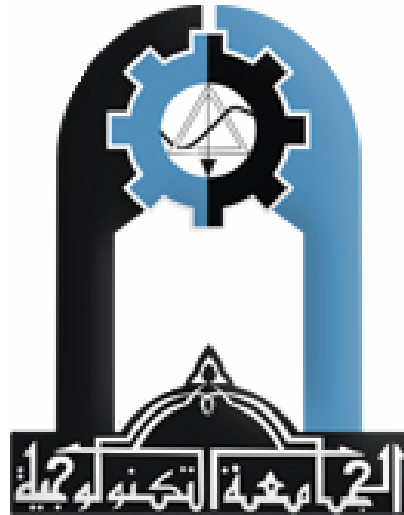


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University of Technology
Computer Science Department

4th Class
Management Information Systems
(MIS)

استاذ المادة: د. علياء عبدالله

Reference book: "Management Information System new approaches to Organization and Technology", 5e, Kenneth C. Laudon , Jane P. Laudon.

Lecture-1

Definitions of Management Information Systems

A. Management: What is management?

- 1. Planning
 - Goal setting
 - Environmental scanning
 - Forecasting
 - Data collection
- 2. Organizing
 - Staffing
 - Coordinating
 - Delegating
 - Understanding
 - Procedures/ Policies
- 3. Leading
 - Authority
 - Motivating
 - Directing: Delegation of responsibilities
 - activating
 - Supervising
 - Negotiation
 - Persuading
- 4. Controlling: Resources- Money (capital), manpower (people), materials, machines, movement (Distribution, flow), and Information
 - Measuring
 - Evaluating
 - Reporting
 - corrective action
 - feed back
- 5. Communicating: Goals/Objectives, standards of desirability
 - Informing
 - Persuading
 - Negotiation
 - Corrective action
 - Listening

Lecture-2

Information: What is information?

- . Processed data
 - Meaningful
 - Perceived value
 - motivating action
 - HAS SURPRISE VALUE
 - HAS NEWS VALUE
 - Presented facts
 - active (it enables doing)
 - business based (Domain based)
 - transformed form data
- 3. Model
 - entity
 - attribute
 - relationship
- 4. Reduces Uncertainty?
- 5. Reduces Equivocality?
- 6. Knowledge/Power
- 7. Send/Receive Messages
- 8. A definition: Information is data that has been processed into a form that is meaningful to the recipient (USER) and is of real or perceived value in current or prospective actions or decisions.

Lecture-3

Systems Concepts:

1. What are systems?

- a. input-process-output an orderly arrangement of interdependent ideas or constructs (ABSTRACT SYSTEM)
- b. a set of elements which operate together to accomplish an objective (PHYSICAL SYSTEM)
- c. Network: An Integrated environment for a specific set of tasks
 - A definition of a system: A physical system is a set of components (subsystems or elementary parts) that operate together to achieve a common objective (or multiple objective).
- d. General Model of a System: Input, process and output.
 - The features which define and delineate a system form its boundary. The system is inside the boundary and the environment is outside the boundary.
 - a system is composed of subsystems
 - Examples: stereo system. PC, automobile.
 - The interconnections and interactions between the subsystems are the INTERFACES.
 - Example of a system: An information system:
 - subsystems: PC Monitor, PC software, PC hard disk, User.
 - What is the boundary between the software and the User?

Lecture-4

2 Systems Approach:

- a. Identify & establish the objective of the system
- b. Consider the totality of its relationships with its environment
- c. Can not ignore the importance of the environment internal or external
- d. Identify its components and their interactions.
- examples:
 - 1. Human Resources
 - skills inventory system

- managerial promotion system
 - should they be separate or linked?
- 2. brokerage house
 - central client or
 - individual broker system
- 3. A TPS that has a very long response time
- 3. Classifications of Systems:
 - a. Natural and Artificial
 - Natural
 - Occur in nature without human intervention
 - Biological systems- immune systems, digestive
 - Artificial
 - Human made or modified
 - Information systems, stereo
 - What about the immune system?
 - Artificial systems are measured
 - Effectiveness: the extend to which a systems achieves its objectives
 - Efficiency: consumption of inputs relative to outputs
 - Usability: the ability of the uses to use the system
 - Satisfaction: A subjective measure of "like" or usability or effectiveness
 - b. Deterministic versus probabilistic
 - deterministic: The interaction between the parts or subsystems is known for certain;
 - example: a computer program which performs exactly to a set of instructions
 - probabilistic: A system that can be described in terms of probable behavior (a certain degree of error);
 - examples: An inventory system, a five year old (who does not follow a certain set of instructions).

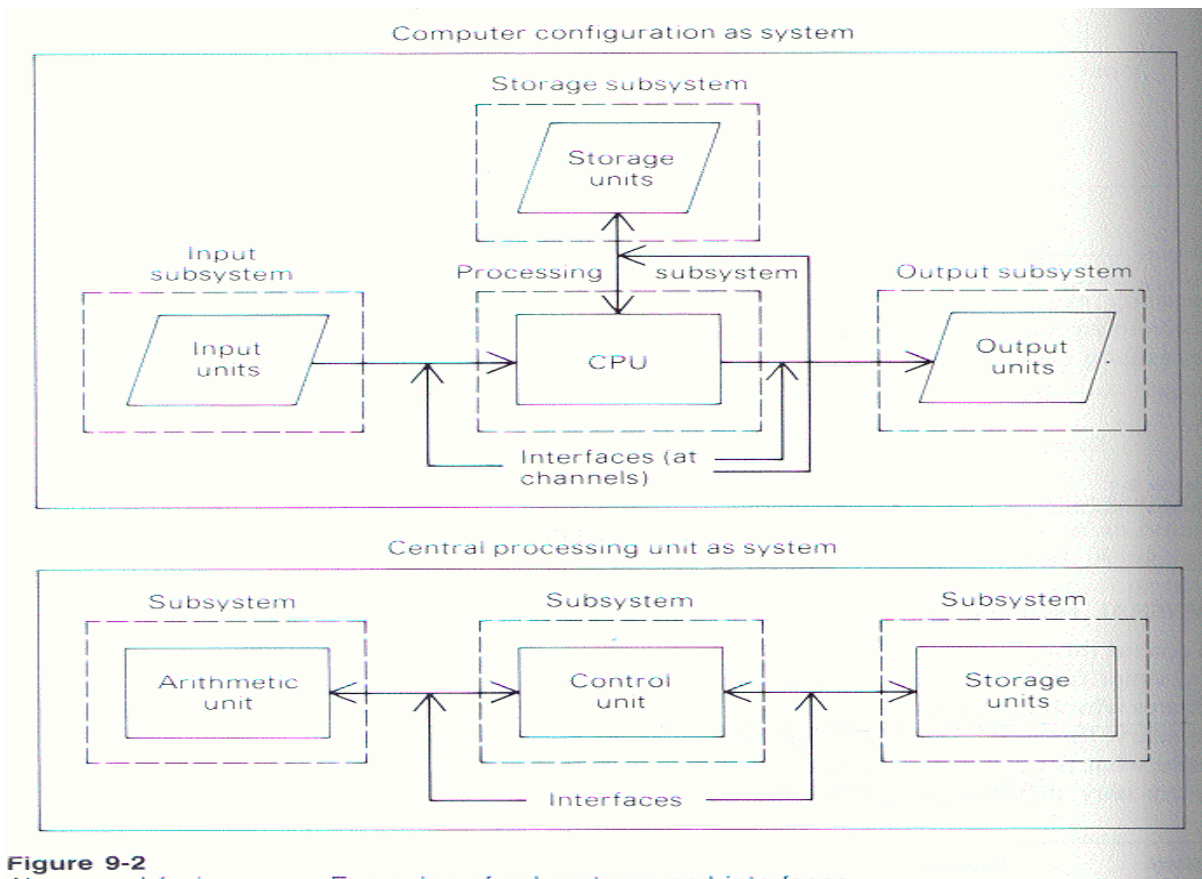


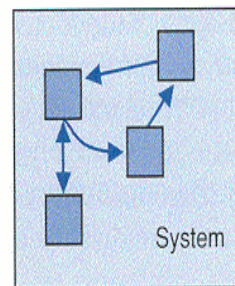
Figure 9-2
Above and facing page: Examples of subsystems and interfaces

- c. Closed and open systems:
 - Closed system: self contained, one that does not exchange material, information, or energy with its environment.
 - Examples:
 - A freshman in an 8:00 AM class;
 - A chemical reaction in a sealed, insulated container.

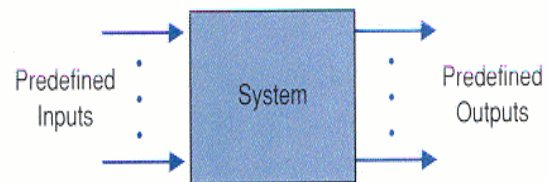
- Relatively closed systems: in organizations and in information processing, there are systems that are relatively isolated from the environment, but are not completely closed, these will be considered closed systems.
- Examples:
 - a pre 1990 manufacturing system
 - a computer program with well defined inputs, a process and an output (No agents)
- Open Systems: exchange information, material, or energy with the environment, including random and undefined inputs.
- Examples:
 - Biological Systems, and Organizational Systems
- Open systems tend to have form and structure
- Adapt to changes in environment so as to continue to exist

FIGURE 10.3

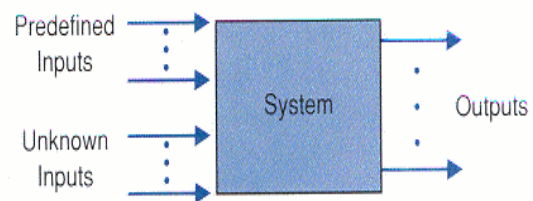
Closed, relatively closed, and open systems.



a. A closed system.

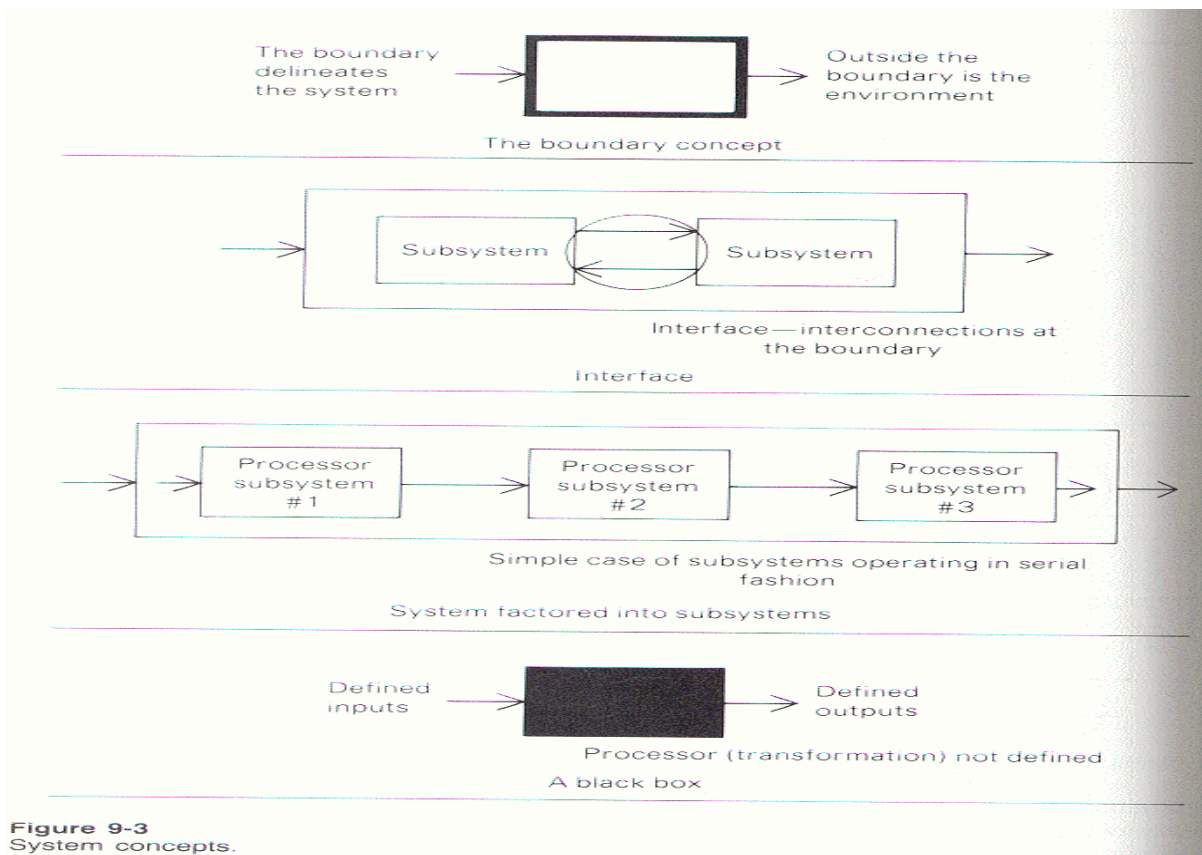


b. A relatively closed system.



c. An open system.

- d. Human-Machine Systems: They both perform some of the activities in the accomplishment of a goal (making a decision).
 - the Machine elements are - hardware and software are relatively closed and deterministic.
 - the human element are open and probabilistic
 - Examples: The computer doing the computations, the human having a cup of coffee and thinking about the answers.



Lecture -5

D. What is an Organization?

- Definition: An Organization is a systematic arrangement of people and technology intended to accomplish some purpose.

- 1. Organizations are collectivities oriented to the pursuit of relatively specific goals and exhibiting relatively high formalized social structures. RATIONAL
- 2. Organizations are collectivities whose participants share a common interest in the survival of the system and who engage in collective activities, informally structured, to secure this end. NATURAL SYSTEM
- 3. Organizations are coalitions of shifting interest groups that develop goals by negotiation; the structure of the coalition, its activities, and its outcomes are strongly influenced by environmental factors. OPEN SYSTEM
 - Input: Men, Materials, Money, Machines, Information
 - Output: Goods and Services
 - Middle: Resources are transformed to create a surplus (PROFIT)
- Every Organization has 3 parts:
 - 1. people: (workers, supervisors, consultants, engineers, superintendents, etc.)
 - 2. Tasks: the operations (paint, fix, print, compress, etc.)
 - 3. Management: Planning, Organizing, leading, controlling the performance of people engaged in the tasks
- Management includes: arranging, conducting discussions and meetings during which decisions are made about how work would be done.

Lecture-6

Organizational Systems

a. Questions:

- 1. What are the strategic parts of a system?
- 2. What is the nature of their mutual dependency?
- 3. What are the main processes in the system that link the parts together and facilitate their adjustments to each other?
- 4. What are the goals sought by systems?
- b. The Organization as a system: The focus is on interdependency of the subsystem components of the system.
 - 1. Subsystems: production, managerial, adaption/innovation subsystem

- 2. Each subsystems has goals and contributes or may be not to the whole system
- 3. thus encouraging the interdependency of the subsystems.
- 4. The interdependency depends on COMMUNICATION.
- 5. Each specialized function (marketing, manufacturing, etc) develop a distinctive nucleus of operating procedures, values, and information processing requirements.
 - The adaptive (Strategic) may be oriented to: change, innovation, the environment, and the future.
 - The Managerial component is oriented toward: growth, stability, efficiency, and "speed" in decision making.
 - The production component may be keyed to: efficiency, rationalization, and careful programming of activities.
- 6. The Open systems approach to organizations
 - a. differentiate functions to cope with environmental change and Complexity.
 - b. Organizations must design integrative mechanisms to coordinate differentiated tasks and design feedback systems for adaption.
 - c. Organizations must also develop/incorporate multiple paths to achieve the goals.
 - Example: MicroSoft- Goal To be the largest Software company. Started with DOS and developed NEW products, marketing strategies.

Lecture-7

Characteristics of Open Organizational Systems

- a. Suprasystem (The environment): Open systems exchange resources, energy, and information with their environment (permeable boundaries, like cells).
 - 1. There exist an interdependency between organizations and their environments.

Characteristics of Open Organizational Systems

- 2. The environment partially determines the type of structures that the organization will adopt to cope with the:
 - degree of technological change
 - complexity
 - uncertainty
 - equivocality
 - 3. The structures will then influence the processes and behavioral patterns within the organization.
- b. Equilibrium: Open systems tend to maintain themselves in steady states (Stability).
 - 1. Control mechanisms: rules, regulations, plans, hierarchy
 - 2. Organizations "must" maintain "some" level of stability to effectively engage in adaptive behaviors, i.e. strategic planning, market research, technological forecasting or new product development
 - 3. Both maintenance and adaptive activities are required for organizational survival.
- c. Feedback: The steady state is maintained through the feedback process.
 - 1. The boundary spanning units (marketing, marketing research, regulatory affairs, Community/Public relations, CEO) serve as external scanning and sensing functions to provide information flow between the organization and its environment.
 - 2. This in turn facilitates adaptation.
 - 3. The internal sensing and scanning functions of organizations (task forces, consultants, etc.) provide the INTERPRETATION necessary to make the transitions (internal adaptation) through feedback.
- d. Cycle of events: The processes: Raw material-intermediates- Finished goods
- e. Control: The dynamic interplay of subsystems
 - The control mechanisms are: SOP's, values, norms, and subcultures.
- d. Cycle of events: The processes: Raw material-intermediates- Finished goods
- e. Control: The dynamic interplay of subsystems

- The control mechanisms are: SOP's, values, norms, and subcultures.
- h. Learning and Growth: An open system that is to change must:
 - contain very specific feedback mechanism
 - a certain variety of information
 - particular kinds of input
 - channel
 - storage.
 - cognitive apparatus
 - decision making centers.
- The capacity to learn and innovate must be institutionalized into the information- processing systems of the organization. The capacity of the system to learn from feedback is essential to its growth. What do you think?

Lecture-8

Information Systems

- What are Information Systems?
 - 1. Information (another definition): an increment in knowledge.
 - Information relies on the context of the question
 - .general knowledge of the recipient.
 - 2. Informal information: interpersonal networking
 - Note: Informal information and other information may not lend itself to computerization, yet!
 - 3. Formal information: Organized information with a specific purpose following rules and procedures (highly structured)

. Information Processing Systems:

- 1. An information system in many respects is a closed system, it is simply the code.
- 2. An information processing function frequently needs data collected and processed in a prior period.
- 3. The data/information storage is added.

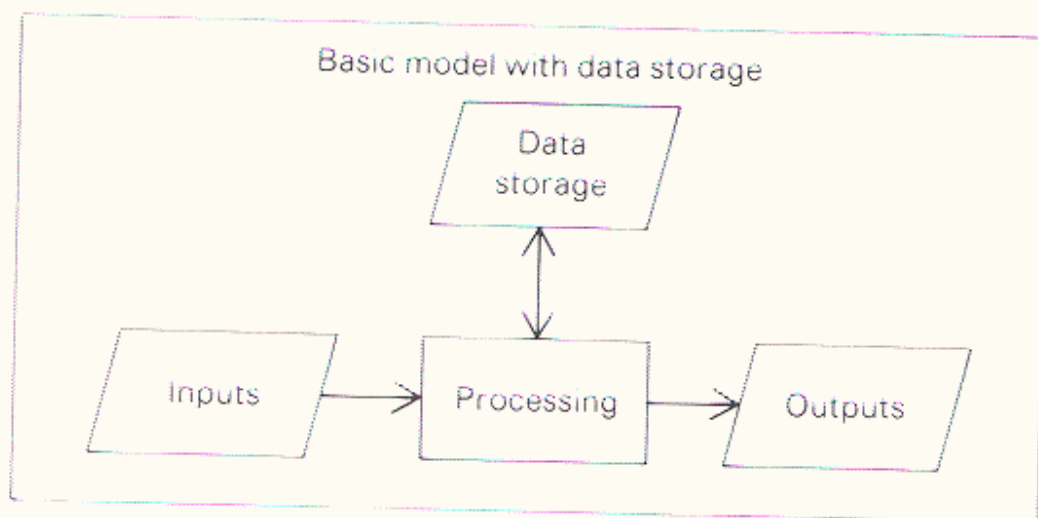
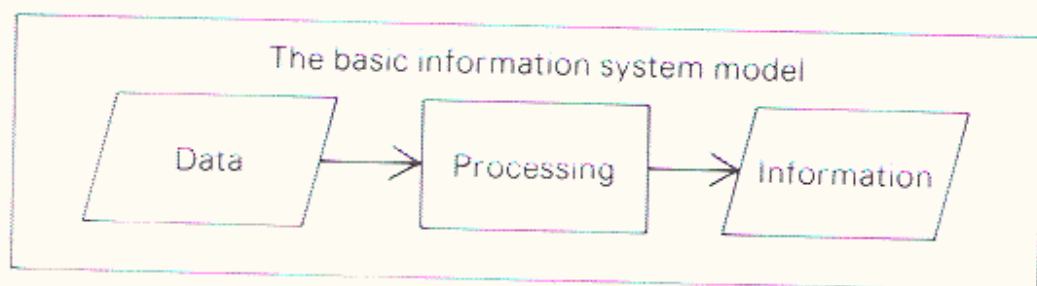
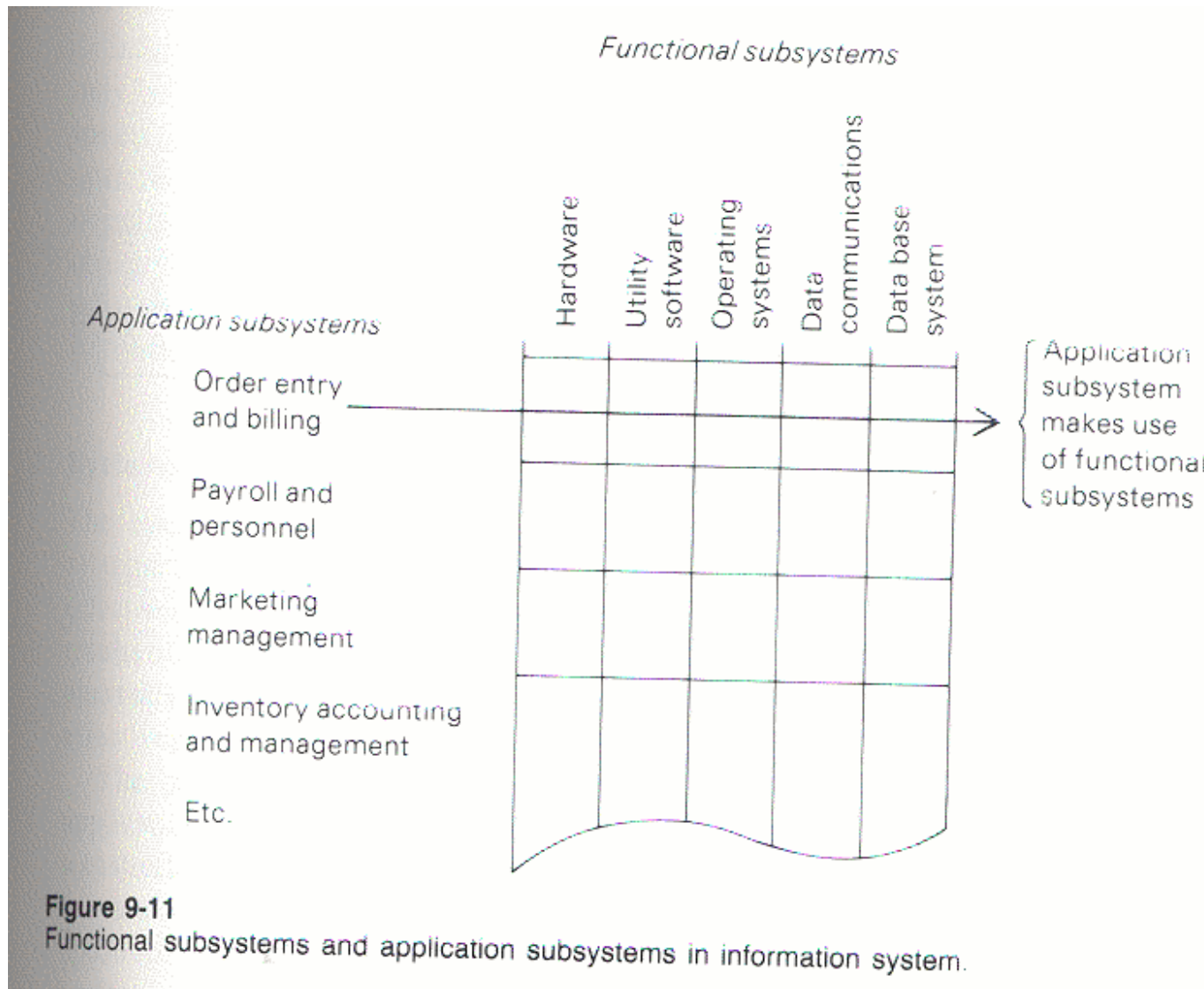


Figure 9-10
Basic information systems model.



Lecture-9

Management Systems

- 1. Primary function(s) mediate between the organization and the immediate task environment.
 - customers
 - suppliers
 - processes

Management Systems

- 2. What do managers do?
 - assume responsibility

- must balance competing goals
- be a conceptual thinker
- work with and through other people
- be a mediator
- must be a politician
- must be a diplomat
- makes difficult decisions
- 3. Management is the work involved in combining and directing the use of resources to achieve
 - particular purposes
 - Leading
- 4. What distinguishes mgmt from other work is that it focuses on maintaining the organization so that it can accomplish its task
 - POSDCORB
 - Planning
 - Organizing
 - Staffing
 - Directing
 - Coordinating
 - Reporting
 - Budgeting
- 5. Schools of management
 - a. Systems Approach
 - Linear Thinking
 - 1. A problem exists
 - 2. It has a single cause
 - 3. It requires a single solution
 - 4. The solution can be evaluated entirely in terms of its impact on the problem
 - 5. The solution will stay put.
 - cause --> Problem --> Action --> Solution
 - Systems thinking
 - 1. A problem exists
 - 2. It has a single cause
 - 3. It requires a single solution
 - 4. The solution will have effects apart from the intended impact upon the problem
 - 5. It makes sense to try to anticipate those effects

- 6. The solution can be evaluated by identifying and weighing the mix of intended and unintended effects
 - 7. The solution will not stay put, since the situation will change
 - Problem embedded intended and in environmental ----> ACTION ---> unintended conditions consequences
- b. The contingency Approach
 - Organizations are systems made up of interdependent parts, people, tasks and mgmt fit together and depend upon one another.
 - There is no one best way to manage Equifinality
 - Different ways to fit different situations.
 - What is the definition of personality?
 - Isn't it the interaction between the environment and behavior of the person?
 - An Organization is like that!!
- Management actions Situational Organizational are Contingent upon -
- > Characteristics --> Results

lecture-10

Management Information Systems

- What are They?
- 1. Definition: A Management Information system is:
 - an integrated user-machine system
 - for providing information
 - to support the operations, management
 - analysis, and decision making functions
 - in an organization
 - The system utilizes
 - Computer hardware & software
 - Manual procedures
 - Models of analysis, planning, control, and
 - decision making and
 - a database.
- 2. Computer based means that the designers of a MIS must have knowledge of computers and of their use in information processing.
- 3. The USER-MACHINE means that the systems designer should understand the capabilities of human as system

components (as information processors) and the behavior of humans as users of information.

- 4. Integration: A plan. Should eliminate: redundancy, incompatible hardware & software. Achieved through standards and guidelines and procedures.
- 5. Data Base: A order system for storing. retrieving and selecting information.
- 6. Models: A mathematical representation of an actual system, containing independent variables that influence the value of a dependent variable (text book). Models may be thought of as containing only the essential of the real system.

Lecture-11

. MIS as an evolving concept

- 1. MIS: Many companies are now using their computers to provide information for decision making; that is, they are using a management information system.
- 2. MIS can provide managers with information in a usable form.
 - A MIS is a formal Inf network using computers to provide management information for decision making
 - The goal of MIS is to provide the correct information to the appropriate manager at the right, in a useful form.
- 3. Successful MIS must provide inf that can be applied:
 - MIS should know who the users are
 - MIS should provide the information the user needs
 - MIS should provide the information in the format the user can understand.

Lecture -12

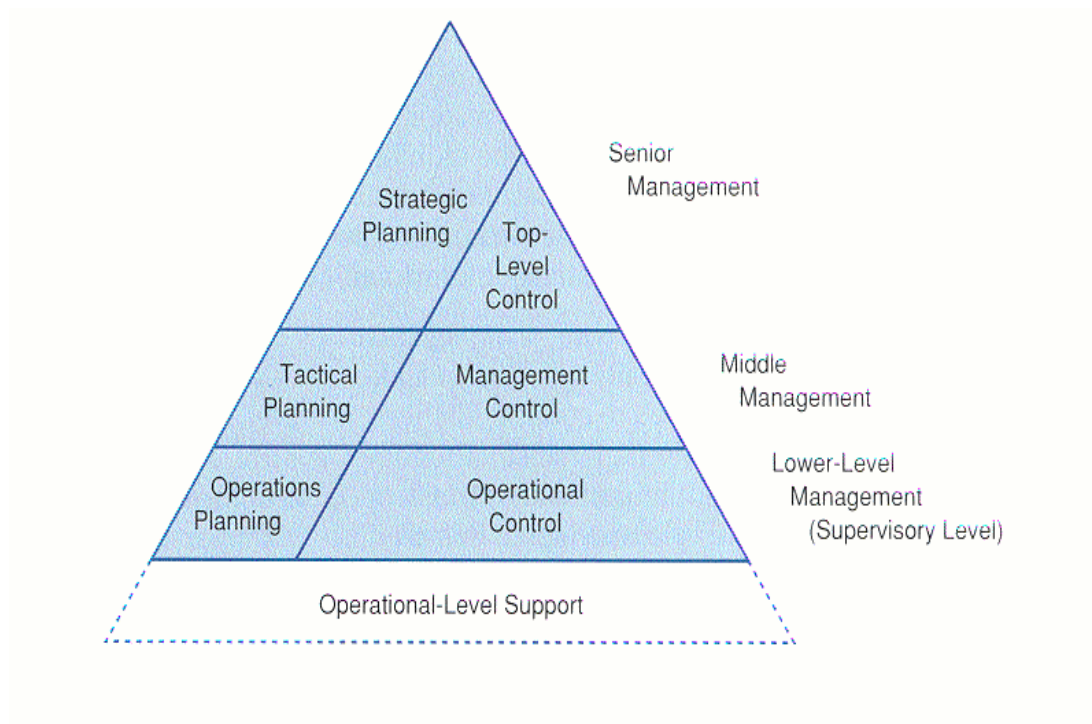
NEW OPTIONS FOR ORGANIZATIONAL DESIGN

- 1 FLATTENING ORGANIZATIONS
- 2 SEPARATING WORK FROM LOCATION
- 3 INCREASING FLEXIBILITY
- 4 REFINING ORGANIZATIONAL BOUNDARIES
- 5 ELECTRONIC COMMERCE
- 6 REORGANIZING WORK FLOWS

Lecture-13

Management Information Systems

. Levels of management: In order to understand who the users of an MIS are and what information they need, one must first understand the levels of management and the types of decisions are made at each level.



Levels of management

- 1. Lower level management makes decisions that affect day to day operations.
 - Programmed decisions that are predetermined by rules and procedures. They lead to a desired result.
 - The information needs of lower-level mgrs. can be met by administrative data processing activities.
- 2. Middle-level mgrs. plan working capital, schedule production, formulate budgets, and make short-term forecasts.
 - Mid-level managers make tactical decisions that usually involve time periods of up to two years.

- Many Mid-level mgmt decisions are non-programmed decisions. No specific predetermined steps can be followed to each solution.
- The information needs of Mid-level mgrs. must be specific.
- 3. Top-level mgrs. provide direction for the company by planning for the next five years +.
 - Top-level mgrs. make strategic decisions that involve a great deal of uncertainty.
 - Top-level mgt. decisions are non-programmed decisions.
- 4. Today Strategic and Management levels are combined. Why?

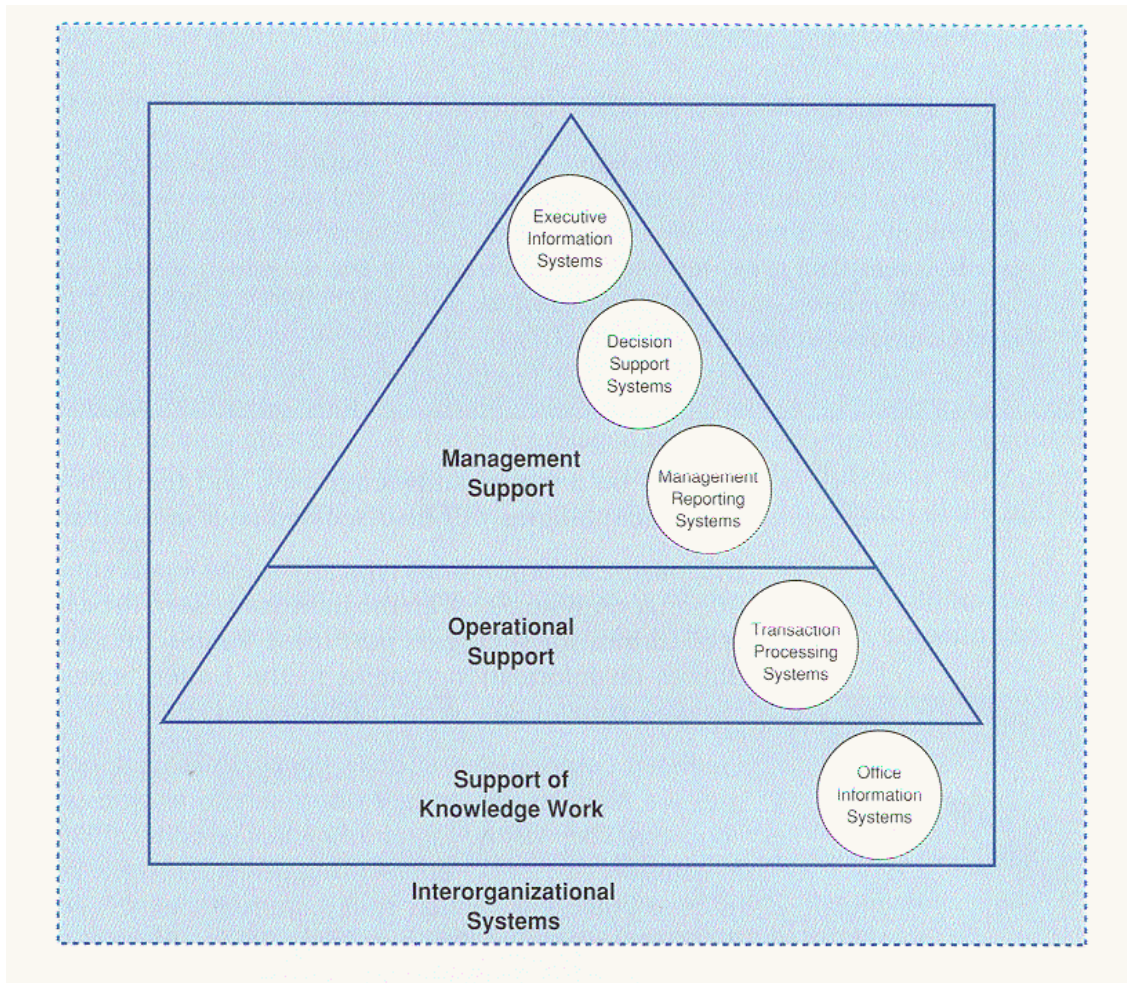
Lecture 14

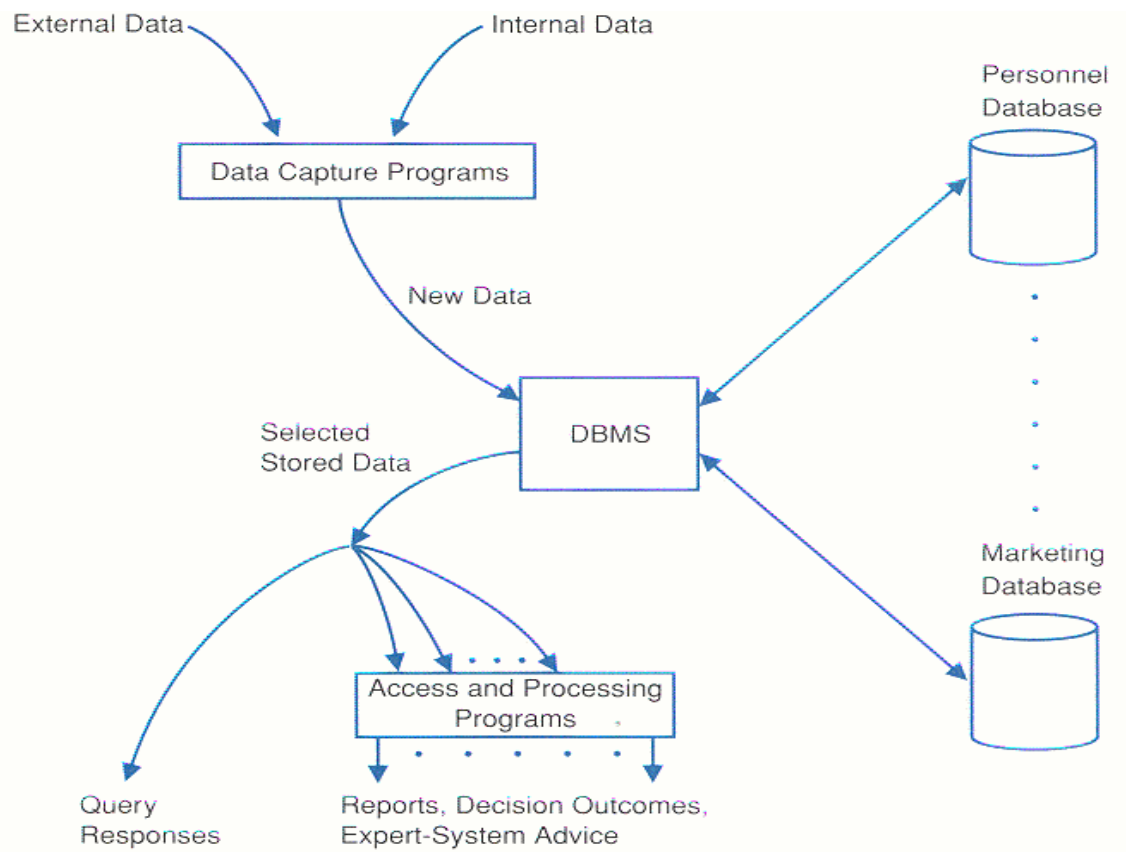
What do information systems do?

- 1. Transaction processing: Operational data processing
 - Examples: Manufacturing systems, order processing, accounts receivable, payroll
- 2. Management Reporting Systems: Produce reports for specific time periods; designed for managers responsible for specific functions in a firm.
 - Examples: Departmental expense reports, performance reports

What do information systems do

- 3. Decision Support Systems (DSS): Designed to support individual and collective decision making.
- 4. Executive Information Systems (EIS): Support the work of senior executives (via themselves or an analysts) with access to company data and general information on the industry and economy.
- 5. Office Information Systems (OIS): Support and coordinate knowledge work in an office environment by handling documents and messages in a variety of forms- text, image, voice, multimedia, video, fax, etc





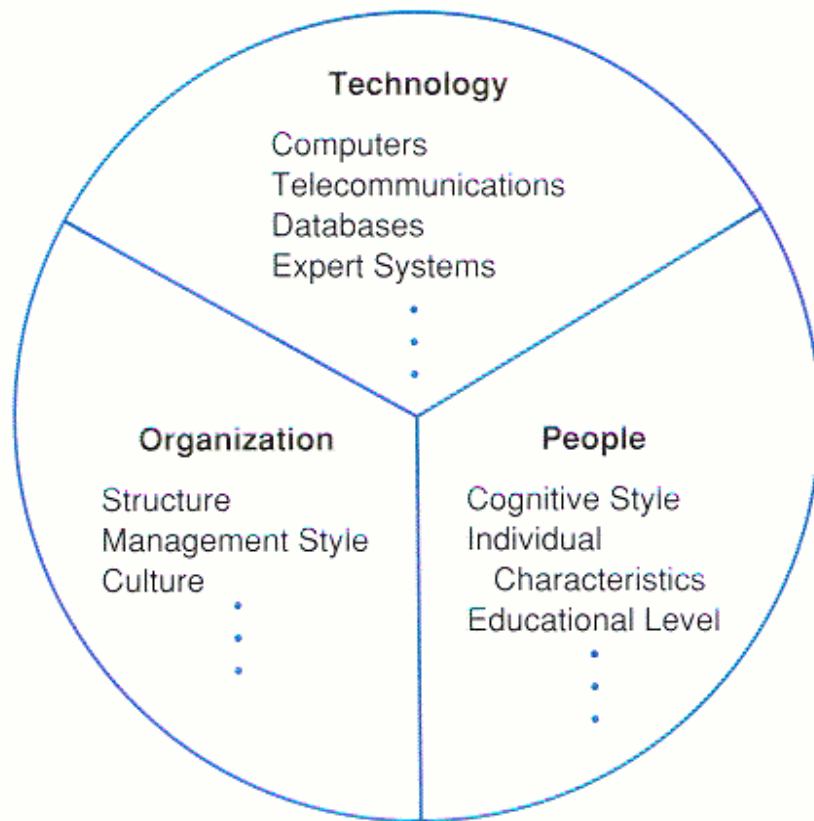


FIGURE 1.6

Disciplines contributing to the field of MIS.

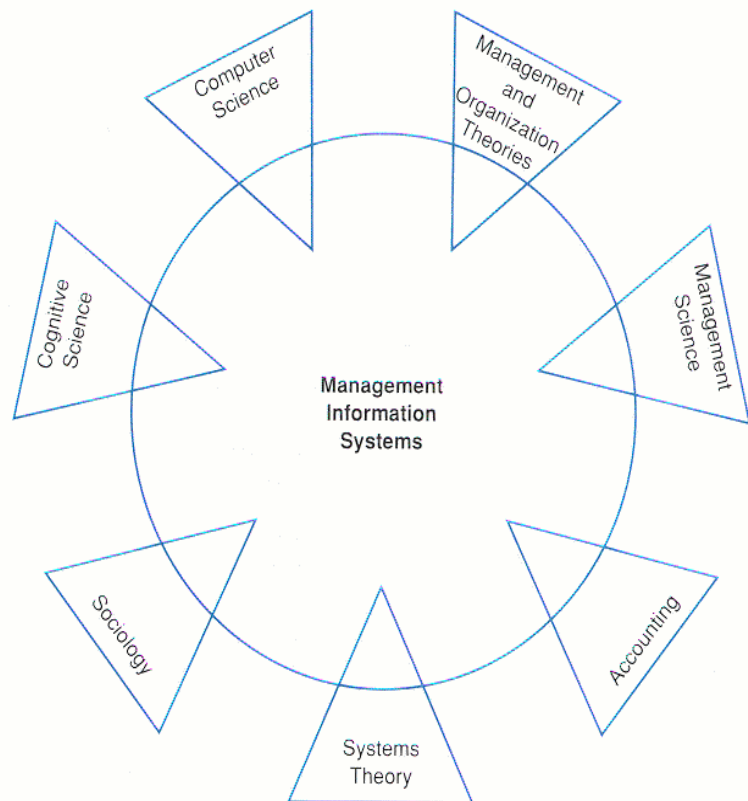
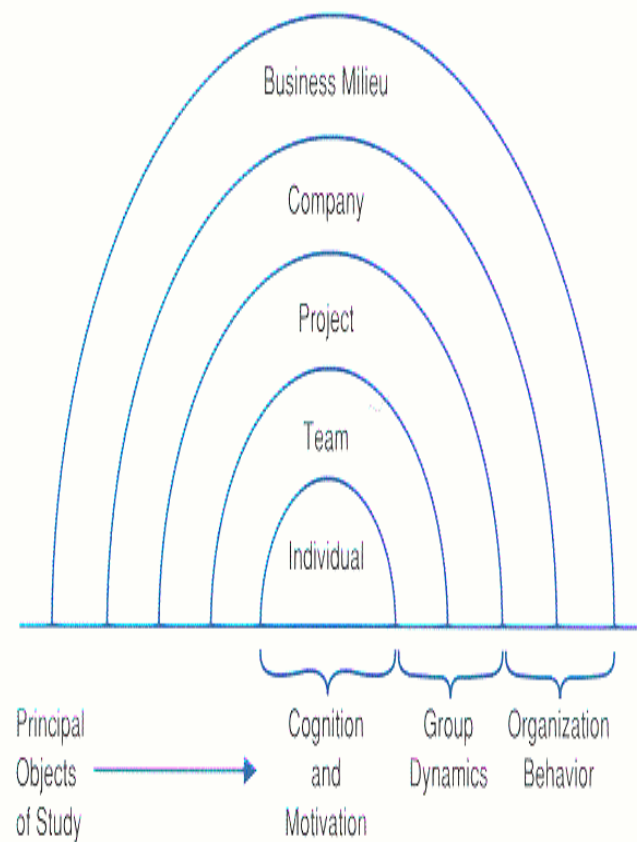


FIGURE 1.7

Levels of behavioral study in
MIS.

(Adapted from Curtis, 1988)



Lecture -15

CHALLENGE OF INFO SYSTEMS

- 1 STRATEGIC: COMPETITIVE & EFFECTIVE
- 2 GLOBALIZATION: MULTINATIONAL INFO
- 3 INFO ARCHITECTURE: SUPPORT GOALS
- 4 INVESTMENT: VALUE OF INFORMATION
- 5 RESPONSIBILITY & CONTROL: ETHICS

WHAT YOU CAN DO ON THE INTERNET

- 1 COMMUNICATE & COLLABORATE
- 2 ACCESS INFORMATION
- 3 DISCUSSIONS

- 4 OBTAIN INFORMATION
- 5 ENTERTAINMENT
- 6 BUSINESS TRANSACTIONS