Why Study Information Systems?

- ALL ARE VITAL COMPONENTS OF SUCCESSFUL BUSINESS ORGANIZATIONS
- Important if you want to be a manager, entrepreneur, business consultant or business professional

Some figures

- The top salary increases went to people in Information Systems, with an average of 9% salary increase (Computerworld.com)
- IT staff earns on average $64,100
- Database Administrators $100,000
- CIO $250,000

Executive Roles in Information Technology

CEO
- Chief Executive Officer
  - Manages External Stakeholder Relationships
  - Sets Strategic Direction
  - Defines High Level IT Needs for the Future

COO
- Chief Operations Officer
  - Manages Operations
  - Allocates Resources
  - Primary Consumer of IT within the Organization

CFO
- Chief Financial Officer
  - Manages Accounting & Finance
  - Forecasts Needs and Secures Financial Resources
  - Allocates Budget for IT Expenditures

CIO
- Chief Information Officer
  - Manages IT Organization and Operations
  - Forecasts IT Needs from Business Strategy
  - Sets Direction for IT Architecture and Organization
  - Plans, Designs and Delivers IT throughout the firm
Information Systems Today

- Integrated with other Functions: Accounting, Finance, Marketing, HR, Operations
- The more integrated, the more advantageous to increase knowledge on Computer-based Information Systems

Why are Information Systems Important?

- Information Systems supports effective decision making by managers
- Information Systems is a vital ingredient in developing competitive products
- Information Systems is a dynamic, rewarding, and challenging career opportunity
- Information Systems is a key component of the resources and infrastructure in today's business enterprises.

Information Systems Framework

- Foundation Concepts
  - IS concepts and Systems Theory (Ch 1)
  - Competitive Strategy Concepts to develop business applications (Ch 1)
- Information Technologies
  - Hardware, Software, Data Communications and Networking and E-Commerce (Ch 3, 4, 5, and 6)

Information Systems Framework

- Business Systems
  - IT in Marketing, Finance, Accounting, HR
  - IT in Cross-Functional applications
  - Decision Making with DSS, ESS and AI

Why are Information Systems Important?

- Information Systems is a major functional area important to business success (just as Finance, Accounting, Marketing, and HR)
- Information Systems is an important contributor to operational efficiency, employee productivity, customer service, and customer satisfaction
Information Systems Framework

- Development Process:
  - Development Methodologies SDLC and Prototyping (Ch 7)
- Management and Ethical Challenges:
  - Ethical Challenges in Information Technology (Ch 8)
  - Global Concerns on IT Security (Ch 8)

Theme of the book:
- “The right information, delivered to the right person, in the right format, and at the right time, can improve the quality of decision-making.”

Data vs. Information

- **Data**: raw facts. By themselves not useful.
- **Data processing**: giving context to data and converting data into information.
- **Information**: the interpretation of processed data in order to make better decisions.

Converting data to Information

Characteristics of Good Information

- **Accurate**
- **Complete**
- **Economical**

Characteristics of Good Information (cont.)

- **Flexible**
- **Reliable**
- **Relevant**
Characteristics of Good Information (cont.)

- **Simple**
- **Timely**
- **Verifiable**

**System**

- **System**: an organized collection of interrelated parts that work together to achieve a common purpose.

- **Systems have**
  - Inputs
  - Processing Mechanism
  - Outputs
  - Feedback
  - Control

**System**

- **A system:**
  - Has an objective.
  - Has a collection of parts.
  - Has a structure.
  - Performs a set of functions.
  - Has a boundary.

**Classifying Systems: Simple vs. Complex**

- **Simple System**
- **Complex system**

**Classifying Systems: Open vs. Closed**

- **Open system**
- **Closed system**

- Adaptive system
- Non-adaptive system

Information Technology

- refers to the method, techniques and tools that are used as means to bring about computer-based information systems

Information System

- is a set of interrelated components that collect (input), manipulate and store (processing), and disseminate (output) data and information as well as a feedback mechanism

Information Systems

- Input - is the activity of capturing and gathering raw data
- Processing - involves converting or transforming raw data into useful output

Information Systems

- Output - involves producing useful information, usually in the form of documents and reports
- Storage – involves storing data as well as information

Information Systems

- Feedback - is output that is used to make adjustments or changes to input or processing activities
- Control – involves monitoring and evaluating feedback
Computer Based Information System

- is an Information System that uses computer systems, devices and technology

Computer-Based IS Components

- **Hardware**
  - Computer Systems
  - Computer Peripherals

- **Software**
  - System Software
  - Application Software

- **Database**
  - Databases
  - Knowledge Bases

- **Networks**
  - Communications media
  - Internet
  - Intranet

- **People**
  - End users
  - IS specialists
“IT Doesn’t Matter” – *Harvard Business Review*

Since every company has access to IT, is IT irrelevant?

GE – “IT is a business imperative, get 20% return on IT investments (invest $2.5 billion per year)”

Is spending a lot of money on IT enough?

Dell Corp – “IT is a huge advantage”

competitive advantage if you do it really well or sinkhole if you do it really really bad.

Intel – “IT does not matter” is a grossly wrong statement

is IT so close to maturation that it offers no competitive advantage?

it’s like saying “I have an old three speed bike and Lance Armstrong has a bike” so there is no competitive advantage

“Nicholas Carr may be ultimately correct when he says IT Doesn’t Matter. Business process improvement, competitive advantage, optimization, and business success do matter and they aren’t commodities. To facilitate these changes, IT can be considered a differentiator or a necessary evil. But today, it’s a must in a real-time corporation

– Ralph Szygenda, CIO of General Motors

Microsoft – “Got to emphasize ‘I’ on ‘IT’”

It’s like saying companies have enough information on their operations, customers, and employees.
Paul Strassman CIO at General Foods, Xerox, the Pentagon, NASA: “The hardware isn’t worth a damn. It’s just disposable. IT is a knowledge-capital issue. It’s basically a huge amount of labor and software. Look at Wal-Mart and FedEx. They’re all waging information warfare.”

Technology is no longer an afterthought in forming business strategy, but the actual cause and driver.

- *E-Business 2.0: Roadmap for Success [Kalakota and Robinson]*

Competitive value of IT lies mostly in the capability of software and of people and the value of information a business acquires and uses.

Competitive value of IT does not lie as much in hardware and networks.

Competitive advantage is a significant and long-term benefit to a company in relation to the competition.

Strategic Information Systems: Any kind of IS that uses IT to gain competitive advantage (or sometimes reduce competitive disadvantage).

Classes of Strategic Information Systems:
- EDP – Electronic Data Processing: automate repetitive tasks.
- EIS – Executive Information Systems: extension of DSS.
Electronic Data Processing
▷ is an organized collection of people, procedures, databases, and devices used to **develop and distribute business transactions**

Management Information System
▷ is an organized collection of people, procedures, databases, and devices used to **provide routine information to decision makers**

Decision Support System
▷ is an organized collection of people, procedures, databases, and devices used to **support problem-specific decision making**

Expert System
▷ is an organized collection of people, procedures, databases, and devices used to **generate expert advice or suggest a decision in an area**

Levels of the Organization and Traditional Systems

Computer literacy vs. IS literacy
▷ **Computer literacy**: knowledge of computer systems and equipment and how they function.
▷ **Information systems literacy**: knowledge of how data and information are used by decision-makers in an organizational setting.
IS literacy includes:

- understanding how and why technology is applied in business.
- understanding the information needs of the different levels of management.

Information Handling

- Data Gathering – searching through the internet, databases, journals, interviews, questionnaires, etc.
- Manipulation – copying data, storing it, moving it between application programs, and even changing the data’s format.
- Analysis – requires the use of tools, some of which include Microsoft Excel and Access.
- Presentation – tools such as Microsoft PowerPoint, HTML editors, and Web browsers are used to present the result of the analysis.

Competitive Strategies

- Cost Leadership
- Differentiation
- Innovation
- Growth
- Alliance

Using IT for Cost Leadership Strategy

- Use IT to reduce the cost of business processes
- Use IT to reduce cost for customers or suppliers

Using IT for Differentiation Strategy

- Create new IT features to differentiate products and services
- Use IT features to reduce the differentiation advantages of competitors
- Use IT features to focus products and services at selected marked niches

Using IT for Innovation Strategy

- Make radical changes to business processes with IT (cut costs, improve quality, efficiency, or customer service)
Using IT for Growth Strategy

- Use IT to manage global business strategies

Using IT for Alliance Strategy

- Develop interenterprise IS linked by the Internet

Other Strategies implemented with IT

- Lock-in customers and suppliers – by locking competitors out
- Build switching costs – investments in IT make customers dependent
- Barriers to entry – investments in IT discourage other companies from entering the market

Critical Success Factors:

Once those factors have been identified:

- Information Systems are developed to directly support those activities that positively impact the identified factors

Critical Success Factors:

- factors critical to the success of a business.

Important Strategic Uses of IT

- Knowledge Management Systems
- Customer-Focused Business
- Virtual Company
Intec Engineering Partnership Ltd.
Based in Houston with offices in Argentina, Chile, Bolivia, England, the Netherlands, Malaysia, and Australia
Project Management Company serves the oil and gas industry

Intec has 500+ employees
Clients include ExxonMobil and ChevronTexaco
Culture: "sharing information and bias against bureaucracy"
Has “Learning Team” which works on sharing knowledge among Intec engineers

“Learning Team” selected Web-based software and search engine from AskMe Corp. and AskMe customized the software.
75,000 technical documents, skills, certification databases, files of individual names, titles, locations e-mail addresses, and photos.

Knowledge Management Systems
Use IT to increase
  Access to information
  And improve problem solving

ROI 133%
Answered question = 30 minutes savings
e.g. pipeline question from Australia got 10 answers a day
“Some of the return on info is not quantified by how quickly you can do something, but by the fact that you can do it at all”

As the company grew, it was becoming more difficult to keep track of and access of information
Ask-Intec solved the problem with strategic use of IT
Intec improved its competitive position in satisfying their present clients and gaining new customers
Customer-Focused Business

- Customer-Focused Business – attempt to respond to customer concerns, provide top-quality customer service, anticipate future needs, and keep customers loyal.
- Internet technologies have created a strategic opportunity for companies to offer fast, responsive, high-quality products and services tailored to individual customer preferences.

Virtual Company

- uses IT to link organizations, people, assets and ideas
- has alliances with business partners interlinked by the Internet forming a interenterprise IS.

End of Information Systems and Systems Concepts