

Managing Information Systems

- Information Systems (IS) have enormous strategic value. When they are not working (even for a short time), an organization cannot function. Furthermore, the Life Cycle Costs (*acquisition, operation, security, and maintenance*) of these systems are considerable. Therefore, it is essential to manage them properly. The planning, organizing, implementing, operating, and controlling of the infrastructures and the organization's portfolio of applications must be done with great skill
- The responsibility for the management of information resources is divided between two organizational entities:
 - The *information systems department* (ISD), which is a corporate entity
 - the *end users*, who are scattered throughout the organization.

Managerial Issues

- **The transition to e-business.** Converting an organization to a networked computing-based e-business may be a complicated process. The e-business requires a client/server architecture, an intranet, an Internet connection, and e-commerce policy and strategy; all in the face of many unknowns and risks. However, in many organizations this potentially painful conversion may be the only way to succeed or even to survive. When to do it, how to do it, what the role of the enabling information technologies will be, and what the impacts will be of such a conversion are major issues for organizations to consider.
- **From legacy systems to client/server to intranets, corporate portals, and Web-based systems.** A related major issue is whether, when, and how to move from the legacy systems to a Web-based client/server enterprise-wide architecture. While the general trend is toward Web-based client/server, there have been several unsuccessful transformations and many unresolved issues regarding the implementation of these systems. The introduction of intranets seems to be much easier than that of other client/server applications. Yet, moving to any new architecture requires new infrastructure and a decision about what to do with the legacy systems, which may have a considerable impact on people, quality of work, and budget. A major aspect is the introduction of wireless infrastructure.

Managerial Issues (Continued)

- **How to deal with the outsourcing and utility computing trends.**
As opportunities for outsourcing (e.g., ASPs) are becoming cheaper, available, and viable, the concept becomes more attractive. In the not-so-distant future, we will see outsourcing in the form of utility computing. How much to outsource is a major managerial issue.
- **How much infrastructure?** Justifying information system applications is not an easy job due to the intangible benefits and the rapid changes in technologies that often make systems obsolete. Justifying infrastructure is even more difficult since many users and applications share the infrastructure that will be used for several years in the future. This makes it almost impossible to quantify the benefits. Basic architecture is a necessity, but there are some options.

Managerial Issues (Continued)

- **The roles of the ISD and end users.** The role of the ISD can be extremely important, yet top management frequently mistreats it. By constraining the ISD to technical duties, top management may jeopardize an organization's entire future. However, it is not economically feasible for the ISD to develop and manage all IT applications in an organization. End users play an important role in IT development and management. The end users know best what their information needs are and to what degree they are fulfilled. Properly managed end-user computing is essential for the betterment of all organizations.
- **Ethical issues.** Systems developed by the ISD and maintained by end users may introduce some ethical issues. The ISD's major objective should be to build efficient and effective systems. But, such systems may invade the privacy of the users or create advantages for certain individuals at the expense of others.

The Strategic Role of Information Systems

Today, leading companies are using information and information systems as tools for staying ahead of competitors. Organisations have developed a special category of information systems called strategic information systems for this purpose.

1. Information as a strategic resource.
2. How information systems can be used for competitive advantage.
3. Implications for Managers and organizations.

Information as a strategic resource

What is a strategic information system?

Computer systems at any level of the organization that changes the **goals, operations, products, services, or environmental relationships** to help the organisation gain a competitive advantage.

Changing conceptions of information and information systems:

How information systems can be used for competitive advantage

Countering competitive forces - focus on external threats and opportunities.

Four competitive strategies.

- **Product differentiation**
- **Focused differentiation**
- **Developing tight linkages to customers and suppliers**
- **Becoming the low-cost producer**

How information systems can be used for competitive advantage

Product differentiation: Firms can develop brand loyalty by creating unique new products and services that can easily be distinguished from those of competitors, and that existing competitors or potential new competitors can't duplicate.

Citibank - ATMs (1977); Retailers; Levi Jeans.

...How information systems can be used for competitive advantage

Focused differentiation: Businesses can create new market niches by identifying a specific target for a product or service that it can serve in a superior manner. The firm can provide a specialized product or service that serves this narrow target market better than existing competitors and that discourages potential new competitors.

Sears, Roebuck and Company continually mines its computerised data on its 40+ million retail customers to target groups such as appliance buyers, tool buyers, gardening enthusiasts and mothers-to-be.

...How information systems can be used for competitive advantage

Developing tight linkages to customers and suppliers: Firms can create ties to customers and suppliers that “lock” customers into the firm’s products and that tie suppliers into a delivery timetable and price structure shaped by the purchasing firm. This raises **switching costs** (the cost for customers to switch to competitors’ products and services) and reduces customers’ bargaining power and the bargaining power of suppliers.

Federal Express; Baxter International's "Stockless inventory" and ordering system.

...How information systems can be used for competitive advantage

Interorganizational systems - Information systems that automate the flow of information across organizational boundaries and link a company to its customers, distributors, or suppliers.

Electronic markets. A marketplace that is created by a computer and communication technologies which link many buyers and sellers via interorganizational systems.

...How information systems can be used for competitive advantage

Becoming the low-cost producer: To prevent new competitors from entering their markets, businesses can produce goods and services at a lower price than competitors without sacrificing quality and level of service.

Airlines—yield management.

Value chain model: Model that highlights the primary or support activities that add a margin of value to a firm's products or services where information systems can best be applied to achieve a competitive advantage.

...How information systems can be used for competitive advantage

Primary activities: Activities most directly related to the production and distribution of a firm's products or services. Primary activities include inbound logistics, operations, outbound logistics, sales and marketing, and services.

Support activities: Activities that make the delivery of the primary activities of a firm possible. Consist of the organization's infrastructure (administration and management), human resources (employee recruiting, hiring, and training), technology (improving products and the production process, and procurement (purchasing input).

Implications for Managers and organizations

- Information systems are too important to be left entirely to a small technical group in the corporation.
- Auditors must take the initiative to identify the types of systems that would provide a strategic advantage to the firm.
 - Information systems in the industry
 - Information systems within the organization

Information systems in the industry

- What are some of the forces at work in the industry?
- What strategies are being used by industry leaders?
- How is the industry currently using information and communication technology?
- Which organizations are the industry leaders in the application of information systems technology?
- What are the direction and nature of change within the industry?

Information systems in the industry

- Are significant strategic opportunities to be gained by introducing information systems technology into the industry?
- Can information systems alter the basis of competition, build in switching costs, generate new products, strengthen the firm's power in dealing with suppliers, or create barriers against new competitors.
- What kinds of systems are applicable to the industry?

Information systems in the industry

- Does it require systems to create new products and services, supplier systems, and/or sales and marketing systems?
- Where are the momentum and change coming from?

Information systems within the organization

- Is the organization behind or ahead of the industry in its application of information systems?
- What is the current business strategic plan, and how does that plan mesh with the current strategy for information services?
- Have the information technologies currently in use provided significant payoffs to the business?
- Do they largely support the business or drain its resources?

Information systems within the organization

- Where would new information systems provide the greatest value to the firm?
- Once these issues have been considered, Auditors can gain a keener insight into whether their firms are ready for strategic information systems.