Chapter 3
Information Systems, Organizations, and Strategy

Student Learning Objectives

1. Which features of organizations do managers need to know about to build and use information systems successfully?
2. What is the impact of information systems on organizations?
3. How do Porter’s competitive forces model, the value chain model, synergies, core competencies, and network economics help companies develop competitive strategies using information systems?
4. What are the challenges posed by strategic information systems and how should they be addressed?

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Key Terms
The following alphabetical list identifies the key terms discussed in this chapter. The page number for each key term is provided.

Agency theory, 90
Benchmarking, 105
Best practices, 105
Business ecosystem, 109
Competitive forces model, 94
Core competency, 107
Disruptive technologies, 87
Efficient customer response system, 97
Mass customization, 97
Primary activities, 104
Product differentiation, 95
Routines, 84
Strategic transitions, 112
Support activities, 104
Switching costs, 100
Transaction cost theory, 89
Value chain model, 103
Value web, 106
Teaching Suggestions

The opening case, “Should T.J. Maxx Sell Online?” illustrates some of the ways that information systems help businesses compete and also the challenges of sustaining a competitive advantage. T.J. Maxx resisted developing an online presence for years even though almost all of its competitors had made the leap. Because of the nature of T.J. Maxx’s product inventory, one that varies from week-to-week, it risks alienating customers if they find too many out-of-stock items or they don’t find what they are looking for.

The retailer also risks alienating its suppliers who do not want to see their merchandise deeply discounted online. And T.J. Maxx risks cannibalizing its in-store sales, as do most other retailers. However, it can’t shrug off profit margins from online sales that tend to be higher by 7 percentage points than those from brick-and-mortar stores.

An interesting aspect of this case that jumps into the chapter’s material nicely is how companies find it necessary to change their business strategies over time, or at least fine tune them. This vignette illustrates how businesses must continually change their core strategy in response to changes brought about by their internal and external environment.

Section 3.1, “Which features of organizations do managers need to know about to build and use information systems successfully?” The chapter begins by dissecting an organization from both a technical and behavioral point of view. The technical definition focuses on three elements: capital and labor; inputs from the environment; and outputs to the environment. See Figure 3.2. The behavioral view emphasizes group relationships, values, and structures as shown in Figure 3.3. These two definitions are not contradictory. The technical definition focuses on thousands of firms in competitive markets whereas the behavioral definition focuses on individual firms and an organization’s inner workings.

All organizations have certain characteristics: routines and business process, politics, culture, reciprocal relationship with environments, and structure. Table 3.2 defines the five organizational structures.

All students belong to organizations of some kind. You can generate some dynamic discussions by having students determine the type of structure some of their organizations are. For instance, if they work at Starbucks, which organizational type is the company? If they work at a retail store, they may have a much different type of organization.

Perhaps the best, and most fun, part of this section focuses on disruptive technologies. Ask students to define other disruptive technologies they may have experience with other than just those in Table 3.1. For instance, electric cars vs. gasoline-fueled cars, iPods vs. CD players, and satellite radio vs. local radio, are all examples of disruptive technologies currently taking place.

Section 3.2, “What is the impact of information systems on organizations?” By understanding that information systems impact organizations in two ways, economically and behaviorally, students can understand that technological change is much more than just updating computer hardware and software. Technology becomes a substitute for traditional capital such as labor,
buildings, and machinery. The transaction cost theory says that firms and individuals seek to economize on transaction costs much as they do on production costs. Information technology helps lower transaction costs by making it cheaper and easier to communicate and collaborate with external suppliers instead of trying to do everything in-house. The agency theory says that a firm is viewed as a “nexus of contracts” among self-interested individuals rather than as a unified, profit-maximizing entity. Information technology reduces agency costs by reducing the number of managers necessary to supervise the individual agents (employees). The impact of information technology on both of these theories shows why firms can reduce the number of employees while maintaining or increasing the levels of production.

From a behavioral standpoint, information technology flattens or reduces the levels of hierarchy in an organization because information flows more freely and more widely through the firm. Decision making is pushed to lower levels of the hierarchy. Managers make decisions faster and better because more information is available more quickly and accurately, thanks to information technology. Professional workers become more self-managing. Decision making becomes more decentralized. Workers rotate from team to team depending on the tasks at hand.

Now, ask your students these questions from the text:

- Who makes sure that self-managed teams do not head off in the wrong direction?
- Who decides which person works on which team and for how long?
- How can managers evaluate the performance of someone who is constantly rotating from team to team?
- How do people know where their careers are headed?

It’s very important for students to understand that the most common reason large IT projects fail is not the failure of technology, but because of organizational and political resistance to change. People simply don’t like change and will resist it in a variety of ways. Ask students to analyze companies that have struggled with major organizational change such as Daimler-Chrysler and even Microsoft. By understanding that the introduction of new information systems involves more than just plunking down new computers on employees’ desks, students can realize that new systems involve changes to tasks, organizational structure, and people.

Most importantly, information systems must be built with a clear understanding of the organization in which they will be used. What works for one company may not work for another. As information systems such as SAP and SalesForce.com proliferate, the danger is that these systems will not work in organizations whose structures aren’t a good fit. In those cases, the organization must align itself with the information system rather than the other way around.

Section 3.3, “How do Porter’s competitive forces model, the value chain model, synergies, core competencies, and network economics help companies develop competitive strategies using information systems?” This section is one of the most critical sections in the text. Understanding business strategy and how information systems can aid employees in making far-reaching and deep-rooted decisions is critical to the long-range success of any corporation. At this point, students need to focus on business-level strategies and the various ways firms achieve an advantage over other firms. They will learn how to use these strategies in order to address a key question: How can we compete effectively in a particular market?
The firm-level and industry-level strategies are analyzed in this section, and a key analytical tool, Porter’s competitive forces model, is introduced. The model focuses on four strategic areas: traditional competitors, new market entrants, substitute products and services, customers, and supplier intimacy.

It’s a great exercise to have students name businesses and companies that use information system strategies for dealing with competitive forces: low-cost leadership, product differentiation, focus on market niche, and strengthening customer and supplier intimacy. Ask your working students to describe the strategies pursued by their organizations.

**Interactive Session: Technology: Nike becomes a technology company**

**Case Study Questions**

1. **Evaluate Nike using the competitive forces and value chain models.**

   Nike has traditional competitors in other clothing and shoe manufacturers but it has a deep reputation for continuously devising new products and services that make it hard for competitors to catch up. It also has a great deal of product differentiation that keeps customers coming back for more and better products than most of its competitors.

   Nike has new market entrant competitors for its activity tracker worn on the wrist with Fitbit and Jawbone. But it has a competitive advantage over the two others based on the point system created in conjunction with the gadget called NikeFuel. The point system locks people into the Nike+ ecosystem of movement-tracking devices making it harder to switch to other wearable computing devices.

2. **What competitive strategies is Nike pursuing? How is information technology related to these strategies?**

   Nike is using product differentiation, focus on market niches, and strengthening customer intimacies to enhance its competitive strategies against its competitors. By embedding so much technology in its products that are interconnected to one another, Nike has increased switching costs tremendously for its customers. If a runner should switch to another product line, many of the other products that person uses would be less valuable because they wouldn’t all be connected and transfer information and data between all the products.

   Nike’s integration of information and information technology into its products keeps people coming back to Nike’s own Web site and apps.

3. **In what sense is Nike a “technology company”? Explain your answer.**

   Nike is known for its leading-edge technologies to make its products more appealing and enhance user performance. It uses advanced technology to support sports superstars. It also
developed the technology used in running shoes that use “supergases” encased in urethane plastic to provide superior cushioning for running shoes.

Nike has also embraced the Internet of Things in which individual devices such as sensors, meters, and electrical appliances are connected to the Internet so that their performance can be monitored and analyzed.

4. How much of an edge does Nike have over its competitors? Explain your answer.

Because it has so many useful and popular apps associated with its products, Nike has quite an edge over its competitors. Athletes like to track their progress and measure one activity against others. Nike’s apps and gadgets make that easy to do—easier than other Nike competitors. Nike provides many different channels through which users can manage their activities such as Facebook pages, online training programs, coaching tips, and daily workouts. Users of multiple Nike + devices can visit the nikeplus.com site to access all their data in one place—including lifetime NikeFuel points accumulated from all their Nike+ devices. No other sporting goods retailer offers that.

Interactive Session: Organizations: Identifying Market Niches in the Age of Big Data

Case Study Questions

1. Describe the kinds of data being analyzed by the companies in this case.

Data about e-book purchases and reading habits are being collected and potentially sold to book publishers. The data include whether a book is completed, if pages are skimmed or skipped, and which genres are most often finished.

Airlines are collecting all kinds of passenger data that can be consolidated to build comprehensive customer profiles. Cabin crews can then use the data to identify certain characteristics about on-board passengers and personalize the flying experience.

Car companies integrate databases and use complex algorithms to more closely match car lot inventory to buyer demand. Vehicle turnover rates improve and the price a consumer pays minus the manufacturer subsidy rise, increasing Ford Motor Company’s profits. Using vehicle Internet connections, the company intends to collect fuel economy data, mechanical failures, and other safety and performance metrics to improve product engineering. Ford estimates that by 2016 up to a third of all its consumer communications will occur inside vehicles.

2. How is this fine-grained data analysis improving operations and decision making in the companies described in this case? What business strategies are being supported?

E-book data: The idea is that writers can use it to better tailor their work to their readership and book editors can use it to choose which manuscripts to publish. Business strategy supported—focus on market niche, product differentiation.
**Airlines:** the data collected can enhance the passenger experience, improve customer service and fashion relevant marketing pitches. Business strategy supported—product differentiation, customer intimacy.

**Car companies:** which cars to build, which features to include or enhance, which cars sell better than others in different parts of the country. Business strategy supported—customer and supplier intimacies, product differentiation, focus on market niche.

3. **Are there any disadvantages to mining customer data? Explain your answer.**

Companies can mine too much data on customers to the point of upsetting customers and turning them against the company. Customers have complained that companies are collecting too much data and integrating it from too many sources. Companies defend their use of demographic data and data not covered under their privacy policies.

Even customers who accept the inevitability of profiling are miffed when they receive unsuitable offers based on faulty personal information. Most customers want a line drawn between data collection to facilitate useful offers and data collection that is too intrusive. Although some airlines have curtailed their use of data collected, they continue to collect it nonetheless. None of the airline carriers currently allow customers to opt out of their data programs.

4. **How do you feel about airlines mining your inflight data? Is this any different from companies mining your credit card purchases or Web surfing?**

Student answers will vary.

**Section 3.4: “What are the challenges posed by strategic information systems and how should they be addressed?”** This section reinforces the idea that information systems should be subservient to business objectives. Have students use the information in the subsection “Management Checklist: Performing a Strategic Systems Analysis” to analyze an organization they are familiar with—the school they are attending or a place where they may have worked.

Take the opportunity to remind students that “Aligning IT with Business Objectives” is one of the most important concepts they’ll learn in this class. Technology must serve the business and businesspeople must take an active role in helping shape IT in a business.

**Review Questions**

3-1 **Which features of organizations do managers need to know about to build and use information systems successfully?**

   Define an organization and compare the technical definition of organizations with the behavioral definition.

   Students can make use of Figures 3.2 and Figure 3.3 in answering this question.
The technical definition defines an organization as a stable, formal social structure that takes
resources from the environment and processes them to produce outputs. This definition of an
organization focuses on three elements: capital, labor, and production and products for
consumption. The technical definition also implies that organizations are more stable than an
informal group, are formal legal entities, and are social structures.

The behavioral definition states that an organization is a collection of rights, privileges,
obligations, and responsibilities that are delicately balanced over a period of time through
conflict and conflict resolution. This definition highlights the people within the organization,
their ways of working, and their relationships.

The technical definition shows us how a firm combines capital, labor, and information
technology. The behavioral definition examines how information technology impacts the
inner workings of the organization. (Learning Objective 3.1: Which features of organizations
do managers need to know about to build and use information systems successfully?
AACSB: Application of knowledge.)

**Identify and describe the features of organizations that help explain differences in
organizations’ use of information systems.**

Common features for organizations include:

- **Routines and business processes:** Standard operating procedures have been developed
  that allow the organization to become productive and efficient thereby reducing costs
  over time.
- **Organizational politics:** Divergent viewpoints about how resources, rewards, and
  punishments should be distributed bring about political resistance to organization
  change.
- **Organizational culture:** Assumptions that define the organizational goals and products
  create a powerful restraint on change, especially technological change.
- **Organizational environments:** Reciprocal relationships exist between an organization
  and environments; information systems provide organizations a way to identify
  external changes that might require an organizational response.
- **Organizational structure:** Information systems reflect the type of organizational
  structure—entrepreneurial, machine bureaucracy, divisionalized bureaucracy,
  professional bureaucracy, or adhocracy. (Learning Objective 3.1: Which features of
  organizations do managers need to know about to build and use information systems
  successfully? AACSB: Application of knowledge.)

**3-2 What is the impact of information systems on organizations?**

Describe the major economic theories that help explain how information systems affect
organizations.

The two economic theories discussed in the book are transaction cost theory and agency
theory. The transaction cost theory is based on the notion that a firm incurs transaction costs
when it buys goods in the marketplace rather than making products for itself. Traditionally, firms sought to reduce transaction costs by getting bigger, hiring more employees, vertical and horizontal integration, and small-company takeovers.

Information technology helps firms lower the cost of market participation (transaction costs) and helps firms shrink in size while producing the same or greater amount of output.

The agency theory views the firm as a nexus of contracts among interested individuals. The owner employs agents (employees) to perform work on his or her behalf and delegates some decision-making authority to the agents. Agents need constant supervision and management, which introduces management costs. As firms grow, management costs rise. Information technology reduces agency costs by providing information more easily so that managers can supervise a larger number of people with fewer resources. (Learning Objective 3.2: What is the impact of information systems on organizations? AACSB: Application of knowledge.)

Describe the major behavioral theories that help explain how information systems affect organizations.

Behavioral theories, from sociology, psychology, and political science, are useful for describing the behavior of individual firms. Behavioral researchers theorize that information technology could change the decision-making hierarchy by lowering the costs of information acquisition and distribution. IT could eliminate middle managers and their clerical support by sending information from operating units directly to senior management and by enabling information to be sent directly to lower-level operating units. It even enables some organizations to act as virtual organizations because they are no longer limited by geographic locations.

One behavioral approach views information systems as the outcome of political competition between organizational subgroups. IT becomes very involved with this competition because it controls who has access to what information, and information systems can control who does what, when, where, and how. (Learning Objective 3.2: What is the impact of information systems on organizations? AACSB: Application of knowledge.)

Explain why there is considerable organizational resistance to the introduction of information systems.

There is considerable organizational resistance to new information systems because they change many important organizational dimensions, such as culture, structure, politics, and work. Lewitt puts forth a model that says that changes in technology are absorbed, deflected, and defeated by organizational task arrangements, structures, and people. In this model the only way to bring about change is to change the technology, tasks, structure, and people simultaneously. In a second model, the authors speak of the need to unfreeze organizations before introducing an innovation, quickly implementing the new system, and then refreezing or institutionalizing the change. (Learning Objective 3.2: What is the impact of information systems on organizations? AACSB: Analytical thinking.)

Describe the impact of the Internet and disruptive technologies on organizations.
The Internet increases the accessibility, storage, and distribution of information and knowledge for organizations; nearly any information can be available anywhere at any time. The Internet increases the scope, depth, and range of information and knowledge storage. It lowers the cost and raises the quality of information and knowledge distribution. That is, it lowers transaction costs and information acquisition costs. By using the Internet, organizations may reduce several levels of management, enabling closer and quicker communication between upper levels of management and the lower levels. The Internet also lowers agency costs.

Disruptive technologies caused by technological changes can have different effects on different companies depending on how they handle the changes. Some companies create the disruptions and succeed very well. Other companies learn about the disruption and successfully adopt it. Other companies are obliterated by the changes because they are very efficient at doing what no longer needs to be done. Some disruptions mostly benefit the firm. Other disruptions mostly benefit consumers. (Learning Objective 3.2: What is the impact of information systems on organizations? AACSB: Application of knowledge.)