

SOLUTIONS MANUAL



Tenth Edition

MANAGEMENT INFORMATION SYSTEMS

MANAGING THE DIGITAL FIRM



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Chapter 2

E-Business: How Businesses Use Information Systems

Learning Objectives

1. What are business processes? How are they related to information systems?
2. How do systems serve the various levels of management in a business?
3. How do enterprise applications, collaboration and communication systems, and intranets improve organizational performance?
4. What is the difference between e-business, e-commerce, and e-government?
5. What is the role of the information systems function in a business?

Chapter Outline

- 2.1 *Business Processes and Information Systems*
 - Business Processes
 - How Information Technology Enhances Business Processes
- 2.2 *Types of Business Information Systems*
 - Transaction Processing Systems
 - Management Information Systems and Decision-Support Systems
 - Executive Support Systems for Senior Management
- 2.3 *Systems That Span the Enterprise*
 - Enterprise Applications
 - Intranets and Extranets
 - Collaboration and Communication Systems: “Interaction” Jobs in a Global Economy
 - E-Business, E-Commerce and E-Government
- 2.4 *The Information Systems Function in Business*
 - The Information Systems Department
 - Organizing the Information Systems Function
- 2.5 *Hands-On MIS*
 - Management Decision Problems
 - Improving Decision Making: Use a Spreadsheet to Select Suppliers
 - Achieving Operational Excellence: Use Internet Software to Plan Efficient Transportation Routes

Key Terms

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

Chief information officer (CIO), 63	Executive support systems (ESS), 51
Chief knowledge officer (CKO), 64	Information systems department, 63
Chief privacy officer (CPO), 64	Information systems managers, 63
Chief security officer (CSO), 63	Interorganizational system, 56
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Decision-support systems (DSS), 48	Knowledge management systems (KMS), 58
Digital dashboard, 52	Management information systems (MIS), 47
Electronic business (e-business), 62	Portal, 51
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Teaching Suggestions

The opening case, “The Tata Nano Makes History Using Digital Manufacturing,” illustrates how much companies today rely on information systems for running their business, driving growth and profitability. Rather than staying with its outdated manufacturing processes based on several manual efforts, Tata Motors wisely chose to implement a completely new system that could help it automate more business processes and integrate functions into a single environment. It adopted the Dassault Systems’ Digital Enterprise Lean Manufacturing Interactive Application software that automates processes in product design and production engineering planning. The software enabled the company to plan manufacturing processes, design plant layouts, and then simulate the repercussions of those plans. The data it provides to Tata’s enterprise resource planning system helps the company save money and time by reducing its reliance on expensive physical prototypes. Much of the planning work was accomplished via computers so design changes were easier and cheaper to incorporate into the prototypes.

This vignette is a great way to launch a discussion about the necessity of using information systems to automate and integrate business processes from the early stages of planning on into actual production. It’s important to note that Tata Motors was confronted with both a problem and an opportunity. It chose to take advantage of the opportunities through increased use of information technology and systems.

Section 2.1, “Components of a Business.” Table 2-1 may help students understand that every business, large and small, uses the same basic business processes. Referring back to this table may help as you examine information needs for each functional area. You could have students select a business with which they are familiar and identify some of the business processes involved in each of the basic functional areas.

Another good classroom exercise is to use Figure 2-1 to compare how the order fulfillment process can be accomplished sequentially, as the figure shows, versus simultaneously as a new information system would allow.

Section 2.2, “Types of Business Information System.s.” This section focuses on how information systems serve various management levels in companies. It’s important that they understand how one system helps serve other systems and that ultimately, all of them serve the entire organization.

Type of System	Information Inputs	Information Outputs	Users
Transaction Processing Systems (TPS)	Transactions; daily events	Detailed reports; lists; summaries	Operations personnel; first-line supervisors
Management Information Systems (MIS)	Summary transaction data; high-volume data; simple models	Summary and exception reports	Middle managers
Decision Support Systems (DSS)	Optimized for data analysis, analytic models and data analysis tools.	Interactive; simulations; analysis	Professionals, staff managers
Executive Support Systems (ESS)	Aggregate data; external, internal	Projections; responses to queries	Senior managers

It’s likely students’ main encounter will be with TPS systems when they first begin their careers. Stress the importance of accurate data at the TPS level since it serves as the basis for the other systems.

Typically, DSS and ESS systems will be the least familiar. Students may better understand them if you ask these types of questions: Why do national retail chains open stores in certain locations and not others? How can a retail chain determine which type of clothing to stock at different geographic locations?

Most importantly, students need to understand that each type of information system supports the different kinds of decisions made at each managerial level.

Interactive Session: Technology: Air Canada Takes Off with Maintenix

Case Study Questions

1. What problems does Air Canada hope that Maintenix will solve?

Air Canada's old legacy systems were not able to interact with one another or with the finance and inventory systems. The inefficiencies of these systems were costing the airline engineers' time and money that could have been used on maintaining planes.

2. How does Maintenix improve operational efficiency and decision-making?

The Maintenix information system provides integrated, intelligent aviation maintenance, repair, and operations software. That leads the way to enhanced visibility of fleet-wide data, timelier decision making, support of Air Canada's existing business model, and increased operational efficiencies. The Maintenix system is accessible via the Web and easy to deploy to all stations around the world. It reduces repetitive tasks and time chasing missing or incomplete information by allowing maintenance, engineering, and finance divisions to easily share information. Wireless deployment also makes Maintenix more effective, since aviation technicians, equipment, and parts are always on the move.

3. Give examples of three decisions supported by the Maintenix system. What information do the Maintenix modules provide to support each of these decisions?

Three decisions supported by the Maintenix system may include:

- *Is Part A compatible with Part B?* The maintenance engineering module establishes the configuration hierarchy, rules, and maintenance program that all of the other modules depend upon. A company uses this module to describe machinery components, part relationships and compatibility rules.
- *Is a qualified technician located on site to perform necessary maintenance?* The line maintenance module matches a dynamic list of maintenance work requirements against finite resources at various locations. The module allows a company to ensure that qualified technicians are available before they schedule maintenance.
- *Are the right parts, in the right quantity, available on site for maintenance?* The materials management module ensures the minimum amount of each part is always in inventory without causing engineers to be short on parts at any time.

MIS In Action

Visit the MXI Technologies Web site (www.mxi.com) and examine the **Maintenix modules for heavy maintenance, shop maintenance, and finance modules** (*answers copied from Web site*).

1. How could an airline benefit from implementing these modules?

Heavy maintenance module: Managing the maintenance of aviation assets is a complex problem that involves matching a large and dynamic list of maintenance work requirements against finite sets of resources (e.g. people, hangars, specialized tools, and equipment). Heavy Maintenance has the additional complexity of dealing with a wide variety of tasks, including removal and testing of most components on the aircraft, causing diverse part, tool and labor skill requirements. Maintenix provides functionality for all aspects of Heavy Maintenance management:

- Heavy Maintenance Visit Planning
- Heavy Maintenance Production Planning & Control
- Heavy Maintenance Execution

Benefits

- Optimized Heavy Maintenance visit planning, production & control
- Improved work packaging using pre-defined plan templates and aircraft-specific maintenance plans
- Inclusion of ALL requirements (scheduled, OOPs, DMIs, MELs, ADs, and SBs) in the plan
- Accurate analysis and forecasting of Non-Routines (NRs) based on actual NRs from previous visits
- Real-time work-in-progress monitoring, allowing immediate impact assessment of NRs, bottlenecks, and any other delays
- Ability to conduct post-check analysis to improve planning of future checks

Shop maintenance module: There are many challenges confronting the management of a component or assembly shop. Above and beyond simply managing the efficient utilization of labor resources, Shops must be able to put themselves in the context of the entire supply chain of an organization, understanding the demand that is pulling components or assemblies through the Shop. Furthermore, the Shop itself is deeply concerned with the technical data surrounding the inventory being repaired or overhauled, and is a key provider of this data to the Technical Records and Reliability groups within the organization.

Maintenix® has a very detailed level of serialized tracking of inventory, which provides a strong foundation for solving these difficult problems. From “cradle to grave,” the history of the component – from everywhere it has been installed to everything that has been installed on it – is tracked. Moreover, Maintenix understands the pivotal role that the Shop plays in the supply chain, and provides unprecedented visibility into the demand that drives the shop activities. In all, Maintenix provides a complete solution for the management and control of component or assembly shops.

- Shop Control
- Shop Production Planning
- Shop Maintenance Execution
- Tool Control & GSE

Benefits

- Visibility both up and down the supply chain
- "Pull" philosophy allows Shop to align work to aircraft demand
- Controllers gain real-time visibility into work-in-process
- Powerful tools to leverage return on experience

Finance module: Accurate financial numbers are critical in ensuring the health of an aviation organization. Governments and shareholders alike are demanding increasing financial accountability from companies worldwide. Gathering accurate average unit prices for inventory, managing discrepancies from purchase order to invoice, tracking maintenance labor costs, and measuring and analyzing your organization's Key Performance Indicators (KPIs) are just some of the features Maintenix® provides to impart strong financial visibility. Maintenix delivers detailed financial data in accordance with today's best practices, such as Sarbanes-Oxley, aimed at allowing accurate analysis of an organization's financial state, as well as enabling improved budget forecasting.

- Procurement & Invoice Receipt
- Sales Orders & Invoice Generation
- Maintenance Cost Tracking
- Financial Reporting
- Financial Analysis

Benefits

- Aviation-oriented procurement options such as borrows and exchanges
- Unprecedented maintenance cost tracking
- Quick & Easy Invoice generation
- Powerful budgeting and KPI analysis tools

2. Give an example of a decision that each of these modules supports?

Answers will vary from student to student. Here is an example from each module:

Heavy maintenance module:

- Question: When will maintenance on a particular aircraft be completed so it can be returned to the flight schedule?
- Answer: The ability of the Maintenix software to monitor real-time work-in-progress will help answer this question.

Shop maintenance module:

- Question: Is a particular tool being used more often at one location than at other comparable locations?

- Answer: The Tool Control software component of the Maintenix program can track tool usage and offer comparisons between locations.

Finance module:

- Question: Are maintenance labor costs higher at one location compared to other locations? If so, what organizational element is causing it?
- Answer: The Maintenix software provides management with maintenance cost tracking so it can answer detailed questions such as this.

Section 2.3, “Systems That Span the Enterprise.” It’s quite possible students feel overwhelmed by all the different kinds of information systems described in the last section. This section helps you tie together all of the information systems into a cohesive package and show how data and information can flow seamlessly through an organization.

Interactive Session: Organizations: Can Information Systems Help Johnny’s Lunch Go National?

Case Study Questions

- 1. Describe Johnny’s Lunch’s business model and business strategy. What challenges does Johnny’s Lunch face as it begins its expansion?**

Johnny’s Lunch’s business model and strategy is to be a low-cost provider with high quality customer service. Challenges include keeping the small-town, local flavor as it grows into a national chain. Another challenge will be to sustain growth despite the impact of a weak economy.

- 2. What systems has the company used or planned to use to overcome these challenges? What types of systems are they? What role will each play in helping Johnny’s Lunch overcome these challenges?**

Management intends to use sophisticated mapping technology to scout locations, state-of-the-art point of sale systems, and inventory management systems that ensure freshness and reduce costs.

- Mapping technology: provides a scientific approach to choosing spots for new restaurants based on the level of competition, demographics, and characteristics of prospective franchise locations. Type of system: DSS.
- Point of sale systems: captures sales transaction data at the actual physical location where goods or services are bought or sold through electronic cash registers or hand-held scanners. It helps monitor inventory, control waste, and adhere to government regulations. Type of system: TPS.

- Inventory management systems: coupled with the POS system, it can help reduce waste, ensure freshness and reduce costs. It will also provide an efficient method of ordering supplies and tracking shipments. Type of system: MIS.

3. What other kinds of systems described in this chapter might help Johnny's Lunch as it expands?

Decision support system: A DSS could help executives analyze their business against competitors for pricing, popularity, and profitability.

Executive support system: An ESS could provide executives with real-time data and information displayed on a digital dashboard.

4. Do you believe Johnny's Lunch will be successful in its attempts to expand nationally? Why or why not?

Answers will vary among students. Some considerations include the ability to compete with more established franchisers, how efficient will the company's supply chains be as franchisee locations continue to expand further away from corporate offices, and the impact rising costs of commodities will have on the pricing structure.

MIS In Action

Visit Johnny's Lunch Web site (www.johnnyslunch.com) and then answer the following questions.

1. What is the target audience for this Web site? What is the objective of the Web site? How easy is it to use? How useful is it in attracting customers? How well does this Web site support the company's business strategy?

The target audience for this Web site appears to be potential franchisees. The objective of the Web site appears to promote ownership of a franchise location of the restaurant. The site is fairly simple to use. It includes a franchise application that potential franchisees can download and complete. Although it allows franchise owners to order uniforms from a third party, it doesn't appear to provide much other support. It doesn't appear to be that useful in attracting customers.

2. How many franchise locations are described on the Web site? Where are they located? What does this tell you about the company's expansion strategy?

At the time this was written the Web site listed seven franchise restaurants located in Michigan, New York, and Ohio. The expansion strategy doesn't appear to have gained much ground. Most of the information under the NEWS link is about franchise deals and expansion news. One item says the company signed a deal for 1005 stores to develop the entire West Coast but there was no direct link to more information about the deal. If this is true, the Web site needs to include the new locations.

Enterprise systems: Central to this section is the need to coordinate activities, decisions, and knowledge across the firm's different levels, functions, and business units. Enterprise systems use a single central data repository in order to supply all users with a consolidated view of employees, customers, suppliers, and vendors. The key to effectively using enterprise systems is to eliminate redundancy and duplication, not just in the information systems but also in business processes.

Supply chain management systems: Students should understand the importance of a business managing its relationships with suppliers through a free-flowing exchange of information. The concept may seem foreign to those students who think a company is a closed entity and shouldn't share data or information with anyone outside the organization. A review of a typical supply chain may be helpful: sourcing, producing, and delivering goods and services. It may also be helpful to engage the students in an exercise that lists all the entities involved in producing and delivering goods and services.

Customer relationship management systems: Ask students how many times they've quit doing business with a company because of poor customer service. Ask them how many times they've had to supply a business with the same information simply because they talked to a different department in the company. Discuss how important it is for every functional area in a business to have the same consolidated view of its customers to avoid these kinds of problems.

Knowledge management systems: Few, if any, students have probably had any experience with these systems. Point out that businesses are beginning to realize how much expertise and experience is locked away in employees' heads and that it's imperative to find a way to capture that information. Moreover, it's important that businesses find a way to make the expertise and experience available to a wide range of users. On the other hand, students should understand that employees are very reluctant to impart with their individual knowledge due to fear or self-preservation.

Intranets and Extranets: As Internet-based technologies continue to expand the basic platforms for disseminating information, smaller businesses that cannot afford to implement enterprise applications can turn to intranets and extranets. Your difficulty will be getting students to understand the difference between the two since they operate basically the same way. Intranets are limited to internal users; extranets are available to external users as well as internal users. Both are an inexpensive way to quickly disseminate information and data across functional lines and organizational boundaries.

Collaboration and communication systems: Students have probably used most of these systems without even realizing their business value. Your task is to relate these ever-increasing common technologies to business processes and needs. Discuss how they can use cell phones, instant messaging, social networking sites, and wikis in a business setting to communicate, collaborate, and share ideas with team members, business partners, customers, and suppliers.

E-business, e-commerce, and e-government: Have students give examples of their own experiences with each of these. Students are most often confused between e-business and e-commerce. Stress that e-business refers to the use of digital technology and the Internet to execute major business processes while e-commerce is more narrowly centered on the buying and selling of goods and services over the Internet.

Section 2.4. “The Information Systems Function in Business.” If possible, arrange a session with the school’s information systems department to allow students to see first-hand how such a center works and who is responsible for running the systems. Have the IS staff and students participate in a Question and Answer forum about how typical processes are handled. Many students have a better appreciation of how these complex centers work when they actually see one in operation rather than just reading about it. Stress to students that in all but the smallest of firms these systems are critical to the operational efficiency and sheer survival in a very competitive marketplace.

Most importantly, students should understand that the IS staff is responsible for the well-being of all users in an organization. Users and the IS staff are teammates not polarizing opposites.

Section 2.5. “Hands-On MIS”

Management Decision Problems

1. **Don’s Lumber Company:** Manual price sheets must be frequently updated. That leads to slower sales processes, pricing errors if sales reps are using outdated information, and customer dissatisfaction due to delays in obtaining information. By putting the data online using an extranet and updating it as necessary, sales reps consult the most current information immediately. That leads to faster sales and more satisfied customers. Necessary decisions include how much information to make available online, who will have access to it, and how to keep the information secure. Senior management would likely make these decisions.
2. **Henry’s Hardware:** Owners do not keep automated inventory or sales records. Invoices are not maintained or tracked (other than for tax purposes). Best guess and gut instinct determine product orders. Business impact includes lost sales, over- and under-ordering products, improper sales accounting and more costly inventory control. An information system could capture data that allows owners to maintain proper inventories, order only those products needed, and ensure proper sales accounting. Decisions on pricing, product levels, and inventory replenishment could be vastly improved based on data and not a best-guess venture.

Improving Decision Making: Use a Spreadsheet to Select Suppliers

Software skills: Spreadsheet date functions, data filtering, DAVERAGE functions.
Business skills: Analyzing supplier performance and pricing.

Although the format of the student's answers will vary, a suggested solution can be found in the Microsoft Excel File named: *MIS11ch02_solutionfile.xls*.

This exercise requires some student knowledge of spreadsheet database functions. At a minimum, students should know how to sort the database by various criteria such as item description, item cost, vendor number, vendor, name, or A/P terms. Students may need to be told that A/P Terms is expressed as the number of days that the customer has to pay the vendor for a purchase. In other words, 30 designates net 30 days. The vendor that allows customers the longest amount of time to pay for an order would, of course, offer the most favorable payment terms.

Students will need to add additional columns for calculating the actual delivery time for each order and the number of days the delivery is late. The Actual Delivery Time can be calculated by subtracting the Promised Ship Date from the Arrival Date. The number of days late can be calculated by subtracting the Promised Transit Time from the Actual Delivery Time. If the number of days late is negative, it indicates that the order arrived early.

These numbers are useful when trying to determine who is the vendor with the best on-time delivery track record. Students can use the DAVERAGE function to determine the average delivery time for each vendor. Students can also use one of the database functions to determine the vendor with the best accounts payable terms. To determine the vendor with the lowest prices for the same item when it is supplied by multiple vendors, students can filter the database using the item description. This filtered list can then be sorted by item cost and vendor number.

Achieving Operational Excellence: Using Internet Software to Plan Efficient Transportation Routes

Obviously the shortest amount of time is more cost-effective than the shortest distance since there's only a difference of 27.05 miles. Saving the 27 miles will take 2 hours, 24 minutes longer. Encourage students to use the Advanced Tools option to quickly change back and forth between "shortest time" and "shortest distance." Only to show how convenient these kinds of online tools are, ask students to use a regular map and calculator to draw out the two routes. (Lots of ughs!)

Shortest Distance: 10 hours, 11 min; 506.56 miles
Shortest time: 8 hours, 35 minutes; 533.61 miles

Review Questions

1. What are business processes? How are they related to information systems?

Define business processes and describe their relationship to business performance.

A business process is a logically related set of activities that define how specific business tasks are performed. Business processes are the ways in which organizations coordinate and organize work activities, information, and knowledge to produce their valuable products or services.

How well a business performs depends on how well its business processes are designed and coordinated. Well-designed business processes can be a source of competitive strength for a company if it can use the processes to innovate or perform better than its rivals. Conversely, poorly designed or executed business processes can be a liability if they are based on outdated ways of working and impede responsiveness or efficiency.

Describe the relationship between information systems and business processes.

Information systems automate manual business processes and make an organization more efficient. Data and information are available to a wider range of decision makers more quickly when information systems are used to change the flow of information. Tasks can be performed simultaneously rather than sequentially, speeding up the completion of business processes. Information systems can also drive new business models that perhaps wouldn't be possible without the technology.

2. Why are information systems so essential for running and managing a business today?

Describe the characteristics of transaction processing systems (TPS) and the role they play in a business.

Transaction processing systems (TPS) are computerized systems that perform and record daily routine transactions necessary in conducting business; they serve the organization's operational level. The principal purpose of systems at this level is to answer routine questions and to track the flow of transactions through the organization.

- At the operational level, tasks, resources, and goals are predefined and highly structured.
- Managers need TPS to monitor the status of internal operations and the firm's relationship with its external environment.
- TPS are major producers of information for other types of systems.
- Transaction processing systems are often so central to a business that TPS failure for a few hours can lead to a firm's demise and perhaps that of other firms linked to it.

Describe the characteristics of MIS and explain how MIS differ from TPS and from DSS.

Middle management needs systems to help with monitoring, controlling, decision making, and administrative activities.

- MIS provide middle managers with reports on the organization's current performance. This information is used to monitor and control the business and predict future performance.
- MIS summarize and report the company's basic operations using data supplied by TPSs. The basic transaction data from TPS are compressed and usually presented in reports that are produced on a regular schedule.
- MIS serve managers primarily interested in weekly, monthly, and yearly results, although some MIS enable managers to drill down to see daily or hourly data if required.
- MIS generally provide answers to routine questions that have been specified in advance and have a predefined procedure for answering them.
- MIS systems generally are not flexible and have little analytical capability.
- Most MIS use simple routines, such as summaries and comparisons, as opposed to sophisticated mathematical models or statistical techniques.

MIS differs from TPS in that MIS deals with summarized and compressed data from the TPS.

While MIS have an internal orientation, DSS will often use data from external sources, as well as data from TPS and MIS. DSS supports "what-if" analyses rather than a long-term structured analysis of MIS. MIS are generally not flexible and provide little analytical capabilities. In contrast, DSS are designed for analytical purposes and are flexible.

Describe the characteristics of DSS and explain how DSS differ from ESS.

Decision-support systems (DSS) support nonroutine decision making for middle managers.

- DSS provide sophisticated analytical models and data analysis tools to support semistructured and unstructured decision-making activities.
- DSS use data from TPS, MIS, and external sources, in condensed form, allowing decision makers to perform "what-if" analysis.
- DSS focus on problems that are unique and rapidly changing; procedures for arriving at a solution may not be fully predefined.
- DSS are designed so that users can work with them directly; these systems include interactive, user-friendly software.

Executive support systems help senior managers address strategic issues and long-term trends, both in the firm and in the external environment.

- ESS address nonroutine decisions requiring judgment, evaluation, and insight because there is no agreed-on procedure for arriving at a solution.
- ESS provide a generalized computing and communications capacity that can be applied to a changing array of problems.

- ESS are designed to incorporate data about external events, such as new tax laws or competitors, but they also draw summarized information from information from internal MIS and DSS.
- ESS are designed for ease-of-use and rely heavily on graphical presentations of data.

Describe the relationship between TPS, MIS, DSS, and ESS.

Ideally, all four systems use the same basic data. TPS are a major source of internal data for other systems, especially MIS and DSS. Internal data from TPS and MIS combine with external data to provide a source of analysis for DSS and ESS. All four systems are designed to give managers of all organizational levels and complete, consolidated view of the firm.

3. How do enterprise applications, collaboration and communication systems, and intranets improve organizational performance?

Explain how enterprise applications improve organizational performance.

An organization operates in an ever-increasing competitive and global environment. The successful organization focuses on the efficient execution of its processes, customer service, and speed to market. Enterprise applications provide an organization with a consolidated view of its operations across different functions, levels, and business units. Enterprise applications allow an organization to efficiently exchange information among its functional areas, business units, suppliers, and customers.

Define enterprise systems and describe how they change the way an organization works?

Enterprise systems integrate the key business processes of an organization into a single central data repository. This makes it possible for information that was previously fragmented in different systems to be shared across the firm and for different parts of the business to work more closely together.

This changes the work flow of an organization:

- Information flows seamlessly throughout an organization, improving coordination, efficiency, and decision making.
- Gives companies the flexibility to respond rapidly to customer requests while producing and stocking only that inventory necessary to fulfill existing orders.
- Increases customer satisfaction by improving product shipments, minimizing costs, and improving a firm's performance.
- Improves decision making by improving the quality of information for all levels of management. That leads to better analyses of overall business performance, more accurate sales and production forecasts, and higher profitability.

Define supply chain management systems and describe how they benefit businesses.

In short, supply chain management systems help businesses better manage relationships with their suppliers. Objective of SCM: get the right amount of products from the companies' source to their point of consumption with the least amount of time and with the lowest cost. SCM provide information to help suppliers, purchasing firms, distributors, and logistics companies share information about orders, production, inventory levels, and delivery of products and services so that they can source, produce, and deliver goods and services efficiently. SCM helps organizations achieve great efficiencies by automating parts of these processes or by helping organizations rethink and streamline these processes. SCM is important to a business because through its efficiency it can coordinate, schedule, and control the delivery of products and services to customers.

Business benefits include:

- Decide when and what to produce, store, and move
- Rapidly communicate orders
- Track the status of orders
- Check inventory availability and monitor inventory levels
- Reduce inventory, transportation, and warehousing costs
- Track shipments
- Plan production based on actual customer demand
- Rapidly communicate changes in product design

Define customer relationship management systems and describe how they benefit businesses.

Customer relationship management systems enable a business to better manage its relationships with existing and potential customers. With the growth of the Web, potential customers can easily comparison shop for retail and wholesale goods and even raw materials, so treating customers better has become very important.

Business benefits include:

- CRM systems provide information to coordinate all the business processes that deal with customers in sales, marketing, and service to optimize revenue, customer satisfaction, and customer retention. This information helps firms identify, attract, and retain the most profitable customers; provide better service to existing customers; and increase sales.
- CRM systems consolidate customer data from multiple sources and provide analytical tools for answering questions such as: What is the value of a particular customer to the firm over his/her lifetime?
- CRM tools integrate a business's customer-related processes and consolidate customer information from multiple communication channels, giving the customer a consolidated view of the company.
- Detailed and accurate knowledge of customers and their preferences helps firms increase the effectiveness of their marketing campaigns and provide higher-quality customer service and support.

Describe the role of knowledge management systems in the enterprise.

Knowledge management systems enable organizations to better manage processes for capturing and applying knowledge and expertise. These systems collect all relevant knowledge and experience in the firm, and make it available wherever and whenever it is needed to improve business processes and management decisions. They also link the firm to external sources of knowledge.

- KMS support processes for acquiring, storing, distributing, and applying knowledge, as well as processes for creating new knowledge and integrating it into the organization.
- KMS include enterprise-wide systems for managing and distributing documents, graphics, and other digital knowledge objects; systems for creating corporate knowledge directories of employees with special areas of expertise; office systems for distributing knowledge and information; and knowledge work systems to facilitate knowledge creation.
- KMS use intelligent techniques that codify knowledge and experience for use by other members of the organization and tools for knowledge discovery that recognize patterns and important relationships in large pools of data.

List and describe the various types of collaboration and communication systems.

In an increasingly globalized economy, more jobs are becoming “interaction” jobs. These kinds of jobs require face-to-face interaction with other employees, managers, vendors, and customers. They require systems that allow the interaction workers to communicate, collaborate and share ideas. Enterprise-wide information systems businesses can use to support interaction jobs include:

- Internet-based collaboration environments like Lotus Notes, Groove, and WebEx provide online storage space for documents, team communications (separated from e-mail), calendars, and audio-visual tools members can use to meet face-to-face.
- E-mail and Instant Messaging (IM) are reliable methods for communicating whenever and wherever around the globe.
- Cell phones and wireless handhelds give professionals and other employees an easy way to talk with one another, with customers and vendors, and with managers. These devices have grown exponentially in sheer numbers and in applications available.
- Social networking is no longer just “social.” Businesses are realizing the value of providing easy ways for interaction workers to share ideas and collaborate with each other.
- Wikis are ideal tools for storing and sharing company knowledge and insights. They are often easier to use and cheaper than more proprietary knowledge management systems. They also provide a more dynamic and current repository of knowledge than other systems.

Explain how intranets and extranets help firms integrate information and business processes.

Because intranets and extranets share the same technology and software platforms as the Internet, they are easy and inexpensive ways for companies to increase integration and expedite the flow of information within the company (intranets alone) and with customers and suppliers (extranets). They provide ways to distribute information and store corporate policies, programs, and data. Both types of nets can be customized by users and provide a single point of access to information from several different systems. Businesses can connect the nets to transaction processing systems easily and quickly. Interfaces between the nets and TPS, MIS, DSS, and ESS systems provide input and output for users.

4. What is the difference between e-business, e-commerce, and e-government?

Distinguish between e-business and e-commerce.

E-business refers to the use of digital technology and the Internet to execute a firm's business processes. It includes internal business processes and processes for coordination with suppliers, customers, business partners, and government regulators.

E-commerce is a narrower part of e-business dealing with the purchase and sale of goods and services over the Internet, including support activities such as marketing and customer support.

Define and describe e-government.

E-government refers to the application of the Internet and networking technologies to digitally enable government and public sector agencies' relationships with citizens, businesses, and other governmental bodies.

5. What is the role of the information systems function in a business?

Describe how the information systems function supports a business.

The information systems departments is the formal organizational unit responsible for information technology services. The information systems department is responsible for maintaining the hardware, software, data storage, and networks that comprise the firm's IT infrastructure.

Compare the roles played by programmers, systems analysts, information systems managers, the chief information officer (CIO), chief security officer (CSO), chief knowledge officer (CKO).

- Programmers are highly trained technical specialists who write the software instructions for computers.
- Systems analysts constitute the principal liaisons between the information systems groups and the rest of the organization. The systems analyst's job is to translate business problems and requirements into information requirements and systems.
- Information systems managers lead teams of programmers and analysts, project managers, physical facility managers, telecommunications managers, or database specialists.
- Chief information officer (CIO) is a senior manager who oversees the use of information technology in the firm.
- Chief security officer (CSO) is responsible for information systems security in the firm and has the principle responsibility for enforcing the firm's information security policy. The CSO is responsible for educating and training users and IS specialists about security, keeping management aware of security threats and breakdowns, and maintaining the tools and policies chosen to implement security.
- Chief knowledge officer (CKO) helps design programs and systems to find new sources of knowledge or to make better use of existing knowledge in organizational and management processes.

Discussion Questions

- 1. How could information systems be used to support the order fulfillment process illustrated in Figure 2-1? What are the most important pieces of information these systems should capture? Explain your answer.**

Today's systems are built to electronically coordinate all the business functions in an enterprise. The sales function begins the process by completing a sales order, electronically inputting the data into the system. The sales system updates daily sales totals and decreases inventory. The accounting department electronically receives the order and runs a credit check. If the credit is not approved, system sends an exception notification to an accounting specialist and the sales person. If credit is approved, the order is sent to the manufacturing and production system and product assembly begins. When the product is completed, electronic shipping documents are prepared and logistics is notified. When the product is shipped, electronic notifications are sent to Sales, Manufacturing and Production, Accounting, and the customer. The system electronically bills the customer.

- 2. Adopting an enterprise application is a key business decision as well as a technology decision. Do you agree? Why or why not? Who should make this decision?**

Adopting an enterprise application is certainly a key business decision for companies today. In order to survive and remain competitive, firms have little choice but to adopt these

systems. Along with the software to accomplish key objectives, firms require appropriate technology platforms.

Enterprise applications, such as enterprise systems, supply chain management systems, customer relationship management systems, and knowledge management systems, are designed to support organization-wide process coordination and integration to help an organization operate efficiently. They span multiple functions and business processes and may be tied to the business processes of other organizations. Enterprise systems integrate the key internal business processes of a firm into a single software system so information flows throughout the organization, thereby improving coordination, efficiency, and decision making.

A decision of this magnitude generally falls to senior managers who make strategic decisions to ensure the long-term survival of the company.

Video Case Questions

You will find video cases illustrating some of the concepts in this chapter on the Laudon Web site at www.pearsonhighered.com/laudon along with questions to help you analyze the cases.

Collaboration and Teamwork: Identifying Management Decisions and Systems

Because students will select different companies and management levels, group answers will vary. General comments for facilitating project preparation are provided below.

Clearly, students would not list TPS as a system that would be used by a senior manager. It would be acceptable if they listed a senior manager as one holding a position within the Management Level Systems or the Strategic Level Systems. That would depend on their interpretation of the term “senior manager.” What they should identify in the answer is that the Executive Senior Manager is mainly focused on the long-term direction and viability of the company. A few things that students might mention would be that a senior executive would be concentrating on issues such as plant expansion or closures, foreign market opportunities, or new markets at home, changes in market trends and interest rates, overall economic outlook, changes in stocks prices, threats or opportunities that may be taking place in the market, and political changes.

Business Problem-Solving Case: JetBlue Hits Turbulence

1. What types of information systems and business functions are described in this case?

- Transaction processing system:
 - ticket sales, baggage handling
 - reservation system

- Management information system:
 - system for managing planes, crews, and scheduling
- Decision support system: no evidence of one
- Executive support system: no evidence of one
- Communication system: evidence of one but it proved to be inadequate

There wasn't any evidence of integrated systems like enterprise applications, customer relationship management, or knowledge management systems.

2. What is JetBlue's business model? How do its information systems support this business model?

JetBlue's business model is to provide a luxurious flying experience at a very low price. Simplicity was JetBlue's mantra. It used a very lean, non-union workforce, flew only one type of plane from one vendor allowing it to standardize flight operations and maintenance procedures, and streamlined its business processes to a bare-bones minimum. Its information systems were also simplified to a single vendor that provided a technology framework in which the supporting staff could develop systems in-house rather than use outsourcing or consultants. JetBlue spent only 1.5 percent of its revenue on information technology, as opposed to the 5 percent spent by competitors.

3. What was the problem experienced by JetBlue in this case? What people, organization, and technology factors were responsible for the problem?

First, it's obvious that only spending 1.5 percent of revenue versus 5 percent like its competitors was a big mistake. It's easy to reduce spending if the company doesn't implement systems it needs in time of crisis. The real problem JetBlue experienced wasn't with the weather—that was only a contributing factor. Here is a list of the real problems:

- Transaction processing systems were not scalable. The TPS JetBlue used was good for normal traffic and normal business conditions. However, the reservation system was not adequate to handle the increased number of customers using it when flights were cancelled.
- No management information system was available to manage the crews.
- No adequate communication system was available for crews to call and get new assignments. Crews were stranded for days without any way for the company to contact them.
- The department responsible for allocating pilots and crews to flights was too small to handle the extra workload created during the crises.
- There wasn't any system in place to manage the stranded, lost, or unclaimed baggage.
- In addition to an inadequate reservation system, the company did not employ enough people to staff its phones to handle the surge in telephone calls from customers.
- The Web site was not scalable; people that called the company were directed to the Web site. Unfortunately, it couldn't handle the surge either.
- The lack of a decision support system prevented JetBlue from managing its crew assignments.

4. Based on what you've learned in this chapter, what kinds of systems and business functions were involved in JetBlue's problem?

- Transaction processing systems: baggage handling, reservations, customer relationship management
- Management information systems: crew scheduling, communication, operations planning
- Decision support systems: crew allocation, aircraft allocation, flight planning
- Executive support systems: weather monitoring, cancellation and reallocation

5. Evaluate JetBlue's response to the crisis. What solutions did the airline come up with? How were these solutions implemented? Do you think that JetBlue found the correct solutions and implemented them correctly? What other solutions can you think of that JetBlue hasn't tried?

Response: JetBlue's CEO David G. Neeleman's initial response and visibility was commendable in that he didn't try to hide the problem and accepted responsibility and accountability. He admitted management wasn't strong enough and its systems were inadequate to handle the crisis.

Solutions: The company purchased new software to improve communications with pilots and crew members. It trained 100 employees from its corporate office to serve as backups for departments that didn't have enough staffing. It created a customer bill of rights to enforce standards for customer treatment and airline behavior. It changed its operational philosophy to accommodate inclement weather situations.

Recommendations: Further increase the number and type of information systems in the company: decision support systems for crew management; transaction processing system for baggage; more scalable Web site for reservations and customer communications.

6. How well is JetBlue prepared for the future? Are the problems described in this case likely to be repeated? Which of JetBlue's business processes are most vulnerable to breakdowns? How much will a customer bill of rights help?

It's very likely JetBlue could experience similar problems in the next crisis unless it ramps up its information systems. The company prided itself on a lean-and-mean, simplified information technology infrastructure. Yet, it's the very lack of IT infrastructure that caused many of its problems. There's a reason why its competitors are spending 3.5 percent more of their revenue on information systems—they're necessary. Except perhaps crew management, most of the same problems are likely to re-occur and are most vulnerable to breakdown: reservations, baggage, plane maintenance, and communications. The new customer bill of rights is a step in the right direction as far as sales and marketing and customer relations are concerned. But it won't mean much if the company doesn't create the proper infrastructure to support the policy in the next crisis.