

## INFORMATION SYSTEMS, ORGANIZATIONS, AND STRATEGY

### 8.1 CASE STUDY: WILL THE NEW US AIRWAYS BE ABLE TO FLY?

In September 2005, US Airways and America West Airlines merged to create something that may shake up the airline industry: a low-cost full-service airline. The new company, which retains the US Airways name, combines a fully developed national route network, first class seating, and customer loyalty program comparable to those offered by traditional airlines such as American and Continental with low prices competitive with budget carriers such as JetBlue, AirTran, and Southwest Airlines. The merging companies couldn't have been more different in terms of their business strategies, organizational culture, and information systems: US Airways, which originated with the formation of All American Aviation in 1939, was a traditional hub-and-spoke carrier with an older workforce, lumbering bureaucracy, and a rigid information systems function that had been outsourced to Electronic Data Systems (EDS). America West was very different. Formed in 1981, it had a younger workforce, a more freewheeling entrepreneurial culture, and a penchant for managing its own information systems. But by the late 1990s, both had something in common: They were considered airlines of last resort that people flew only when there were no other alternatives.

US Airways was forced to file for bankruptcy first in 2002 and again in 2004, laying off thousands of employees. America West was struggling with surging fuel costs and competition from Southwest Airlines, another low-cost carrier. The US Airways merger was designed to create synergies between a traditional full-service airline and a newer low-cost carrier. The resulting company combines US Airways' experience and strong network on the east coast of the United States and America West's low-cost structure, information systems, and routes in the western United States. Management believes the merger will produce \$600 million in annual cost savings. To achieve these cost savings, the new US Airways will reduce the merged companies' annual IT spending of \$240 million by about 40 percent by eliminating redundant information systems. The merged company adopted primarily the simple, flexible information systems and business processes of America West. It eliminated systems and business processes for carrying hazardous materials and handling unaccompanied minors on connecting flights because their costs were too high relative to the benefits they provided. The company only retained a few of the old US Airways' processes and systems, such as an application for determining where and when to purchase fuel or check-in applications to support international routes.

The new US Airways is now the fifth-largest carrier in the United States and the world's largest low-cost airline. Will it be successful? It's still too early to tell. It cost around \$75 to \$80 million to integrate the information system applications and business processes of the merging companies. Whether the merger will produce benefits depends on how well the two companies' systems and business processes are integrated.

US Airways noted in regulatory filings "that the merger will result in certain synergies, business opportunities, and growth prospects" but the company "may never realize" them. "Significant challenges in consolidating functions, integrating...organizations, procedures and operations" will make the integration of the two airlines "costly, complex, and time-consuming." If the merger is successful, the new US Airways will have a network like Continental Airlines and a cost structure similar to Southwest. The question then becomes whether the company will be able to take advantage of its new strengths. A low-cost airline with a national network might still wind up as a carrier of last resort if it merely focuses on costs and does not provide a good customer experience. But if the new US Airways is able to provide customer value and service along with low costs, it could become a highly sought-after brand.

The experience of US Airways illustrates the interdependence of business environments, organizational culture, business processes, business strategy, and the development of information systems. US Airways and America West merged in response to competitive pressures from their surrounding environment. The merging companies had different organizational cultures, business processes and information systems, which had to be integrated for the new company to run effectively. The new information systems—many taken over from a more modernized America West—had to be fine-tuned to support the new US Airways' business strategy. US Airways' systems effort can't succeed without a significant amount of organizational and management change.

## **8.2 HEADS UP**

As a manager, you'll need to know about the relationship between organizations, information systems, and business strategy. This chapter first introduces the features of organizations that you will need to understand when you design, build, and operate information systems. Then it examines the problems firms face from competition and the various ways in which information systems can provide competitive advantage. Every business student and future manager should know about these strategic uses of information technology.

- If your career is in finance and accounting, you will be developing and managing strategic products and services that are largely based on information systems such as wealth management, financial advising, risk management systems, online financial services, and credit services.
- If your career is in human resources, you will be working with systems that could give your firm a strategic edge by providing information and communication capabilities that lower the cost of managing employees or by organizing jobs and work assignments to reduce operational costs.
- If your career is in information systems, you will be working with managers from all the other business areas to identify opportunities for strategic information systems and their technology requirements.
- If your career is in manufacturing and production, you will be developing production systems based on information technology and systems that help your firm compete by lowering supply chain costs, increasing quality, and enabling the firm to design and bring new products to market more rapidly.
- If your career is in sales and marketing, you will be working with information systems and technologies that create strategic advantages for your firm such as customer relationship management systems, online Web site monitoring tools, and business analytics tools that can help you understand your customers better.

### **8.3 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. You will need to understand how information systems can change social and work life in your firm. You will not be able to design new systems successfully or understand existing systems without understanding your own business organization.

US Airways had to revise its business processes so that two formerly separate companies could operate as a single entity, and it also had to eliminate redundant information systems. The opening case also shows that such changes are not easy to make and that it is still unclear whether the new US Airways has a successful strategy and business model.

## Part One Organizations, Management, and the Networked Enterprise

As a manager, you will be the one to decide which systems will be built, what they will do, and how they will be implemented. You may not be able to anticipate all of the consequences of these decisions. Some of the changes that occur in business firms because of new information technology (IT) investments cannot be foreseen and have results that may or may not meet your expectations. Who would have imagined ten years ago, for instance, that e-mail and instant messaging would become a dominant form of business communication and that many managers would be inundated with more than 200 e-mail messages each day (Walker, 2004)?

**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. This definition of organizations is powerful and simple, but it is not very descriptive or even predictive of real-world organizations. A more realistic behavioral definition of an organization is that it is a collection of rights.

### **8.4 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, privileges, obligations, and responsibilities that is delicately balanced over a period of time through conflict and conflict resolution

In this behavioral view of the firm, people who work in organizations develop customary ways of working; they gain attachments to existing relationships; and they make arrangements with subordinates and superiors about how work will be done, the amount of work that will be done, and under what conditions work will be done. Most of these arrangements and feelings are not discussed in any formal

rulebook. How do these definitions of organizations relate to information systems technology? A technical view of organizations encourages us to focus on how inputs are combined to create outputs when technology changes are introduced into the company. The firm is seen as infinitely malleable, with capital and labor substituting for each other quite easily.

### 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.

Organizations, Management, and the Networked Enterprise definition of an organization suggests that building new information systems, or rebuilding old ones, involves much more than a technical rearrangement of machines or workers—that some information systems change the organizational balance of rights, privileges, obligations, responsibilities, and feelings that have been established over a long period of time.

Changing these elements can take a long time, be very disruptive, and require more resources to support training and learning. For instance, the length of time required to implement effectively a new information system is much longer than usually anticipated simply because there is a lag between implementing a technical system and teaching employees and managers how to use the system. Technological change requires changes in who owns and controls information; who has the right to access and update that information; and who makes decisions about whom, when, and how.

This more complex view forces us to look at the way work is designed and the procedures used to achieve outputs. The technical and behavioral definitions of organizations are not contradictory. Indeed, they complement each other: The technical definition tells us how thousands of firms in competitive markets combine capital, labor, and information technology, whereas the behavioral model takes us inside the individual firm to see how that technology affects the organization's inner workings

**FEATURES OF ORGANIZATIONS** 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.

**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.

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 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 that 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 of 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

### FIGURE 3-4 ROUTINES, BUSINESS PROCESSES, AND FIRMS

All organizations are composed of individual routines and behaviors, a collection of which make up a business process. A collection of business processes make up the business firm. New information system applications require that individual routines and business processes change to achieve high levels of organizational performance.

You can see organizational culture at work by looking around your university or college. Some bedrock assumptions of university life are that professors know more than students, the reason students attend college is to learn, and classes follow a regular schedule. Organizational culture is a powerful unifying force that restrains political conflict and promotes common understanding, agreement on procedures, and common practices. If we all share the same basic cultural assumptions, agreement on other matters is more likely. At the same time, organizational culture is a powerful restraint on change, especially technological change (review the chapter-opening case). Most organizations will do almost anything to avoid making changes in basic assumptions. Any technological change that threatens commonly held cultural assumptions usually meets a great deal of resistance. However, there are times when the only sensible way for a firm to move forward is to employ a new technology that directly opposes an existing organizational culture. When this occurs, the technology is often stalled while the culture slowly adjusts. 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 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. Figure 3-5 illustrates the role of information systems in helping organizations perceive changes in their environments and also in helping organizations act on their environments. Information systems are key instruments for environmental scanning, helping managers identify external changes that might require an organizational response. Environments generally change much faster than organizations. The main reasons for organizational failure are an inability to adapt to a rapidly changing

environment and a lack of resources—particularly among young firms—to sustain even short periods of troubled times. New technologies, new products, and changing public tastes and values (many of which result in new government regulations) put strains on any organization's culture, politics, and people. Most organizations do not cope well with large environmental shifts. The inertia built into an organization's standard operating procedures, the political conflict raised by changes to the existing order, and the threat to closely held cultural values typically inhibit organizations from making significant changes. It is not surprising that only 10 percent of the Fortune 500 companies in 1919 still exist today.

**Organizational Structure** Organizations all have a structure or shape.

The kind of information systems you find in a business firm—and the nature of problems with these systems—often reflects 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, one 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 outgrow their usefulness.

### FIGURE 3-5 ENVIRONMENTS AND ORGANIZATIONS HAVE A RECIPROCAL RELATIONSHIP

Environments shape what organizations can do, but organizations can influence their environments and decide to change environments altogether. Information technology plays a critical role in helping organizations perceive environmental change and in helping organizations act on their environment.

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 non-routine tasks.