Chapter- 3

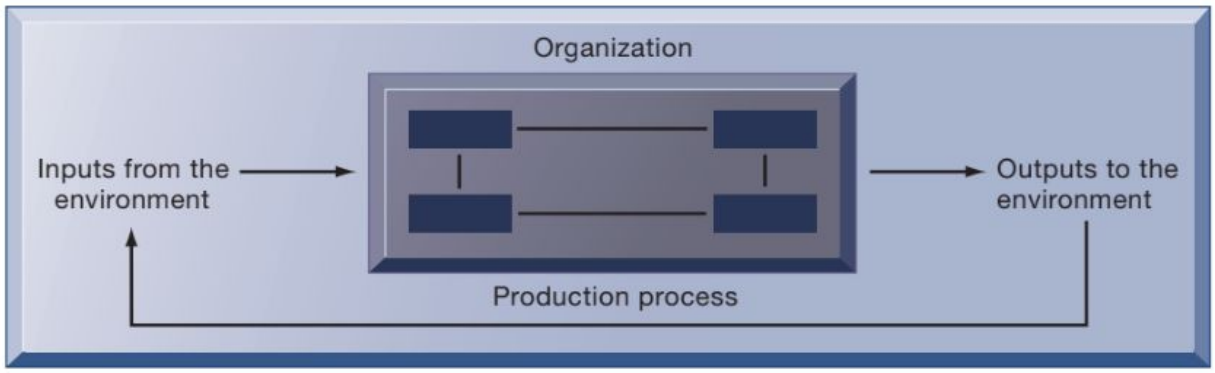
Information Systems, Organizations, and Strategy

Topic- 1: Which features of organizations do managers need to know about to build and use IS successfully?

3.1: 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 the 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 (see Figure 3. 2).

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.

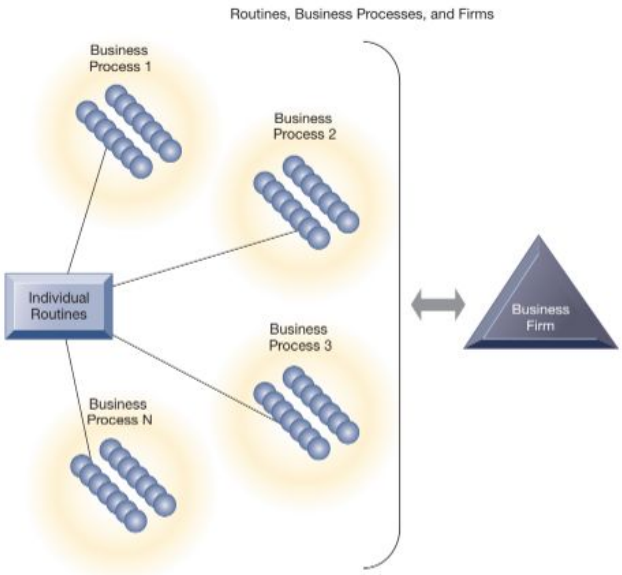
An organization is more stable than an informal group (such as a group of friends that meets every Friday for lunch) in terms of longevity and routineness. Organizations are formal legal entities with internal rules and procedures that must abide by laws. Organizations are also social structures because they are a collection of social elements, much as a machine has a structure—a particular arrangement of valves, cams, shafts, and other parts.

3.2: Features of Organizations

Routines and Business Processes

All organizations, including business firms, become very efficient over time because individuals in the firm develop routines for producing goods and services. Routines—sometimes called standard operating procedures—are precise rules, procedures, and practices that have been developed to cope with virtually all expected situations. As employees learn these routines, they become highly productive and efficient, and the firm is able to reduce its costs over time as efficiency increases. For instance, when you visit a doctor's office, receptionists have a well-developed set of routines for gathering basic information from you, nurses have a different set of routines for preparing you for an interview with a doctor, and the doctor has a well-developed set of routines for diagnosing you. Business processes are collections of such routines. A business firm, in turn, is a collection of business processes.

FIGURE 3.4 ROUTINES, BUSINESS PROCESSES, AND FIRMS



Organizational Politics: People in organizations occupy different positions with different specialties, concerns, and perspectives. As a result, they naturally have divergent viewpoints about how resources, rewards, and punishments should be distributed. These differences matter to both managers and employees, and they result in the political struggle for resources, competition, and conflict within every organization. Political resistance is one of the great difficulties of bringing about organizational change—especially the development of new information systems. Virtually all large information systems investments by a firm that bring about significant changes in strategy, business objectives, business processes, and procedures become politically charged events. Managers who know how to work with the politics of an organization will be more successful than less skilled managers in implementing new information systems. Throughout this book, you will find many examples where internal politics defeated the best-laid plans for an information system.

Organizational Culture: All organizations have bedrock, unassailable, unquestioned (by the members) assumptions that define their goals and products. Organizational culture encompasses this set of assumptions about what products the organization should produce, how it should produce them, where, and for whom. Generally, these cultural assumptions are taken totally for granted and are rarely publicly announced or discussed. Business processes—the actual way business firms produce value—are usually ensconced in the organization's culture.

Organizational Environments: Organizations reside in environments from which they draw resources and to which they supply goods and services. Organizations and environments have a reciprocal

relationship. On the one hand, organizations are open to and dependent on the social and physical environment that surrounds them. Without financial and human resources—people willing to work reliably and consistently for a set wage or revenue from customers—organizations could not exist. Organizations must respond to legislative and other requirements imposed by the government as well as the actions of customers and competitors. On the other hand, organizations can influence their environments. For example, business firms form alliances with other businesses to influence the political process; they advertise to influence customer acceptance of their products.

Organizational Structure: All organizations have a structure or shape. Mintzberg's classification, described in Table 3. 2, identifies five basic kinds of organizational structure (Mintzberg, 1971). The kind of information systems you find in a business firm—and the nature of problems with these systems—often reflect the type of organizational structure. For instance, in a professional bureaucracy such as a hospital, it is not unusual to find parallel patient record systems operated by the administration, another by doctors, and another by other professional staff such as nurses and social workers. In small entrepreneurial firms, you will often find poorly designed systems developed in a rush that often quickly outgrow their usefulness. In huge multidivisional firms operating in hundreds of locations, you will often find there is not a single integrating information system, but instead, each locale or each division has its set of information systems.

Other Organizational Features: Organizations have goals and use different means to achieve them. Some organizations have coercive goals (e.g., prisons); others have utilitarian goals (e.g., businesses). Still, others have normative goals (universities, religious groups). Organizations also serve different groups or have different constituencies, some primarily benefiting their members, others benefiting clients, stockholders, or the public. The nature of leadership differs greatly from one organization to another—some organizations may be more democratic or authoritarian than others. Another way organizations differ is by the tasks they perform and the technology they use. Some organizations perform primarily routine tasks that can be reduced to formal rules that require little judgment (such as manufacturing auto parts), whereas others (such as consulting firms) work primarily with nonroutine tasks.

3.3: 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. In our experience, 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

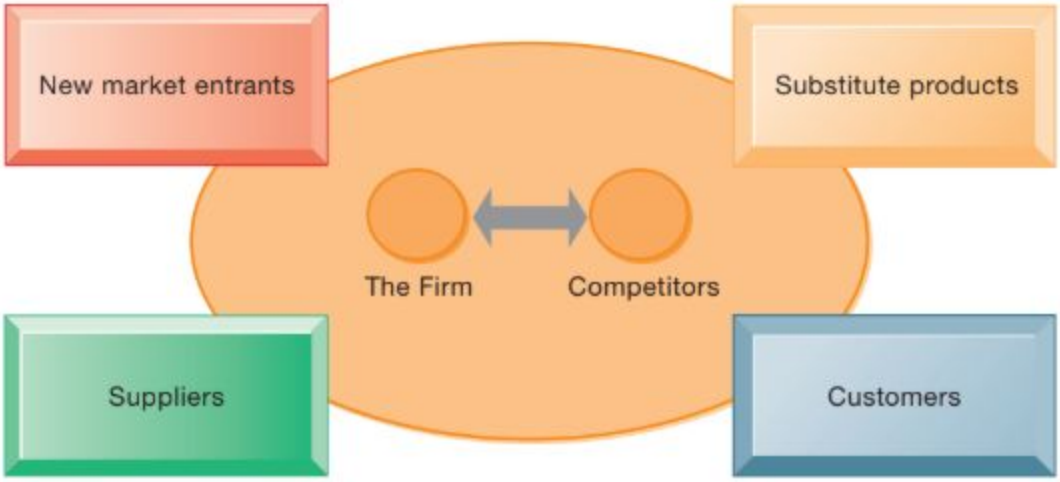
- The kinds of tasks, decisions, and business processes that the information system is designed to assist

Topic- 2: Porter's competitive forces model, the value chain model, synergies, core competencies, and network economics

5.1: Porter's Competitive Forces Model

Arguably, the most widely used model for understanding competitive advantage is Michael Porter's competitive forces model (see Figure 3. 8). This model provides a general view of the firm, its competitors, and the firm's environment. Porter's model is all about the firm's general business environment. In this model, five competitive forces shape the fate of the firm.

FIGURE 3.8 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.

Traditional Competitors: All firms share market space with other competitors who are continuously devising new, more efficient ways to produce by introducing new products and services and attempting to attract customers by developing their brands and imposing switching costs on their customers.

New Market Entrants: In a free economy with mobile labor and financial resources, new companies are always entering the marketplace. In some industries, there are very low barriers to entry, whereas, in other

industries, entry is very difficult. For instance, it is fairly easy to start a pizza business or just about any small retail business, but it is much more expensive and difficult to enter the computer chip business, which has very high capital costs and requires significant expertise and knowledge that is hard to obtain. New companies have several possible advantages: They are not locked into old plants and equipment, they often hire younger workers who are less expensive and perhaps more innovative, they are not encumbered by old worn-out brand names, and they are "more hungry" (more highly motivated) than traditional occupants of an industry. These advantages are also their weakness: They depend on outside financing for new plants and equipment, which can be expensive; they have a less-experienced workforce, and they have little brand recognition.

Substitute Products and Services: In just about every industry, there are substitutes that your customers might use if your prices become too high. New technologies create new substitutes all the time. Ethanol can substitute for gasoline in cars; vegetable oil for diesel fuel in trucks; and wind, solar, coal, and hydropower for industrial electricity generation. Likewise, the Internet and wireless telephone service can substitute for traditional telephone service. And, of course, an Internet music service that allows you to download music tracks to an iPod or smartphone has become a substitute for CD-based music stores. The more substitute products and services in your industry, the less you can control pricing and the lower your profit margins.

Customers: A profitable company depends in large measure on its ability to attract and retain customers (while denying them to competitors) and charge high prices. The power of customers grows if they can easily switch to a competitor's products and services or if they can force business and its competitors to compete on price alone in a transparent marketplace where there is little product differentiation and all prices are known instantly (such as on theInternet). For instance, in the used college textbook market on the Internet, students (customers) can find multiple suppliers of just about any current college textbook. In this case, online customers have extraordinary power over used-book firms.

Suppliers: The market power of suppliers can have a significant impact on firm profits, especially when the firm cannot raise prices as fast as can suppliers. The more different suppliers a firm has the greater control it can exercise over suppliers in terms of price, quality, and delivery schedules. For instance, manufacturers of laptop PCs almost always have multiple competing suppliers of key components, such as keyboards, hard drives, and display screens.

5.2: Information System Strategies for Dealing with Competitive Forces What

What is a firm to do when it is faced with all these competitive forces? And how can the firm use information systems to counteract some of these forces? How do you prevent substitutes and inhibit new market entrants? There are four generic strategies, each of which often is enabled by using information technology and systems: low-cost leadership, product differentiation, focus on market niche, and strengthening customer and supplier intimacy.

Low-Cost Leadership: Use information systems to achieve the lowest operational costs and the lowest prices. The classic example is Walmart. By keeping prices low and shelves well-stocked using a legendary inventory replenishment system, Walmart became the leading retail business in the United States. Walmart's continuous replenishment system sends orders for new merchandise directly to suppliers as soon as consumers pay for their purchases at the cash register. Point-of-sale terminals record the bar code of each item passing the checkout counter and send a purchase transaction directly to a central computer at Walmart headquarters. The computer collects the orders from all Walmart stores and transmits them to suppliers. Suppliers can also access Walmart's sales and inventory data using web technology.

Product Differentiation: Use information systems to enable new products and services or greatly change the customer convenience in using your existing products and services. For instance, Google continuously introduces new and unique search services on its website, such as Google Maps. By purchasing PayPal, an electronic payment system, in 2003, eBay made it much easier for customers to pay sellers and expanded use of its auction marketplace. Apple created the iPod, a uniquely portable digital music player, plus iTunes, an online music store where songs can be purchased for $0.69 to $1.29 each. Apple has continued to innovate with its multimedia iPhone, iPad tablet computer, and iPod video player.
Manufacturers and retailers are using information systems to create products and services that are customized and personalized to fit the precise specifications of individual customers. For example, Nike sells customized sneakers through its NIKEiD program on its website. Customers are able to select the type of shoe, colors, material, outsoles, and even a logo of up to eight characters. Nike transmits the orders via computers to specially equipped plants in China and Korea. The sneakers take about three weeks to reach the customer. This ability to offer individually tailored products or services using the same production resources as mass production is called mass customization.

Focus on Market Niche: Use information systems to enable a specific market focus and serve this narrow target market better than competitors. Information systems support this strategy by producing and analyzing data for finely tuned sales and marketing techniques. Information systems enable companies to analyze customer buying patterns, tastes, and preferences closely so that they efficiently pitch advertising and marketing campaigns to smaller and smaller target markets.
The data come from a range of sources—credit card transactions, demographic data, purchase data from checkout counter scanners at supermarkets and retail stores, and data collected when people access and interact with websites. Sophisticated software tools find patterns in these large pools of data and infer rules from them to guide decision making. Analysis of such data drives one-to-one marketing that creates personal messages based on individualized preferences. For example, Hilton Hotels' OnQ system analyzes detailed data collected on active guests in all of its properties to determine the preferences of each guest and each guest's profitability. Hilton uses this information to give its most profitable customers additional privileges, such as late checkouts. Contemporary customer relationship management (CRM) systems feature analytical capabilities for this type of intensive data analysis

Strengthen Customer and Supplier Intimacy: Use information systems to tighten linkages with suppliers and develop intimacy with customers. Fiat Chrysler Automobiles LLC uses information systems to facilitate direct access by suppliers to production schedules and even permits suppliers to decide how

and when to ship supplies to Chrysler and Fiat factories. This allows suppliers more lead time in producing goods. On the customer side, Amazon keeps track of user preferences for book and CD purchases and can recommend titles purchased by others to its customers. Strong linkages to customers and suppliers increase switching costs (the cost of switching from one product to a competing product) and loyalty to your firm.

5.3: The Business Value Chain Model

Although the Porter model is very helpful for identifying competitive forces and suggesting generic strategies, it is not very specific about what exactly to do, and it does not provide a methodology to follow for achieving competitive advantages. If your goal is to achieve operational excellence, where do you start? Here's where the business value chain model is helpful.

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 (see Figure 3. 9).

Primary activities are most directly related to the production and distribution of the firm's products and services, which create value for the customer. Primary activities include inbound logistics, operations, outbound logistics, sales and marketing, and service. Inbound logistics includes receiving and storing materials for distribution to production. Operations transform inputs into finished products. Outbound logistics entails storing and distributing finished products. Sales and marketing include promoting and selling the firm's products. The service activity includes maintenance and repair of the firm's goods and services.

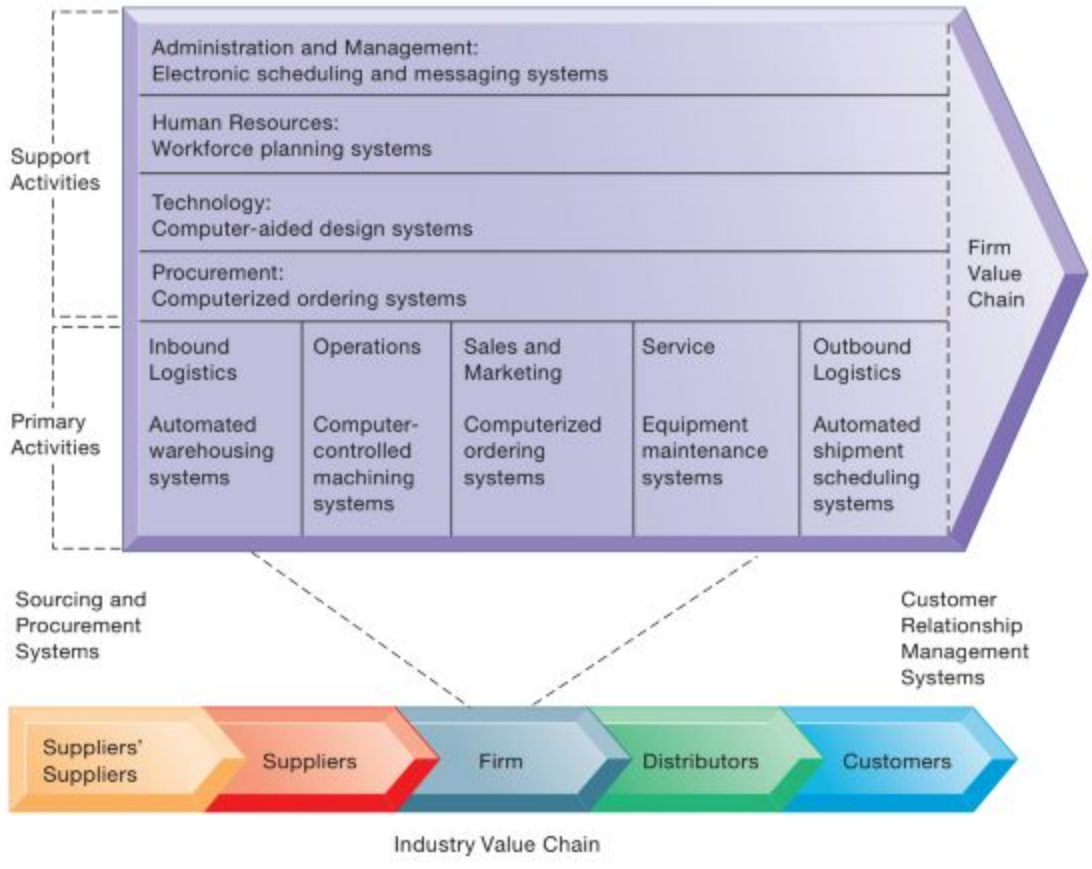
Support activities make the delivery of the primary activities possible and consist of organization infrastructure (administration and management), human resources (employee recruiting, hiring, and training), technology (improving products and the production process), and procurement (purchasing input).

Using the business value chain model will also cause you to consider benchmarking your business processes against your competitors or others in related industries and identifying

industry best practices. Benchmarking involves comparing the efficiency and effectiveness of your business processes against strict standards and then measuring performance against those standards. Industry best practices are usually identified by consulting companies, research organizations, government agencies, and industry associations as the most successful solutions or problem-solving methods for consistently and effectively achieving a business objective.

Once you have analyzed the various stages in the value chain at your business, you can come up with candidate applications of information systems. Then, once you have a list of candidate applications, you can decide which to develop first. By making improvements in your own business value chain that your competitors might miss, you can achieve a competitive advantage by attaining operational excellence, lowering costs, improving profit margins, and forging a closer relationship with customers and suppliers. If your competitors are making similar improvements, then at least you will not be at a competitive disadvantage—the worst of all cases!

FIGURE 3.9 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.