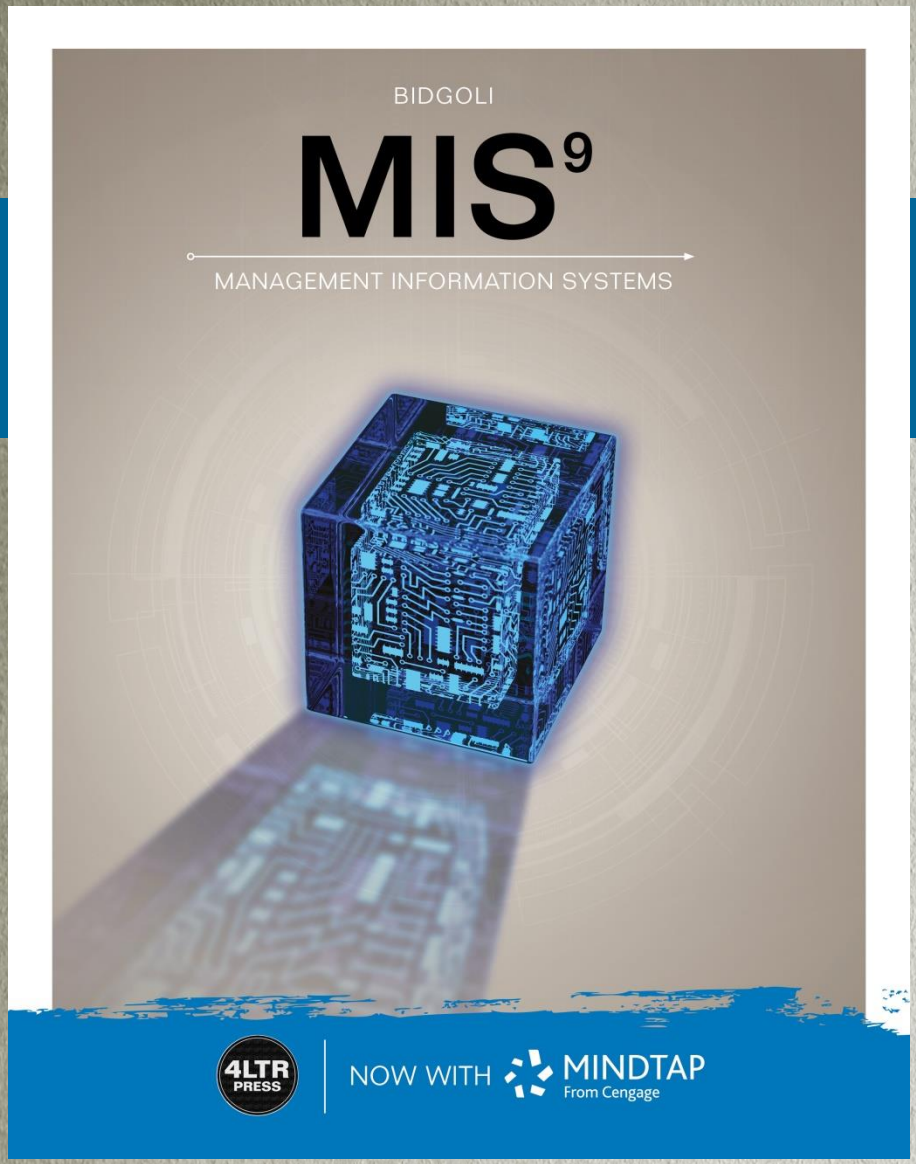

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Information Systems: An Overview

Learning Outcomes (1 of 3)

- Discuss common applications of computers and information systems
- Explain the differences between computer literacy and information literacy
- Define transaction-processing systems
- Define management information systems

Learning Outcomes (2 of 3)

- Describe the four major components of an information system
- Discuss the differences between data and information
- Explain the importance and applications of information systems in functional areas of a business

Learning Outcomes (3 of 3)

- Discuss how information technologies are used to gain a competitive advantage
- Explain the Five Forces Model and strategies for gaining a competitive advantage
- Review the IT job market
- Summarize the future outlook of information systems

Computers and Information Systems

- Many uses
  - Reduce costs
  - Gain a competitive advantage in the marketplace
  - Online classes
  - Grocery and retail stores
  - Telecommuting
  - Social networking
  - Video sharing

Computer Literacy and Information Literacy (1 of 2)

- Computer literacy
  - Skill in using productivity software, as well as having a basic knowledge of hardware and software, the Internet, and collaboration tools and technologies
    - Software examples: word processors, spreadsheets, database management systems, and presentation software

Computer Literacy and Information Literacy (2 of 2)

- Information literacy: understanding the role of information in generating and using business intelligence (BI)
  - BI provides historical, current, and predictive views of business operations and environments and gives organizations a competitive advantage in the marketplace

The Beginning: Transaction-Processing Systems

- Transaction-processing systems (TPSs)
  - Focus on data collection and processing
  - Used for cost reduction
  - Applied to structured tasks (e.g., record keeping, simple clerical operations, and inventory control)
  - Require minimal human involvement when automated

Management Information System (1 of 2)

- Management information system (MIS)
  - Organized integration of hardware and software technologies, data, processes, and human elements
  - Designed to produce timely, integrated, relevant, accurate, and useful information for decision-making

Management Information System (2 of 2)

- Designing tasks
  - Define the system's objectives
  - Collect and analyze data
  - Provide information in a useful format for decision-making purposes
- MIS applications
  - Used in both private and public sectors

Exhibit 1.3 Major Components of an Information System

Data (1 of 2)

- Data component of an information system
  - Considered the input to the system
- Sources of data
  - Internal: sales and personnel records
  - External: customers, competitors, suppliers, government agencies, financial institutions, labor and population statistics, as well as economic conditions

Data (2 of 2)

- Has a time orientation
  - Past data: performance reports
  - Current data: operational reports
- Can be collected in different forms
  - Disaggregated data: helps analyze sales by product, territory, or salesperson
  - Aggregated data: useful for reporting overall performance during a sales quarter

Database

- Collection of relevant data organized in a series of integrated files
  - Essential for the success of any information system
- Database management system (DBMS)
  - Used to create, organize, and manage databases
- Reduces personnel time needed to gather, process, and interpret data manually

Process

- Generates the most useful type of information for making decisions
  - Transaction-processing reports
  - Models for decision analysis that can be built into the system or accessed from external sources

Information (1 of 3)

- Consists of facts analyzed by the process component and is an output of an information system
  - Usefulness qualities
    - Timeliness
    - Integration with other data and information
    - Consistency and accuracy
    - Relevance

Information (2 of 3)

- Needs to provide either a base for users to explore different options or insight into tasks
- Usefulness is affected by the information system's user interface
  - Graphical user interfaces (GUIs) are used because they are flexible and easy

Information (3 of 3)

- Systems should produce information in different formats, including graphics, tables, and exception reports
  - Increases likelihood of users understanding and being able to use the information
- Users need to be able to make use of informal information when solving problems
  - Refer to text for examples

Using Information Systems and Information Technologies

- Information technologies
  - The Internet
  - Computer networks
  - Database systems
  - Point-of-sale (POS) systems
  - Radio-frequency-identification (RFID) tags

The Importance of Information Systems (1 of 5)

- Timely, relevant, and accurate information is a critical tool
  - Enhance a company's competitive position in the marketplace
  - Manage the four Ms of resources
    - Manpower, machinery, materials, and money

The Importance of Information Systems (2 of 5)

- Personnel information system (PIS) or human resource information system (HRIS)
  - Designed to provide information that helps decision makers in personnel carry out tasks effectively
- Logistics information system (LIS)
  - Designed to reduce the cost of transporting materials while maintaining safe and reliable delivery

The Importance of Information Systems (3 of 5)

- Manufacturing information system (MFIS)
  - Used to manage manufacturing resources
    - Reduce manufacturing costs
    - Increase product quality
    - Improve inventory decisions

The Importance of Information Systems (4 of 5)

- Financial information system (FIS)
  - Used to provide information to financial executives in a timely manner
- Marketing information system (MKIS)
  - Used to improve marketing decisions
  - Provides timely, accurate, and integrated information about the marketing mix
    - Price, promotion, place, and product

The Importance of Information Systems (5 of 5)

- Marketing technology tools
  - Business, Web, and mobile analytics
  - E-mail marketing
  - Search engine marketing
  - Mobile technologies
  - Marketing automation

Using Information Technologies for a Competitive Advantage (1 of 3)

- Michael Porter: three strategies for successfully competing in the marketplace
  - Overall cost leadership
  - Differentiation
  - Focus

Using Information Technologies for a Competitive Advantage (2 of 3)

- Information systems
  - Help organizations reduce the cost of products and services
  - Help bottom-line and top-line strategies
  - Use enterprise systems to create an efficient and effective link between suppliers and consumers

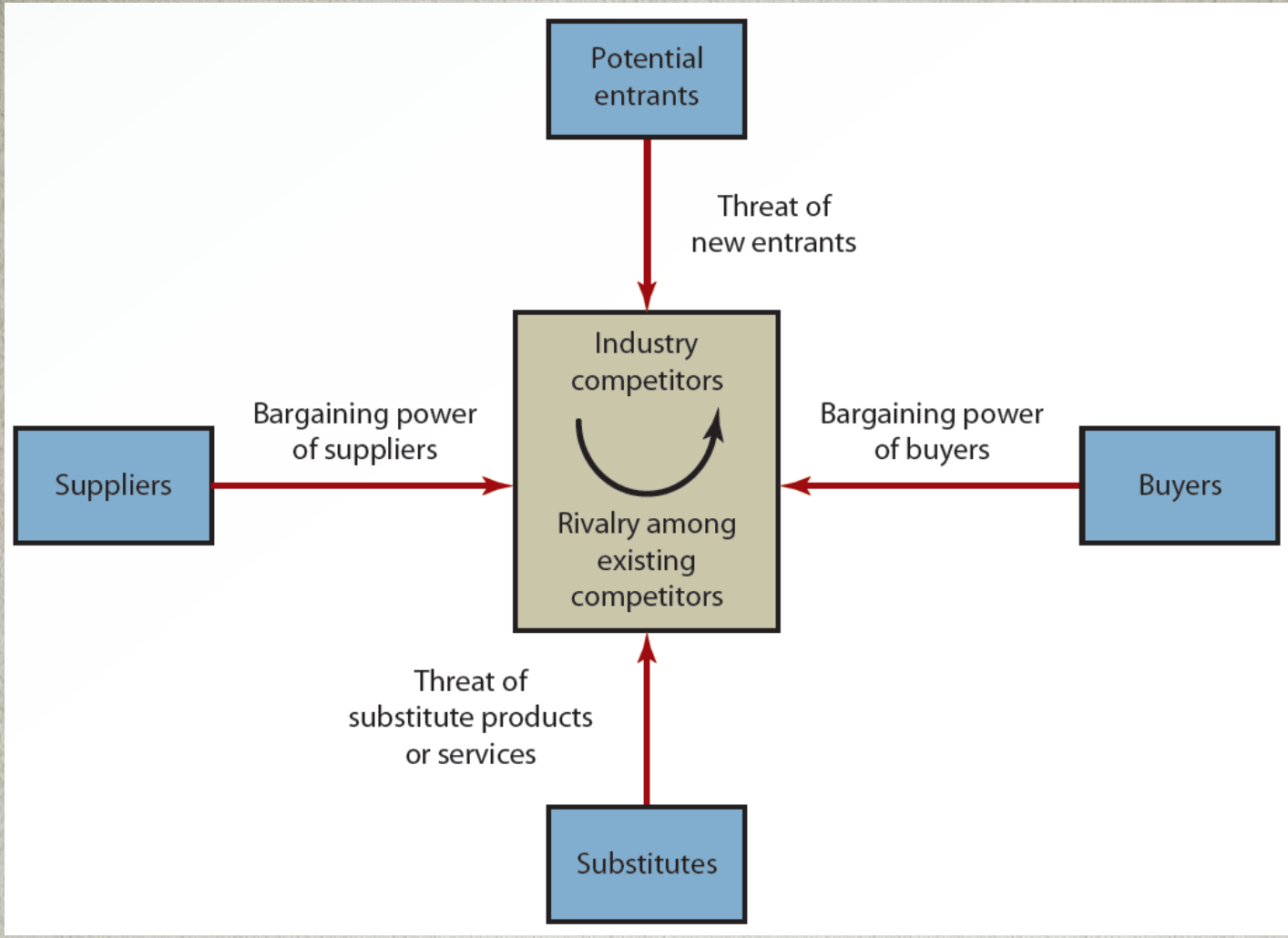
Using Information Technologies for a Competitive Advantage (3 of 3)

- Differentiation strategies
  - Making products and services different from competitors
- Focus strategies
  - Focusing on specific market segments to achieve a cost or differentiation advantage

Porter's Five Forces Model: Understanding the Business Environment (1 of 3)

- Analyzes a firm's position in the marketplace and how information systems can make it more competitive
  - Five forces
    - Buyer power
    - Supplier power
    - Threat of substitute products or services
    - Threat of new entrants
    - Rivalry among existing competitors

Exhibit 1.4 The Five Forces Model



Porter's Five Forces Model (2 of 3)

- Buyer power
  - High when customers have many choices and low when customers have few choices
- Supplier power
  - High when customers have fewer options and low when customers have more options
- Threat of substitute products or services
  - High when many alternatives to an organization's products and services are available

Porter's Five Forces Model (3 of 3)

- Threat of new entrants
  - Low when duplicating a company's product or service is difficult
  - Focus strategies are used to ensure that the threat remains low
- Rivalry among existing competitors
  - High when competitors occupy the same marketplace position
  - Low when there are few competitors

The IT Job Market (1 of 5)

- Categories of IT jobs
  - Operations and help desk
  - Programming
  - Systems design
  - Web design and Web hosting
  - Network design and maintenance
  - Database design and maintenance
  - Robotics and artificial intelligence

The IT Job Market (2 of 5)

- Chief technology officer (CTO)/chief information officer (CIO)
  - Oversees long-range planning and monitors new developments that can affect a company's success
- Chief privacy officer (CPO)
  - Responsible for managing risks and business impacts of privacy laws and policies

The IT Job Market (3 of 5)

- Manager of information systems services
  - Responsible for managing hardware, software, and personnel in the information systems department
- Systems analyst
  - Responsible for the design and implementation of information systems
  - Should have a sound understanding of business systems and functional areas within a business organization

The IT Job Market (4 of 5)

- Network administrator
  - Oversees a company's internal and external network systems
  - Provides network and cybersecurity
- Database administrator (DBA)
  - Responsible for database design and implementation
  - Required to have knowledge and understanding of data warehouses and data-mining tools

The IT Job Market (5 of 5)

- Computer programmer
  - Writes programs or software segments that allow the information system to perform a specific task
- Webmaster
  - Designs and maintain the organization's Web site
  - Have been in high demand owing to the popularity of e-commerce applications

Outlook for the Future (1 of 3)

- Predictions for the future
  - Hardware and software costs will decline
  - Artificial intelligence and related technologies will improve and expand
  - Computer literacy and networking technology will improve
  - Personal computers will improve in power and quality
  - Internet growth will continue

Outlook for the Future (2 of 3)

- Computer criminals will become more sophisticated
  - Protecting personal information will become more difficult

Outlook for the Future (3 of 3)

- Some of the trends that should continue
  - Ubiquitous computing and the Internet of Things (IoT)
  - 3D printing, pervasive analytics, context aware computing, smart machines and devices, and cloud computing
  - Software defined applications and infrastructures
  - Security
  - Increased applications of augmented and virtual reality

Summary

- Computers and information systems are used to reduce costs and gain a competitive advantage in the marketplace
- Information systems are designed to collect data, process it, and deliver timely, relevant, and useful information for making decisions