

Information Systems, Organizations, Management, and Strategy

The Difficulties of Managing Change

- Change through the development of Information Technology & Information System is slowed by the natural inertia of organizations.
- The process to changes is more complicated than expected.

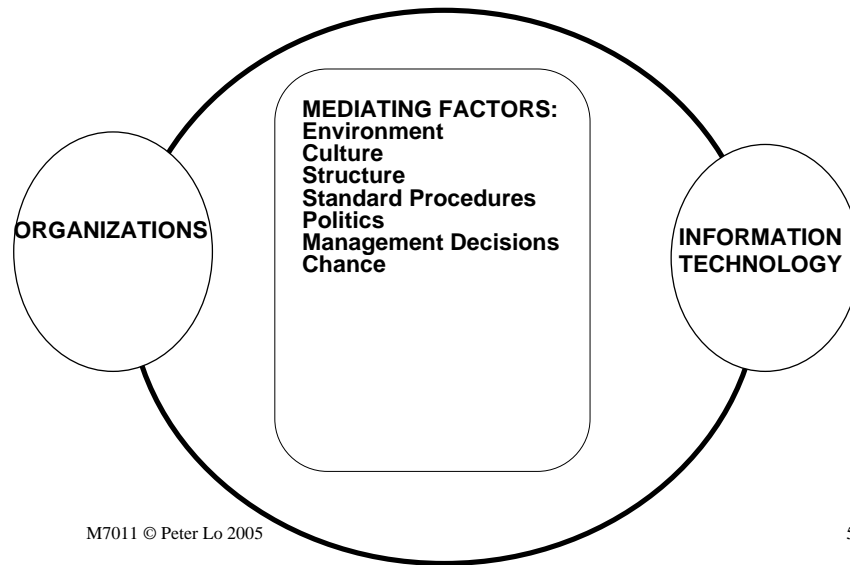
Fitting Technology to the Organization

- It is important to align Information Technology to the business plan, to senior management's strategic business plans and to Standard Operating Procedures (SOP) in the business.
- Information Technology is supposed to be the servant of the organization.
- Managers will need to change the organization to fit the technology or to adjust both the organization and the technology to achieve an optimal "fit".

Sustainability of Competitive Advantages

- The competitive advantages conferred by strategic systems do not necessarily last long enough to ensure long-term profits.
- Competitors can copy the strategic systems

The Two-way Relationship



M7011 © Peter Lo 2005

5

The Two-way Relationship

- It is mediated by many factors, including decision made, organizational culture, bureaucracy, politics, business fashion and pure chance.
- Information Technology and organizations have a mutual influence on each other.
- Information System must be aligned with the organization needed by the organization. The organization must be aware of and must open itself to the influences of Information System to benefit from new technologies.
- Information System affect organizations, and organization necessarily affect the design of systems.
- Managers decide what systems will be built, what systems will do and how they will be implemented.

M7011 © Peter Lo 2005

6

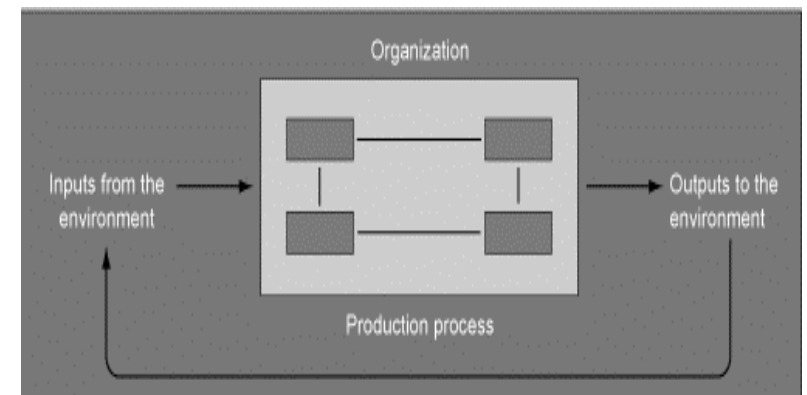
Theories of Organizations

- Organization (Technical)
 - ◆ A stable, formal social structure that takes resources from the environment and processes them to produce outputs.
- Organization (Behavioral)
 - ◆ A collection of rights, privileges, obligations, and responsibilities that are delicately balanced over time through conflict and conflict resolution.

M7011 © Peter Lo 2005

7

Technical Microeconomic Definition of Organization



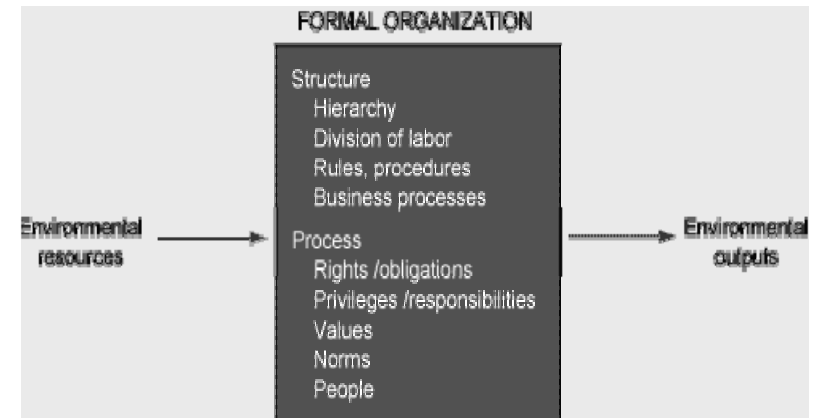
M7011 © Peter Lo 2005

8

Technical Microeconomic Definition of Organization

- In the technical microeconomic definition of organization, capital and labor are transformed by the firm through the production process into products and services.
- The products and services are consumed by the environment, which supplies additional capital and labor as inputs in the feedback loop.

Behavioral Definition of Organization



Behavioral Definition of Organization

- An organization is a collection of rights, privileges, obligations, responsibilities that are delicately balanced over time through conflict and conflict resolution.
- It emphasizes group relationships, values, and structures.

Bureaucracies

- A German sociologist *Max Weber*, was the first to describe these “ideal-typical” characteristics of organizations in 1911. He called organizations ‘**Bureaucracies**’ that have certain structural features.
- Bureaucracy mean a formal organization with a clear-cut division of labor, abstract rules and procedures, and impartial (fair) decision making using technical qualifications and professionalism as a basis for promoting employees.

Structural Characteristics of all Organizations

- ◆ Clear division of labor
- ◆ Hierarchy
- ◆ Explicit rules and procedures
- ◆ Impartial judgments
- ◆ Technical qualifications for positions
- ◆ Maximum organizational efficiency

Characteristics of Organizations

- Organizations employ or train individuals who possess specific talents or skills.
- Organizations arrange specialists in a hierarchy of authority in which everyone is accountable to someone and authority is limited to specific actions.
- Authorities and actions are further limited by abstract rules and procedures (SOPs) that are interpreted and applied to specific cases.

Standard Operating Procedure (SOP)

- All organizations, over time, stabilize to produce a given number of products and services by following standard routines.
- Standard Operating Procedures are precise, defined rules, procedures, and practices developed by organizations to cope with virtually all expected situations.
- Some of these rules and procedures are written down as formal procedures, but most are rules of thumb to be followed in selected situations.

Organizational Politics

- Organizations are arranged so that people occupy different positions. Because these individuals have different concerns and specialties, they naturally have different viewpoints, perspectives and opinions about resources, rewards and punishments should be distributed.
- Different viewpoints lead to political struggle, competition, and conflict.
- Political resistance to organizational change such as the development of new Information Systems.

Organizational Culture

- Organizational Culture is a set of fundamental assumptions about:
 - ◆ What products the organization should produce?
 - ◆ How and where it should produce them?
 - ◆ For whom they should be produced?
- Organizational Culture is a powerful unifying force.
- Organizational Culture is a powerful restraint on change

Unique Features of organizations

- Although all organizations have some common characteristics, no two organizations are identical.
- Organizations have different:
 - ◆ Structures/Organizational types
 - ◆ Goals
 - ◆ Constituencies (components)
 - ◆ Leadership Styles,
 - ◆ Tasks
 - ◆ Surrounding Environment

Organizational Type

- Entrepreneurial Structure
- Machine Bureaucracy
- Divisionalized Bureaucracy
- Professional Bureaucracy
- Adhocracy

Organizational Type

- Entrepreneurial Structure
 - ◆ Young, small firm in a fast-changing environment
 - ◆ Has a simple structure
 - ◆ Is managed by an entrepreneur serving as its single CEO
 - ◆ e.g. small start-up business

Organizational Type

- Machine Bureaucracy
 - ◆ Large bureaucracy existing in a slowly changing environment
 - ◆ Producing standard products
 - ◆ Dominated by a centralized management team and centralized decision making
 - ◆ e.g. mid-sized manufacturing firm

Organizational Type

- Divisionalized Bureaucracy
 - ◆ Combination of multiple machine bureaucracies
 - ◆ Each producing a different product or service
 - ◆ All topped by one central headquarters
 - ◆ e.g. Fortune 500 firms like General Motors

Organizational Type

- Professional Bureaucracy
 - ◆ Knowledge-based organization where goods and services depend on the expertise and professionals
 - ◆ Dominated by department heads with weak centralized authority
 - ◆ e.g. law firms, school systems, hospital

Organizational Type

- Adhocracy
 - ◆ Task force” organization that must respond to rapidly changing environments
 - ◆ Consists of large groups of specialists organized into short-lived multidisciplinary teams
 - ◆ Has weak central management
 - ◆ e.g. consulting firms such as the Rand Corporation

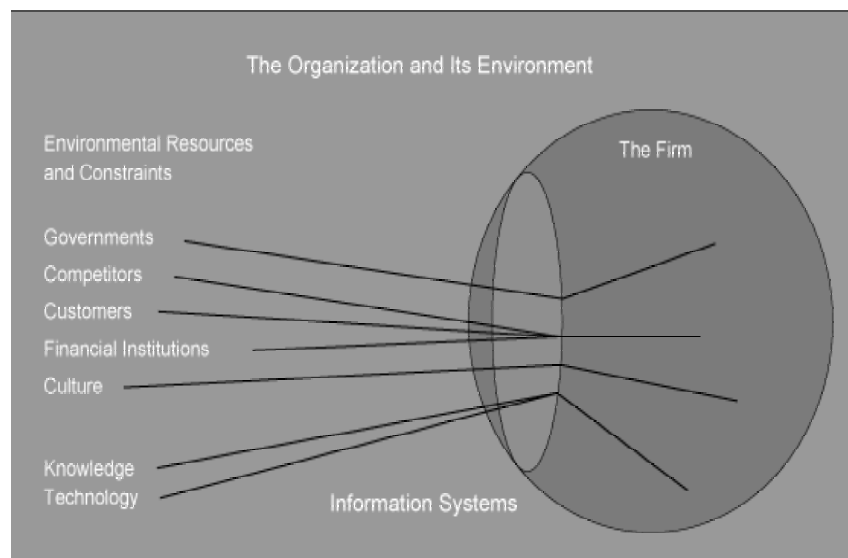
Organizations and Environments

- Organizations reside in environment from which they draw resources and to which supply goods and services. Organizations and environments have a two-way reciprocal relationship.
- Environment shapes what organizations can do, but organization can influence their environments and decide to change environment altogether.

Organizations and Environments

- Information Technology plays a critical role in helping organizations perceive environmental changes, and in helping organizations act as on their environment.
- Information System act as a filter between organizations and their environments. They do not reflect reality but, instead, refract environmental change through a number of built-in biases.

Organizations and Environments



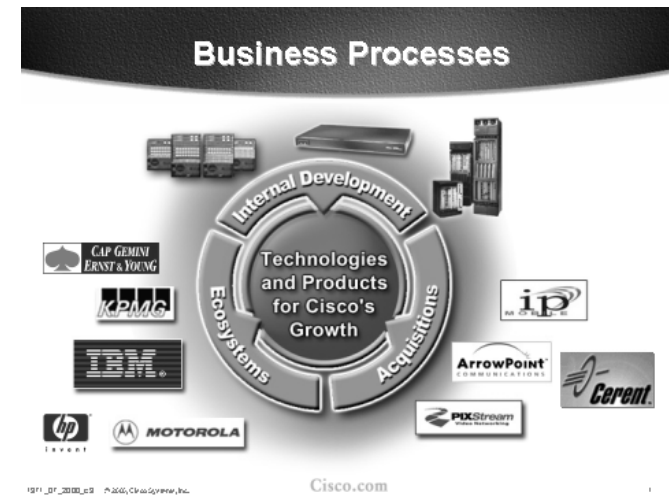
Other Differences among Organizations

- Organizations have different shapes or structures.
- Organizations differ in their ultimate goals and the types of power used to achieve the goals.
- The nature of leadership differs greatly from one organization to another; even in similar organizations devoted to the same goal. Some of the major leadership styles are
 - ◆ Democratic
 - ◆ Authoritarian 權力主義 (even totalitarian 極權主義)
 - ◆ Laissez-faire (leadership in absent),
 - ◆ Technocratic (according to technical criteria, formal model),
 - ◆ Bureaucratic (strictly according to formal rules).

Other Differences among Organizations

- Organizations differ in the tasks they perform and the technology they use.
- In some cases, organizations use routine tasks that could be programmed (e.g. inventory, reordering). Organizations that primarily perform routine tasks are typically hierarchical and according to standard procedures.
- In other cases, organizations work with highly judgmental, non-routine tasks (e.g. consulting company that creates strategic plan for other companies).

Business Processes



Business Processes

- Business processes refer to the manner in which work is organized, coordinated and focused to produce a valuable product or service.
- Business processes are also concrete workflows of material, information and knowledge – sets of activities.
- Business processes also refer to the unique ways in which organizations coordinate work, information, and knowledge, and the ways in which management chooses to coordinate work.

Business Processes

- The current interest with business processes comes from the recognition that strategic success ultimately depends on how well firms execute their primary mission of delivering the lowest cost, highest quality goods and services to customers.
- Business processes, by nature, are generally cross-functional, go beyond the boundaries between sales, marketing, manufacturing, and research and development; processes cut across the traditional organizational structure, grouping employees from different functional specialties to complete a piece of work.

Business Processes

- The objectives for processes are more external and linked to meeting customer and market demands than are those for the traditional functional approach. Instead of evaluating how well each functional area is performing as a discrete business function, management would evaluate how well a group executes a process.
- IS can help organizations achieve great efficiencies by automating parts of these processes or by helping organizations rethink and streamline these processes through the development of workflow software.

Organizational Level and Support Systems

Organizational Level	Activity	Example Support System
Individual	Job, task	PC application, DSS
Team	Project	Product Scheduling, DSS, Groupware
Department	Major Function	A/C Payable, Warehouse, MIS, Major TPS
Division	Major product or service	Marketing, Administration, HR, MIS
Organization	Multiple products, services, and goals	MIS, ESS
Inter-organization	Alliance competition exchange contact	Communication systems, intelligence, observation, and monitoring systems
Organizational network	Sector of economy: related products, services; interdependencies	Informal communication systems

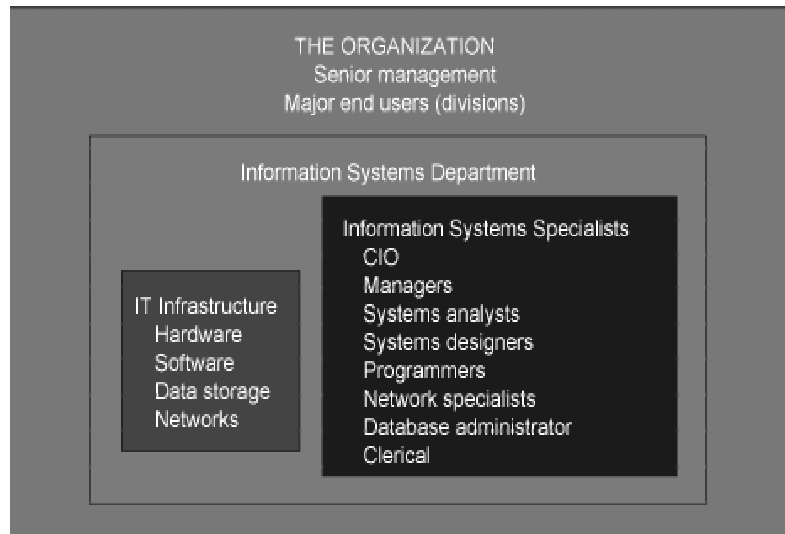
How Organization Affect Information Systems

1950s	Electronic accounting machines (EAM)
1960s	Data processing departments
1970s	Information systems
1980s	Information systems and services
1990s – Post 2000	Enterprise-wide information utility

Information Technology Services

- A way in which organizations affect Information Technology is through decisions about who will design, build, and operate the technology within the organization.
- These decisions determine how technology services will be delivered.

Information Systems Department



Information Systems Department

- Information Systems department is the formal organizational unit that is responsible for Information Systems in the organization.
- Programmers are highly trained technical specialists who write computer software instruction.
- Systems analysts are specialists who translate business problems and requirements into information requirements and systems, acting as liaison between Information Systems and department and the rest of the organization.

Information Systems Department

- **Information Systems Managers** are leaders of various specialists in the Information Systems department.
- End users are representatives of departments outside the Information Systems group for whom Information Systems applications are developed.
- **Chief Information Officer (CIO)** is a senior manager in charge of the Information Systems function in the firm.

Why Organizations Build Information Systems ?

- Environmental Factors
 - ◆ Factors external to the organization that influence the adoption and design of Information System.
 - ◆ E.g. rising costs of labor, competitive action of other organizations, and change in government regulations.
- Institutional Factors
 - ◆ Factors internal to the organization that influence the adoption and design of Information System.
 - ◆ They include value, norms, and vital interests that govern matters of strategic importance to the organization.

How Information Systems Affect Organizations ?

- Economic Theories
 - ◆ Microeconomic Model
 - ◆ Transaction Cost Theory
 - ◆ Agency Theory
- Behavioral Theories

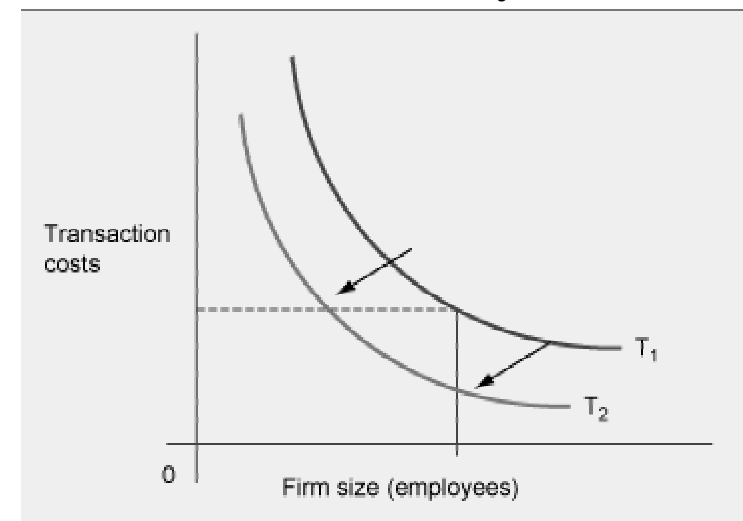
Microeconomic Model

- Information Technology is a factor of production, like capital and labor.
- In the microeconomic model of the firm, Information Technology should result in a decline in the number of middle managers and clerical workers as Information Technology substitutes for their labor.

Transaction Cost Theory

- Information Technology also helps firms contract in size because it can reduce transaction costs. According to transaction cost theory, firms and individuals seek to economize on transaction costs.
- Firms traditionally grew in size in order to reduce transaction costs. Information Technology potentially reduces the costs for a given size, shifting the transaction cost curve inward, opening up the possibility of revenue growth without increasing size, or even revenue growth accompanied by shrinking size.

Transaction Cost Theory



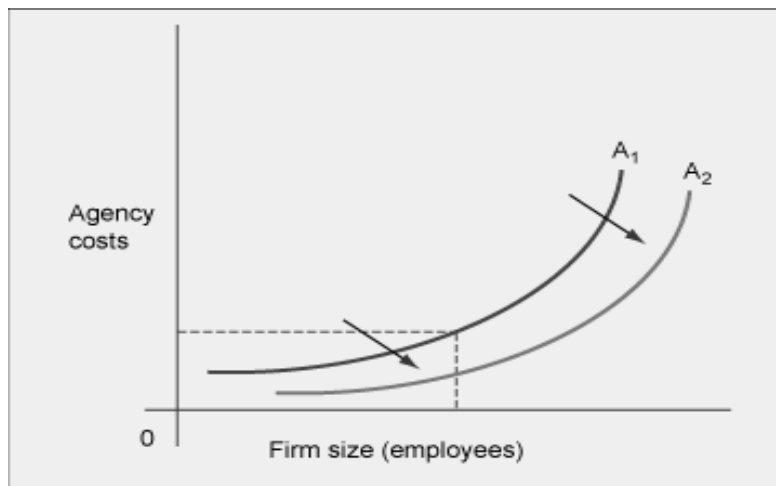
Agency Theory

- Information Technology also can reduce internal management costs.
- According to agency theory, the firm is viewed as a “nexus of contracts” among self-interested individuals rather than as a unified, profit-maximizing entity.
- A principal (owner) employs “agents” (employees) to perform work on his or her behalf.
- Agents need constant supervision; otherwise they will tend to pursue their own interest rather than those of the owners.

Agency Theory

- As firms grow in size and scope, agency costs or coordination costs rise because owners must expend more and more effort supervising and managing employees.
- Information Technology shifts the agency cost curve down and to the right, allowing firms to increase size while lowering agency costs

Agency Theory



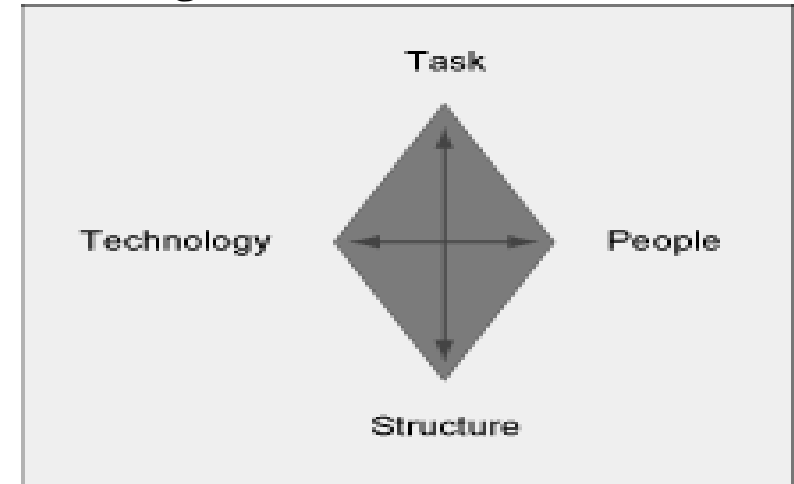
Behavioral Theories

- Information Technology could change hierarchy of decision making
- Lower cost of information acquisition
- Broadens the distribution of information

Virtual Organization

- Uses networks to link people, assets, and ideas to create and distribute products and services without being limited to physical locations
- In virtual offices, employees do not work from a permanent location. Here, workspaces are temporary with employees moving from desk to desk as vacancies open.

Organization Politics and Resistance to Change



Organization Politics and Resistance to Change

- Organizational resistance and the mutually adjusting relationship between technology and organization.
- Implementing Information System has consequences for task arrangements, structures and people.
- According to this model, in order to implement change, all four components must be changed simultaneously.