Chapter 3
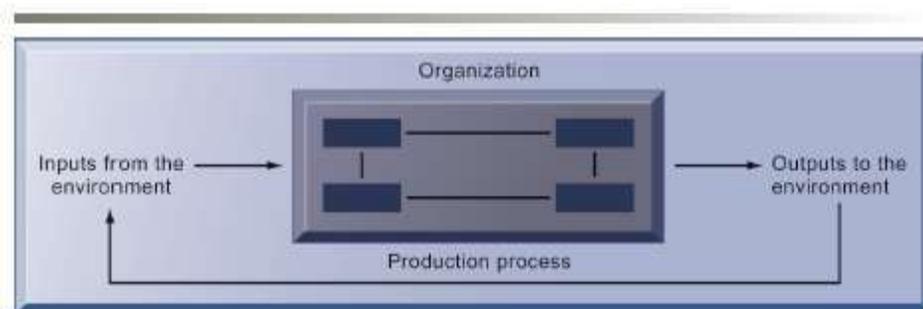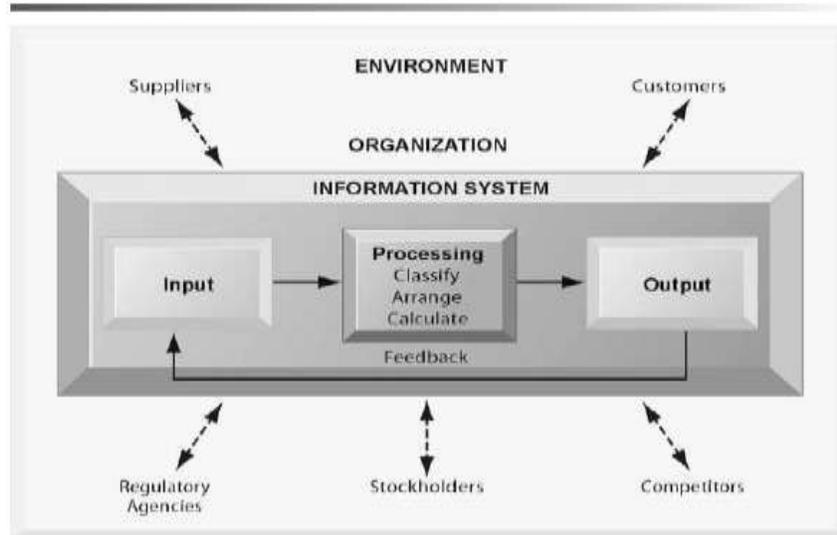# Information Systems, Organizations, and Strategy

Organizations and Information Systems

Relationship between information systems and organization is like chicken-and-egg theory. We need to design information systems that serve the existing organization. At the same time we must be ready and willing to restructure the organization to take advantage of the improvements an information system can offer. So which one takes precedent—the organization or the information system? Actually neither one. The goal is to adapt one to the other.

What Is an Organization?

An **organization** is very similar to the information system. Refer to the figures given below:

Figure: The Technical Microeconomic Definition of the Organization

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These two figures have many things in common. Both information systems and organizations require inputs and some sort of processing, both have outputs, and both depend on feedback for successful completion of the loop. Information systems use data as their main ingredient and organizations rely on people. However, the similarities are remarkable. Both are a structured method of turning raw products (data/people) into useful entities (information/producers).

Features of Organizations

The class you're enrolled in is an organization of sorts, isn't it? Think about it—how many of the following characteristics fit your class? How many fit any organization you're in?
- Clear division of labor
- Hierarchy of authority
- Abstract rules and procedures
- Impartial judgments
- Technical qualifications for positions
- Maximum organizational efficiency

These characteristics describe organizations that are called bureaucracies.

Organizational Structure

Table given below shows some common organizational structures.

TABLE 3-2 ORGANIZATIONAL STRUCTURES

ORGANIZATIONAL TYPE	DESCRIPTION	EXAMPLES
Entrepreneurial structure	Young, small firm in a fast-changing environment. It has a simple structure and is managed by an entrepreneur serving as its single chief executive officer.	Small start-up business
Machine bureaucracy	Large bureaucracy existing in a slowly changing environment, producing standard products. It is dominated by a centralized management team and centralized decision making.	Midsize manufacturing firm
Divisionalized bureaucracy	Combination of multiple machine bureaucracies, each producing a different product or service, all topped by one central headquarters.	Fortune 500 firms, such as General Motors
Professional bureaucracy	Knowledge-based organization where goods and services depend on the expertise and knowledge of professionals. Dominated by department heads with weak centralized authority.	Law firms, school systems, hospitals
Adhocracy	Task force organization that must respond to rapidly changing environments. Consists of large groups of specialists organized into short-lived multidisciplinary teams and has weak central management.	Consulting firms, such as the Rand Corporation

How Information Systems Impact Organizations and Business Firms

Two major types of theories about how information systems affect organizations are: economic theories and behavioral theories.

Economic Impacts

It's sometimes cheaper to hire a computer than to hire a person. To better illustrate this concept, let's take a look at how a company can find it cheaper to use an information system to develop and disseminate a Human Resources policy for employee dress codes. The HR assistant may write the first draft of the policy and give it to the HR director on paper. The director will review it and make changes. The assistant then must incorporate the changes and reprint the document. If there is an information system, the assistant can submit the draft to the director electronically and the director can make changes to the electronic version of the file and return it to the assistant. This will reduce time and cost of the task.

Of course others in the organization must review the new dress code policy. The proposed policy can be printed in 15 copies, a person can manually send the copies out, track who they went to and when, and then track all the changes made to the proposal. If we use information systems, the proposed policy can be sent electronically to reviewers who will electronically collaborate on necessary changes. Each of the reviewers can see what the others think and the changes they would like to make. This is another point where we can huge amount of human effort and some amount of time and money also. One manager can oversee ten employees (agents) rather than four employees because information is cheaper and easier to disseminate.

Organizational and Behavioral Impacts
IT Flattens Organizations

Rather than five layers of management in an organization, information technology allows companies to flatten the layers to three, maybe even two. Here's how:

- IT pushes decision-making rights lower in the organization because lower-level employees receive the information they need to make decisions without supervision.
- Managers now receive so much more accurate information on time, they become much faster at making decisions, so fewer managers are required.
- Management costs decline as a percentage of revenues, and the hierarchy becomes much more efficient.

The Internet and Organizations

The example used earlier of posting personnel policies to the company intranet is just one small example of how businesses are using network technologies to reduce costs and enhance their business processes. Business-to-business commerce is growing at a tremendous pace because of the cost savings the Internet allows. *The Internet provides an open platform technology that allows transaction processing between businesses at much cheaper costs and provides an easy-to-use interface.* The innovative ways organizations are using the Internet, intranets, and extranets to improve their business processes and lower costs is simply fascinating.

Using Information Systems to Achieve Competitive Advantage

Porter's Competitive Forces Model

Porter's **competitive forces model** tells that much of the success or failure of a business depends on its ability to respond to its external environment. Figure below shows five external forces that every business must contend with at one time or another.
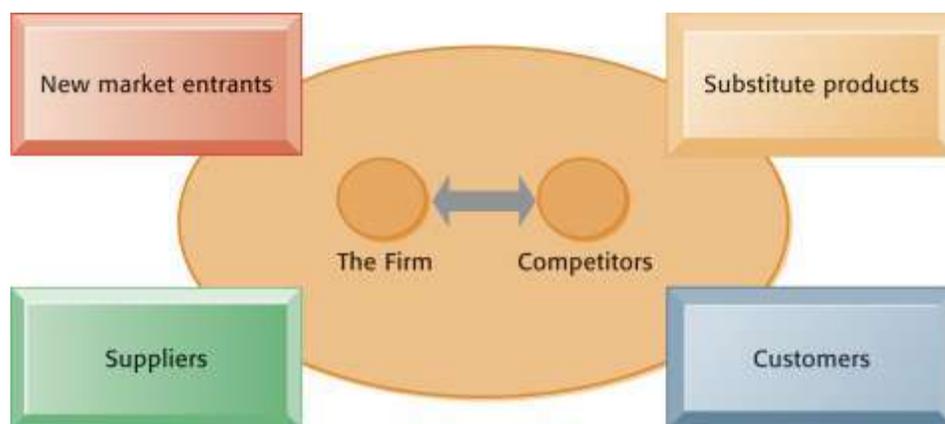
Figure: Porter's Competitive Forces Model

It's important to understand from this model that a firm's success is not predicated on how well it does internally. It must also pay attention to:

- **Traditional competitors:** Always trying to steal your customers with new products and services.
- **New market entrants:** Not constrained by traditional ways of producing goods and services, they can easily jump into our markets and steal customers away with cheaper or better products and services.
- **Substitute products and services:** Customers may be willing to try substitute products and services if they decide our price is too high or the quality of our products and services is too low.
- **Customers:** They are now armed with new information resources that make it easier for them to jump to our competitors, new market entrants, or substitute products.
- **Suppliers:** The number of suppliers used may determine how easy or difficult our business will have in controlling our supply chain. Too few suppliers and you lose a lot of control.

Information System Strategies for Dealing with Competitive Forces

Many companies have found that effective and efficient information systems allow them to deal with external forces in one of four ways: low-cost leadership, product differentiation, focus on market niche, and strengthen customer and supplier intimacy.

Low-Cost Leadership

By using information systems to lower our operational costs we can lower our prices. That will make it difficult for traditional competitors and new market entrants to match our prices.

Product Differentiation

A very effective use of strategic information systems is to create products or services that are so different that they create barriers for the competition. **Product differentiation** is at the heart of Apple Computer's success. People like to feel that they are unique individuals with their own needs and desires. One of the best strategies for dealing with competitors is to offer customers exactly what they want, when they want it, and how they want it. The Internet provides a new outlet for **mass customization** by allowing customers to order one-of-a-kind products.

Focus on Market Niche

If an organization is in a tough competitive market, it can choose to focus on a very narrow segment of the market rather than a broad general audience. A firm can gather very specific information about its customers using data mining techniques. Then it creates a focused differentiation business strategy to market directly to those consumers. Apple Computer uses focused differentiation to help sell its computers to a narrow target market of graphic designers and educators rather than the general population of computer users.

Strengthen Customer and Supplier Intimacy

Supply chain management (SCM) systems increase supplier intimacy while customer relationship management systems increase customer intimacy. SCM systems create immense **switching costs** between a company and its suppliers because of the investment of hardware and software necessary to make the system successful. Customer relationship management systems allow companies to learn details about customers that give them the competitive advantage over traditional competitors and new market entrants.

The Internet's Impact on Competitive Advantage

The Internet allows traditional competitors to introduce new products and services and attract customers. It provides a low cost avenue for new market entrants. Consumers can easily and quickly find substitute products and services through the Internet. Customers can use information provided on the Internet to create new competition between companies while suppliers can increase their market power. Table below summarizes the impact the Internet is having on many industries.

TABLE 3-5 IMPACT OF THE INTERNET ON COMPETITIVE FORCES AND INDUSTRY STRUCTURE

COMPETITIVE FORCE	IMPACT OF THE INTERNET
Substitute products or services	Enables new substitutes to emerge with new approaches to meeting needs and performing functions
Customers' bargaining power	Availability of global price and product information shifts bargaining power to customers
Suppliers' bargaining power	Procurement over the Internet tends to raise bargaining power over suppliers; suppliers can also benefit from reduced barriers to entry and from the elimination of distributors and other intermediaries standing between them and their users
Threat of new entrants	The Internet reduces barriers to entry, such as the need for a sales force, access to channels, and physical assets; it provides a technology for driving business processes that makes other things easier to do
Positioning and rivalry among existing competitors	Widens the geographic market, increasing the number of competitors, and reducing differences among competitors; makes it more difficult to sustain operational advantages; puts pressure to compete on price

Because of the tremendous growth of the Internet and its influence on all five elements of Porter's model, businesses must continually monitor the organizational environment, especially the external environment for potential challenges and opportunities. Those businesses that adapt their business model stand a chance of success. Those businesses who ignore the environmental changes and remain stagnant, risk everything they have.

The Business Value Chain Model

A **value chain** is a set of activities that a firm operating in a specific industry performs in order to deliver a valuable product or service for the market. Porter described a chain of activities common to all businesses, and he divided them into primary and support activities, as shown below.
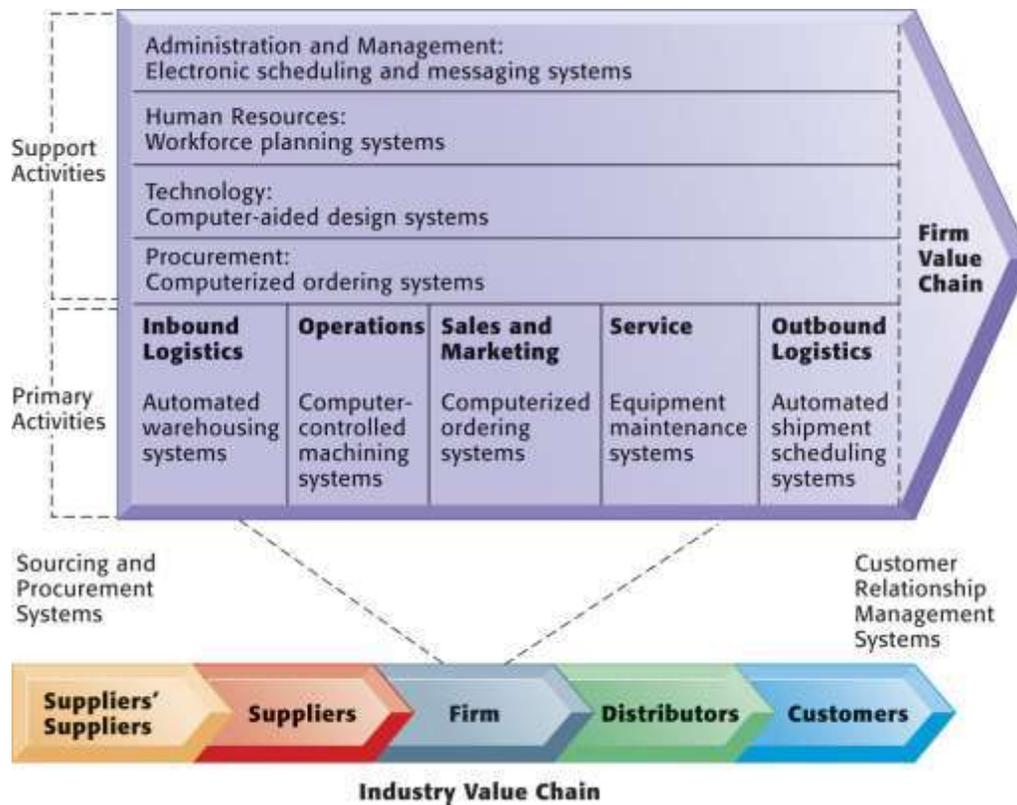
Figure The Value Chain Model

❖ Primary Activities

Primary activities relate directly to the physical creation, sale, maintenance and support of a product or service. They consist of the following:

- **Inbound logistics** – These are all the processes related to receiving, storing, and distributing inputs internally. Your supplier relationships are a key factor in creating value here.

- **Operations** – These are the transformation activities that change inputs into outputs that are sold to customers. Here, your operational systems create value.

- **Outbound logistics** – These activities deliver your product or service to your customer. These are things like collection, storage, and distribution systems, and they may be internal or external to your organization.

- **Marketing and sales** – These are the processes you use to persuade clients to purchase from you instead of your competitors. The benefits you offer, and how well you communicate them, are sources of value here.

- **Service** – These are the activities related to maintaining the value of your product or service to your customers, once it's been purchased.

    ❖ **Support Activities**

These activities support the primary functions above. In our diagram, the dotted lines show that each support, or secondary, activity can play a role in each primary activity. For example, procurement supports operations with certain activities, but it also supports marketing and sales with other activities.

- **Procurement (purchasing)** – This is what the organization does to get the resources it needs to operate. This includes finding vendors and negotiating best prices.

- **Human resource management** – This is how well a company recruits, hires, trains, motivates, rewards, and retains its workers. People are a significant source of value, so businesses can create a clear advantage with good HR practices.

- **Technological development** – These activities relate to managing and processing information, as well as protecting a company's knowledge base. Minimizing information technology costs, staying current with technological advances, and maintaining technical excellence are sources of value creation.

- **Infrastructure** – These are a company's support systems, and the functions that allow it to maintain daily operations. Accounting, legal, administrative, and general management are examples of necessary infrastructure that businesses can use to their advantage.

By effectively using an information system in a strategic role at any, or preferably all, levels of the organization, a digital firm can provide more value in their products than the competition. If they can't provide more value, then the strategic information system should help them provide the same value but at a lower price.

Using Systems for Competitive Advantage: Management Issues

Strategic information systems often change the organization as well as its products, services, and operating procedures, driving the organization into new behavioral patterns. Successfully using information systems to achieve a

competitive advantage is challenging and requires precise coordination of technology, organizations, and management.

Sustaining Competitive Advantage

Using information systems to beat the competition and increase the value of a product is not easy. Because competitors can quickly copy strategic systems, competitive advantage is not always sustainable. Sustaining a competitive advantage constantly requires changing processes and methods of conducting business. Managers simply cannot rest on their success with today's fast paced, fast changing technological advances. Technology changes much faster than organizations can adapt. As soon as employees and managers become comfortable with a particular system, it's almost time to make some more changes.

Aligning IT with Business Objectives

It's such a basic idea—an organization should align its information technology with its business objectives. It's an easy thing to have happen when the techies and the non-techies fail to work together to plan, implement, and maintain information systems that support their company's business objectives and competitive strategy.

Employees and managers in all the functional areas must be active players in the IT game. They can't sit on the sidelines and let someone else decide what kind of information system the company will have. They can't claim ignorance and say they don't know that much about computers.

Managing Strategic Transitions

A vital attribute of any manager's success is the ability to adapt to change. The pace of technological change is at its highest level ever. With each advance, the organization must use **strategic transitions,** to take its advantage. Making changes in the information systems should trigger a review of associated processes to make sure they are in sync.