



Operations Management I

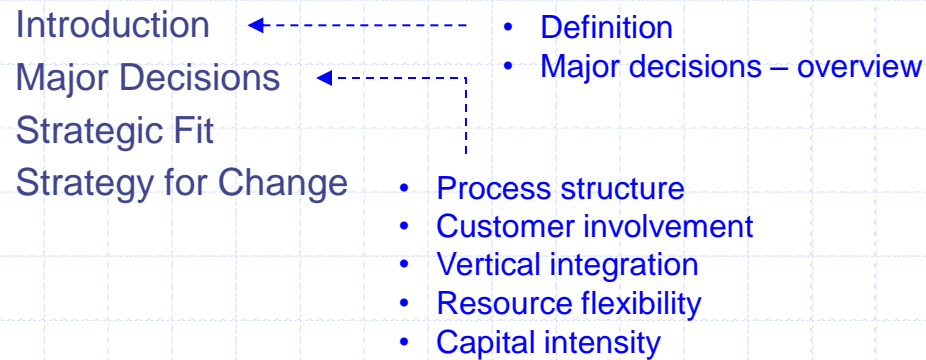
Process Design Strategy

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Process Design Strategy



Krajewski and Ritzman, 2005, **Operations Management**, Prentice Hall. (Chapter 3)

Process Design Strategy

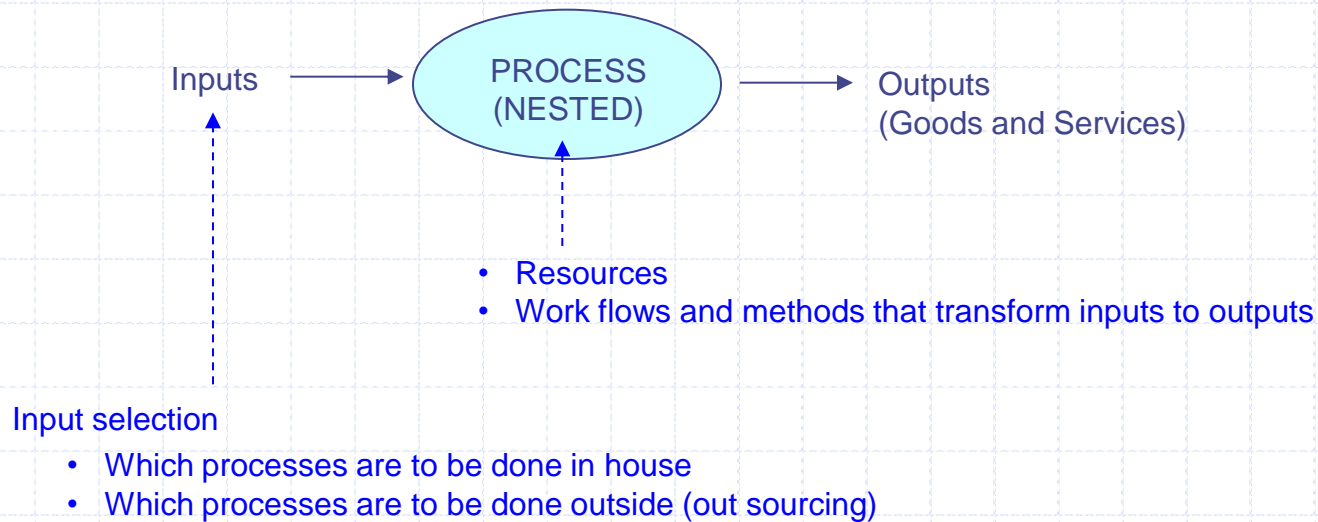
◆ Introduction

Process Design

- Definition

How to make a service or product

(Selection of inputs, resources, work flows and methods that transform inputs to outputs)

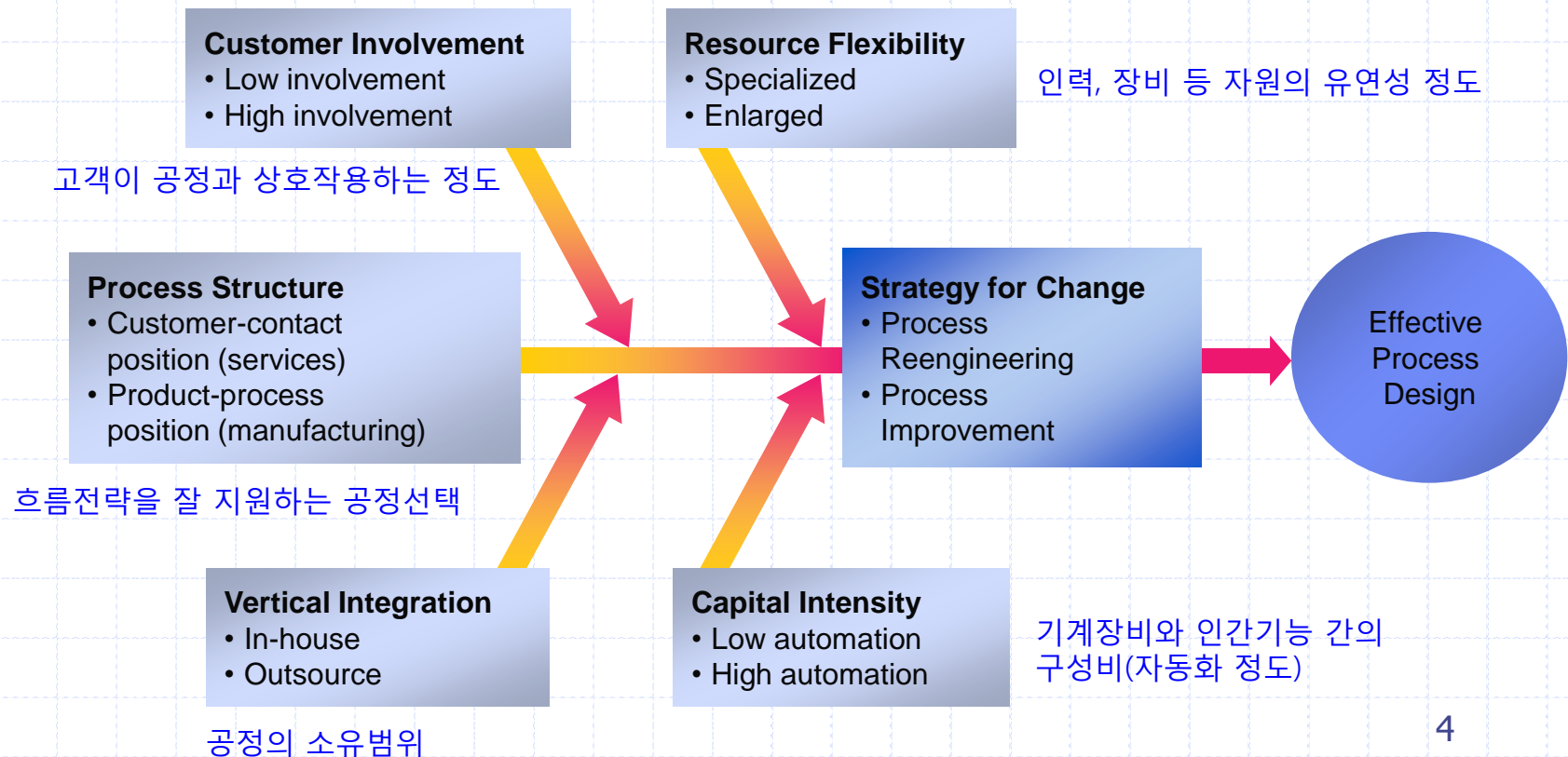


Process Design Strategy

◆ Introduction

Major Process Design Decisions

- Overview



Process Design Strategy

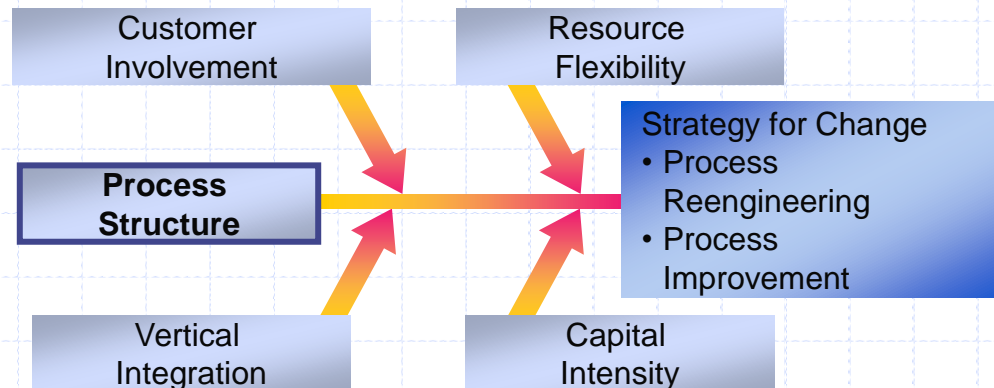
◆ Major Decisions

Process Structure (1)

- Definition

Choosing a process type that best achieves the relative importance to be placed on it for quality, time, flexibility, and cost

- ✓ Process structure in service: customer contact
- ✓ Process structure in manufacturing: volume



Process Design Strategy

◆ Major Decisions

Process Structure (2)

- Process structure in service

A good process design for a service process depends on the type and amount of customer contact.

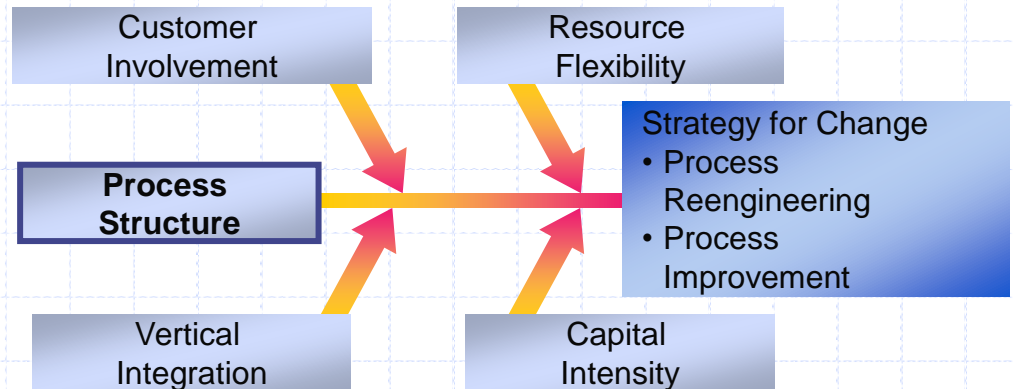
✓ Customer contact

Extent to which the customer is present, is actively involved, and receives personal attention during the service process

←----- Percentage of the total time the customer is at the process, relative to the total time to complete the service

➤ Dimensions

- | | |
|---|--|
| <ul style="list-style-type: none"> ▪ Physical presence ▪ What is processed ▪ Contact intensity ▪ Personal attention ▪ Method of delivery | <p>←-----</p> <ul style="list-style-type: none"> • Front office • Hybrid office • Back office |
|---|--|



Process Design Strategy

Major Decisions

Process Structure (3)

- Process structure in service
- ✓ Customer contact – dimensions

Physical presence

Whether or not the customer is physically present at the process

What is processed

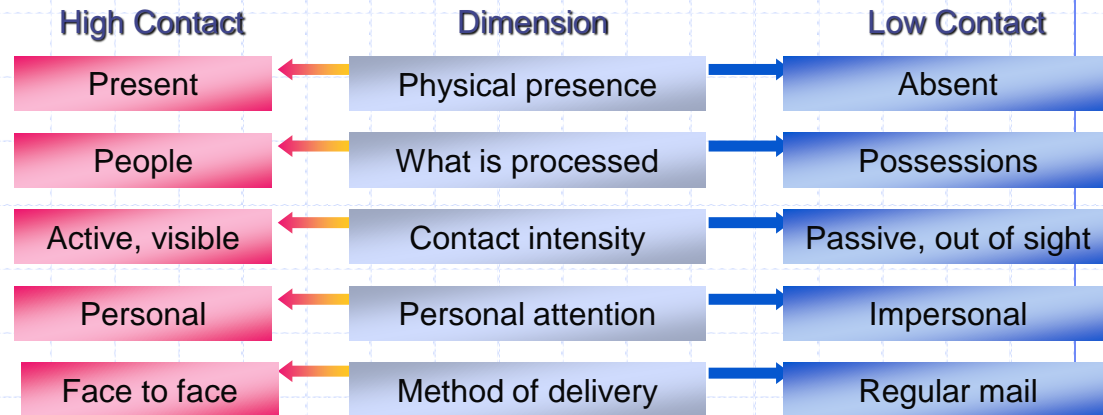
- ✓ People-processing services
- ✓ Possession-processing services
- ✓ Information-based services

Contact intensity

Extent to which the process accommodates the customer

- ✓ Active contact
- ✓ Passive contact

Customer is not involved in tailoring the process to meet special needs (e.g., public transportation, theaters)



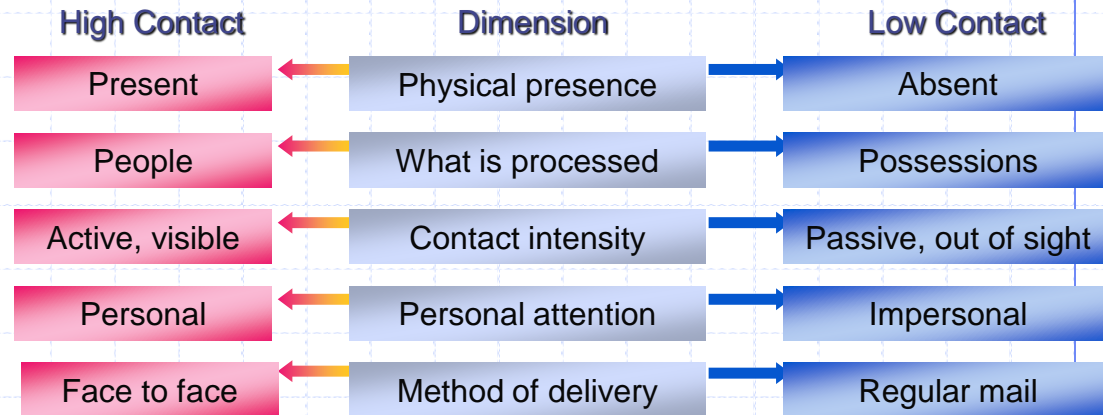
Collect, manipulate, analyze, and transmit data that has value to the customer (news, education, etc.)

Process Design Strategy

Major Decisions

Process Structure (4)

- Process structure in service
 - ✓ Customer contact – dimensions
 - Personal attention
 - ✓ Personal contact ← More intimate, and exhibit mutual confiding and trust between the service provider and the customer
 - ✓ Impersonal contact ← Less intimate process
 - Method of delivery
 - ✓ Face-to-face ← Assuring more clarity in identifying customer needs and in delivering the service
 - ✓ Regular mail



Process Design Strategy

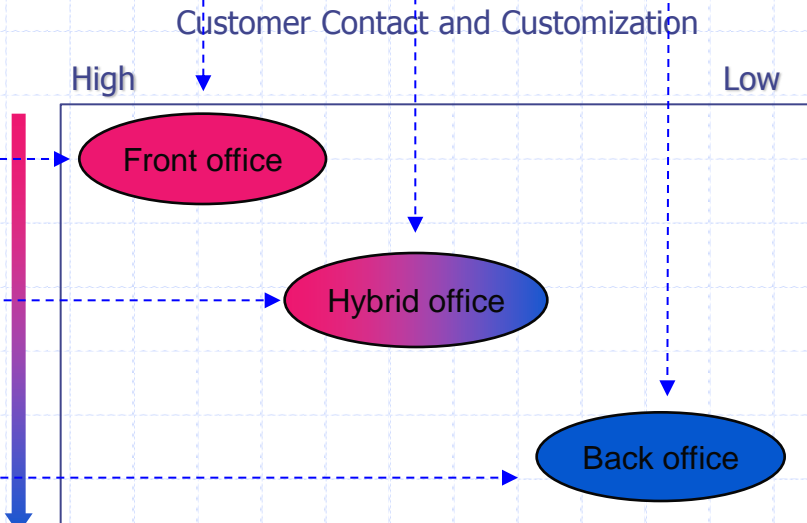
Major Decisions

Process Structure (5)

- Process structure in service
- ✓ Customer-contact matrix

- Jumbled flows
- Complex work with many exceptions
- Flexible flows with some dominant paths
- Moderate job complexity with some options
- Line flows
- Routine work easily understood by employees

Less Complexity
Less Divergence
More Line Flows



- Some interaction with customers
- Standardized services with some options
- Low interaction with customers
- Standardized services
- High interaction with customers
- Highly customized services

Process Design Strategy

Major Decisions

Process Structure (6)

- Process structure in service
- ✓ Customer-contact matrix

➤ Front office

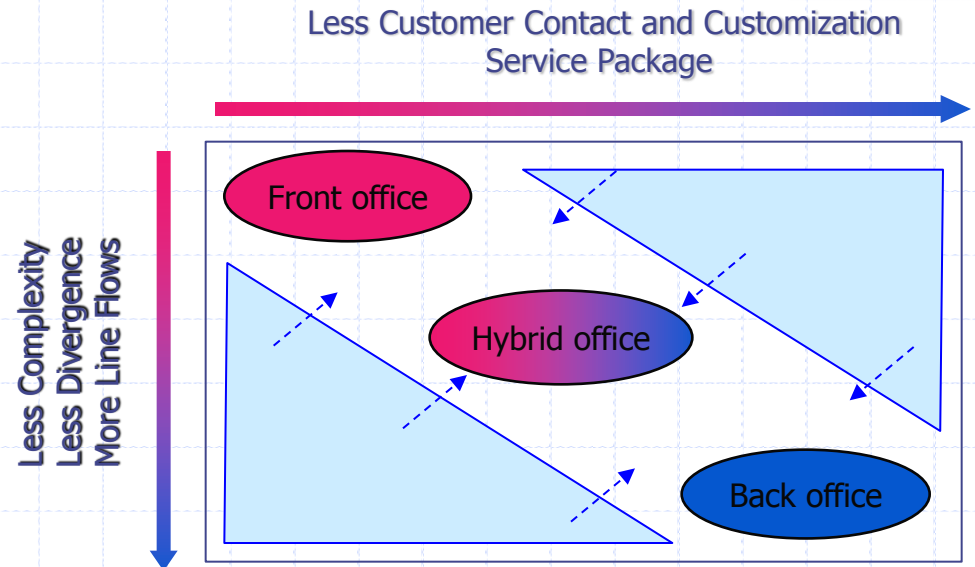
- High customer contact and customized services
- Complex flows (jumbled flows)
e.g., sale of financial services

➤ Hybrid office

- Moderate customer contact and standardized services with some options
- Moderate complex flows
e.g., creation of quarterly performance reports

➤ Back office

- Low customer contact and little service customization (standardization)
- Line flows
e.g., production of monthly client balance reports



Process Design Strategy

◆ Major Decisions

Process Structure (7)

- Process structure in manufacturing

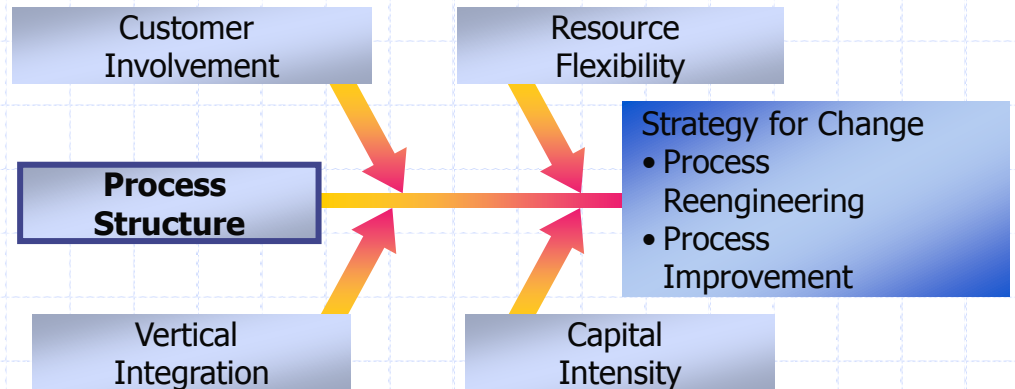
The best choice for a manufacturing process depends on volume and degree of customization required for the process

- ✓ Major types

- Project process
- Job process
- Batch process
- Line process
- Continuous process

- Less customization
- Higher volume

- Less complexity
- Less divergence
- More line flows



Process Design Strategy

Major Decisions

Process Structure (8)

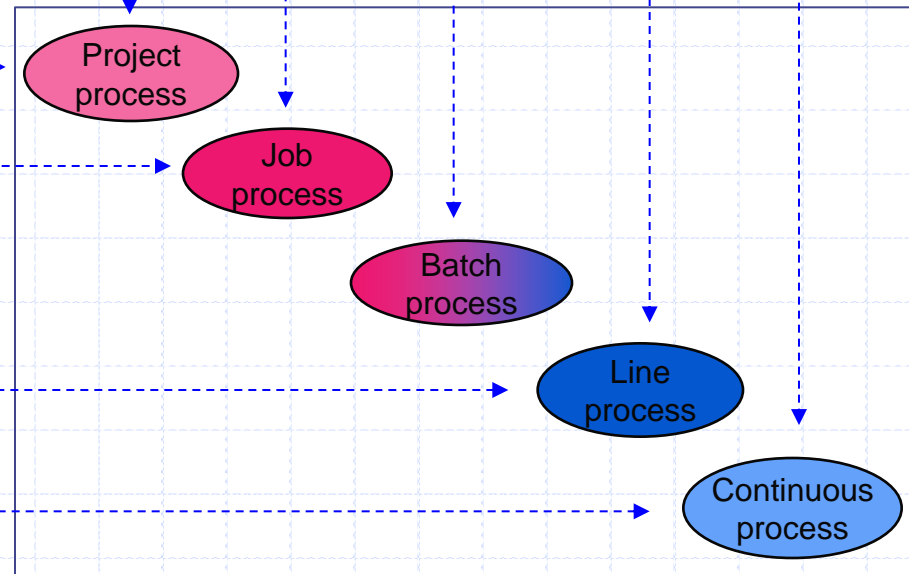
- Process structure in manufacturing
- ✓ Product-process matrix

- Complex and highly customized process
- Unique sequence of tasks
- Jumbled flows
- Complex work with many exceptions
- Connected line
- Routine work
- Continuous flows
- Highly repetitive work

Less Complexity
Less Divergence
More Line Flows

- One-of-a kind products
- Made to customer order
- Low volume
- Low standardization
- Multiple products
- Moderate volume
- Few major products
- Higher volume
- High volume
- High standardization

Less Customization and Higher Volume
Product Design



Process Design Strategy

Major Decisions

Process Structure (9)

- Process structure in manufacturing

✓ Product-process matrix

➤ Project process

A process characterized by

- High degree of product customization
- Large scope of each product
- Release of substantial resource once it is completed

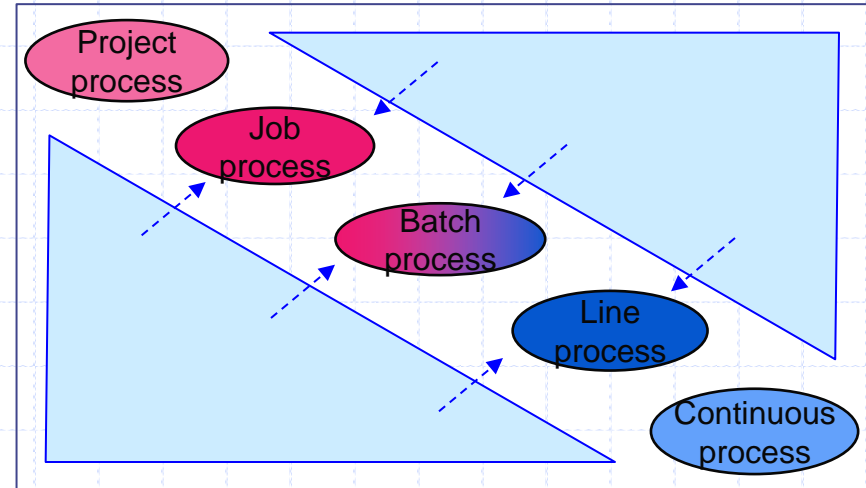
➤ Job process ←----- 유연흐름전략(process-focused strategy)

A process with

- Flexibility needed to produce a wide variety of products in significant quantities
- Considerable complexity and divergence in the steps performed

Less Complexity
Less Divergence
More Line Flows

Less Customization and Higher Volume
Product Design



Process Design Strategy

Major Decisions

Process Structure (10)

- Process structure in manufacturing

✓ Product-process matrix

- **Batch process** ◀----- 중간흐름전략(intermediate strategy)

A process that differs from the job process with respect to volume, variety, and quantity

- **Line process** ◀----- 라인흐름전략(product-focused strategy)

A process, lying between batch and continuous processes, in which

- Volumes are high
- Products are standardized

◀----- Allows resources to be organized around particular products

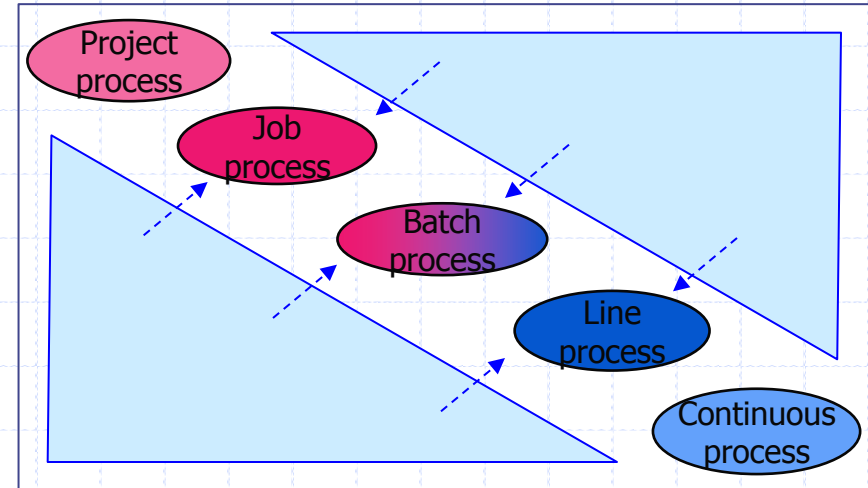
- **Continuous process**

The extreme end of high volume standardized production, with rigid line flows.

◀----- Process industry (petroleum refining, chemical processes, steel, etc.)

Less Complexity
Less Divergence
More Line Flows

Less Customization and Higher Volume
Product Design



Process Design Strategy

◆ Major Decisions

Customer Involvement

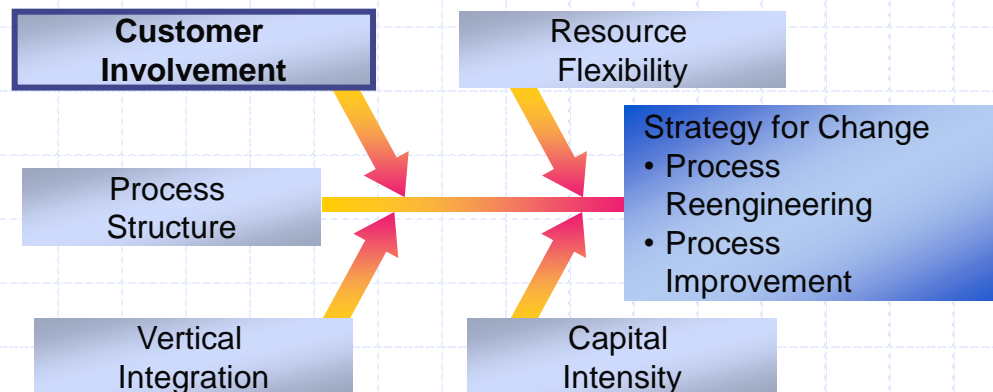
- Definition

The ways in which customers become part of the process and the extent of their participation

←----- How much should customers be involved in the process?

✓ Low customer involvement

✓ High customer involvement ←----- e.g., self-service



Process Design Strategy

◆ Major Decisions

Vertical Integration

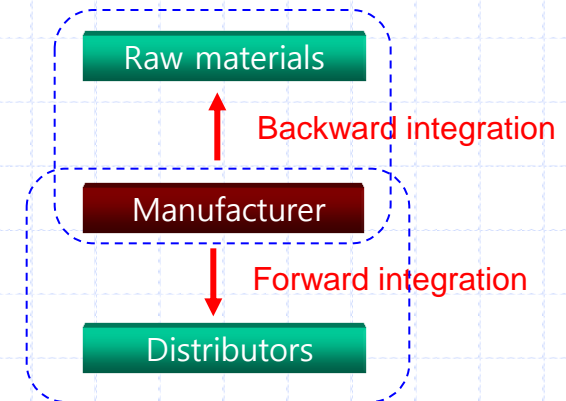
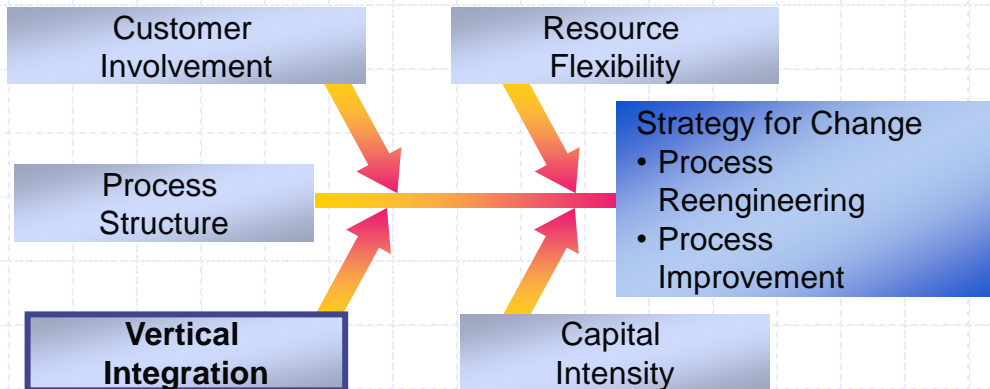
- Definition

Decision on which services or products should be created in-house

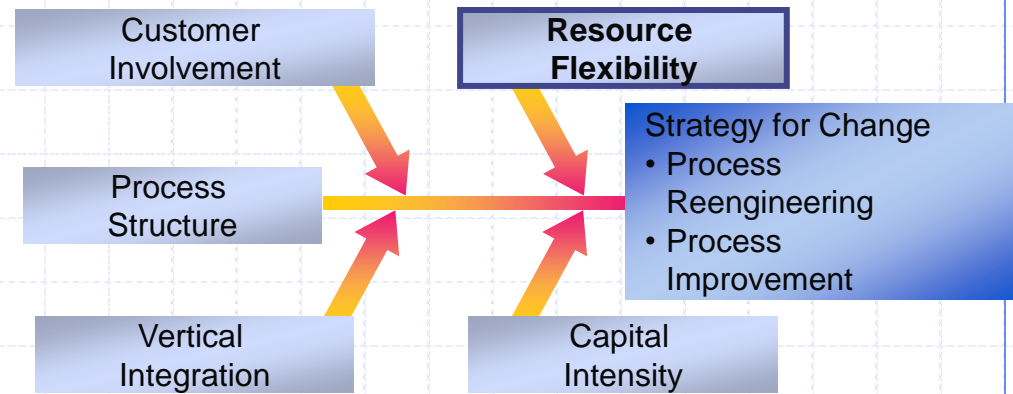
- ✓ **Make-or-buy decisions**

- Make decision: more vertical integration
- Buy decision: more outsourcing

Allotting work to suppliers or distributors to provide needed services and materials and to perform those processes that the organization does not perform itself



Process Design Strategy



Major Decisions

Resource Flexibility

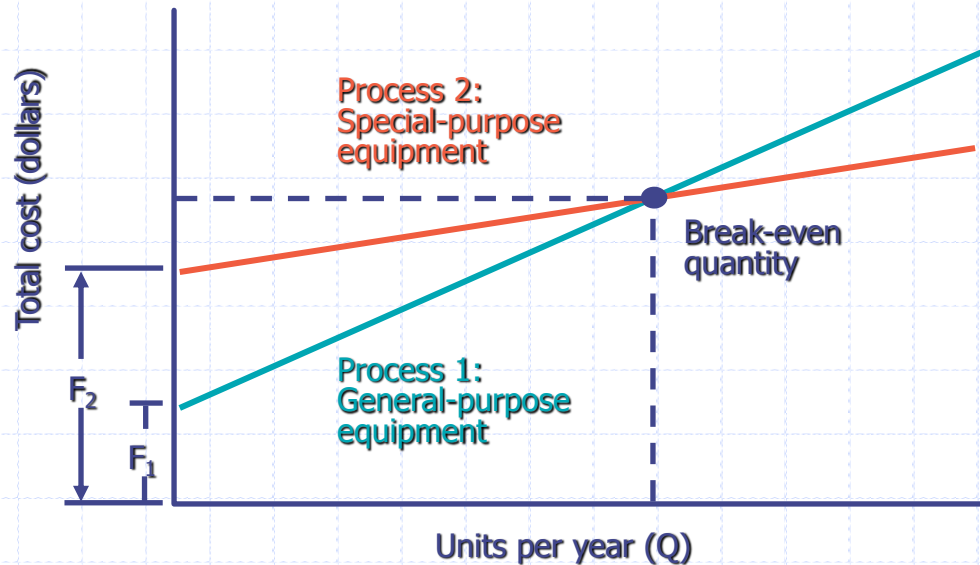
- Definition

Decision on how flexible a process's human resources and equipment should be

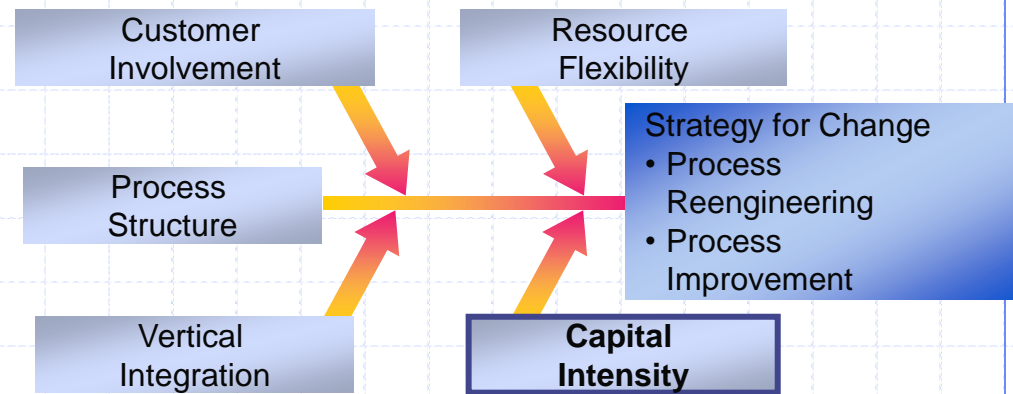
- Flexible workforce
- Flexible equipment

e.g., economy of scope

e.g., Breakeven analysis



Process Design Strategy



◆ Major Decisions

Capital Intensity

- Definition

Mix of equipment and human skills in the process
(the greater the relative cost of equipment, the greater is the capital intensity)

←--- How much should a firm depend on machinery and automated processes?

- ✓ Fixed automation

A manufacturing process that produces one type of part or product in a fixed sequence of simple operations

- ✓ Flexible (programmable) automation

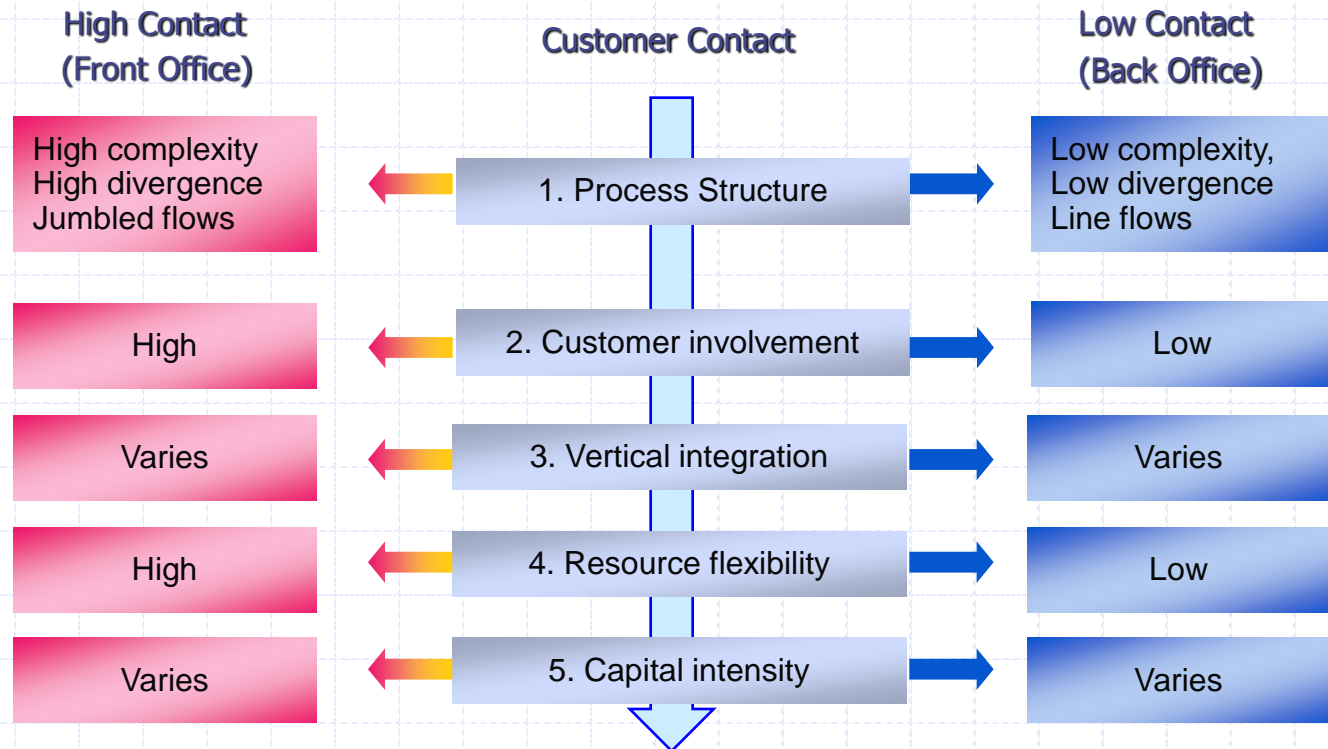
A manufacturing process that can be changed easily to handle various products

Process Design Strategy

◆ Strategic Fit

Decision patterns for service processes

- Customer contact

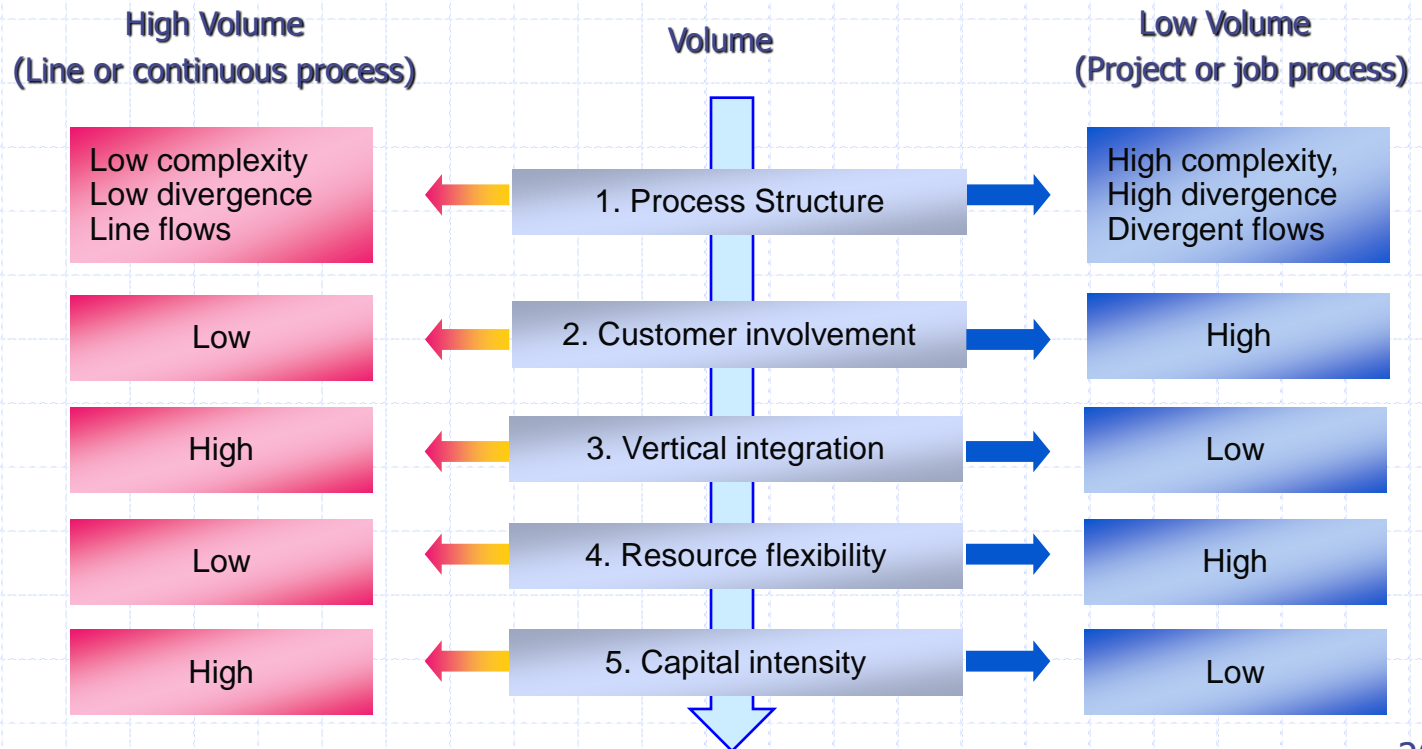


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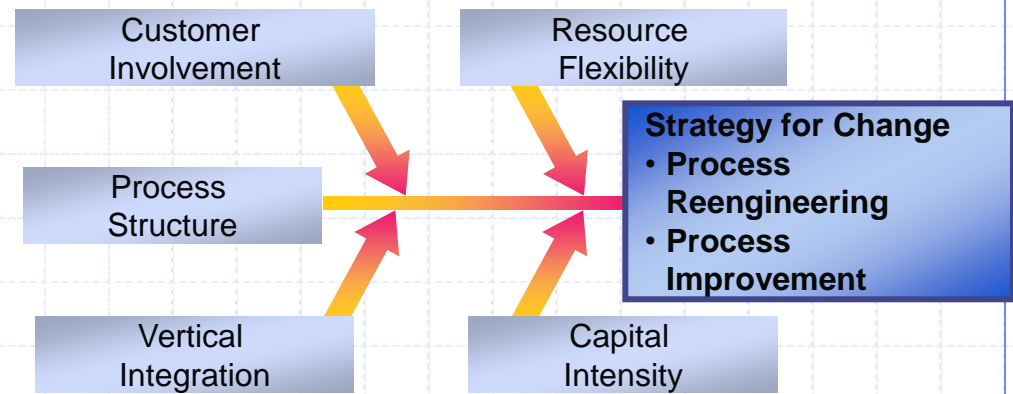
◆ Strategic Fit

Decision patterns for manufacturing processes

- Volume



Process Design Strategy



◆ Strategy for Change

Methods

- **Process Reengineering**

Fundamental rethinking and radical redesign of processes to improve performance dramatically in terms of cost, quality, service, and speed

←--- Reinvention, rather than incremental improvement

- ✓ Critical processes
- ✓ Strong leadership
- ✓ Cross-functional teams
- ✓ Information technology
- ✓ Process analysis

- **Process Improvement**

Systematic study of the activities and flows of each process to improve it

e.g., 작업관리(방법연구) – 공정분석, 작업분석, 동작연구