Chapter 2
Information Systems for Competitive Advantage
Learning Objectives

► Know the general systems model of the firm.
► Understand the eight-element environmental model as a framework for understanding the environment of a business organization.
► Understand that supply chain management involves the planning and coordination of physical resources that flow from the firm’s suppliers, through the firm, and to the firm’s customers.
► Recognize that competitive advantage can be achieved with virtual as well as physical resources.

Learning Objectives (Cont’d)

► Understand Michael E. Porter’s concepts of value chains and value systems.
► Know the dimensions of competitive advantage.
► Recognize the increasing challenges from global competitors and the importance of information and coordination in meeting those challenges.
► Understand the challenges of developing global information systems.
Learning Objectives (Cont’d)

► Know the basic types of information resources available to the firm.
► Know the dimensions of information that should be provided by an information system.
► Know how to manage knowledge in the form of legacy systems, images, and knowledge.
► Understand how a firm goes about strategic planning – for the firm, its business areas, and its information resources.

Figure 2.1 The General System Model of the Firm
The General Systems Model of the Firm

► Physical resource flow includes personnel, material, machines, and money.
► Virtual resource flow includes data, information, and information in the form of decisions.

► Firm’s control mechanism include
  ▪ Performance standards to meet if the firm wants to achieve overall objectives.
  ▪ Firm’s management.
  ▪ Information processor that transform data into information.
The Firm in Its Environment

- **Environmental elements** are organizations and individuals that exist outside the firm and have a direct or indirect influence on it.
  - Such as suppliers, customers, labor unions, financial community, stockholders and owners, competitors, and governments.
- **Global community** is the geographic area where the firm performs its operations.

Figure 2.2 Eight Environmental Elements

![Diagram showing the eight environmental elements: Society, Government, Global community, Customers, Competitors, Suppliers, Labor unions, and Stockholders or owners.](image)
Environmental Resource Flows

- Information flows from customers. Often.
- Material flow to customers. Often.
- Money flow to stockholders. Often.
- Raw materials flow from suppliers. Often.
- Money flow from government. Less often.
- Material flow to suppliers. Less often.
- Personnel flow to competitors. Less often.

Managing the Physical Resource Flows—Supply Chain Management

- **Supply chain** is the pathway that facilitates the flow of physical resources from suppliers to the firm and then to customers.
- **Supply chain management** manages the resources through the supply chain to ensure timely and efficient flow.
Supply Chain Management Activities

► Forecasting customer demand
► Scheduling production
► Establishing transportation networks
► Ordering replenishment stock from suppliers
► Receiving stock from suppliers

Supply Chain Management Activities

► Managing inventory—raw materials, work-in-process, and finished goods
► Executing production
► Transporting resources to customers
► Tracking the flow of resources from suppliers, through the firm, and to customers
Supply Chain Management

► Firm’s information systems can be used to perform the supply chain activities.
► Electronic systems provide the ability to track the flow of the resources as it occurs.
► Is a crucial aspect of a firm’s ERP system.

Competitive Advantage

► Competitive advantage refers to the use of information to gain leverage in the marketplace.
  ▪ Uses virtual as well as physical resources.
  ▪ Is used to meet the strategic objectives of the firm.
Porter’s Value Chains

► **Value chain** is created to achieve competitive advantage.
  - Consists of the primary and support activities that contribute to margin.
► **Margin** is the value of the firm’s products and services minus their costs, as perceived by the firm’s customers.
  - Increased margin is the objective of the value chain.

![Figure 2.3 A Value Chain](image-url)
Porter’s Value Activities

► **Primary value activities** manage the flow of physical resources through the firm.
► **Support value activities** include the firm’s infrastructure.
  - Each value activity includes purchased inputs, human resources, and technology.

Expanding the Scope of the Value Chain

► **Interorganizational system (IOS)** is the linking of the firm’s value chain to those of other organizations.
► **Business partners** are the participating firms in the IOS.
► **Value system** is the linking of the firm’s value chain with those of its distribution channel members.
The Dimensions of Competitive Advantage

► **Strategic advantage** has a fundamental effect in shaping the firm’s operations.

► **Tactical advantage** is when the firm implements a strategy better than its competitors.

► **Operational advantage** deals with everyday transactions and processes.

Challenges from Global Competitors

► **Multinational corporation (MNC)** is a firm that operates across products, markets, nations, and cultures.
  - It consists of a parent company and its subsidiaries.
  - Information processing is crucial to minimize *uncertainty.*
The Special Need for Coordination in a MNC

► Coordination is key to achieving competitive advantage globally.

► Advantages of coordination include:
  - Flexibility in responding.
  - Ability to respond market by market.
  - Ability to keep abreast of market needs globally.
  - Reduce overall costs of operation.

Challenges in Developing Global Information Systems

► Global information system (GIS) describes an information system that consists of networks that cross national boundaries.

► Challenges
  - Politically imposed constraints.
  - Cultural and communications barriers.
  - Hardware purchases and imports
  - Data processing
  - Data communications
GIS Subsidiary Challenges

► Technological problems due to level of technology in subsidiary countries
  ▪ Telecommunications speed and quality
  ▪ Software copyrights and licenses
► Lack of support from subsidiary managers

Knowledge Management

► Information resources consist of hardware, software, information specialists, users, facilities, databases, and information.
► Knowledge management (KM) is acquiring data, processing data into information, using and communicating information in the most effective way, and discarding information at the proper time.
The Dimensions of Information

- **Relevancy** - pertains to the problem at hand.
- **Accuracy** - strive for 100%.
- **Timeliness** - should be available for decision making before a crisis situations develop or opportunities are lost.
- **Completeness** - the correct amount of aggregation and supports all areas of the decision being made.
  - **Information overload** is having too much information.

The Changing Nature of Knowledge Management

- **Legacy information systems** are earlier systems software and hardware that are incompatible or partially incompatible with current information technology.
  - Produce primarily historical information.
  - Data may not be available in digital format.
- **Image management**
Strategic Planning for Information Resources (SPIR)

- Strategic Planning
  - Enterprise-executive committee
  - Business areas-resources for human, information, financial, marketing, manufacturing.

- The SPIR Approach:
  - Concurrent development of strategic plans for information services and the firm so that the firm's plan reflects the support to be provided by information services.

- Chief Information Officer (CIO)
- Chief Technology Officer (CTO)

Figure 2.7 Strategic Planning for Information Resources