Operations Management I

Operations Management – Overview

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Operations Management – Overview

Process and Value Chains

- Definitions
- Differences between manufacturing and service processes

Operations Management

- Definition
- Basic objectives
- Decisions

Krajewski and Ritzman, 2005, **Operations Management,** Prentice Hall. **(Chapter 1)**

Hopp and Spearman, 2008, **Factory Physics**, McGraw Hill. **(Chapter 1)**

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Process and Value Chains

Process (1)

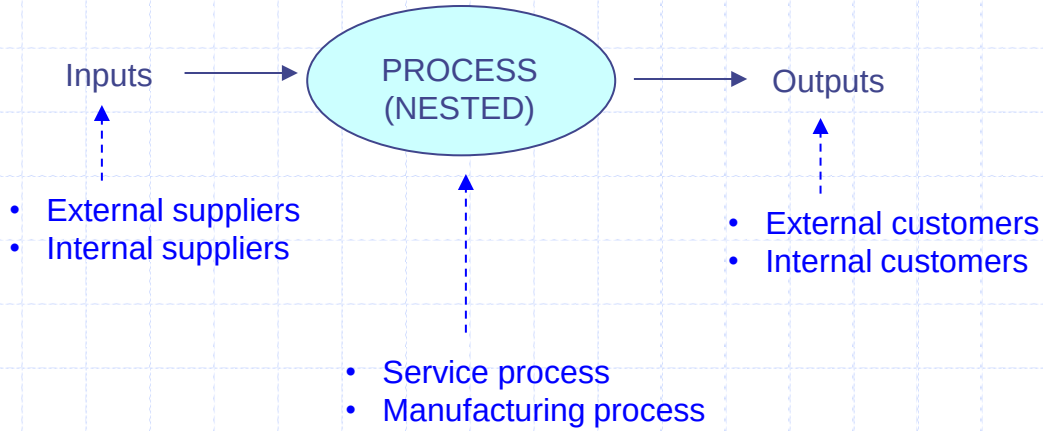
- Definition

  Any activity or group of activities that takes one or more inputs, transforms and add value to them, and provides one or more outputs for its customers (Krajewski and Ritzman, 2005)

  ◄---- Every business is composed of a set of processes.

  ✓ Process view

  c.f., BPR (business process reengineering)
  BPM (business process management), etc.



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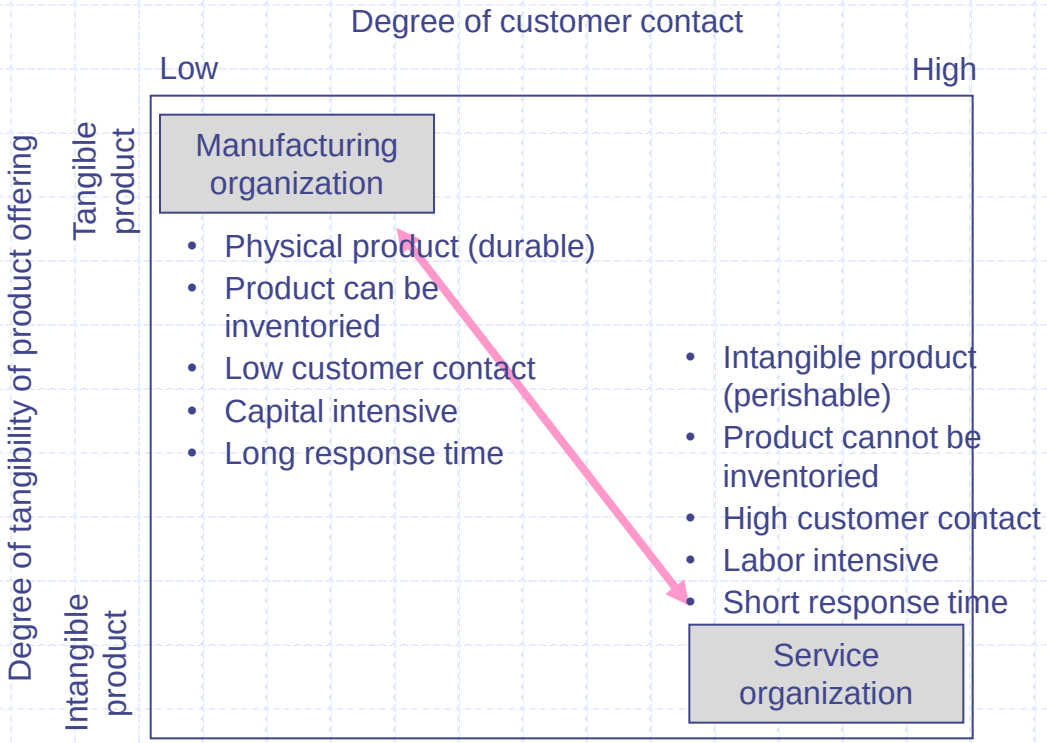
Process and Value Chains

Process (2)

- Differences between manufacturing and service processes (Dan Reid and Sanders, 2005)
  - ✓ Product tangibility
  - ✓ Degree of customer contact



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Process and Value Chains

Value Chains (가치사슬)

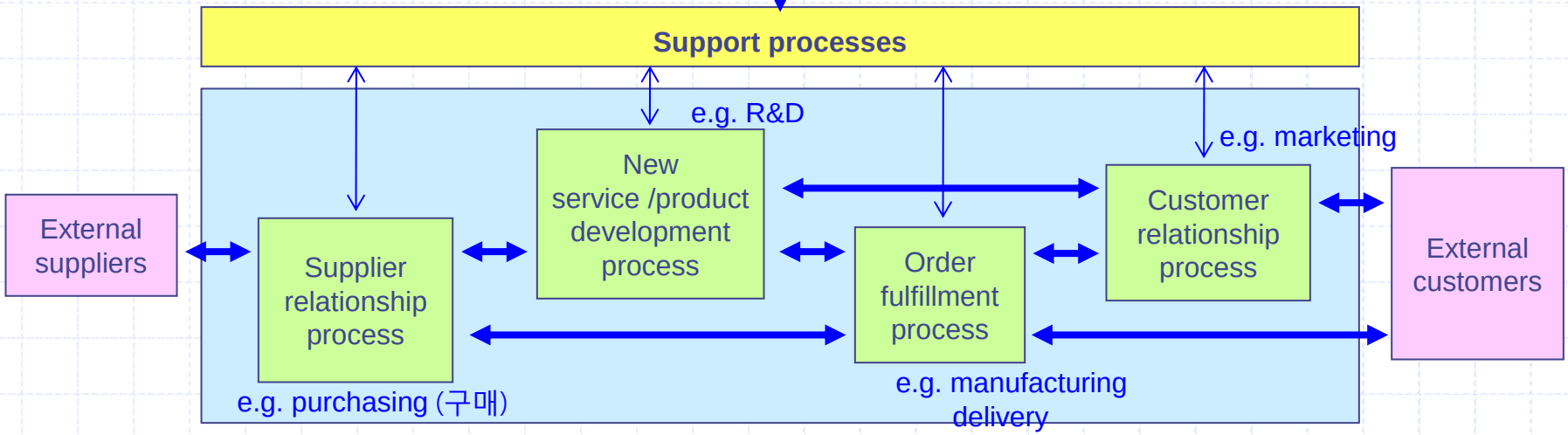
- Definition

  Interrelated series of processes that produce a service or product
  (Krajewski and Ritzman, 2005,)

  Each activity in a process should add value to the preceding activities.

✓ Types of processes in a value chain

Provides vital resources and inputs to the core processes (budgeting, recruiting, scheduling, etc.)



Core processes

A chain of activities that delivers value to external customers

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Operations

- Definition
  - ✓ Broad sense (process)

    Application of resources to the production of goods and services

    ◄---- Resources: capital, equipment , materials, technology, human skills, knowledge, etc.

    ⟵ All organizations involve operations.
    - Factory produces physical goods.
    - Hospitals perform surgical and other medical operations.
    - Banks perform checking account transactions and other financial services.
  - ✓ Narrow sense (production)

    Specific function in an organization

    ⟵ Every business is managed through three major functions.
    - Major functions: marketing, operations (production), finance
    - Supporting functions: accounting, purchasing, human resources, engineering, etc.

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Management (1)

- Definition

  Process of developing decisions and taking actions to direct the activities of people within organizations towards common objectives

- Approaches

  ✓ Behavioral approach

  Managers lead the activities of an organization by working through other people to get things done.

  ◄---- human relation, interpersonal relationships, communication and organizational behavior

  ✓ Decision making ◄---- Focus of operations management under the IE viewpoint

  Managers make decisions that guide operating systems toward organizational goals (scientific methodology)

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Operations Management

Management (2)

- Decision making
  - ✓ Characteristics of decisions

    Appropriateness of a given type of analysis depends on
    - ➢ Significance of the decision

      Significant or long-lasting decisions deserve more consideration than trivial or routine ones.
    - ➢ Time and cost limitations

      Time availability and the cost of analysis influence the amount of analysis.
    - ➢ Degree of complexity

      Decision complexity increases when
      - many variables are involved
      - variables are highly interdependent
      - data are incomplete or uncertain.

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Operations Management

Management (3)

- Decision making

✓ Basic steps

A brilliant solution to the wrong problem doesn't help much.

Step 1. Problem definition

- ➢ Defining the problem (scope)
- ➢ Establish the decision criteria ← single vs. multiple objectives

Step 2. Modeling

- ➢ Models describe the essence of a problem or relationship by abstracting relevant variables from the real world situation. ← Types of model
  - ✓ Verbal: words and descriptions
  - ✓ Physical: modified scale
  - ✓ Schematic: diagrams and charts
  - ✓ Mathematical: equations and numbers

Step 3. Problem solving

- ➢ Generate alternatives by varying the values of the parameters
- ➢ Evaluate the alternatives and select the alternative that best satisfies the criteria (optimization)

← Optimal vs. heuristic solutions

Step 4. Implementation and monitoring

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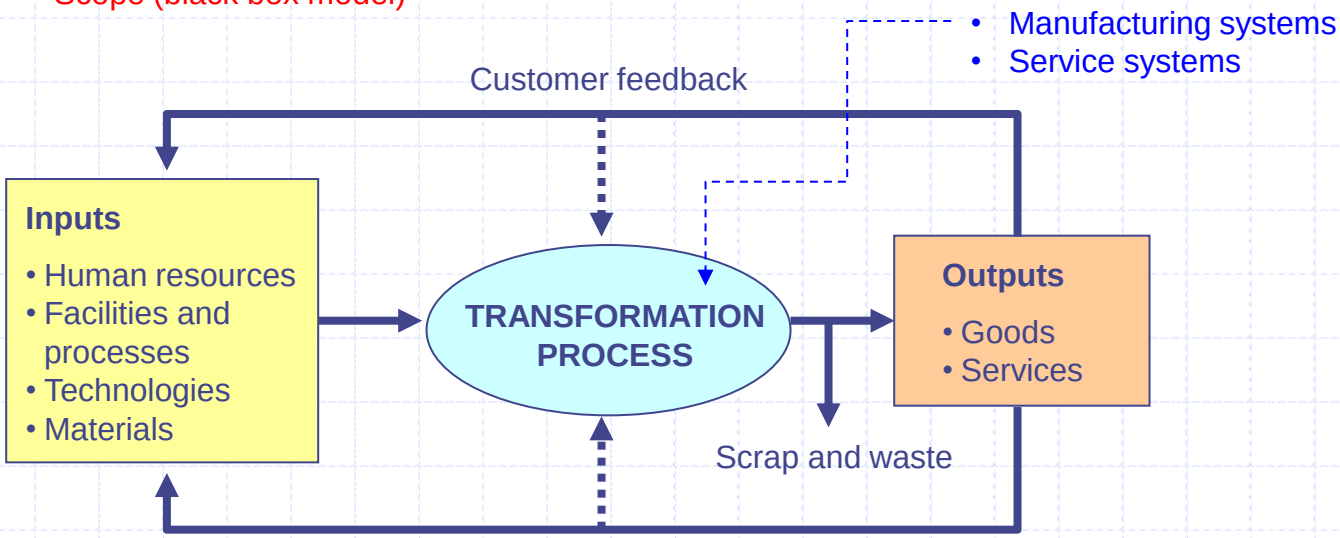
Operations + Management (1)

- Definition

Systematic design, direction, and control of processes that transform inputs into services and products for internal and external customers

Management of an organization's productive resources (decision making in production/service systems)

✓ Scope (black box model)



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Operations + Management (2)

- Basic objectives

✓ Cost (원가)

➢ Low cost operations

<- • Efficient utilization of labor, material, and equipment
• Volume enhancement

✓ Quality (품질) <- • External quality by customers
• Internal quality at each step in the manufacturing process

➢ Top quality
➢ Consistent quality

✓ Time (시간)

➢ Delivery speed
➢ On-time delivery
➢ Development speed

✓ Flexibility (유연성) <- Availability of degrees of freedom in a certain decision making situation

➢ Customization
➢ Variety
➢ Volume flexibility

Relative importance of these objectives varies from one firm to another.

<- Strategic issue

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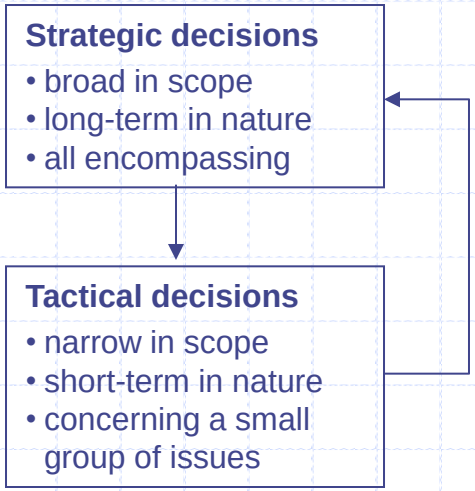

Operations Management

Contents (1)

- Operations strategy ◄----- **OM I (운용관리 I)**

  What are the unique features of the operation that will make it competitive?

- Design problems (strategic decisions)

  Decisions that set the direction for the entire company
  (broad in scope and long term in nature)

  ✓ Product design (제품설계) ◄----- **CIMS (첨단생산시스템) : CAD, Concurrent Engineering, etc.**

  What are the unique features of the product?

  ✓ Process design (공정설계)

  ➢ Location analysis
  ➢ Facility layout
  ➢ Factory physics (basic laws for system operations)
  ➢ Job design and work measurement ◄--------- **Work Study (작업관리)**
  ➢ Resource planning ◄---------- **OM I (운용관리 I)**
  ➢ Project management

OM II (운용관리 II) ----►

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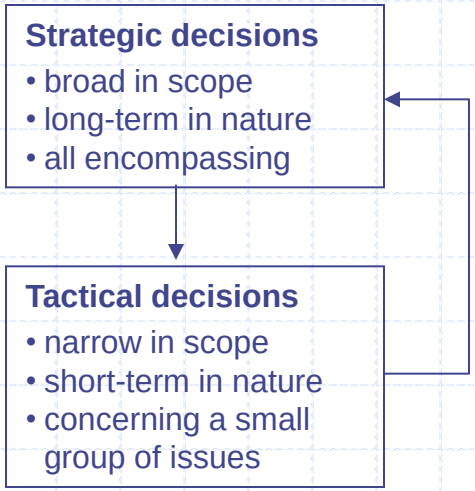

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OM I (운용관리 I)

Contents (2)

- Operational problems (tactical/operational decisions)

  Decisions that are specific and short term in nature and are bound by strategic decisions (narrow in scope and short term in nature)

  ✓ Demand forecasting

  What is the expected demand for the product?

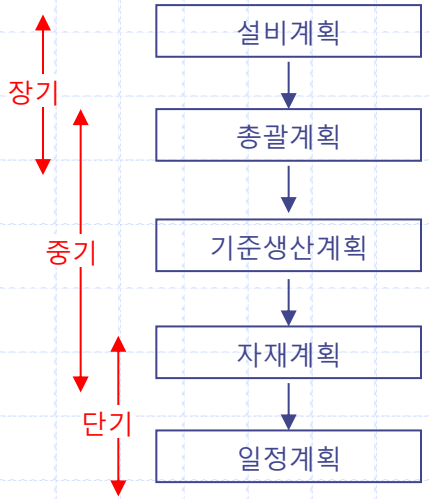
  ✓ Production planning and scheduling

  ➢ Aggregate planning
  ➢ Master production scheduling (MPS)
  ➢ Material requirement planning (MRP)
  ➢ Operations scheduling

  ✓ Toyota production system (JIT or lean manufacturing)

  ✓ Inventory management

✓ MRP II Framework



Operations Management – Overview

- **HW #1**
  - 내용: Summary of historical background
    Page 14 – 37 (section 1.2 – 1.6)
  - 납기: 1 week
  - 비고: 3 명 1 조 (2명 이하 가능)