Appendix A

Using Information Technology

Learning Objectives

❶ Describe the key components of a computer and explain their purpose.

❷ Discuss the different ways computers and related technologies, contribute to today's businesses.

❸ Describe some of the key challenges of managing today's information technologies.

❹ Identify emerging technologies and their implications.

Information Technologies Increasing Value

Management Information Systems → Improve Decision Making → Firm's Revenue

Management Information Systems → Improve Efficiency → Firm's Expenses

Firm's Revenue / Firm's Expenses → Firm's Earnings → Firm's Value

---

Computer Literacy

"To err is human, but to really foul things up requires a computer."

-Anonymous

"For better or worse, technology has pervaded every aspect of business and most facets of our lives"

-Prof. Murray

What is MIS?

- Identifying the *information* that is needed for effective *decision making* in organizations and developing *information systems* to satisfy those needs

- In other words…

  " **MIS is using technology to create business value**."

MIS

What do MIS professionals do?

TECHNOLOGY

MIS

BUSINESS

Bridge the gap between *business* and *technical* minds

MIS

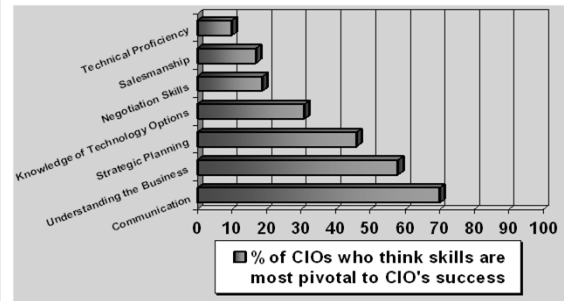### What does it take to succeed?

PEOPLE SKILLS
- Communication
- Teamwork
- Patience
- Creativity
- Decision Making
- Creativity

TECHNICAL SKILLS
- Technical Curiosity
- Problem Solving
- Analytical
- Programming
- Web development
- Synthesis

BUSINESS SKILLS!

Essential Skills for Today's CIO

Technical Proficiency
Salesmanship
Negotiation Skills
Knowledge of Technology Options
Strategic Planning
Understanding the Business
Communication

0 10 20 30 40 50 60 70 80 90 100

☐ % of CIOs who think skills are most pivotal to CIO's success

Source: CIO, March 1, 2002

MIS Career Outlook – GREAT!

Projected percent growth in occupations from 2008 to 2018

- Network systems & data communications analysts (53.4%)
- Computer software engineers, applications (34%)
- Computer software engineers, systems software (30.4%)

These positions are ranked in the **top 25%** for median earnings and are in the BLS list of fastest growing jobs.

Source: U.S. Department of Labor Bureau of Labor Statistics
http://www.bls.gov/emp/ep_table_103.htm

MIS Careers

What general careers are there in MIS?
- Project Managers / CIO
- Systems Analysis and Design
- Software Design
- Internet
- Database
- Network / Telecommunications
- Technical Sales

Data versus Information

- Data – collection of unorganized facts.

- Information – data that has been processed into a useful form which can be used in decision making.

- Information Processing Cycle

  Input → Process → Output → Storage
  (Data)   (Information)

Data versus Information

- 1234567.89 is **data**.
- "Your bank balance has jumped 8087% to $1234567.89" is **information**.
- "Nobody owes me that much money" is **knowledge**.
- "I'd better talk to the bank before I spend it, because of what has happened to other people" is **wisdom**.

Characteristics of Good Information

- Relevant
- Timely
- Accurate
- Meaningful Format
- Complete
- Accessible

System Architecture: Four Key Components

① Central Processing Unit (CPU)
② Primary Storage
③ Secondary Storage
④ Peripherals

Central Processing Unit (CPU)

Business Online

- Heart of a computer.
- Performs all calculations and moves information between computer and other components.
- Speed or movement is measured in Gigahertz.

Primary Storage

Where information is temporarily stored.
- Random access memory (RAM).
- Memory where programs and data in current use are kept and accessed.
- Generally applications will run faster with more RAM available.

CPU and Primary Storage
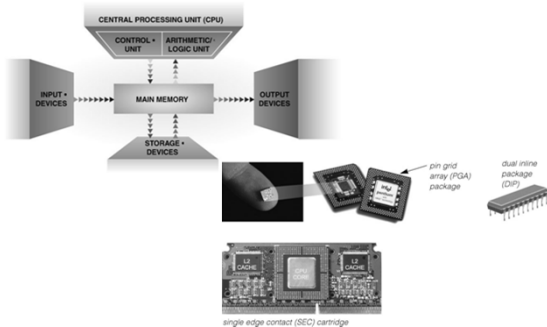
Secondary Storage

More permanent and sometimes removable storage.

Common forms of secondary storage:
- Hard drives
- Floppy disks
- Magnetic tapes
- CD ROMS

Peripherals

Devices attached to the CPU which are not primary or secondary storage.

Types of peripherals:
- Mouse
- Monitor
- Keyboard
- Printer
- Scanners

Peripherals - Keyboard

Software Categories

- System or Operating Software: manages the other software programs in a system.
- Application Software: programs that perform specific functions.
- Middleware: allows other application programs to cooperate with each other.
- Utility Software: programs that perform specific functions generally for the system.

Computer Use

- Computational Models
- Data Processing Systems
- Interorganizational System

Data Processing Systems

Advantages:
- Accuracy
- Speed
- Space
- Flexibility

Interorganizational Systems (IOS)

Use computers and telecommunications technology to move information across boundaries of the firm.

IOS Types:
① Remote job entry systems
② Electronic data interchange (EDI)
③ Commercial information service

Managing Information Technologies

- Managing firm's information system architecture
  - Stand-alone system
  - Mainframe (multi-user) system with terminals
  - Network system includes file servers and workstations
    - Local area network (LAN)
    - Wide area network (WAN)

Managing Information Technologies

- Acquiring software
  - Compatibility
  - Upgradeability
  - Support
  - Customized software

Managing Information Technologies

- Managing the development of information systems
  - Enterprise resource planning (ERP) systems
  - Systems development life cycle (SDLC)
  - Incremental development techniques
    - Prototype, alpha and beta testing

Managing Information Technologies

- Managing the implementation of information systems
  - Transferring a system to its intended users often is more difficult than technical development of the system.

Managing Information Technologies

Implementation Techniques

① Ensure top management support.
② Ensure need for system has been established and communicated to users.
③ Involve those using the system in the design and development process.
④ Design system that is <u>intrinsically</u> motivating.

Managing Information Technologies

- Managing information systems security
  - Protect against espionage
    - Use passwords to limit access
    - Systematically change passwords
    - Terminate user rights when person leaves
    - Train personnel in security procedures
  - Protect against sabotage
    - Back up system regularly
    - Use proper virus hygiene

Protecting Your Computer

- Windows software patches and updates
  - update.microsoft.com
- Symantec antivirus and firewall software (schedule updates!)
  - www.buffalo.edu/ubit/service-guides/software.html
- Adware removal tools
  - www.lavasoftusa.com - Adware
  - www.safer-networking.org - Spybot Search & Destroy

Protecting Your Computer

- Excellent General Resource:
  - www.spywarewarrior.com
- Don't open unknown email attachments
- Don't open or respond to spam email
- Don't share your username/password
- Keep your computer physically secure
- Be careful installing shareware/freeware programs
- Seek out help in maintaining your computer system if necessary.

Truly Intelligent Systems

- Artificial intelligence (AI)
- Experimental computers with many CPU's that operate simultaneously

- The Goal of Artificial intelligence (AI) is to perform tasks such as, logical reasoning, language, vision, and motor skills
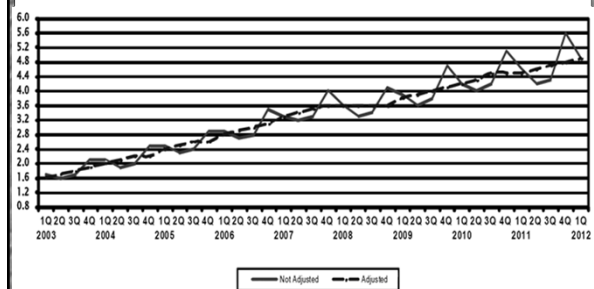
Why should you care about MIS?

- Do you use a computer/cell phone/other technology?
- Technology is everywhere and impacts most aspects of business and our lives.
- Technology / Information Systems can and should be utilized as a competitive advantage.
- Information systems can be built to aid decision making and to automate existing work

Why should you care about MIS?

- E-Commerce is rapidly growing! Online consumer spending was up 22% in 2010 to $165,000,000,000!
- More and more users (customers) are utilizing broadband connections to the Internet.
- There are an estimated 1.9 billion users (customers) using the Internet. This represents roughly 28.7% of the world population.
- The Internet is becoming more diverse. In other words, the market you can sell to is growing and changing.

E-Commerce Growth: % of overall retail sales

Why should you care about MIS?

As managers and business owners, you also:

- Need to be knowledgeable when working with your MIS department and/or technology vendors.
- Need to leverage technology **appropriately** to create business value.
- Need to position your company appropriately to take advantage in changes in technology and to protect yourself from problems with technology.
- Need to understand how technology may create a global market for your products and services.

Quote

"We should be impressed by technology, but we shouldn't be distracted by it or fooled into thinking that technology, unto itself, is the solution to anything."

-Lou Gerstner