

Management Information Systems, 10/e

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Chapter 2

Information Systems for Competitive Advantage

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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.

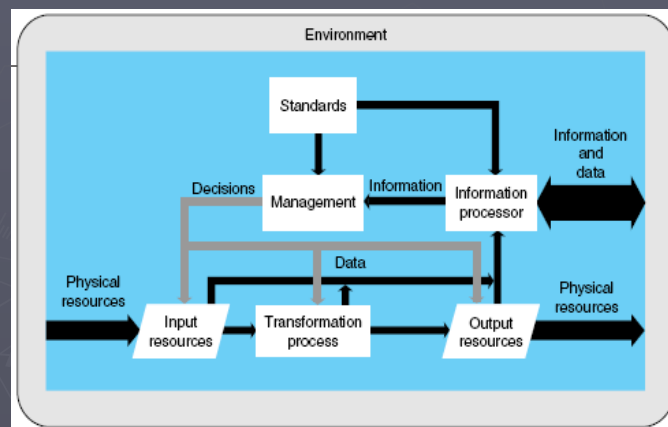
Learning Objectives (Cont'd)

- ▶ 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.

The General Systems Model of the Firm

- ▶ 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



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.

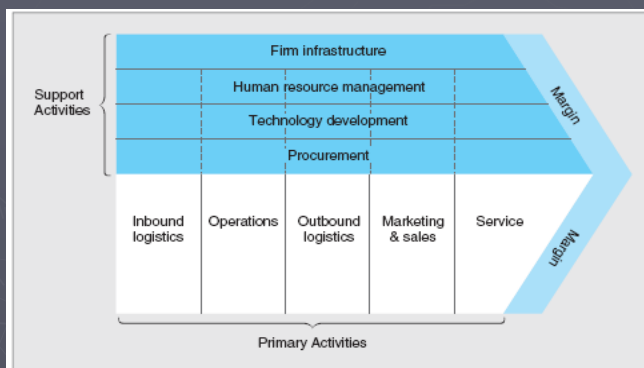
Competitive Advantage

- ▶ **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



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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

