COMP1010 - Week 2 Information Systems

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Knowledge and Expertise

Research Overview

- Professor Brian Corbitt PhD FACS CP is currently Professor of Information Systems and Professor Mentor in the College of Business at RMIT University. He has previously been Deputy Pro Vice Chancellor Business Research (RMIT), Pro Vice Chancellor (Online Services at Deakin University), Adjunct Professor of IT at KMIT (NB), Professor of Management Science at Shinawatra University in Thailand, JADE Professor of eCommerce at Victoria University of Wellington in New Zealand, and prior was on staff at both Monash University and the University of Melbourne, where he was also Head of International House.
- Visiting Professor Smith School of Business, University of Maryland, USA.
- Professor Corbitt specialises in Information Systems modelling, business policy and IT, ebusiness, eGovernment and spatial information systems.
- He has published 10 books on eBusiness, eCommerce and eGovernment. He has also published over 200 refereed scholarly papers, and numerous government reports to the Governments of Thailand and New Zealand, as well as many invited papers as a keynote speaker on IT policy in Malaysia, Singapore, Thailand, New Zealand, Japan, Hong Kong, and Australia.

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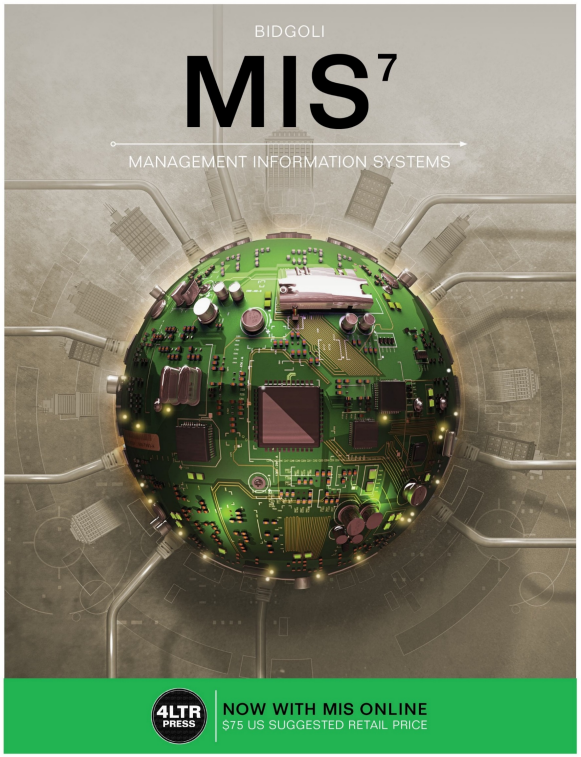

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INFORMATION SYSTEMS: AN OVERVIEW

LEARNING OUTCOMES

1 Discuss common applications of computers and information systems

2 Explain the differences between computer literacy and information literacy

3 Define transaction-processing systems

4 Define management information systems

5 Describe the four major components of an information system

LEARNING OUTCOMES *(continued)*

6 Discuss the differences between data and information

7 Explain the importance and applications of information systems in functional areas of a business

8 Discuss how information technologies are used to gain a competitive advantage

LEARNING OUTCOMES *(continued)*

9 Explain the Five Forces Model and strategies for gaining a competitive advantage

10 Review the IT job market

11 Summarize the future outlook of information systems

Computers and Information Systems in Daily Life

- Used by organizations to reduce costs and gain a competitive advantage in the marketplace
- Used by students for online classes
- Used in grocery and retail stores
  - Point-of-sale (POS) system speeds up service by reading the universal product codes (UPCs) on items in the shopping cart
  - Health
- Information systems and information technologies are used interchangeably

Computer Literacy and Information Literacy

- **Computer literacy**: Skill in using productivity software such as:
  - *Word processors, spreadsheets, database management systems, and presentation software*
  - *Knowledge of hardware and software, the Internet, and collaboration tools and technologies*

Computer Literacy and Information Literacy

- **Information literacy**: Understanding the role of information in generating and using business intelligence
  - **Business intelligence (BI)**
    - Provides historical, current, and predictive views of business operations and environments
    - Gives organizations a competitive advantage in the marketplace

The Beginning: Transaction-Processing Systems

- Focus on data collection and processing
  - *Mainly used for cost reduction*
  - *Applied to structured tasks*
    - Record keeping, simple clerical operations, and inventory control
  - *Requires minimal human involvement when automated*

Management Information Systems

- 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 purposes

Management Information Systems

- Processes: Methods for performing a task in an MIS application
- Designing involves:
  - *Defining the system's objectives*
  - *Collecting and analyzing data*
  - *Providing information in useful format for decision-making purposes*
- Used in private and public sectors

Exhibit 1.3 Major Components of an Information System

Data

- Component of an information system consisting raw facts
- Sources of data
  - *Internal: Sales and personnel records*
  - *External*
    - Customers, competitors, and suppliers
    - Government agencies and financial institutions
    - Labor and population statistics
    - Economic conditions

Data

- Has a time orientation
- Collected in forms of:
  - Aggregated
    - Useful for reporting overall performance during a sales quarter
  - Disaggregated
    - Analyzes sales by product, territory, or salesperson

Database

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

Process

- Component of an information system that generates useful information for decision making
  - *Transaction-processing reports and models for decision analysis can be built into the system or accessed from external sources*

Information

- Consists of facts analyzed by the process component and is an output of an information system
- Need to have the following qualities to be useful:
  - Timeliness
  - Integration with other data and information
  - Consistency and accuracy
  - Relevance

Information

- Need 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 because:
  - *Interface must be flexible and easy to use*

Information

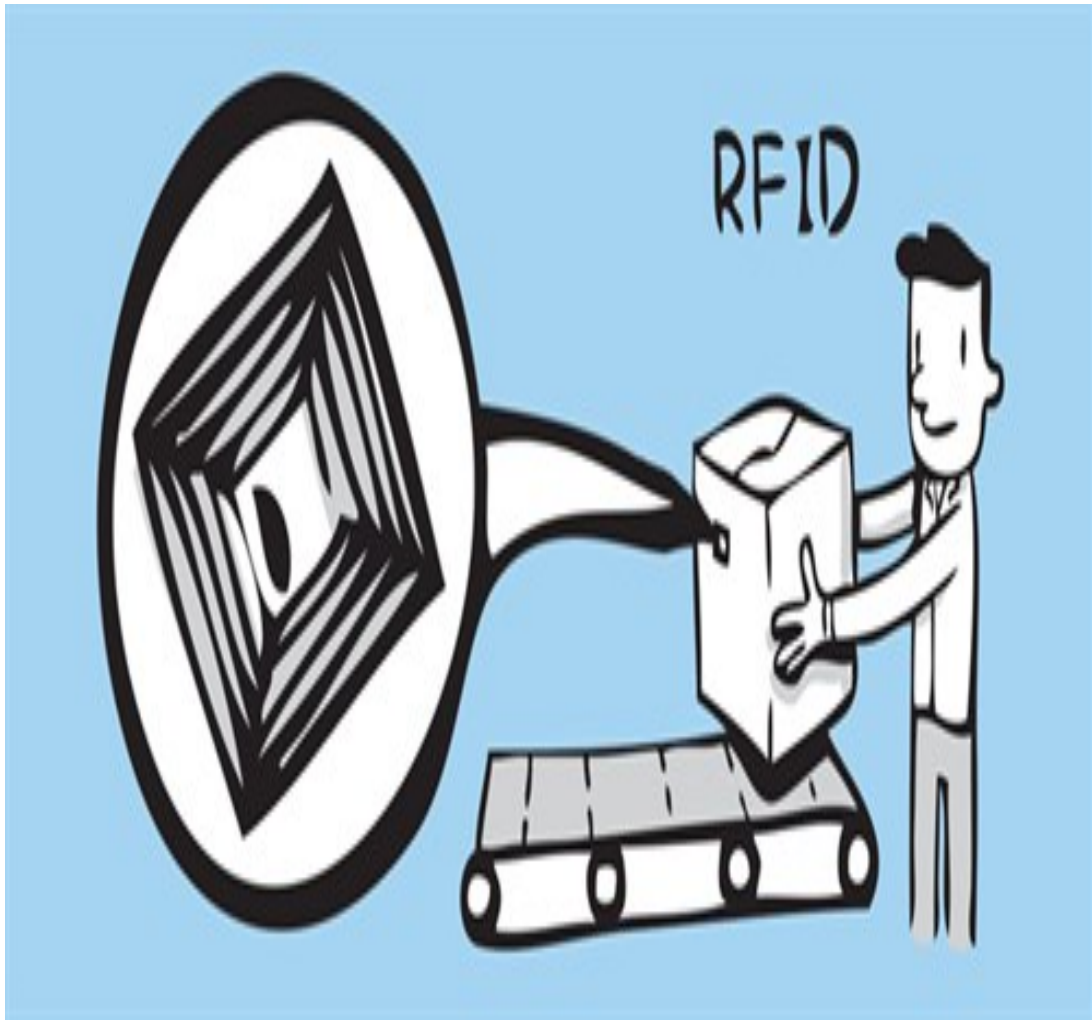
- Information systems should produce information in different formats
  - Graphics
  - Tables
  - Exception reports

Information

- Supplied in a variety of formats increases the likelihood of:
  - *Users understanding and being able to use the information*
- Users need to be able to make use of informal information to solve problems

Using Information Systems and Information Technologies

- **Information technologies**: Support information systems
  - Uses:
    - Internet
    - Computer networks
    - Database systems
    - POS systems
    - Radio frequency identification (RFID) tags



Importance of Information Systems

- Timely, relevant, and accurate information is a critical tool for:
  - *Enhancing a company's competitive position in the marketplace*
  - *Managing the four Ms of resources*
    - Manpower, machinery, materials, and money

Importance of Information Systems

- Personnel information system (PIS) or human resource information system (HRIS)
  - *Type of information system*
  - *Provides information that helps decision makers in personnel performing their tasks more effectively*
  - *Web technologies improve the efficiency and effectiveness of HR departments*
    - Intranets are used to provide basic HR functions

Importance of Information Systems

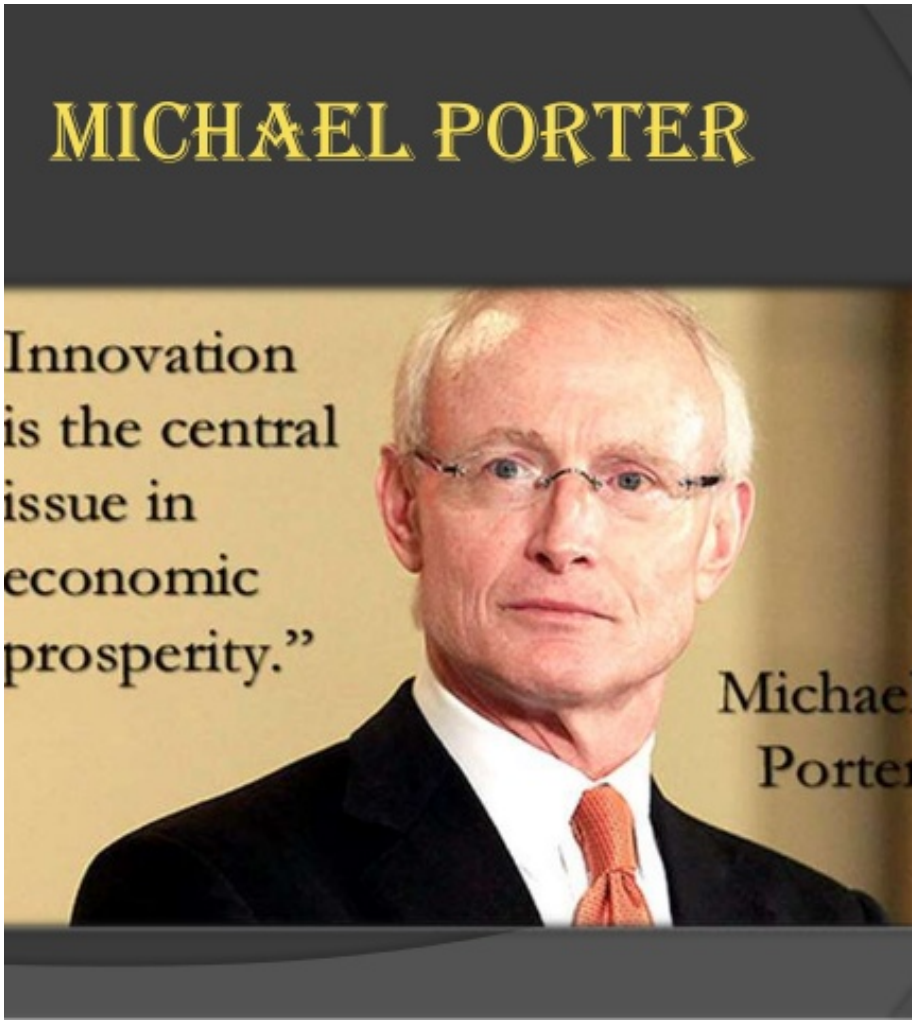
- Logistics information system (LIS)
  - Reduces the cost of transporting materials
  - Maintains safe and reliable delivery
- Manufacturing information system (MFIS)
  - Manages manufacturing resources which help companies to:
    - Reduce manufacturing costs
    - Increase product quality
    - Improve inventory decisions

The Importance of Information Systems

- Financial information system (FIS)
  - *Provides information to financial executives in a timely manner*
- Marketing information system (MKIS)
  - *Improves marketing decisions*
  - *Provides timely, accurate, and integrated information about the marketing mix-4Ps*
    - Price, promotion, place, and product

Using Information Technologies for a Competitive Advantage

- Strategies for competing in the marketplace identified by Michael Porter, a Professor at Harvard Business School
  - Overall cost leadership
  - Differentiation
  - Focus



Using Information Technologies for a Competitive Advantage

- Information systems helps:
  - *Organizations to reduce the cost of products and services*
  - *Bottom-line strategies*
    - Improves efficiency by reducing overall costs
  - *Top-line strategies*
    - Focuses on generating new revenue

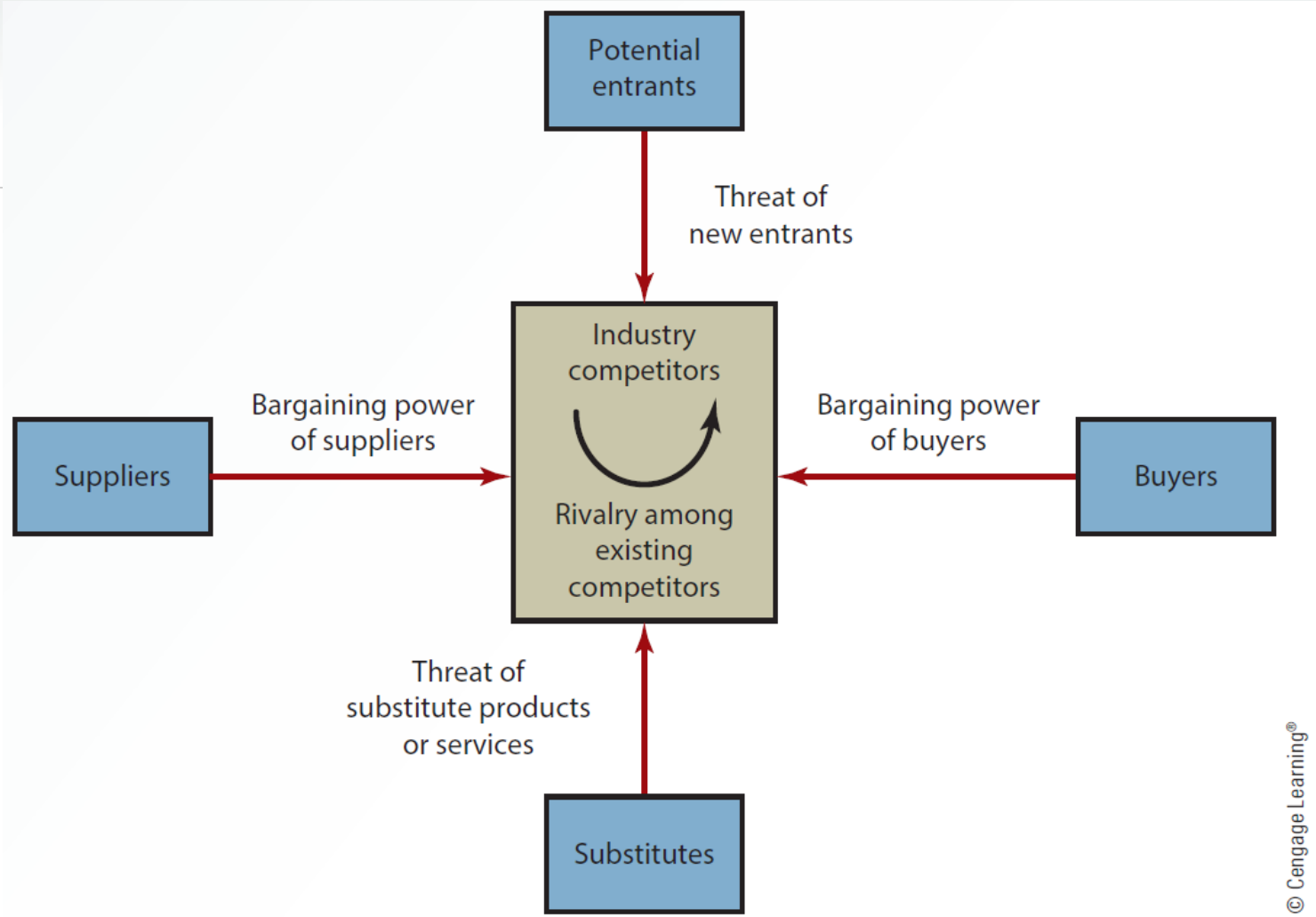
Using Information Technologies for a Competitive Advantage

- Organizations:
  - *Use enterprise systems to reduce costs and improve customer service*
  - *Make the products and services different from their competitors for differentiation strategies*
  - *Focus on specific market segments to achieve a cost or differentiation advantage with focus strategies*

Porter's Five Forces Model: Understanding the Business Environment

- Analyzes an organization's position in the marketplace and how information systems can be used to 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



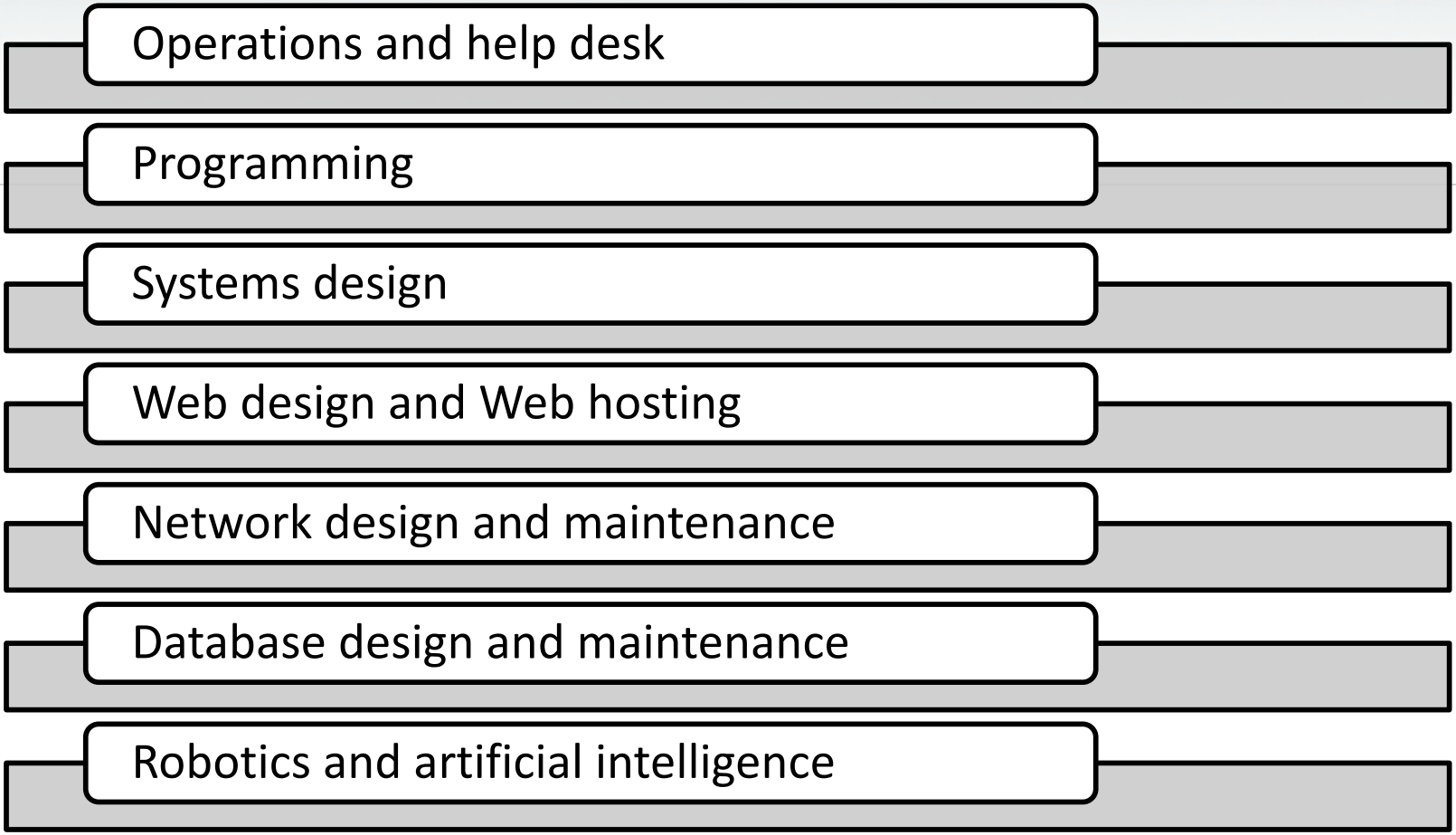
Porter's Five Forces Model: Understanding the Business Environment

- 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 alternatives to an organization's products and services are available*

Porter's Five Forces Model: Understanding the Business Environment

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

Categorization of IT Jobs



Popular Jobs in the Information Systems Field

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

Popular Jobs in the Information Systems Field

- 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*
    - Requires understanding of business systems and functional areas within a business organization

Popular Jobs in the Information Systems Field

- Network administrator
  - *Administers a company's internal and external network systems*
  - *Provides network and cybersecurity*
- Database administrator
  - *Responsible for database design and implementation*
  - *Possesses knowledge and understanding of data warehouses and data-mining tools*

Popular Jobs in the Information Systems Field

- Computer programmer
  - *Writes programs or software segments allowing the information system to perform a specific task*
- Webmaster
  - *Designs and maintains the organization's website*

Outlook 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

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

KEY TERMS

- **Business intelligence (BI)**
- **Computer literacy**
- **Data**
- **Database**
- **Five Forces Model**
- **Information**

KEY TERMS

- Information literacy
- Information technologies
- Management information system (MIS)
- Process
- Transaction-processing systems (TPSs)

SUMMARY

- Computers and information systems are used to reduce costs and gain a competitive advantage in the marketplace
- Computer and information literacy are the types of knowledge required to be competitive in the workplace
- Information systems are designed to collect data, process it, and deliver timely, relevant, and useful information for making decisions

SUMMARY

- Some segments of the IT job market have shown growth compared to other job markets, even during the economic downturn
- Improvement in networking technology will result in easy computer connections and faster transfer of information
- Internet growth will make e-collaboration easier, despite geographical distances