycle time
- Automated material handling
- Low work in progress
- Low cost of production

Disadvantages

- Problem at one stage disrupt the entire production
- Needs line layout changes with the change in product design
- Capital intensive investments

Continuous Production

Advantages

- Less waste
- Workers are semi-skilled Higher profit
- Constant process flow

Disadvantages

- Less flexible
- Product differentiation is limited (identical products)
- Not able to fulfill individual demand

Classifications of Production Systems

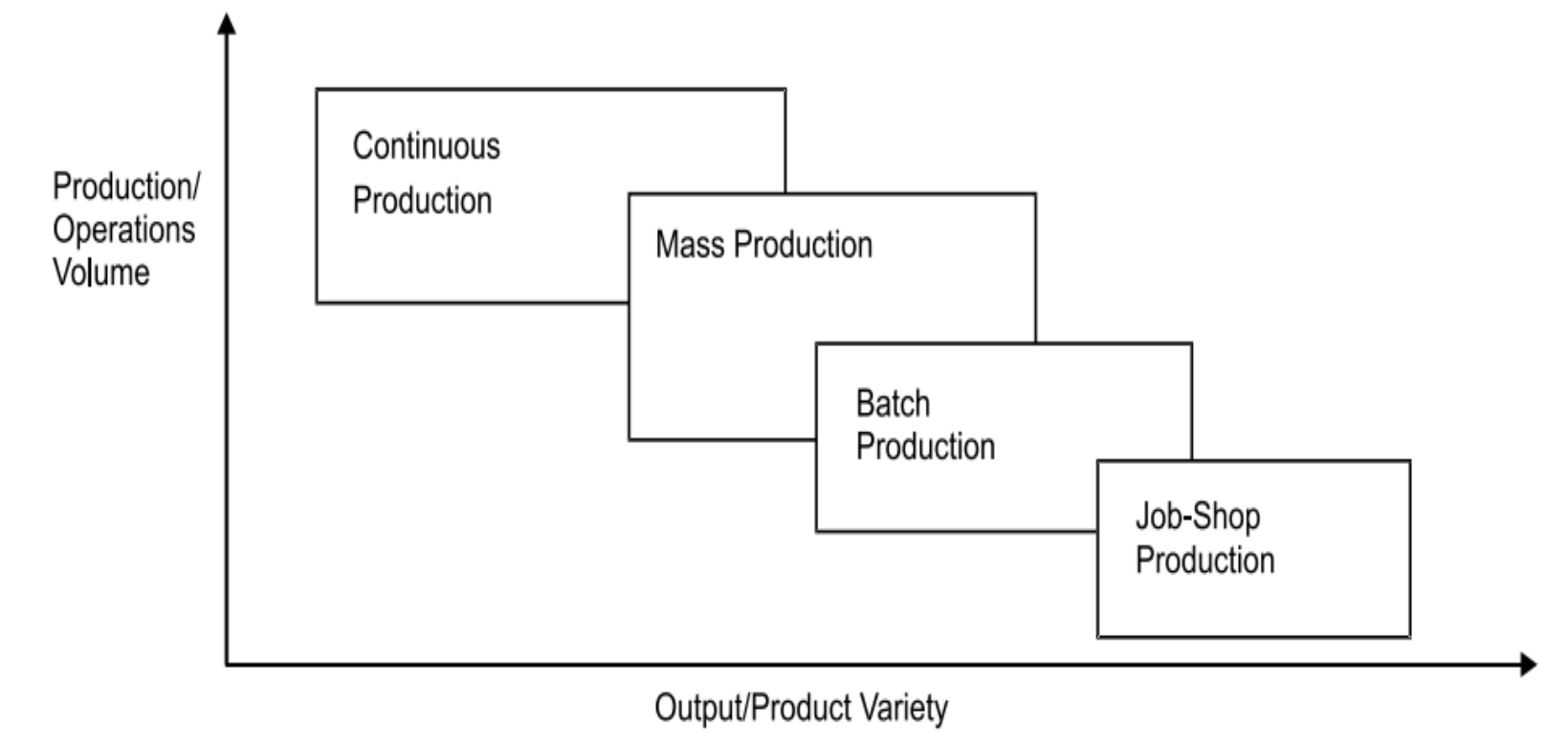


Figure 3: Classification of Production Systems

Source: Production Systems and Operations Management 1.0 Introduction 1.1 Related Issues of Operations Management. url:https://www.semanticscholar.org/paper/Production-Systems-and-Operations-Management-1.0-of/7dbec389c32e0eecb28678f15ca91b87b3d8bbc2/figure/3

Summary

- Production and operations management is an important function in business organizations
- Production management focuses on the **main value addition** processes
- Operations management overseas the **core activities** of the organization
- Operations management has wider scope and involves various activities and organizations
- Production systems can be Intermittent (Job shop & Batch production) or

continuous (Mass production and Continuous production)

References

[1] Stevenson, W. J. and Sum, C. C. ”*Operations management”* (Vol. 8). New York, NY: McGraw-Hill/Irwin, 2014, pp.4

[2] Kumar, S. A., and Suresh, “*Production and operations management”,* New Age International, 2006, pp. 8

[3] Halevi, Gideon. “*Handbook of production management methods”*. Elsevier, 2001, pp.59

Thank You !

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