

IT

(Information Technology)

Khatam Institute of higher Education

Session # 1



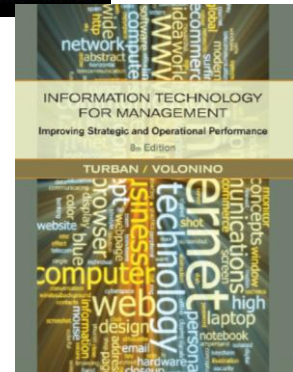
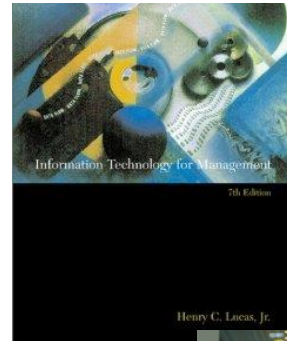
Course Description

- *Instructor*
 - *Omid Fatahi Valilai, Ph.D. Industrial Engineering Department, Sharif University of Technology*
 - *Email: Fvalilai@Sharif.edu, Tel: 021-6616-5706*
- *Class time*
 - *Tuesday* *13:00~16:00*
- *Course evaluation*
 - *Mid-term* *(30%)*
 - *Final exam* *(40%)*
 - *Quiz* *(10%)*
 - *Exercise* *(20%)*

Course Description (Continued ...)

- **Mid-term session:**
 - 18th , Azar 1393
- **Reference:**
 - Lucas, Henry J; “Information Technology for Management”, 7th edition, 2009, Irwin Mc Graw-Hill
 - Turban, Efraim; Volonino, Linda; “Information Technology for management, improving strategic and operational performance”, 2011, John Wiley & Sons

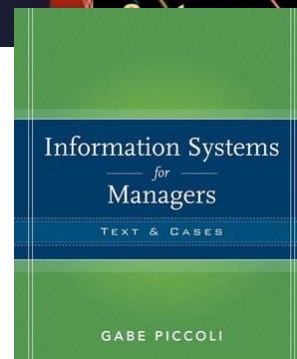
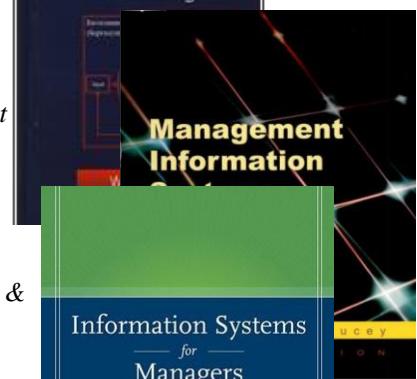
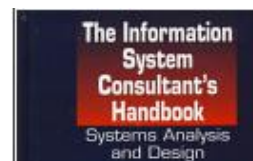
Khatam Institute of higher Education
IT (Information Technology), Session #1



Course Description (Continued ...)

- **Reference:**
 - Turban , E. et al., “Information Technology for Management Advancing Sustainable, Profitable Business Growth”, 2013, Wiley
 - Terence Lucey; “Management Information Systems”, 2004, Cengage Learning EMEA
 - Gabriele Piccoli; “Information systems for managers: texts & cases ”, 2007, John Wiley & Sons Inc

Khatam Institute of higher Education
IT (Information Technology), Session #1



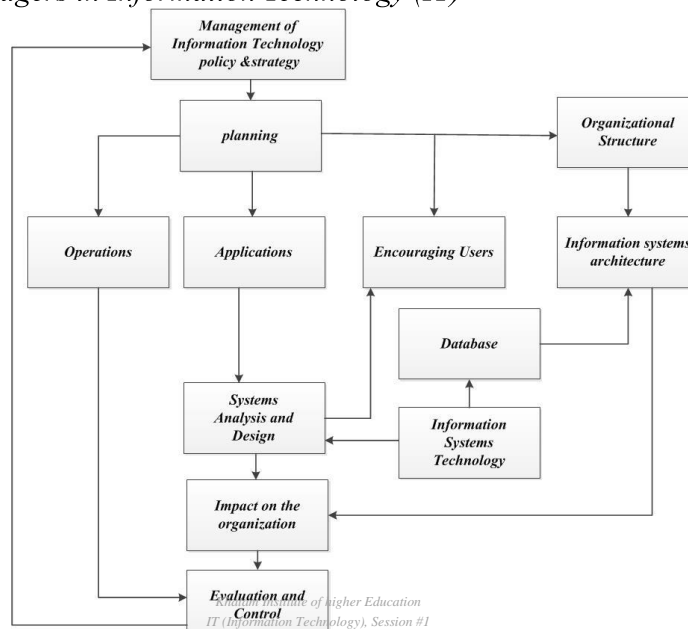
Course Description (Continued..)

- **Contents:**
 - *Foundation of Information Technology (IT)* (1 session)
 - *A Look Toward the Future of Information Technology* (2 sessions)
 - *Information Management and IT Architecture* (2 sessions)
 - *Networks, Collaboration, and Sustainability* (2 sessions)
 - *E-Business & E-Commerce Models and Strategies* (4 sessions)
 - *Functional Area and Compliance Systems* (4 sessions)
 - *Enterprise Systems and Applications* (6 sessions)
 - *Business Process and Project Management* (5 sessions)
 - *Logistics and Information Technology* (8 sessions)

Khatam Institute of higher Education
IT (Information Technology), Session #1

6

The role of managers in Information Technology (IT)



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IT (Information Technology), Session #1

7

The role of managers in Information Technology (IT)

- *Using technology to transform the organization*
 - *We are living in revolutionary times, a revolution brought on by dramatic advances in information technology.*
 - *If the steam engine, a new form of power, and mechanization created an Industrial Revolution over 150 years ago, **computers** and **communications equipment** have produced a Technology Revolution in the last half of the twentieth century.*

The role of managers in Information Technology (IT)

- *Using technology to transform the organization*
 - *In the Technology Revolution, companies use IT as a new **source of energy for processing and accessing** information.*
 - *Information Technology helps the organization collect, store, retrieve, and apply knowledge to solve problems;*
 - *IT converts the raw material of information into useable knowledge.*

The Technology Revolution, like the Industrial Revolution, has changed the economy, creating new industries and ways of doing business.

The role of managers in Information Technology (IT)

- *Using technology to transform the organization*

Information Technology

- *Provides new ways to design organizations and new organizational structures.*
- *Creates new relationships between customers and suppliers who electronically link themselves together.*
- *Presents the opportunity for electronic commerce, which reduces purchasing cycle times, increases the exposure of suppliers to customers, and creates greater convenience for buyers.*
- *Enables tremendous efficiencies in production and service industries*

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IT (Information Technology), Session #1*

10

The role of managers in Information Technology (IT)

A System and a Disaster

Oxford Health Plans is a successful health maintenance organization (HMO) in the New York area. The firm went public in 1991, and its stock price enjoyed steady growth. In 1997, however, problems with a new computer system led to significant losses, \$120 million in the fourth quarter on top of \$78 million in the third quarter. When the company announced its second quarterly loss, its stock price was 75 percent lower than its previous high. It was unable to send out monthly bills for many of its customers, and the company could not track payments to hundreds of doctors and hospitals. During the year, uncollected payments from customers rose to \$400 million, while Oxford's unpaid bills to (caregivers) rose to over \$650 million.

The problem began when Oxford started planning a system, based on the Oracle database management system, when it had a little over 200,000 members. By the time the system went live three years later, the HMO had 1.5 million members. The company tried to convert to the

new system all at once. While the computer system labored under the load, Oxford management continued its aggressive drive to sign up new members. The new system was intolerant of errors that were accepted in the old one. As a result, an account with thousands of participants might have been rejected for an error in any member's record.

Some customers refused to pay the HMO after not being billed for months so Oxford had to write off over \$100 million in uncollectible bills. The HMO's failure to pay its bills also angered care providers: At one point it owed Columbia University \$16 million and Cornell \$17 million for medical services. Oxford lost track of its actual medical costs—information a health care provider needs to set reserves and project liabilities.

While organizations have been implementing IT since the 1950s, we still seem to repeat many of the same problems. Oxford is a clear case of a management failure rather than a technology failure.

IT (Information Technology), Session #1

11

The role of managers in Information Technology (IT)

- *Using technology to transform the organization*

- Information Technology*

- *refers to all forms of technology applied to processing, storing, and transmitting information in electronic form.*

- *Information systems execute organized procedures that process and/or communicate information*

- *Information technology, however, extends far beyond the computational capabilities of computers. Today computers are used extensively for communications as well as for their traditional roles of data storage and computation.*

The role of managers in Information Technology (IT)

- *Using technology to transform the organization*

- Information Technology*

- *One impact of Information Technology is its use to develop new organizational structures*

- *The organization that is most likely to result from the use of these variables is the T-Form or Technology-Form organization,*

- *an organization that uses IT to become highly efficient and effective*

The role of managers in Information Technology (IT)

- *Using technology to transform the organization*
 - *The firm has a flat structure made possible by using e-mail and groupware (programs that help coordinate people with a common task to perform) to increase the span of control and reduce managerial hierarchy.*
 - *Managers delegate tasks and decision making to lower levels of management, and information systems make data available at the level of management where it is needed to make decisions.*
 - *The organization provides a fast response to competitors and customers.*
 - *Some members of the organization primarily work remotely without having a permanent office assigned*

The role of managers in Information Technology (IT)

- *Using technology to transform the organization*
 - *Information technology has demonstrated an ability to change or create the following:*
 - *Within organizations*
 - *Organizational structure*
 - *Inter-organizational relations*
 - *The economy*
 - *Education*
 - *National development*

The role of managers in Information Technology (IT)

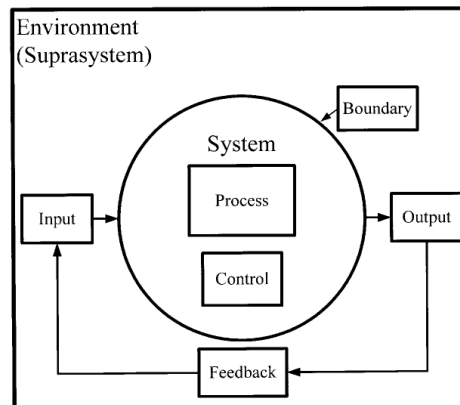
- *Using technology to transform the organization*
 - *Six major trends have drastically altered the organizations*
 - *The use of technology to transform the organization*
 - *The use of information processing technology as a part of corporate strategy.*
 - *Technology as a pervasive part of the work environment.*
 - *The use of technology to support knowledge workers*
 - *The evolution of the computer from a computational device to a medium for communications.*
 - *The growth of the Internet and World Wide Web.*

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IT (Information Technology), Session #1*

16

Foundation of Information Systems (IS)

- *Information system (IS):*
 - *is a set of hardware, software, data, human, and procedural components intended to provide the right data and information to the right person at the right time.*



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IT (Information Technology), Session #1*

17

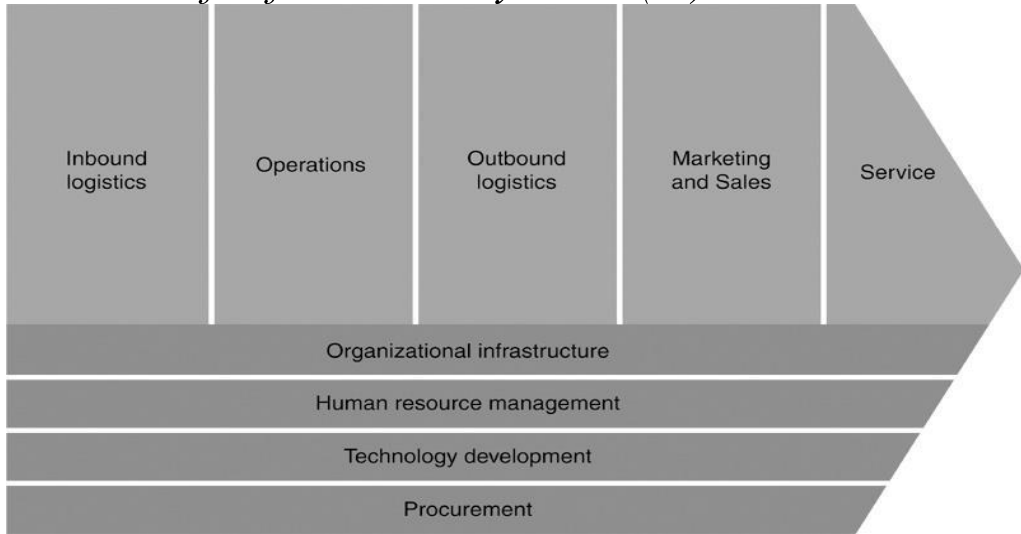
Foundation of Information Systems (IS)

- *Data & Information:*
 - *Data is a raw fact and can take the form of a number or statement such as date or a measurement .*
 - *Information is the data which have been processed so that they are meaningful.*
 - *Information needs the process(es) which collect(s) data and subject them to transformation process.*

Foundation of Information Systems (IS)

- *Information system (IS):*
 - *Of the most important role of the Information systems is to provide information for management*
 - *This management enables decision making process which ensure that the organization is controlled*
 - *The organization will be in control if it is meeting the needs of the environment*

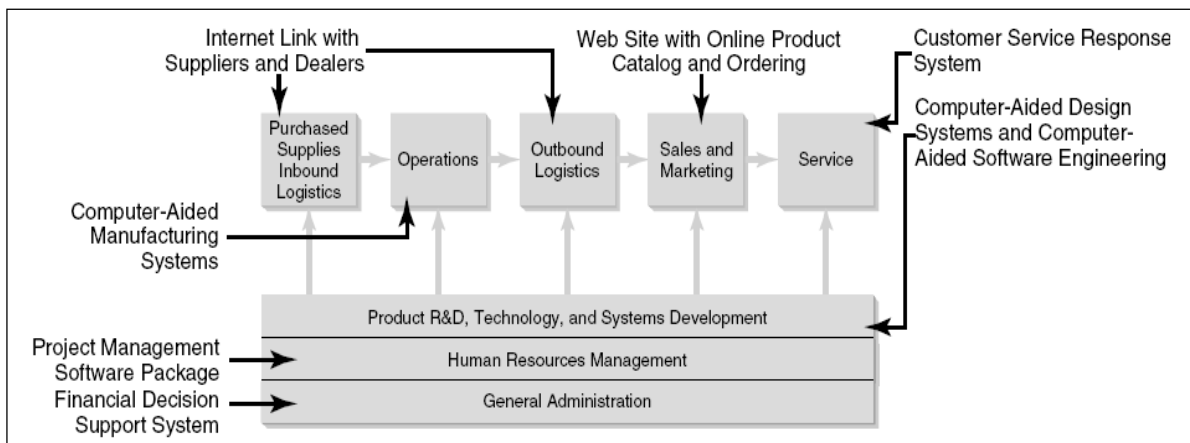
Foundation of Information Systems (IS)



Khatam Institute of higher Education
IT (Information Technology), Session #1

20

Foundation of Information Systems (IS)



Khatam Institute of higher Education
IT (Information Technology), Session #1

21

Foundation of Information Systems (IS)

- *Information systems may be divided into two categories of systems:*
 - *The Ones that support an organization's day-to-day business activities*
 - *Systems that support managerial decision making.*

Foundation of Information Systems (IS)

- *Types of Information Systems (IS):*
 - *Transaction Processing System (TPS) or Operations Information Systems (OIS)*
 - *Management Information Systems (MIS)*
 - *Decision Support System (DSS)*
 - *Group Decision Support System (GDSS)*
 - *Executive Support Systems (ESS) or Executive Information System (EIS)*

Foundation of Information Systems (IS)

- *Transaction Processing System (TPS) or Operations Information Systems (OIS)*
 - *TPSs support the routine, day-to-day activities that occur in the normal course of business.*
 - *TPSs often perform activities related to customer contacts – like order processing and invoicing.*
 - *The primary objective of any TPS is to capture, process, and store transactions and to produce a variety of documents related to routine business activities.*
 - *One objective of any TPS is error-free data input and processing.*

Foundation of Information Systems (IS)

- *Management Information Systems (MIS)*
 - *Management information systems (MIS) can often give firms a competitive advantage by providing the right information to the right people in the right format and at the correct time.*
 - *The primary purpose of an MIS is to help an organization achieve its goals by providing managers with insight into the regular operations of the organization so that they can*
 - *Control,*
 - *Organize, and*
 - *Plan**more effectively and efficiently.*
 - *MIS provides managers with information, typically in reports, that support effective decision making and provides feedback on daily operations*

Foundation of Information Systems (IS)

- *Management Information Systems (MIS) perform the following functions:*
 - *Provide reports with fixed and standard formats (hard-copy and soft-copy reports)*
 - *Use internal data stored in the computer system. MIS reports use primarily internal sources of data that are contained in computerized databases.*
 - *Allow end users to develop their own custom reports*

Foundation of Information Systems (IS)

- *Management Information Systems (MIS) are used in processes like:*
 - *Financial Management Information Systems*
 - *Manufacturing Management Information Systems*
 - *Marketing Management Information Systems*
 - *Human resource Management Information Systems*

Foundation of Information Systems (IS)

- *Decision Support System (DSS):*
 - *Decision support systems offer the potential to generate higher profits, lower costs, and better products and services.*
 - *today's managers at all levels are faced with less structured, non routine problems, but the quantity and magnitude of these decisions increase as a manager rises higher in an organization.*
 - *A DSS gives the decision maker a great deal of flexibility in computer support for decision making.*
 - *What-if analysis*
 - *Goal-seeking analysis*
 - *Simulation*

Foundation of Information Systems (IS)

- *Decision Support System (DSS):*
 - *Group Decision Support Systems (GDSS)*
 - *A group decision support system (GDSS), also called group support system and computerized collaborative work system, consists of most of the elements in a DSS, plus GDSS software needed to provide effective support in group decision-making settings.*
 - *Many GDSSs allow anonymous input, where the person giving the input is not known to other group members.*
 - *One key characteristic of any GDSS is the ability to suppress or eliminate group behavior that is counterproductive or harmful to effective decision making.*
 - *GDSS software, often called groupware or workgroup software helps with joint work group scheduling, communication, and management.*

Foundation of Information Systems (IS)

- *Decision Support System (DSS):*
 - *Executive Support System (ESS) or Executive Information System (EIS)*
 - *ESS is a specialized DSS that includes all hardware, software, data, procedures, and people used to assist senior-level executives within the organization.*
 - *ESSs give top executives a means of tracking critical success factors.*
 - *ESSs are typically tailored to individual executives; DSSs are not tailored to particular users.*
 - *An ESS allows executives to drill down into the company to determine how certain data was produced.*
 - *ESSs also support strategic planning. Strategic planning involves determining long-term objectives by analyzing the strengths and weaknesses of the organization, predicting future trends, and projecting the development of new product lines.*

Foundation of Information Systems (IS)

- *Hardware:*
 - *Hardware describes the physical components of a computer system which can be categorized as input devices, a central processing unit, internal and external memory and output devices.*
 - *Input devices are used to capture or enter data into the computer.*
 - *The central processing unit (CPU) performs processing by carrying out instructions given in the form of computer programs.*
 - *Internal memory is used as a temporary means of storage data and instructions while external memory provides a means of storing data and programs outside of the computer. Output devices translate the results of processing into a human-readable form.*

Foundation of Information Systems (IS)

- *Software:*
 - *Software can be defined as a series of detailed instructions that control the operation of a computer system and exists as programs which are developed by computer programmers.*
 - *Systems software: Systems software manages and controls the operation of the computer system as it performs tasks on behalf of the user. Systems software consists of three basic categories:*
 - *Operating systems,*
 - *Software development programs and*
 - *Utility programs.*
 - *Application software: Application software can be defined as a set of programs that enable users to perform specific information-processing activities. Application software can be divided into two broad categories:*
 - *General-purpose and*
 - *Application-specific.*

Foundation of Information Systems (IS)

- *Database Systems:*
 - *A database is a collection of related files.*
 - *Databases can exist on paper, for example a telephone directory.*
 - *A computer-based database offers the advantage of powerful search facilities which can be used to locate and retrieve information.*
 - *An electronic database provides facilities for users to add, amend or delete records as required.*
 - *Indexing features mean that the same basic information can be stored under a number of different categories. This provides great flexibility and allows users to locate, retrieve and organize information as needed.*

Foundation of Information Systems (IS)

- *Database Systems:*
 - *The data in an electronic database is organized by fields and records.*
 - *A field is a single item of information, such as a name or a quantity.*
 - *A record is a collection of related fields and a table is a collection of related records.*
- *Database Software*
 - *The majority of database programs support the creation of relational databases containing several linked tables.*
 - *When using database software data is retrieved from a database using what is called a query.*

Foundation of Information Systems (IS)

- *Database Software*
 - *The majority of database programs make use of a special structured query language (SQL) in order to create queries.*
 - *Structured query language (SQL) provides a standardized method for retrieving information from databases.*
 - *SQL programs are created by producing a series of statements containing special key words.*

Foundation of Information Systems (IS)

- *Networks:*
 - *A network is a combination of devices connected to each other through communication links to provide the channels for information to flow continuously between people.*
 - *Networks are important to an organization because they help a business connect with its customers, suppliers and collaborators*
- *Network components:*
 - *Servers*
 - *End-user computers or terminals*
 - *Telecommunications processors*
 - *Middleware*

Foundation of Information Systems (IS)

- *E-business:*
 - *E-business involves several key activities including improving business processes, enhancing communications and providing the means to carry out business transactions securely.*
 - *E-business is part of a broader Internet economy which encompasses all of the activities involved in using the Internet for commerce.*
- *The Internet economy is made up of the following layers:*
 - *Internet Infrastructure*
 - *Internet Applications Infrastructure*
 - *Internet Intermediaries*
 - *Internet Commerce*

Foundation of Information Systems (IS)

- *E-Commerce:*
 - *E-Commerce can be described as using technology to conduct business transactions, such as buying and selling goods and services.*

 - *E-Commerce encompasses a wide range of associated activities, such as after-sales support and even logistics.*

 - *E-commerce activities can be broken down into five basic types:*
 - *B2B*
 - *B2C*
 - *B2G*
 - *C2C*
 - *M-Commerce*