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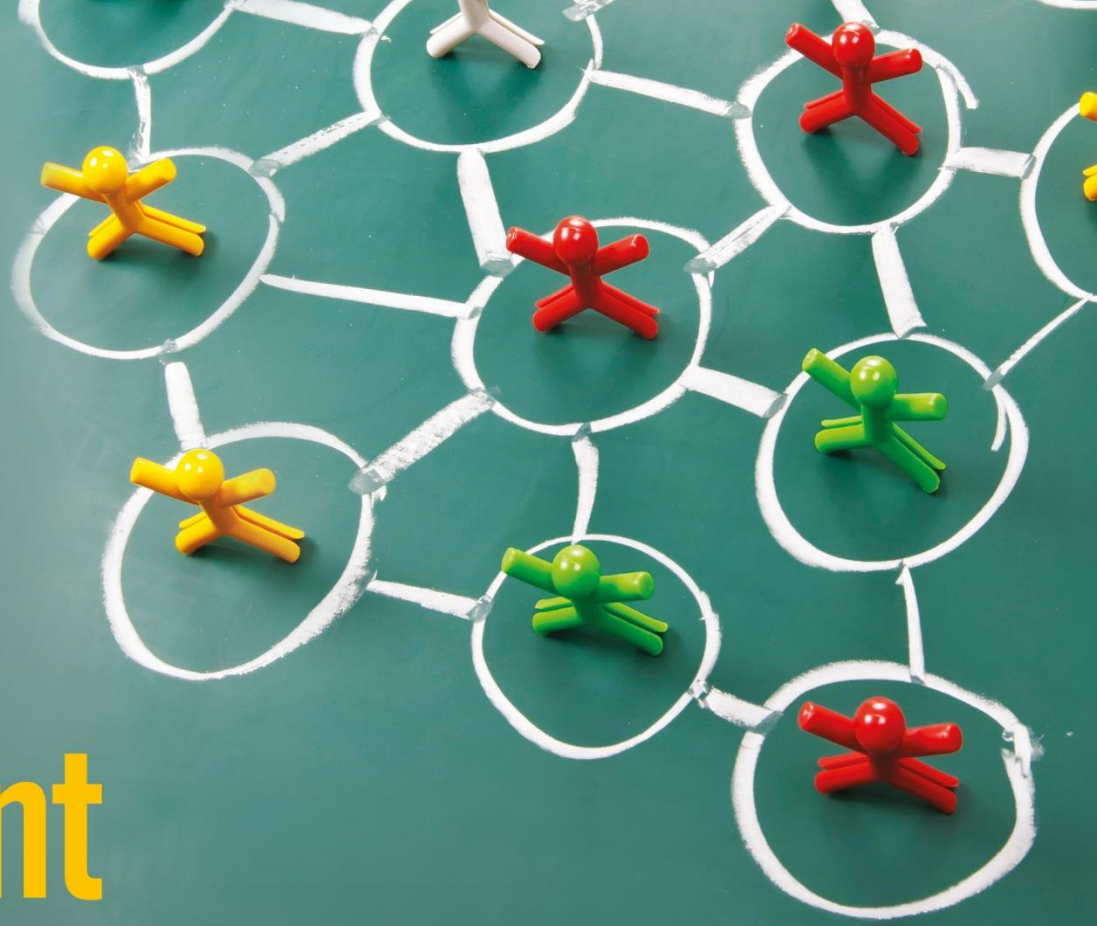


Introduction to Business Management

9TH EDITION

CHAPTER 11
OPERATIONS MANAGEMENT

Chapter content

- Introduction
- An operations-management model
- The classification of process types for manufacturers and service providers
- Operations design
- Operations planning and control
- Operations improvement
- Summary

Introduction

- Importance of operations management
  - Reduce the costs
  - Increase the revenue
  - Reduce the amount of investment
  - Provide the impetus for new innovation
- Concerned with management of the transformation process
- Defining terms used in operations management
  - Operations function
  - Operations managers
  - Operations management

An operations-management model

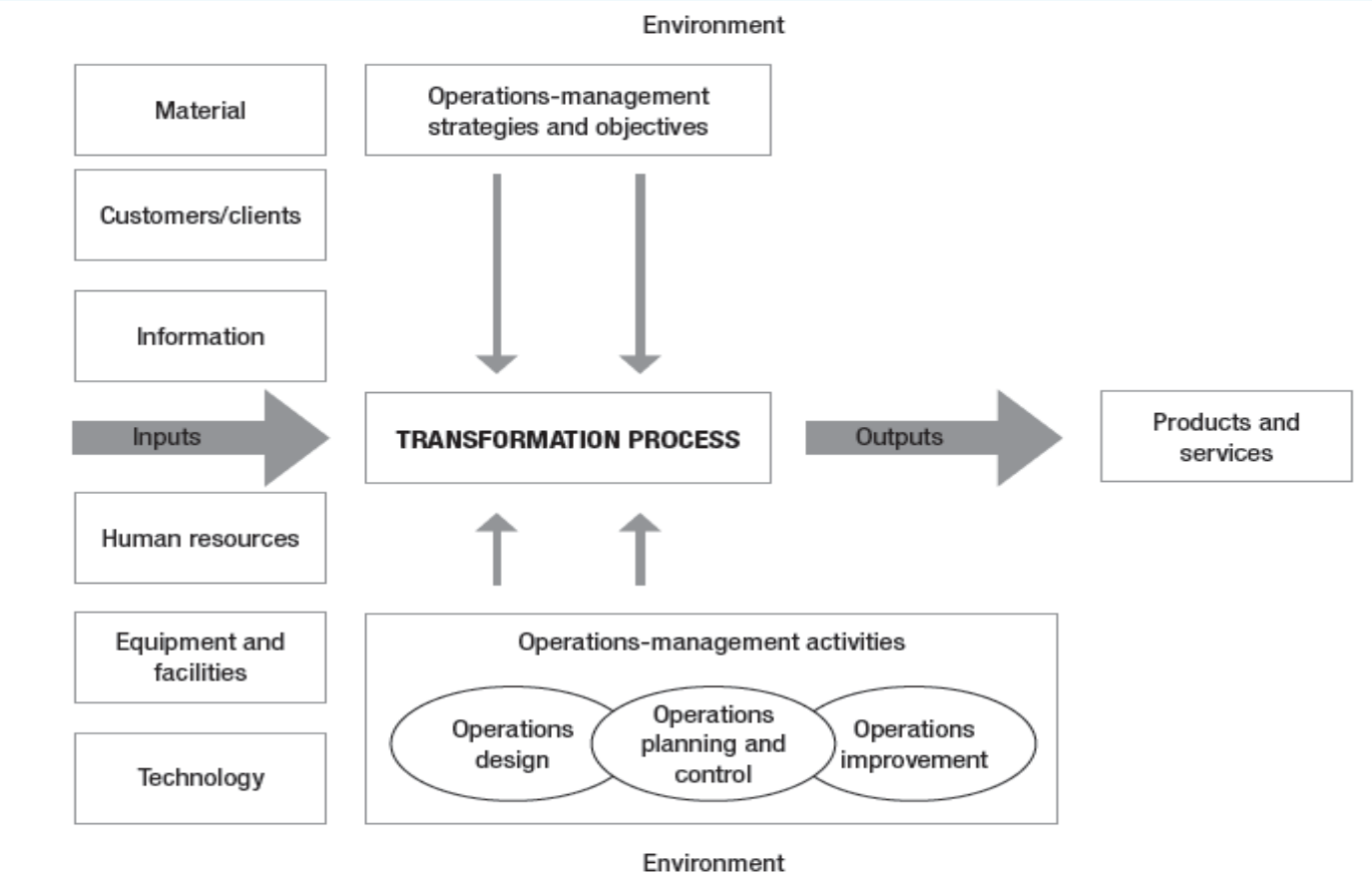


Figure 11.1: A general model of operations management

Operations-management strategies and performance objectives

- Focus on customers' needs and continually formulate strategies and objectives to maintain, strengthen and expand competitive position and customer base
- Six customer/client needs:
  - Higher quality
  - Lower costs
  - Shorter lead time
  - Greater adaptability
  - Lower variability
  - High level of service.

Positive results obtained by operations management guidelines

Operations-management guideline		Positive result
Doing things right the first time	can lead to	Higher quality
Doing things cost effectively	can lead to	Lower cost
Doing things fast	can lead to	Shorter lead time
Changing things quickly	can lead to	Greater adaptability
Doing things right every time	can lead to	Lower variability
Doing things better	can lead to	Better service

Figure 11.2: Positive results obtained by the application of operations-management guidelines

The transformation model

- Operations function is primarily concerned with the application of resources by means of a transformation process to provide outputs
- Model could apply to both manufacturers and service providers
- Model comprises three main components:
  - Inputs
  - Transformation process itself
  - Outputs.

A basic transformation model

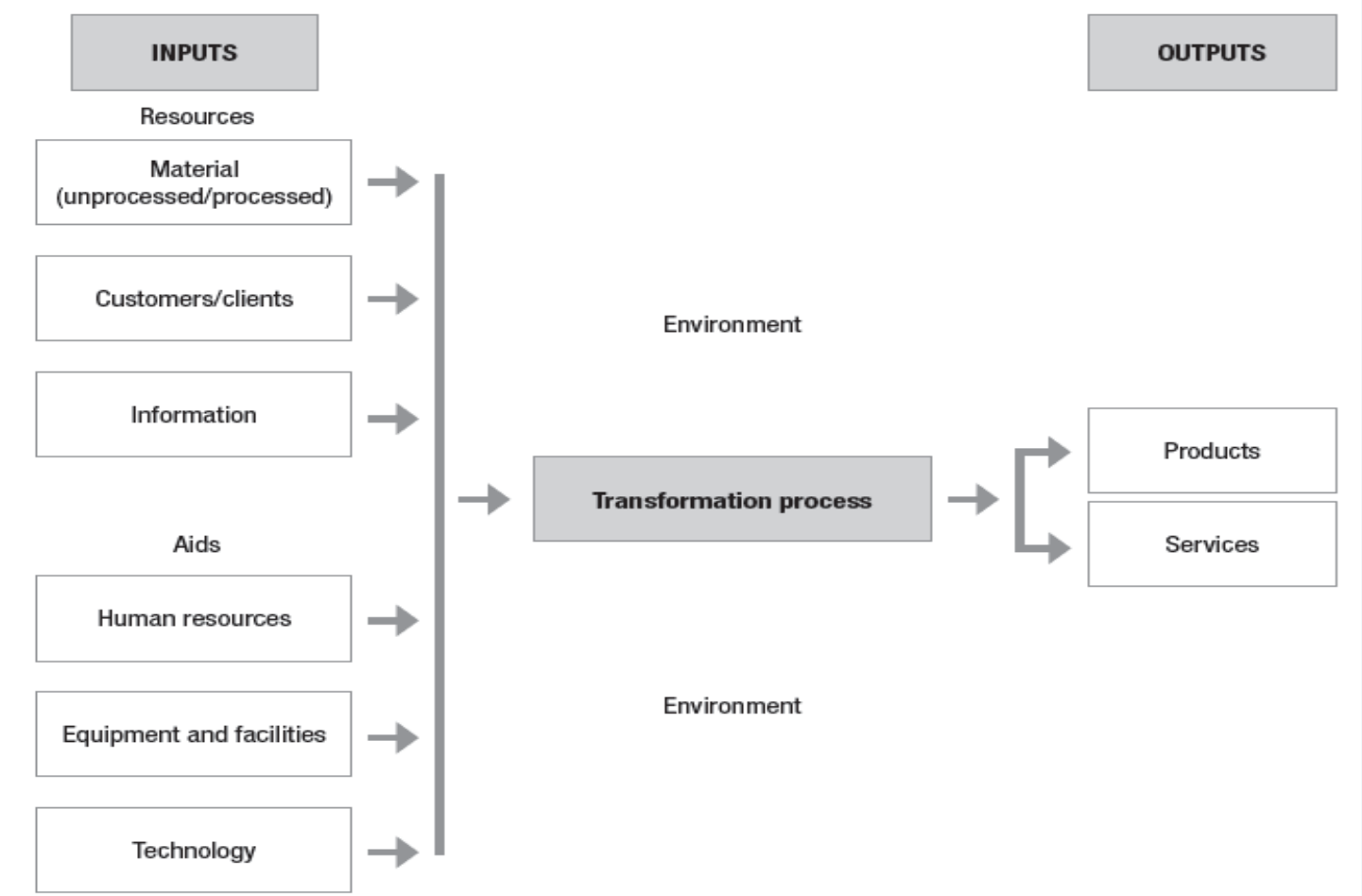


Figure 11.3: A basic transformation model

Inputs

- Resources to be transformed include:
  - Material
  - Customers
  - Information.
- Resources required to make transformation possible:
  - Human resources
  - Equipment and facilities
  - Technology.

The transformation process

- Inputs are converted into outputs in the transformation process
- Three main types of resource inputs are addressed:
  - Transformation of materials
  - Transformation of information
  - Transformation of customers/clients.

Outputs

- Ultimate goal of transformation process is to convert or process inputs into outputs
- Characteristics of products manufactured and services provided differ
- Important to note the difference because they have specific implications for the management of the various operations processes

Characteristics of products and services

Table 11.1: Characteristics of products and services

Products produced by manufacturer	Services produced by service provider
• Physically tangible and durable	• Intangible and perishable
• Output kept in stock	• Output not kept in stock
• Little customer contact	• Plenty of client contact
• Manufactured before use	• Provision and consumption simultaneous
• Long response time	• Short response time
• Local and international markets	• Mainly local markets
• Large production facilities	• Small service-provision facility
• Capital-intensive production	• Labour intensive
• Quality easily measurable	• Quality difficult to measure

Different operations have different characteristics

- Four distinctive characteristics (four Vs):
  - Volume of output
  - Variety of output
  - Variation of output
  - Visibility of output.
- The implications of these four characteristics can be significant in terms of the cost of creating products and services

The classification of process types for manufacturers

- Five main categories are identified:
  - Project processes
  - Jobbing processes
  - Batch processes (job lots)
  - Mass processes
  - Continuous or repetitive systems.

The classification of manufacturers' operational processes

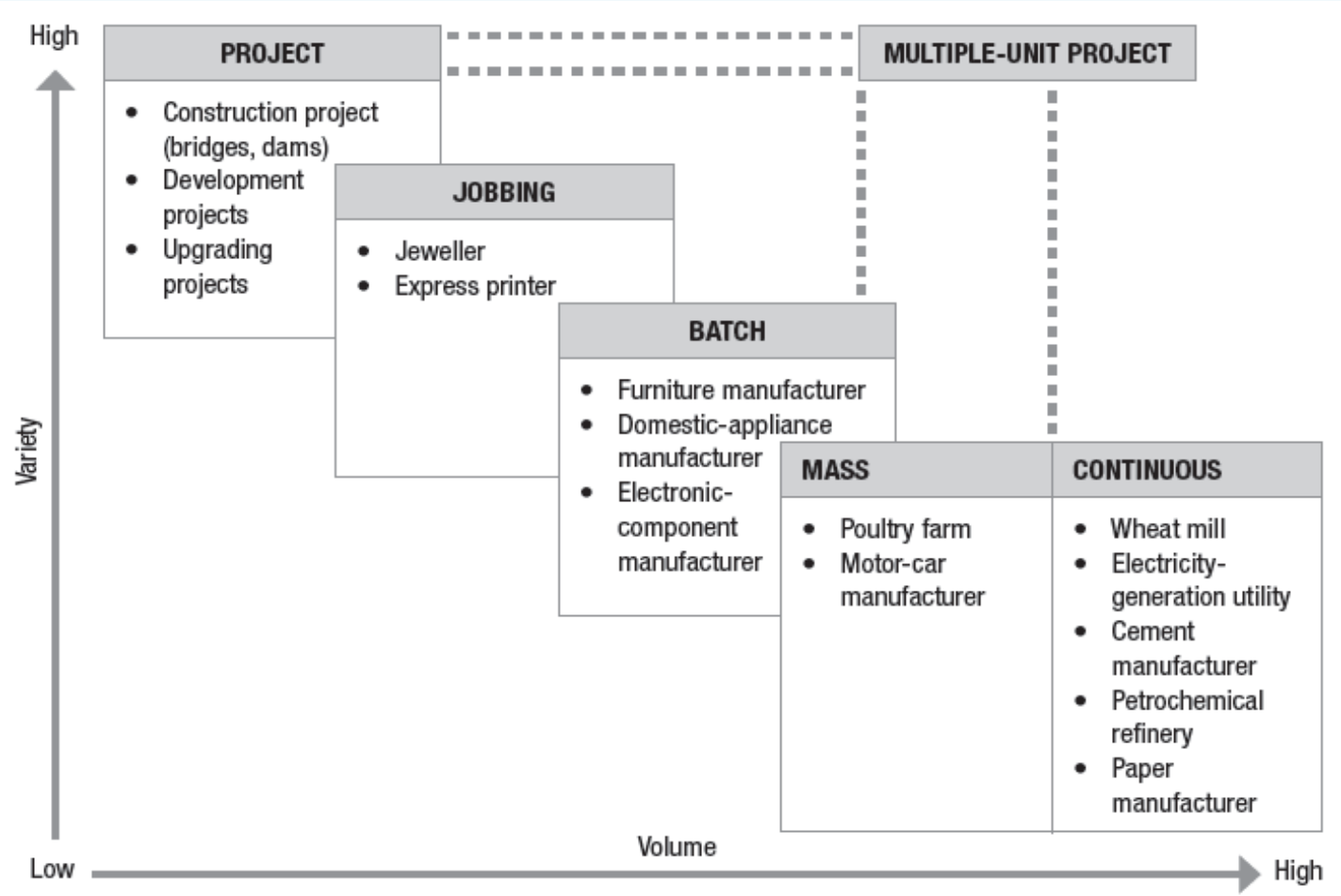


Figure 11.4: The classification of manufacturers' operational processes

The classification of process types for service providers

- Three main categories are identified:
  - Professional services
  - Service shops
  - Mass services.

The classification of service providers' operational processes

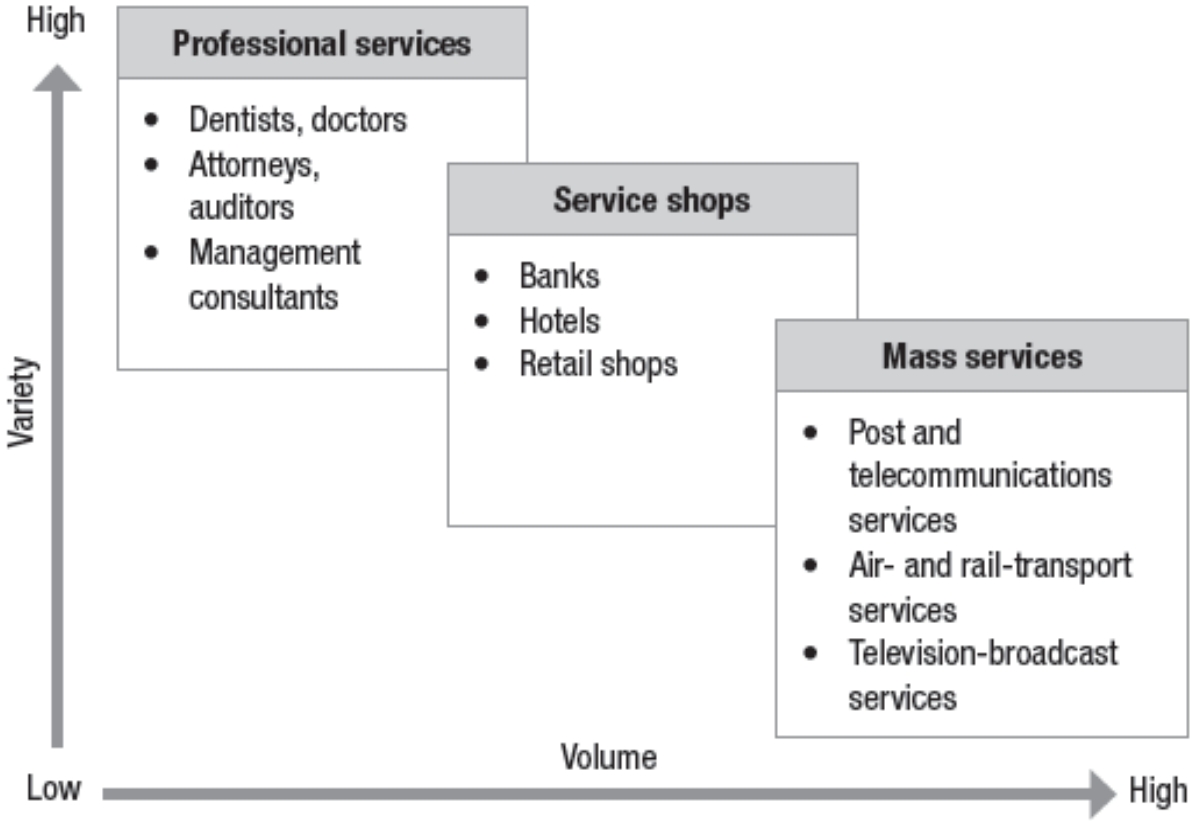


Figure 11.5: The classification of service providers' operational processes

The nature of operations design

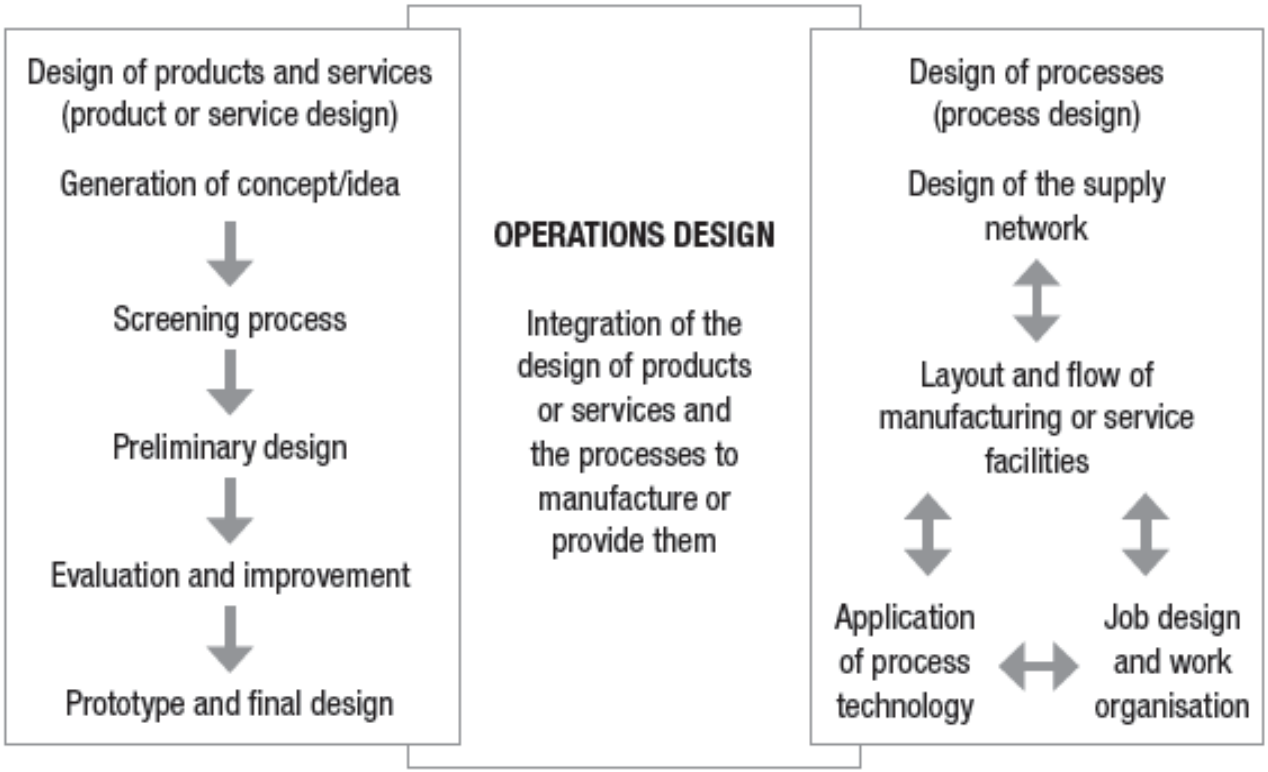


Figure 11.6: The nature of operations design

The design of products and services

- Operations managers are not solely responsible for the design of a product or service
- Indirectly responsible for providing the information and advice on which the ultimate success of the development and manufacture of the product or service depends

The competitive advantage of good design

- Design of a product or service begins and ends with the customer
- Through the design and production of a good quality product, the business's competitive position is reinforced in the marketplace

The components of products and services

- Product or service is broadly defined as anything that can be offered to a customer in order to satisfy his or her needs
- Products and services consist of three interdependent components:
  - Concept (idea)
  - Package composition of products and services
  - Process for creating the package.

The stages in the design of products and services

- Ultimate result of the design of products and services is the full detailed specification of the product or service
- To obtain a full detailed specification a number of steps must be followed:
  - Concept generation
  - The screening process
  - Preliminary design
  - Evaluation and improvement
  - Prototype and final design.

The design of operations processes

- Design of operational processes to manufacture products or provide services is just as important as the design of the products or services themselves
- When designing a particular operational process, it is important for the entire supply network to be taken into consideration
- Helps to determine precisely what the inputs for the specific operational processes are, as well as the customer/client needs that have to be satisfied

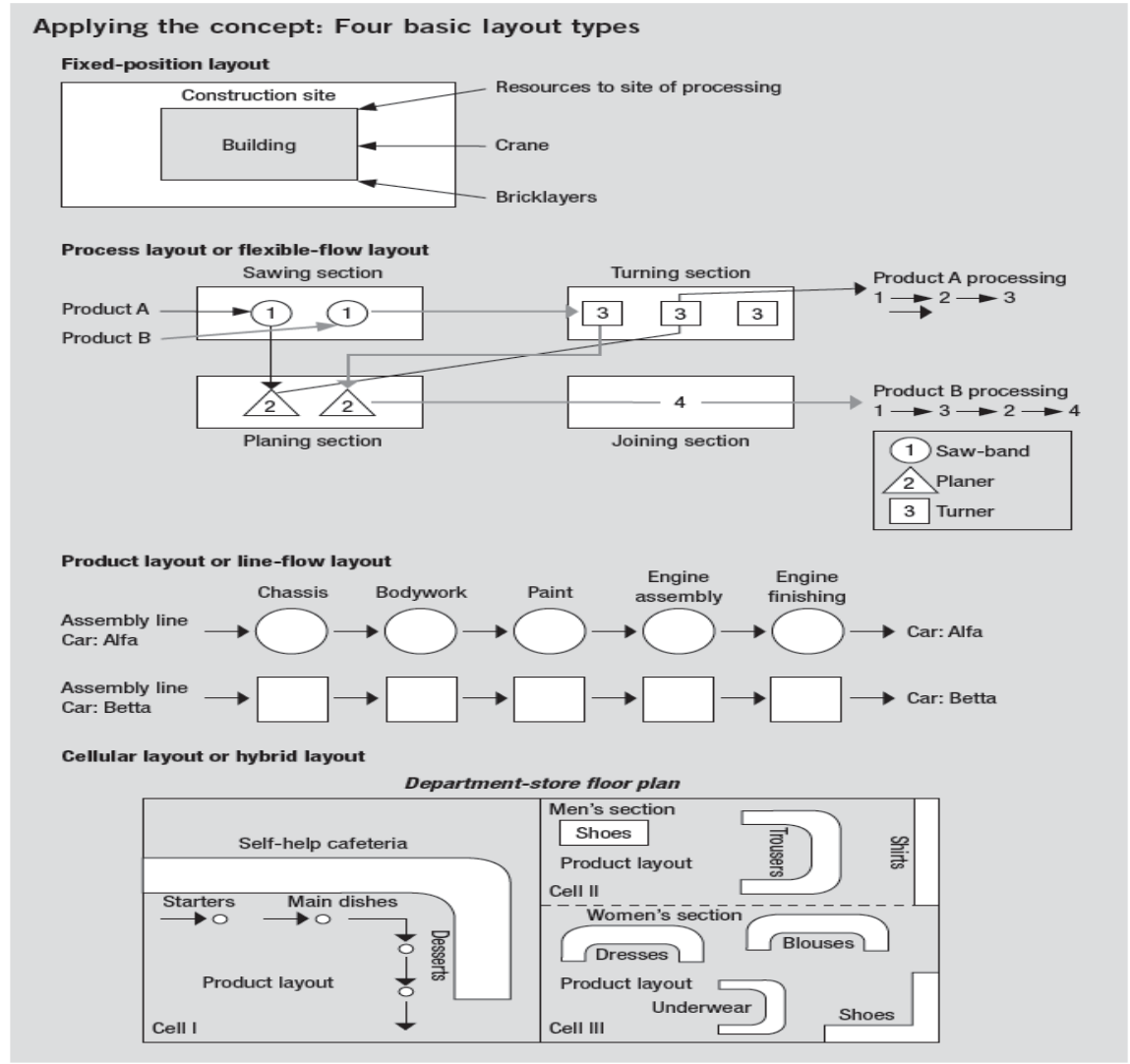
The design of supply networks

- Operations processes do not exist in isolation – part of integrated supply network
- Includes suppliers of materials or services, intermediaries and customers/clients
- In design, entire supply network needs to be taken into consideration
- Helps determine inputs, as well as competitive position

The layout and flow of manufacturing and service-provision facilities

- Layout of a manufacturing/service facility entails three steps:
  - Selecting the process type
  - Selecting the basic layout type (four basic types):
    - Fixed-position layout
    - Process layout (flexible-flow layout)
    - Product layout (line-flow layout)
    - Cellular layout (hybrid layout).
  - Detailed design of the layout

Four basic layout types



The application of process technology

- ‘Process technology’ refers to the machines, equipment and apparatus used in transformation process to transform materials, information and clients so that products can be manufactured or services provided
- The operations manager has to be continuously involved in the management of all facets of process technology

The application of process technology

- To perform this task effectively, it is necessary to:
  - Foresee how technology can improve a specific operational process
  - Decide which technology or technologies to use
  - Integrate the new technology with existing operations activities
  - Continually monitor the performance of the technology
  - Upgrade or replace the technology when necessary.

Job design and work organisation

- Operations management also focuses on people's involvement in the operations activity itself
- Job design determines how workers perform tasks
- Work study – scientific approach used in job design and work organisation to study factors influencing people in work environment to improve efficiency and effectiveness

Job design and work organisation

- Two work-study techniques:
  - Method study – systematic recording and critical investigation of present and proposed work methods to develop and apply easier and more effective methods in to reduce costs
  - Work measurement – application of techniques designed to determine how long it takes a trained and qualified worker to do a specific job at a fixed level of performance.

Components of work study

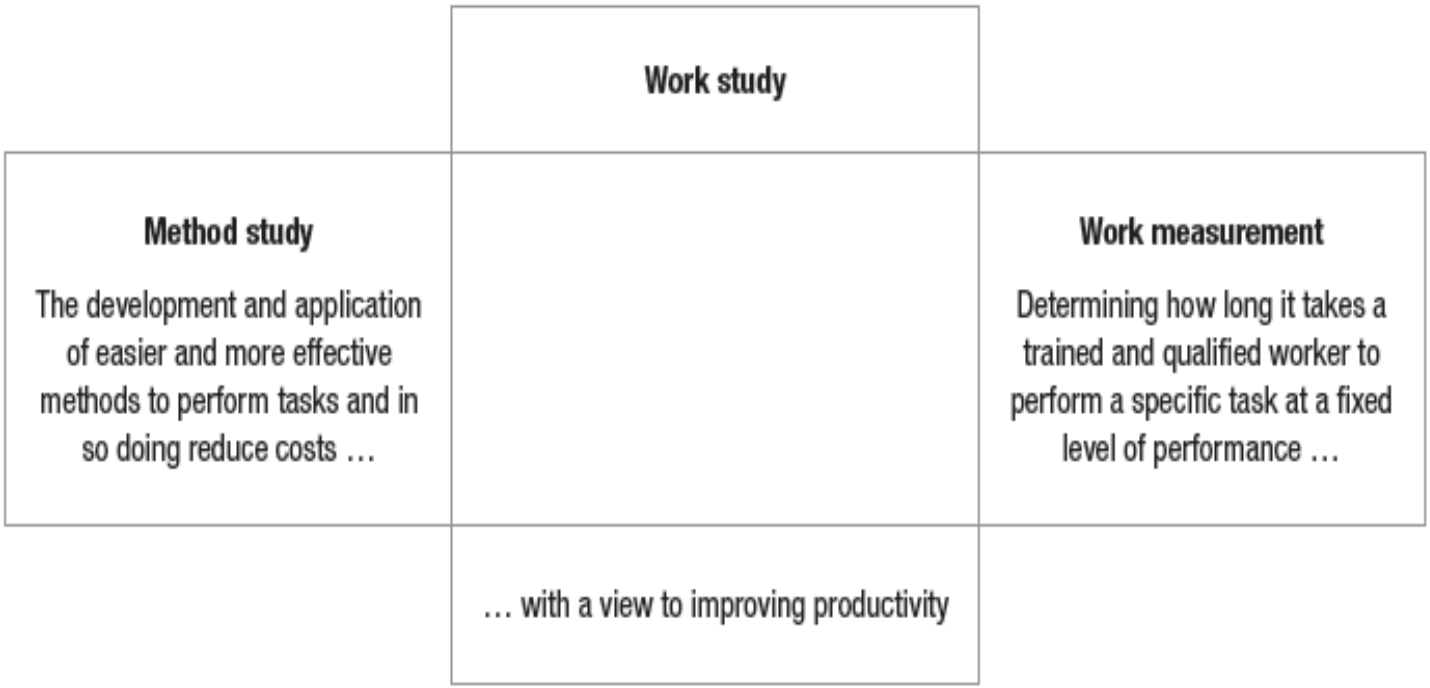


Figure 11.7: Components of work study

Operations planning and control

- Reconciling supply of products/services with demand by means of planning and control activities occurs in terms of three dimensions:
  - Volume
  - Timing
  - Quality.

Operations planning and control

- To reconcile the volume and timing dimensions with each other, three different integrated activities are performed:
  - Loading of tasks
  - Sequencing of tasks
  - Scheduling of tasks.

The nature of operations planning and control

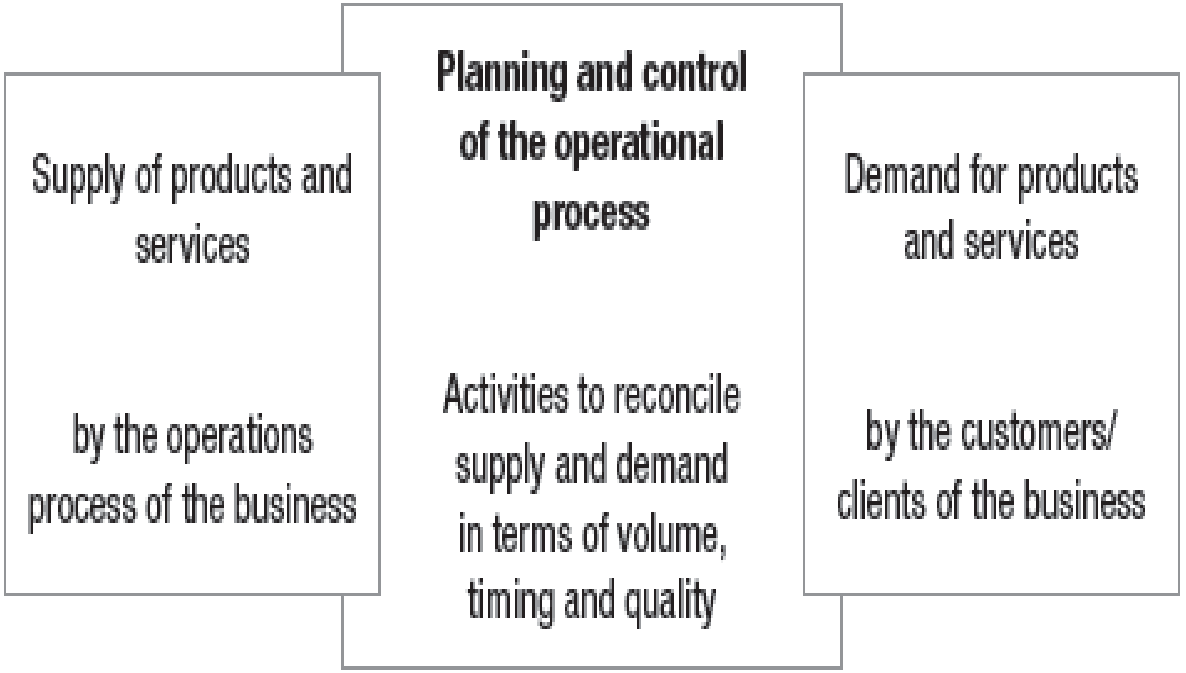


Figure 11.8: The nature of operations planning and control

Capacity planning and control

- Capacity planning and control focus on the provision of manufacturing and/or service capacity of a particular operations process
- Capacity is the maximum level of value-added activity over a period of time that the process can achieve under normal operating circumstances

The nature of capacity planning and control

- Quantitative data on expected demand, and the required capacity to satisfy demand must be obtained as follows:
  - Determine the total demand and required capacity
  - Identify alternative capacity plans
    - A level-capacity plan
    - A chase-demand plan
    - A demand-management plan
  - Choice of a particular capacity planning and control approach

Quality planning and control

- Quality is one of the main methods of adding value to products and/or services
- From an operations management perspective, quality is defined as consistent conformity to customers/client expectations
- The difference between expected quality and perceived quality is known as the quality gap
- Operations management, in conjunction with other functional areas, should endeavour to eliminate any quality gaps.

The nature of quality planning and control

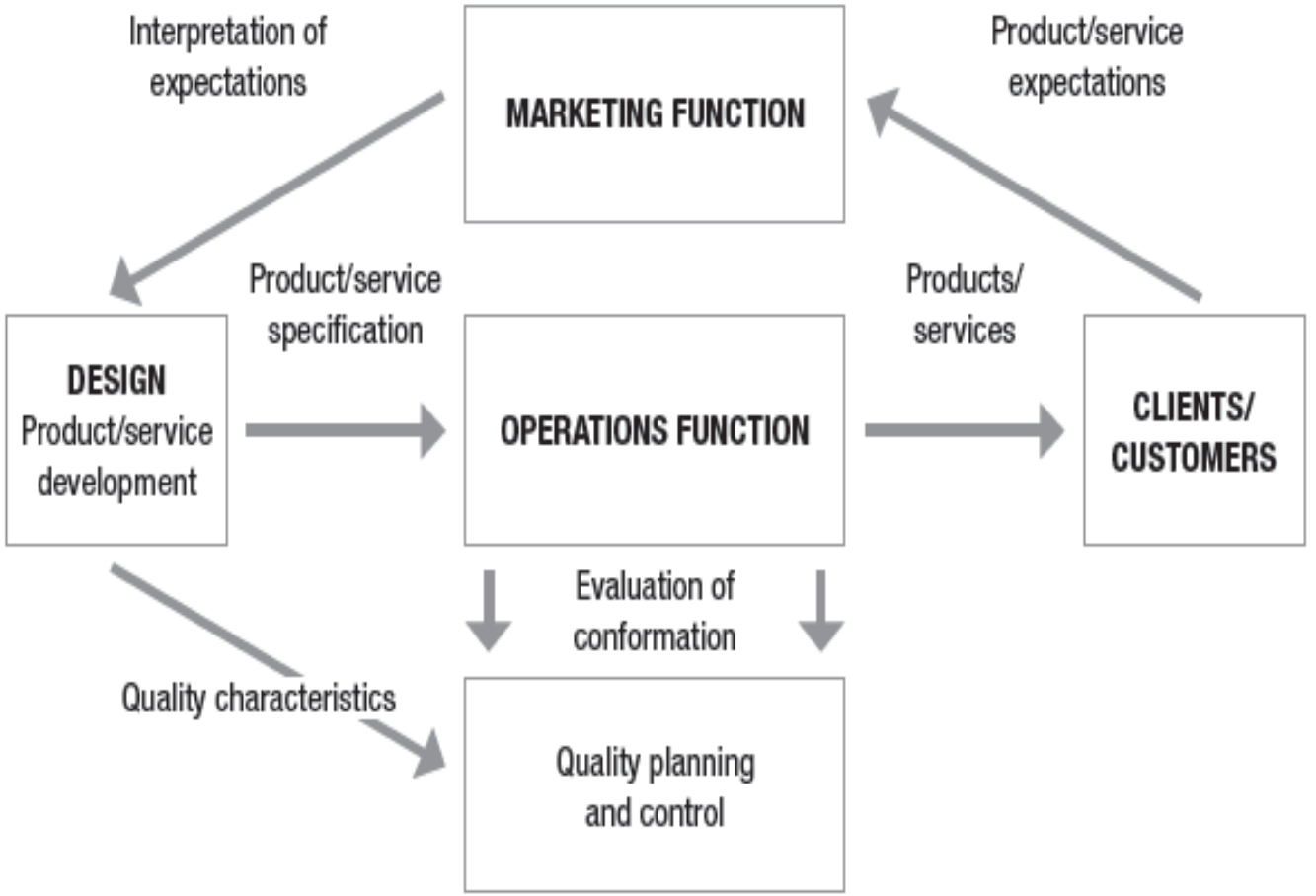


Figure 11.9: Extending the product/service design cycle for quality planning and control

The steps in quality planning and control

Step 1: Defining the quality characteristics of the product or service

Step 2: Measuring the quality characteristics of the product or service

Step 3: Setting standards for each quality characteristic of the product or service

Step 4: Controlling quality against set standards

Step 5: Identifying and rectifying the causes of poor quality

Step 6: Continuously improving quality

The nature of operations improvement

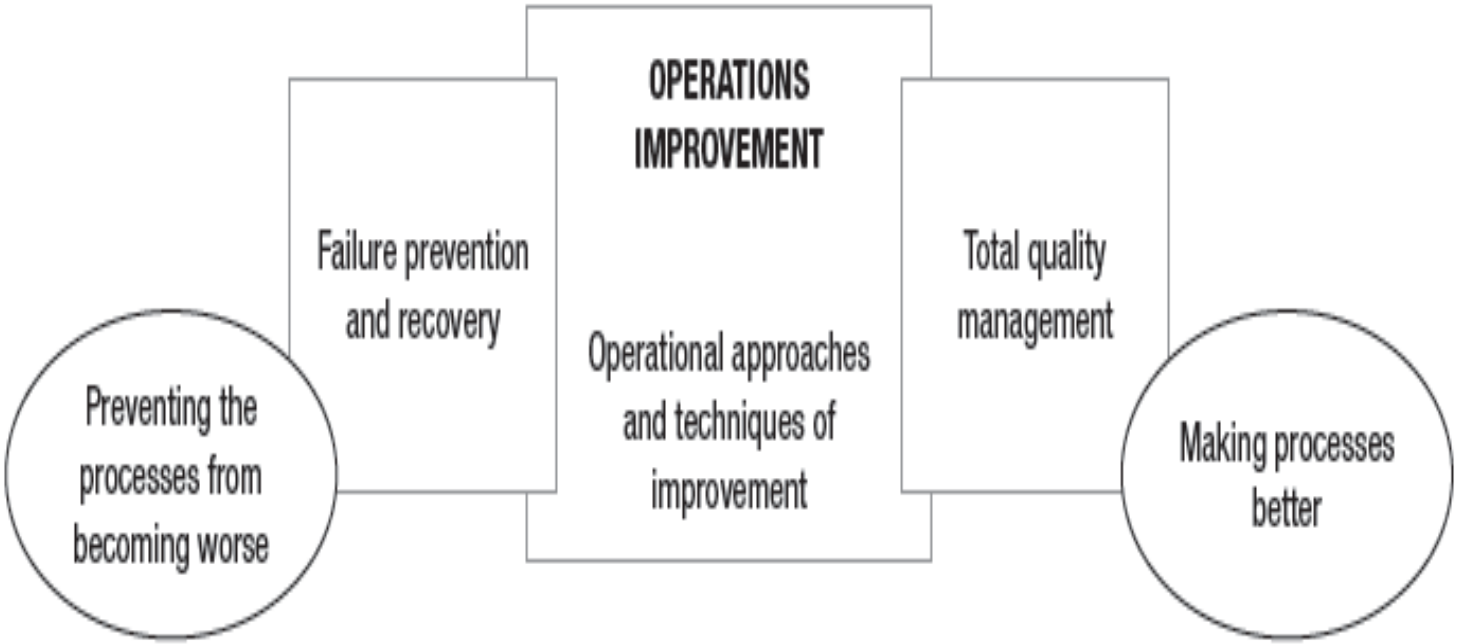


Figure 11.10: The nature of operations improvement

Different types of performance standards

- Four types of performance standards:
  - Historical performance standards
  - Target performance standards
  - Competitors' performance standards
  - Absolute performance standards.

Priorities for improvement

- Not all areas earmarked for improvement are equally important
- Priorities for improvement need to be determined
- Two divergent approaches to improvement can be followed:
  - Breakthrough improvement
  - Continuous improvement.

Failure prevention and recovery

- There is always the chance of breakdown or failure occurring
- Types of failures include:
  - Design failures
  - Facility failures
  - Staff failures
  - Supplier failures
  - Customer/client failures.

Failure detection and analysis

- Operations managers should have mechanisms in place to detect failures
- Procedures should be put into operation to determine the causes of the failure
- Once causes and consequences of failure have been established, operations managers should try to prevent them in the first place
- Recovery procedures and contingency plans should already have been devised and put in place to minimise the potential detrimental effects on customers

Total quality management (TQM)

- TQM is a management philosophy, with the primary aim of satisfying needs and expectations of customers/clients by means of high-quality products or services
- Focal point of TQM is the underlying processes that occur at each customer and supplier interface

Defining TQM

- Meeting the needs and expectations of customers
- Covering all parts of the business regardless of how small they are
- Making every employee in the business quality conscious
- Identifying and accounting for all costs of quality

Defining TQM

- Doing things right the first time
- Developing and implementing systems and procedures for quality
- Establishing a continuous process for improvement

Total-quality-management model

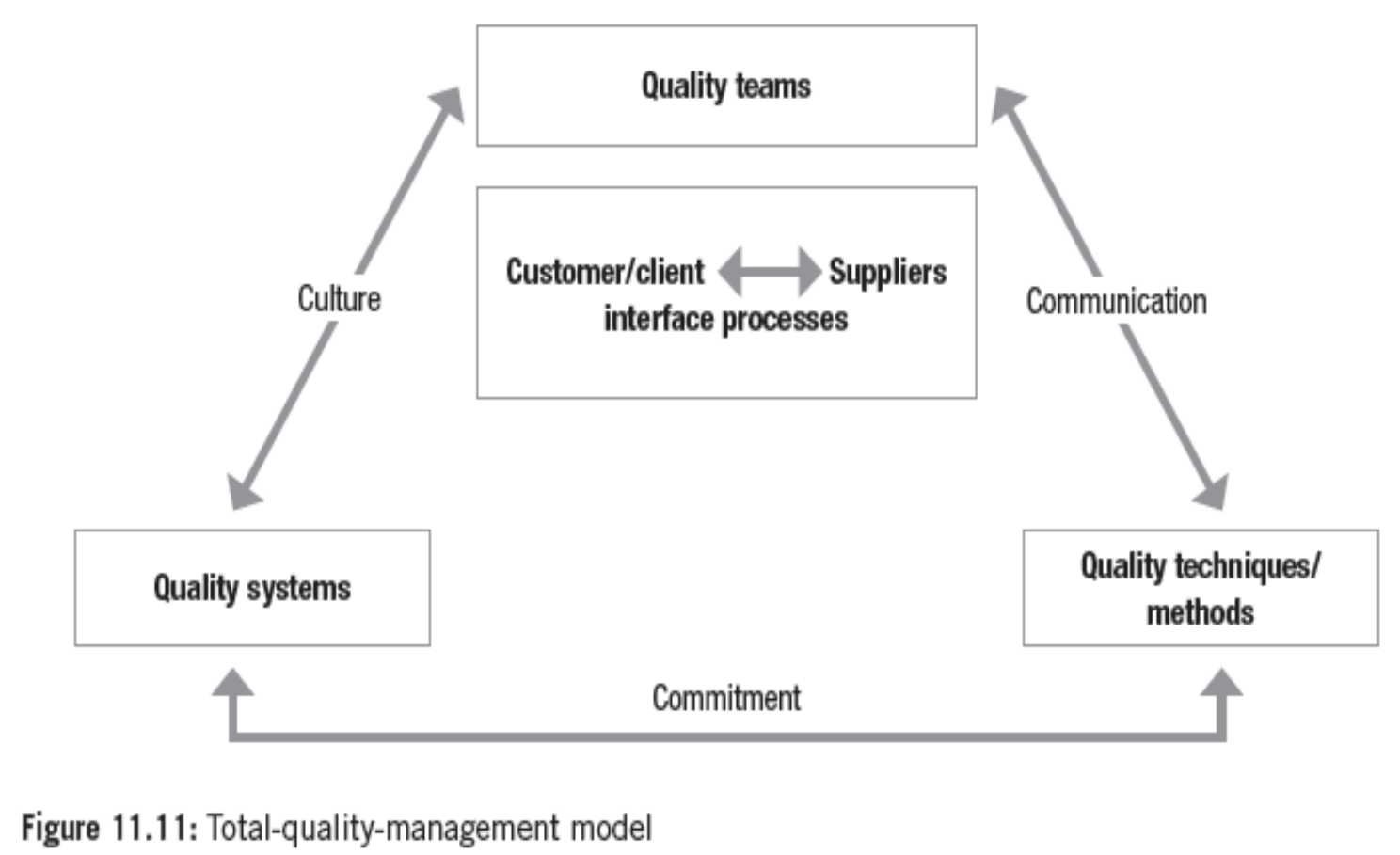


Figure 11.11: Total-quality-management model

The ISO 9000 quality management system standard

- ISO 9000 series – International quality management system
- ISO 9000 document includes guidelines under five headings:
  - Documentation requirements
  - Management responsibility
  - Resource management
  - Product realisation
  - Measurement, analysis and improvement.

The implementation of TQM

- Factors that should be taken into account include the following:
  - Integration of TQM in the overall business strategy
  - Top management's and employees' support and involvement
  - Teamwork in the improvement initiatives
  - Feedback on quality successes that have been achieved
  - Creation of a quality awareness culture
  - Training of employees in quality techniques and methods.

Summary

- Three activities of operations managers
  - Design
  - Planning and control
  - Improvement.
- Classification of different process types for manufacturers and service providers
- Satisfy needs of customers/clients and design operations process to manufacture or provide

Summary (continued)

- Improving the reliability of the entire operations process on a continuous basis
- Improving the entire business by applying TQM