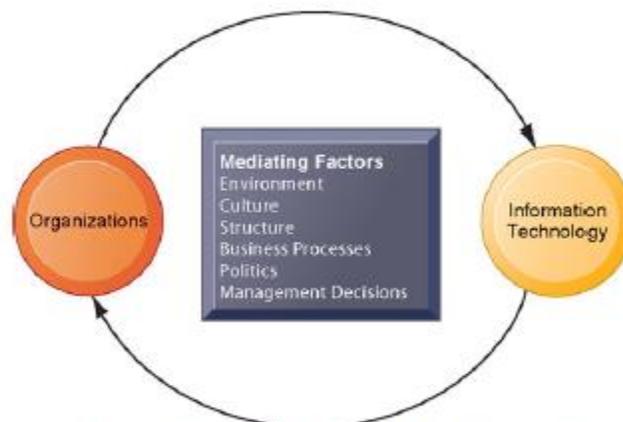


Unit 3: Information Systems, Organization and Strategy

Organizations and Information systems:

- Information systems and organizations influence one another. Information systems are built by managers to serve the interests of the business firm.
- At the same time, the organization must be aware of and open to the influences of information systems to benefit from new technologies.
- The interaction between information technology and organizations is complex and is influenced by many mediating factors, including the organization's structure, business processes, politics, culture, surrounding environment, and management decisions.

FIGURE 3-1 THE TWO-WAY RELATIONSHIP BETWEEN ORGANIZATIONS AND INFORMATION TECHNOLOGY

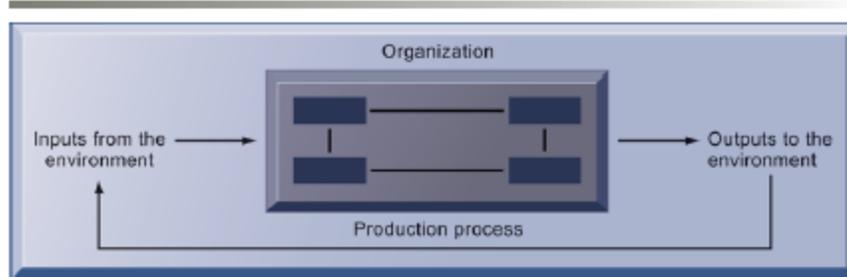


This complex two-way relationship is mediated by many factors, not the least of which are the decisions made—or not made—by managers. Other factors mediating the relationship include the organizational culture, structure, politics, business processes, and environment.

What is an organization?

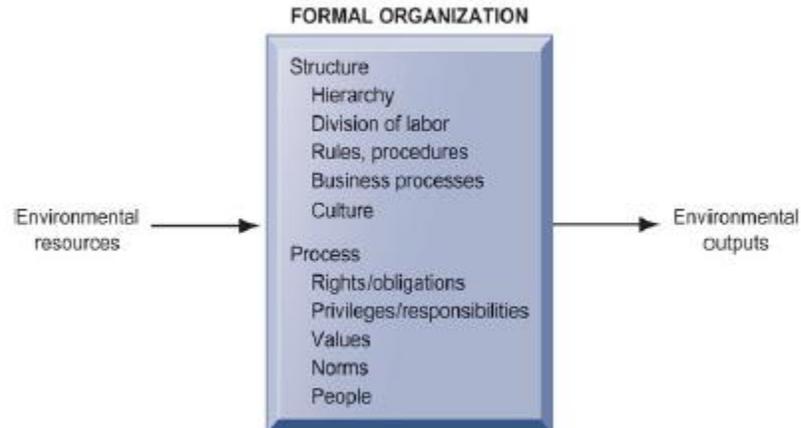
- An organization is a stable, formal social structure that takes resources from the environment and processes them to produce outputs.
- This technical definition focuses on three elements of an organization. Capital and labor are primary production factors provided by the environment.
- The organization (the firm) transforms these inputs into products and services in a production function. The products and services are consumed by environments in return for supply inputs.
- An organization is more stable than an informal group (such as a group of friends that meets every Friday for lunch) in terms of longevity and routineness.
- Organizations are formal legal entities with internal rules and procedures that must abide by laws.
- Organizations are also social structures because they are a collection of social elements, much as a machine has a structure—a particular arrangement of valves, cams, shafts, and other parts.

FIGURE 3-2 THE TECHNICAL MICROECONOMIC DEFINITION OF THE ORGANIZATION



In the microeconomic definition of organizations, capital and labor (the primary production factors provided by the environment) are transformed by the firm through the production process into products and services (outputs to the environment). The products and services are consumed by the environment, which supplies additional capital and labor as inputs in the feedback loop.

FIGURE 3-3 THE BEHAVIORAL VIEW OF ORGANIZATIONS



The behavioral view of organizations emphasizes group relationships, values, and structures.

- All modern organizations have certain characteristics. They are bureaucracies with clear-cut divisions of labor and specialization.
- Organizations arrange specialists in a hierarchy of authority in which everyone is accountable to someone and authority is limited to specific actions governed by abstract rules or procedures.
- These rules create a system of impartial and universal decision making.
- Organizations try to hire and promote employees on the basis of technical qualifications and professionalism (not personal connections).
- The organization is devoted to the principle of efficiency: maximizing output using limited inputs. Other features of organizations include their business processes, organizational culture, organizational politics, surrounding environments, structure, goals, constituencies, and

leadership styles. All of these features affect the kinds of information systems used by organizations.

Features of Organizations:

- Clear division of labor
- Hierarchy of authority
- Abstract rules and procedures
- Impartial judgments
- Technical qualifications for positions
- Maximum organizational efficiency
- Routines and Business Processes
- Organization Politics
- Organization Culture
- Organization Environments
- Organizational Structure

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?

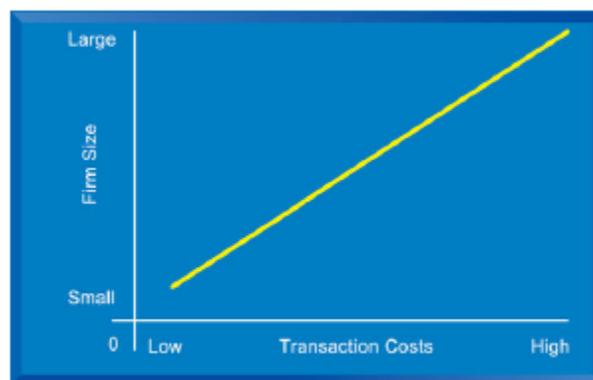
- Information systems have become integral, online, interactive tools deeply involved in the minute-to-minute operations and decision making of large organizations.
- Over the last decade, information systems have fundamentally altered the economics of organizations and greatly increased the possibilities for organizing work.

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

Economic Impact:

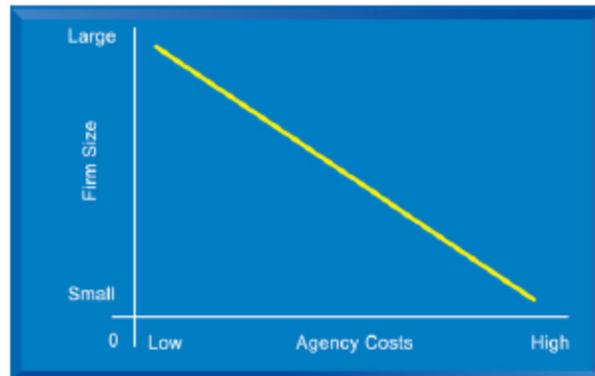
- From the point of view of economics, IT changes both the relative costs of capital and the costs of information.
- Information systems technology can be viewed as a factor of production that can be substituted for traditional capital and labor.
- As the cost of information technology decreases, it is substituted for labor, which historically has been a rising cost.
- Hence, information technology should result in a decline in the number of middle managers and clerical workers as information technology substitutes for their labor.
- As the cost of information technology decreases, it also substitutes for other forms of capital such as buildings and machinery, which remain relatively expensive.
- Hence, over time we should expect managers to increase their investments in IT because of its declining cost relative to other capital investments.
- IT also obviously affects the cost and quality of information and changes the economics of information.
- Information technology helps firms contract in size because it can reduce transaction costs—the costs incurred when a firm buys on the marketplace what it cannot make itself.
- 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.

FIGURE 3-6 THE TRANSACTION COST THEORY OF THE IMPACT OF INFORMATION TECHNOLOGY ON THE ORGANIZATION



When the costs of participating in markets (transaction costs) were high, it made sense to build large firms and do everything inside the firm. But IT reduces the firm's market transaction costs. This means firms can outsource work using the market, reduce their employee head count, and still grow revenues.

FIGURE 3-7 THE AGENCY COST THEORY OF THE IMPACT OF INFORMATION TECHNOLOGY ON THE ORGANIZATION



Agency costs are the costs of managing a firm's employees. IT reduces agency costs making management more efficient. Fewer managers are needed to manage employees. IT makes it possible to build very large global firms and to run them efficiently without greatly expanding management. Without IT, very large global firms would be difficult to operate because they would be very expensive to manage.

Organizational and Behavioral Impact:

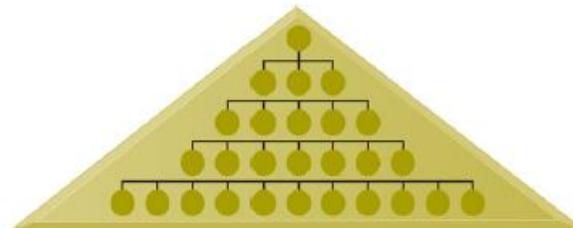
IT Flattens Organizations

- Large, bureaucratic organizations, which primarily developed before the computer age, are often inefficient, slow to change, and less competitive than newly created organizations.
- Some of these large organizations have downsized, reducing the number of employees and the number of levels in their organizational hierarchies.
- Rather than five layers of management in an organization, information technology allows companies to flatten the layers to three, maybe even two.

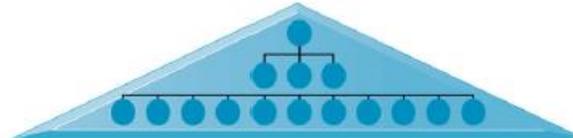
Here 's how:

- 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.

FIGURE 3-8 FLATTENING ORGANIZATIONS



A traditional hierarchical organization with many levels of management



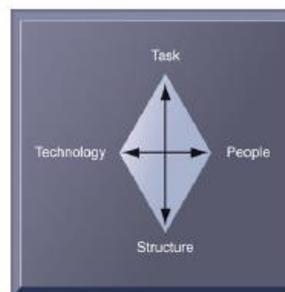
An organization that has been "flattened" by removing layers of management

Information systems can reduce the number of levels in an organization by providing managers with information to supervise larger numbers of workers and by giving lower-level employees more decision-making authority.

The Internet and Organizations:

- The Internet, especially the World Wide Web, has an important impact on the relationships between many firms and external entities, and even on the organization of business processes inside a firm.
- The Internet increases the accessibility, storage, and distribution of information and knowledge for organizations.
- In essence, the Internet is capable of dramatically lowering the transaction and agency costs facing most organizations.
- For instance, banks deliver their internal operating procedures manuals to their employees at distant locations by posting them on the corporate Web site, saving the distribution costs.
- A global sales force can receive nearly instant product price information updates using the Web or instructions from management sent by e-mail.
- Vendors of some large retailers can access retailers' internal Web sites directly to find up-to-the-minute sales information and to initiate replenishment orders instantly.
- Businesses are rapidly rebuilding some of their key business processes based on Internet technology and making this technology a key component of their IT infrastructures.

FIGURE 3-9 ORGANIZATIONAL RESISTANCE AND THE MUTUALLY ADJUSTING RELATIONSHIP BETWEEN TECHNOLOGY AND THE ORGANIZATION



Implementing information systems has consequences for task arrangements, structures, and people. According to this model, to implement change, all four components must be changed simultaneously.

Implications for the Design and Understanding of Information Systems:

- To deliver genuine benefits, information systems must be built with a clear understanding of the organization in which they will be used.
- The central organizational factors to consider when planning a new system are the following:
 - The environment in which the organization must function.
 - The structure of the organization: hierarchy, specialization, routines, and business processes.
 - The organization's culture and politics.
 - The type of organization and its style of leadership.
 - The principal interest groups affected by the system and the attitudes of workers who will be using the system.
 - The kinds of tasks, decisions, and business processes that the information system is designed to assist.

Using Information Systems to Achieve Competitive Advantage:

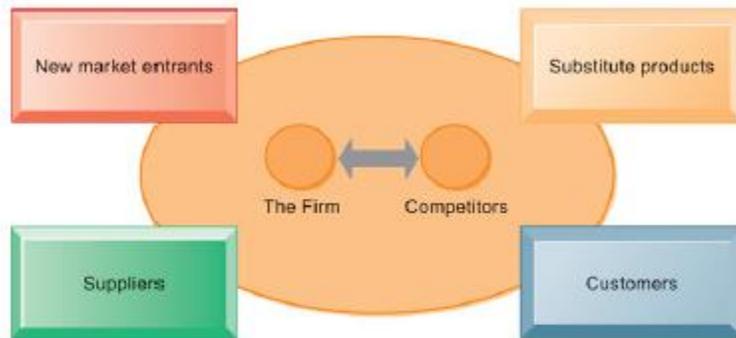
- In almost every industry you examine, you will find that some firms do better than most others. There's almost always a stand-out firm.
 - In the automotive industry, Toyota is considered a superior performer.
 - In pure online retail, Amazon is the leader.
 - In off-line retail, Walmart is the largest retailer on earth, is the leader.
 - In online music, Apple's iTunes is considered the leader with more than 75 percent of the downloaded music market,
 - In the industry of digital music players, the iPod is the leader.
 - In Web search, Google is considered the leader.
- Firms that "do better" than others are said to have a competitive advantage over others: They either have access to special resources that others do not, or they are able to use commonly available resources more efficiently—usually because of superior knowledge and information assets.
- In any event, they do better in terms of revenue growth, profitability, or productivity growth (efficiency), all of which ultimately in the long run translate into higher stock market valuations than their competitors.
- But why do some firms do better than others and how do they achieve competitive advantage? How can you analyze a business and identify its strategic advantages? How can you develop a strategic advantage for your own business? And how do information systems contribute to strategic advantages? One answer to that question is Michael Porter's competitive forces model.

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.
- 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.

FIGURE 3-10 PORTER'S COMPETITIVE FORCES MODEL



In Porter's competitive forces model, the strategic position of the firm and its strategies are determined not only by competition with its traditional direct competitors but also by four other forces in the industry's environment: new market entrants, substitute products, customers, and suppliers.

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.

TABLE 3-4 FOUR BASIC COMPETITIVE STRATEGIES

STRATEGY	DESCRIPTION	EXAMPLE
Low-cost leadership	Use information systems to produce products and services at a lower price than competitors while enhancing quality and level of service	Walmart
Product differentiation	Use information systems to differentiate products, and enable new services and products	Google, eBay, Apple, Lands' End
Focus on market niche	Use information systems to enable a focused strategy on a single market niche; specialize	Hilton Hotels, Harrah's
Customer and supplier intimacy	Use information systems to develop strong ties and loyalty with customers and suppliers	Chrysler Corporation Amazon.com

- **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.
- 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.

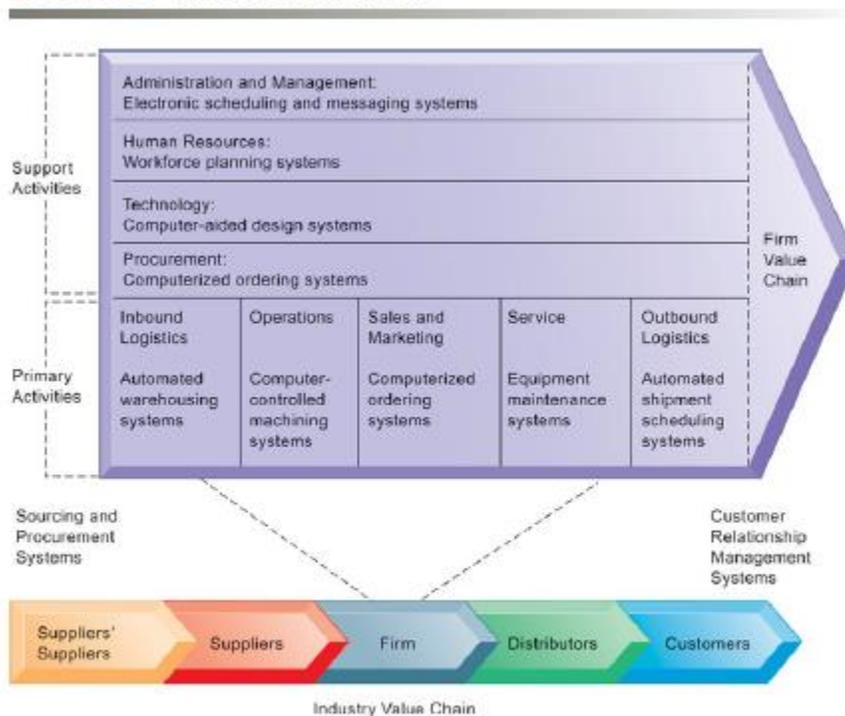
TABLE 3-5 IMPACT OF THE INTERNET ON COMPETITIVE FORCES AND INDUSTRY STRUCTURE

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

The Business Value Chain Model:

- The value chain model highlights specific activities in the business where competitive strategies can best be applied (Porter, 1985) and where information systems are most likely to have a strategic impact.
- This model identifies specific, critical leverage points where a firm can use information technology most effectively to enhance its competitive position.
- The value chain model views the firm as a series or chain of basic activities that add a margin of value to a firm's products or services.
- These activities can be categorized as either primary activities or support activities.

FIGURE 3-11 THE VALUE CHAIN MODEL



This figure provides examples of systems for both primary and support activities of a firm and of its value partners that can add a margin of value to a firm's products or services.

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.