

FUNDAMENTALS OF INFORMATION SYSTEMS

ITE101 LESSON 1

INFORMATION TECHNOLOGY

- IT is making our world smaller, enabling more and more people to *communicate, collaborate, and compete*.

We are...or it is...

- Global
- Massively interconnected
- Intensively competitive
- 24/7/365
- Real time
- Rapidly change
- Information intensive

1.1 WHY SHOULD I STUDY INFORMATION SYSTEMS

- The informed user is YOU!
- IT Offers Career Opportunities
- Managing Information Resources

THE INFORMED USER IS YOU!

Homo Conexus

- you are the most connected generation in history.
- you practice continuous computing
- you are surrounded by a personal, movable information network.

Other items

- you benefit when you understand what is behind the application.
- you can recommend and help select IT applications
- you will be aware of new technology and understand how IT improves performance.
- understanding IT is beneficial to entrepreneurs.

Digital Nomads

- are location-independent individuals who use technology to work remotely, allowing them to travel freely while earning income
- often in fields (tech, marketing, or creative arts) and can range from full-time travellers to those who move seasonally

- uses laptops, and Wi-Fi to work from cafes, co-working spaces, or temporary housing instead of a fixed office.

IT OFFERS CAREER OPPORTUNITIES

- IT is vital to modern business providing many lucrative career opportunities
 - ◆ Programmers, business analysts, system analysts, and designers
 - ◆ Chief Information Officer (CIO) – executive in charge of the IS function
 - ◆ Career opportunities will remain strong in the future
- MIS personnel vs. end users
- Changing Role of the IS Department
 - ◆ Traditional Function of the MIS Department
 - ◆ New (Consultative) Functions of the MIS Department

Top Job Rankings: Forbes (Out of 10)

- #3 Information security analyst
- #7 Software engineer
- #8 Computer systems analyst

Top Job Rankings: U.S. News & World Report (out of 100)

- #3 Computer systems analyst
- #13 Software Developer
- #20 Web Developer
- #29 IT Manager

Top Job Rankings: Money

- #1 Software Engineer
- #7 IT Analyst

CAPABILITIES OF INFORMATION SYSTEMS

- store huge amounts of information in small space
- allow quick, inexpensive access to vast amounts of information worldwide
- interpret vast amounts of data quickly and efficiently

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- increase effectiveness and efficiency of people working in groups in one place or around the world
- perform high-speed, high-volume numerical computations
- automate semiautomatic business process and manual tasks
- provide fast, accurate communication and collaboration within and among organizations

MANAGEMENT INFORMATION SYSTEMS (MIS)

- the planning for and the development, management and use of information technology tools
- to help people perform all the tasks related to information processing and management.

MIS DEPARTMENT

Traditional	New (Consultative)
–Managing systems development	–Incorporating Ecommerce into the business
–Systems project management	–Managing system integration
–Managing computer operations	–Internet, Intranet, Extranet
–Providing technical services	–Education
–Infrastructure planning, development, and control	–Managing Outsourcing

Initiating and designing specific strategic information systems

- your information needs will often mandate the development of new strategic information systems.
- you will decide which strategic systems you need (because you know your business needs better than the MIS department does)
- you will provide input into developing these systems.

Incorporating the Internet and electronic commerce into the business

- you will be primarily responsible for effectively using the Internet and electronic commerce in your business.
- you will work with the MIS department to accomplish this task.

Managing system integration, including the Internet, intranets, and extranets

- your business needs will determine how you want to use the Internet, your corporate intranets, and extranets to accomplish your goals.
- you will be primarily responsible for advising the MIS department on the most effective use of the Internet, your corporate intranets, and extranets.

Educating the non-MIS managers about IT

- your department will be primarily responsible for advising the MIS department on how best to educate and train your employees about IT.

Educating the MIS staff about the business

- communication between the MIS department and the business units is a two-way street.
- you will be responsible for educating the MIS staff on your business, its needs, and its goals.

1.2 OVERVIEW OF COMPUTER-BASED INFORMATION SYSTEMS

IT vs IS

Information Technology

- any computer based **tool** that people use to work with information processing needs of an organization

Information Systems

- collects, processes, stores, analyzes, and disseminates information of the specific purpose,

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→ Get the

- ◆ right information to the
- ◆ right people and the
- ◆ right time in the
- ◆ right amount in the
- ◆ right format

Data

- transactions that are recorded, classified and stored but are not organized to convey any specific meaning

Information

- meaning and value

Knowledge

- accumulated learning and expertise as they apply to a current problem or activity.

Functional Area Systems

- a collection of application programs within an area is called Functional Area Systems.
 - ◆ Accounting
 - ◆ Finance
 - ◆ POM- Production/ Operations/ Management
 - ◆ Marketing
 - ◆ Human Resources IS

Accounting Systems

- forecast revenues and business activity
- Determine the best sources and uses of funds
- perform audits
- financial reports and documents are accurate.

Marketing

- **Product analysis:** developing new goods and services
- **Site analysis:** determining the best location for production and distribution facilities
- **Promotion analysis:** identifying the best advertising channels
- **Price analysis:** setting product prices to obtain the highest total revenues

Principles of Operation Management (POM)

- Customer orders
- Develop production schedules
- Control inventory levels
- Monitor product quality

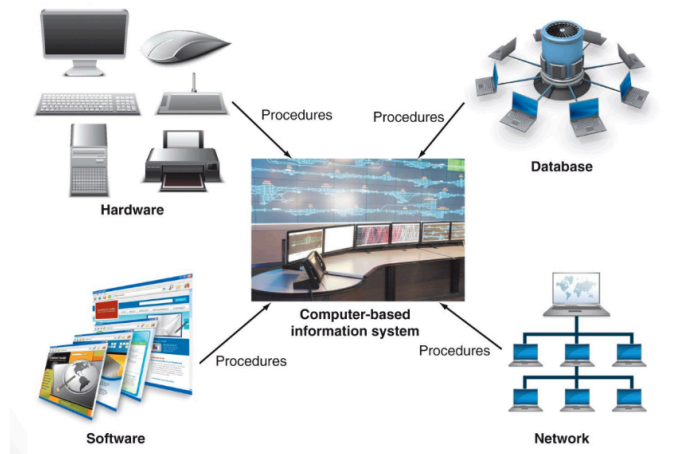
Human Resources

- Recruiting process
- Analyze and screen job applicants
- Hire new employees
- Monitor employee productivity
- Employ Health and Retirement benefits

Data-Information-Knowledge-Wisdom

- **Business Intelligence** – helps analyze information to make better informed decisions
- **Expert Systems** – attempt to duplicate human experts by applying reasoning and

BASIC COMPONENTS OF A CBIS



Information Technology Services

IT Platform (or otherwise know as IT Components)	IT Personnel
–Hardware	–Develop IS Systems
–Software	–Oversee security and risk
–Networks	–Manage data
–Database	

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expertise to a domain area (navigation routes)

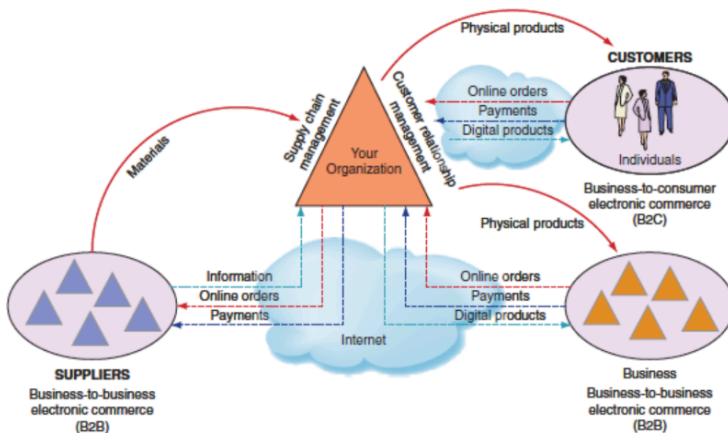
- **Dashboards** -- provide rapid access to timely information

Two Information Systems that support the entire organization

- **Enterprise Resource Planning** -- connects all functional areas together
- **Transaction Processing System** -- captures data from everywhere and everything

Information Systems between Organizations

- once you figured out your information systems within the walls of your company
- streamline your business so you can purchase supplies and sell goods
- stay competitive
- better known as supply chain management:
- suppliers of raw materials through factories and warehouses to YOU
- **Flow of:**
 - ◆ Materials
 - ◆ Information
 - ◆ Money



Clerical Workers

- performs essential daily office and administrative support tasks, like answering phones, data entry, filing, scheduling, and managing records, ensuring an organization runs smoothly.

Knowledge Workers

- professional employees that are experts in a particular subject area (e.g., financial and marketing analysts, engineers, lawyers, and accountants.).

Functional area information systems

- summarize data and prepare reports, primarily for middle managers, but sometimes for lower-level managers as well.

Business Intelligence (BI)

- stems that provide computer-based support for complex, nonroutine decisions, primarily for middle managers and knowledge workers.

Expert Systems (ES)

- systems that attempt to duplicate the work of human experts by applying reasoning capabilities, knowledge, and expertise within a specific domain.

Dashboards (aka Digital Dashboards)

- a special form of IS that supports all managers of the organization by providing rapid access to timely information and direct access to structured information in the form of reports.

1.3 HOW DOES IT IMPACT ORGANIZATIONS?

IT Reduces the Number of Middle Managers

- IT makes middle managers more productive, thus less needed

IT Changes the Manager's Job (changes decision making process)

- IT provides near-real-time information
- Managers have less time to make decisions
- IT provides tools for analysis to assist in decision making

Will IT Eliminate Jobs?

- Creates new job categories, and requires more employees with IT knowledge and skills

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HOW DOES IT IMPACT ORGANIZATIONS? EXAMPLES

- Book Industry
- Music Industry
- Video Industry
- Software Industry
- Videogame Industry
- Photography Industry
- Marketing Industry
- Recruiting Industry
- Financial Services Industry
- Motion Picture Industry
 - ◆ DreamWorks Animation
- Automobile Industry
- Agriculture Industry
- National Defense Industry
- Fashion Industry
- Education
- Legal Profession

IT Reduces the Number of Middle Managers

- IT makes middle managers more productive
- Consequently, IT reduces the number of middle managers required

IT Changes the Manager's Job

- **Decision making is the most important managerial task**
- **IT changes the way managers make decisions**
 - ◆ IT provides near-real-time information
 - ◆ Managers have less time to make decisions
 - ◆ IT provides tools for analysis to assist in decision making

Will IT Eliminate Jobs?

- **The competitive advantage of replacing people with IT & machines is increasing rapidly**
- **Increasing the use of IT in business also:**
 - ◆ creates new job categories
 - ◆ requires more employees with IT knowledge and skills

Social Effects

Positive

- Opportunities for people with disabilities
- Provide people with flexibility in their work
- Robots will take over mundane chores
- Enable improvement in healthcare
 - ◆ make better/faster diagnoses
 - ◆ monitor critically ill patients more accurately
 - ◆ streamline the process of researching & developing new drugs

Ergonomic Products

- A. wrist support
- B. back support
- C. eye-protection filter
- D. adjustable foot rest

1.4 IMPORTANCE OF INFORMATION SYSTEMS TO SOCIETY

- IT Affects Our Quality of Life
- The Robot Revolution Is Here Now
- Improvements in Healthcare

IT Affects Our Quality of Life

- **IT has changed the way we work**
 - ◆ smartphones provide constant access to text, email, and voice communications
 - ◆ the lines between time at work and leisure time at home have become blurred
 - ◆ surveys indicate employees take laptops and smartphones on vacation

Enabling People with Disabilities to Work with Computers

- **Computer solutions available to**
 - ◆ Visually-impaired users
 - ◆ Hearing-impaired users
 - ◆ Motor-impaired users

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Improvements in Healthcare

→ IT used in Healthcare to:

- ◆ make better/faster diagnoses
- ◆ monitor critically ill patients more accurately
- ◆ streamline the process of researching & developing new drugs
- ◆ to enhance the work of radiologists
- ◆ allow surgeons to use virtual reality to plan complex surgeries & use
- ◆ robots to remotely perform surgery

→ The Emergence of Cognitive Computing: IBM Watson

The Robot Revolution is Here Now

→ Robotics used in Industry:

- ◆ manufacturing
- ◆ hospitals
- ◆ farming operations

→ Robotics used in the Home:

- ◆ roomba to vacuum our floors
- ◆ scooba to wash our floors
- ◆ verro to clean our pools
- ◆ looj to clean our gutters
- ◆ baxter
- ◆ LoweBots
- ◆ walmart shopping cart robots
- ◆ drones
- ◆ autonomous vehicles