IT
(Information Technology)

Khatam Institute of higher Education

*Session # 2*

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)*
▪ *Logestics and Information Technology*	*(8 sessions)*

The role of managers in Information Technology (IT)
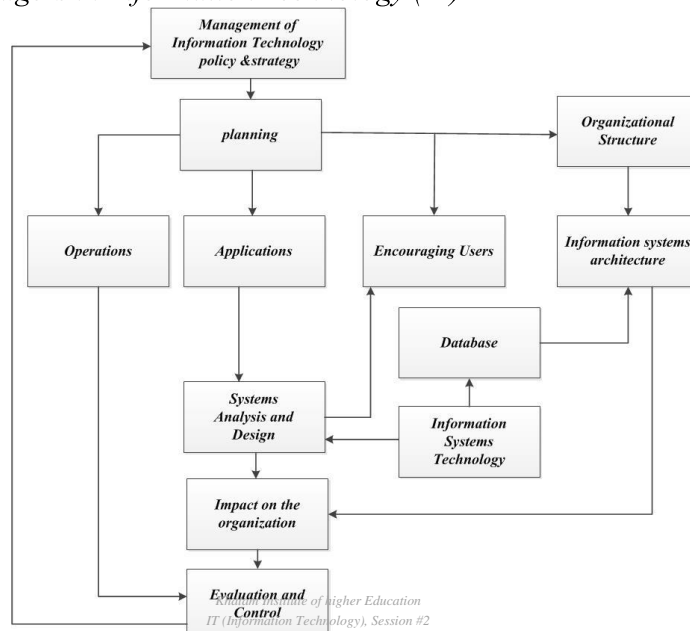
The role of managers in Information Technology (IT)

- *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.*

Homework IT:I:01

Pergamon

0268–4012(95)00061–5

Organizational Structure and the Use of Information Technology: Preliminary Findings of a Survey in the Private and Public Sector

W L CURRIE

The role of managers in Information Technology (IT)

▪ *Information Technology (IT) in perspective*

  ▪ *Is there value in IT?*

    ▪ *In deciding whether to make an investment, companies frequently compute the*

Net Present Value (NPV)

of a proposal, using an interest rate that represents a minimum acceptable return for the firm.

Homework IT:I:02

Software productivity metrics: who needs them?

C J Dale and H van der Zee*

The role of managers in Information Technology (IT)

- *Information Technology (IT) in perspective*
  - *Investment Opportunities Matrix*

IT INVESTMENT OPPORTUNITIES MATRIX

Type of investment	Example	Comments	Upside	Probability of return
Infrastructure	Wide Area Network	Support current business—may allow for future investments	Little itself, but allows new programs	.2 to 1.0 (.5)
Required: no return Managerial control	OSHA reporting system, budgets	A cost of doing business	Almost none	0 to .5 (.2)
No other way to do the job	Computerized reservations system, Air Traffic Control	Enable new task or process, provide better customer service, new products	Could gain more than forecast	.5 to 1.0 (.75)

The role of managers in Information Technology (IT)

- *Information Technology (IT) in perspective*
  - *Investment Opportunities Matrix*

Direct return from IT	Merrill Lynch, Chrysler	Structured, cost/ benefit and NPV appropriate	A little if you can build on the investment	.7 to 1.0 (.9)
Indirect returns	CRS in travel agencies	Potential for considerable return, but indirect benefits hard to estimate	Could be substantial future benefits	0 to 1.0 (.5)
Competitive necessity	Bank ATMs, much EDI Electronic commerce	Need the system to compete in the business; what is the cost of not investing in technology?	Very little if you are following the industry	0 to 1.0 (.2)

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The role of managers in Information Technology (IT)

- *Information Technology (IT) in perspective*
  - *Investment Opportunities Matrix*

Strategic application	Baxter, Merrill Lynch CMA	High risk–high potential; may be able to estimate return only after implementation	A high potential	0 to 1.0 (.5)
Transformational IT	Virtual organizations, Oticon	Must be combined with changes in management philosophy; good for fast-response organization—risky to change structure, but high potential rewards	A high potential	0 to 1.0 (.5)

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The role of managers in Information Technology (IT)

- *HW#03*

    There are information systems all around us. We encounter them at the university, in stores and banks, when making airline, hotel, or rental-car reservations, and in many other aspects of our daily routine. For this project, choose an information system and critique it.

    First, describe the system: What are its objectives? Who are the users? What is the underlying technology including computers, databases, and communications network? Trace the input of the system to determine who inputs what information. Look at the output of the system. Is it a physical document? Often, systems have to store data on a more or less permanent basis in files or in a database. Can you figure out what is in the database for your system?

    Draw a diagram of the input, processing, database, and outputs of your system. What are the major strengths of the system? Do you see any problems with it? What can you suggest to improve the system?

- *The Home work should be sent to omidf@ie.sharif.edu till Monday, 20th of Mehr*

    (Oct, 12th ,2013)

- *Email subject: "HW03:studentnumber"*

Course Contents

- *The role of managers in Information Technology (IT)*   *(3 sessions)*

    - *Using technology to transform the organization*

    - *Interpreting and understanding Information*

    - *Information Technology (IT) in perspective*
        - *Frameworks for Information Technology*
        - *The Basics of Information Systems*

Organizational Issues

- *The impact of Information Technology on the organization*
  - *Organizational Structure and Design*
    - *There are many factors that influence the structure and design of modern organizations.*
      - *Uncertainty*

      - *Specialization*

      - *Coordination*

      - *Interdependence*
        - *Pooled interdependence*
        - *Sequential interdependence*
        - *Reciprocal interdependence*

Organizational Issues

- *The impact of Information Technology on the organization*
  - *Organizational flexibility*
    - *A flexible organization defends quickly against threats and moves rapidly to take advantage of opportunities.*

    - *Flexibility provides the organization with the ability to adapt to change and respond quickly to market forces and uncertainty in its environment.*

    - *In general, technology speeds up the pace of work and increases the capacity of the organization to process information*

Organizational Issues

- *The impact of Information Technology on the organization*
  - *Organizational flexibility*

ORGANIZATIONAL FLEXIBILITY IN THE AIRLINE AND SECURITIES INDUSTRIES

Boundaries	Time	Nature and pace of work	Responsiveness
Airline CRS stage 1*			
Remove boundary of manual centralized processing; make reservation from anywhere	Make reservation anytime	Confirmed reservation made instantaneously	Alter schedules in response to loads
Airline CRS stage 2			
Boundary for making reservation shifts from airline to agent; airport boarding pass moved to travel agency	Extra service by agent, e.g., 24-hour assistance	Travel agent becomes more productive	Yield management programs allow instantaneous adjustment to demand for seats

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Organizational Issues

- *The impact of Information Technology on the organization*
  - *Creating new types of organizations*
    - *Information Technology makes it possible to create new forms of organizations through the use of different design variables.*
      - *Structural*
        - *Virtual components, Linking mechanisms, Electronic linking, Technological leveling*
      - *Work Process*
        - *Production automation, Electronic workflows, Virtual components*
      - *Communications*
        - *Electronic communications, Technological matrixing*
      - *Inter-organizational relations*
        - *Electronic customer/ supplier relationships, Electronic linking*

Organizational Issues

- *The impact of Information Technology on the organization*
  - *Creating new types of organizations*

CONVENTIONAL AND *IT* DESIGN VARIABLES

Class of variable	Conventional design variables	IT design variables
Structural	Definition of organizational subunits	Virtual components
	Determining purpose, output of subunits	Linking mechanisms
	Reporting mechanisms	
	Linking mechanisms	Electronic linking
	Control mechanisms	
	Staffing	Technological leveling
Work process	Tasks	Production automation
	Workflows	Electronic workflows
	Dependencies	
	Output of process	
	Buffers	Virtual components

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Organizational Issues

- *The impact of Information Technology on the organization*
  - *Creating new types of organizations*
    - *Technology makes it possible to create new forms of organizations through the use of different design variables.*

Communications	Formal channels	Electronic communications
	Informal communications/collaboration	Technological matrixing
Interorganizational relations	Make versus buy decision	Electronic customer/ supplier relationships
	Exchange of materials	Electronic customer/ supplier relationships
	Communications mechanisms	Electronic linking

Organizational Issues

■ *The impact of Information Technology on the organization*

■ *Creating new types of organizations*

IT DESIGN VARIABLES AND FOUR PROTOTYPICAL ORGANIZATIONS

Organization variable	Virtual	Negotiated organizations	Traditional	Vertically integrated conglomerates
Virtual components	Substitute electronic for physical components	Substitute electronic for physical components	Use to replace isolated components	Force component onto electronic subsidiary
Electronic linking and communications	Essential part	Essential part	Optional	Essential part
Technological matrixing	Participate in matrixed group	Use for coordination	Use for various groups	Use for coordination and task forces
Technological leveling	Use to supervise remote workers and groups	NA	Use to reduce layers of management	Use to reduce layers of management
Electronic workflows	Crucial part of strategy	Crucial part of strategy	Use where applicable to restructure work	Key to coordinate work units
Production automation	NA	Communicate designs	Use where applicable	Coordinate production among work units
Electronic customer/ supplier links	Used extensively	Used extensively	Potentially important	Key to operations

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Organizational Issues

■ *The impact of Information Technology on the organization*

■ *Creating new types of organizations*

Mercedes Benz

...egan selling ...tility vehicle ...s Mercedes ...nore than a ...Explorer; it ...reviewers. ...beyond just- ...here suppli- ...ts weeks in ...ew days or ...Mercedes is ...cturing. ...h the paint ...er to a sup- ...plier, like Johnson Controls in Wisconsin, to deliver a dashboard within a few hours.

The plant assembles cars in which other suppliers manufacture 70 percent of the components. The objective of just-in-sequence manufacturing is to dramatically reduce inventory management costs. The company contracted with IBM to develop the system for its 2 million-square-foot plant; IBM has installed enterprise resource planning software from The Baan Company.

In this example, information technology provides electronic linking and communications and ties Mercedes to its suppliers. The objective is to reduce inventory management effort and costs while maintaining scheduled production.

Organizational Issues

- *The impact of Information Technology on the organization*
  - *Building a T-form organization*
    - *The pure T-Form organization operates with the assumptions about people found in the virtual and negotiated agreement organizations, where managers base supervision on trust in employees and their self-control.*

    - *The T-Form organization is a generic model for a technologically enabled organization.*

    - *The same IT design variables can be used in a variety of ways to create very different types of organizations, all of which have some of the characteristics of the T-Form.*

Organizational Issues

- *The impact of Information Technology on the organization*
  - *Creating new types of organizations*
    - *Technology makes it possible to create new forms of organizations through the use of different design variables.*
      - *Structural*
        - *Virtual components, Linking mechanisms, Electronic linking, Technological leveling*
      - *Work Process*
        - *Production automation, Electronic workflows, Virtual components*
      - *Communications*
        - *Electronic communications, Technological matrixing*
      - *Inter-organizational relations*
        - *Electronic customer/ supplier relationships, Electronic linking*
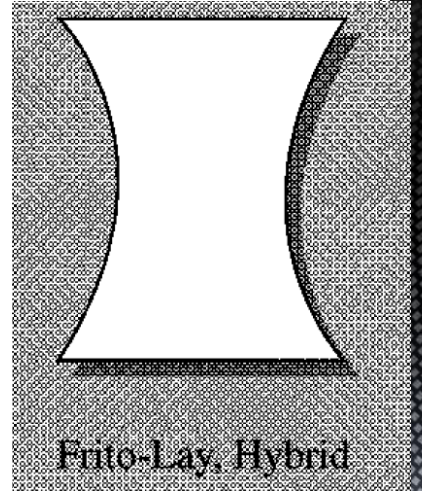
Organizational Issues

- *The impact of Information T_____ on*
  - *Building a T-form organizat___*
    - *Frito-Lay is a major prod____ _____ Corn Chips.*

    - *The company invested hea_____ its drivers and a satellite con_____ it transactions data to headq____*

    - *The firm developed a data_____ on-support tools for district n_____ r operations*

Frito-Lay, Hybrid

Organizational Issues

- *The impact of Information Technology on the organization*
  - *Building a T-form organization*

Companies/IT design variables	Frito-Lay
Virtual components	
Electronic linking and communications	Extensive with route sales force, district managers, factories, distribution centers
Technological matrixing	
Technological leveling	At headquarters
Electronic workflows	
Production automation	
Electronic customer/ supplier relationships	

Organizational Is

- *The impact of Inf*
  organization
  - *Building a T-for*
    - *Mrs. Fields C*
      systems to gui
      of the busines

    - *The company*
      communicate

    - *It also has a v*
      controllers at
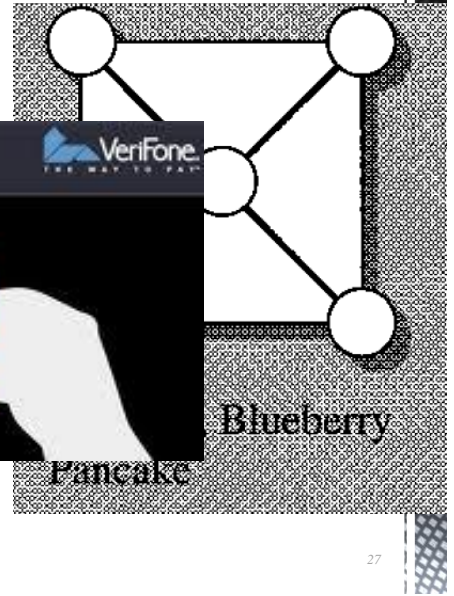   *sales results f*

Organizational Issues

The impact of Information Technology on the organization

- *Building a T-form organization*

Companies/IT design variables	Mrs. Fields
Virtual component	Presence of Mrs. Fields in each store
Electronic linking and communications	E-mail and voice mail; PCs in stores
Technological matrixing	
Technological leveling	For store controller organization
Electronic workflows	
Production automation	In store systems
Electronic customer/ supplier relationships	

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Organizational Issues

- *The impact of Information Technology on the organization*
  - *Building*
    - *VeriFo...*
      credit...
      comme...
    - *The fir...*
    - *The ch...*
      all the...
    - *Verifone uses technology extensively for communications and coordination in the firm*

- *Building a T-form organization*

Organizational Issues

The impact of Information Technology on the organization

Companies/IT design variables	Verifone
Virtual components	Extensive use of teams and alliances
Electronic linking and communications	Extensive within company
Technological matrixing	Global teams to solve problems
Technological leveling	Minimum structure and hierarchy
Electronic workflows	
Production automation	
Electronic customer/ supplier relationships	

Organizational Issues

- *The impact of Information [Technology on the]*
  organization
  - *Building a T-form organi[zation]*
    - *Oticon is a Danish ma[...]*
      underwent a major res[...]
      considerable market sh[...]

    - *The chairman created [...]*
      which an executive con[...]
      the firm must complete[...]
      leader.

    - *The leader must put to[...]*
      task; technology facilit[...]
      teams.

oticon
PEOPLE FIRST

Invisible In the Canal (IIC)

mini RITE

mini RITE

Completely In The
Canal (CIC)

In The
Canal
(ITC)

Half
Shell

Receiver In The Ear
(RITE)

Behind The Ear
(BTE)

Organizational Issues

The impact of Information Technology on the organization

- *Building a T-form organization*

Companies/IT design variables	Oticon
Virtual components	Project teams
Electronic linking and communications	Within firm
Technological matrixing	Project teams
Technological leveling	
Electronic workflows	
Production automation	Redesign of factory
Electronic customer/ supplier relationships	

Organizational Issues

The impact of Information Technology on the organization

- *Building a T-form organization*

Companies/IT design variables	Frito-Lay	Mrs. Fields	Verifone	Calyx & Carolla	Oticon
Virtual components		Presence of Mrs. Fields in each store	Extensive use of teams and alliances	Growers, FedEx, and credit card companies	Project teams
Electronic linking and communications	Extensive with route sales force, district managers, factories, distribution centers	E-mail and voice mail; PCs in stores	Extensive within company	With growers	Within firm
Technological matrixing			Global teams to solve problems		Project teams
Technological leveling	At headquarters	For store controller organization	Minimum structure and hierarchy		
Electronic workflows				With growers, credit card companies	
Production automation		In store systems			Redesign of factory
Electronic customer/ supplier relationships				With growers, credit card companies	

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