Chapter 2
Global E-Business and Collaboration

Student Learning Objectives

1. What are business processes? How are they related to information systems?
2. How do systems serve the different management groups in a business and how do systems that link the enterprise improve organizational performance?
3. Why are systems for collaboration and social business so important and what technologies do they use?
4. What is the role of the information systems function in a business?

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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.

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Teaching Suggestions

The opening vignette, "Social Networking Takes Off at Kluwer," provides an outstanding example of how one business is using new collaboration tools to improve employee communications and performance and help the organization streamline operations and speed up key business functions. Kluwer is a knowledge-intensive company that was hampered by outdated processes and tools for managing information.

Kluwer adopted an enterprise social networking platform called Microsoft Yammer that enables employees to create groups to collaborate on projects and share and edit documents. The software became a central resource for sharing company news and updates. Employees use Yammer to discover people in other departments with useful expertise that could help them in their work. More than 80 percent of Kluwer's employees use Yammer on a regular basis. The social network has been especially helpful as an incubator for new business ideas.

The new technology helped Kluwer move from a static corporate knowledge and work environment to one in which actively engaged employees can obtain more knowledge from colleagues. Because there is more effective sharing of institutional knowledge, the company has become more innovative and efficient.

Section 2.1, "What are business processes? How are they related to information systems?" 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, "How do systems serve the different management groups in a business and how do systems that link the enterprise improve organizational performance?" This section focuses on how information systems serve various management levels in companies. The ultimate goal is for students to realize that one system helps serve other systems and, working together, all the systems serve the entire organization.

Type of System	Information Inputs	Information Outputs	Users
Transaction Processing Systems	Transactions; daily events	Detailed reports; lists; summaries	Operations personnel; first-line

(TPS)			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 when they first begin their careers. Stress the importance of accurate data at the TPS level because it serves as the initial source for the other systems.

Typically, DSS and ESS 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.

It's quite possible students feel overwhelmed by all the different kinds of information systems described in the first part of this section. "Systems for Linking the Enterprise" helps you tie together all of the information systems into a cohesive package and shows how data and information can flow seamlessly through an organization.

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 because 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.

E-business, e-commerce, and e-government: Have students give examples of their own experiences with of 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 whereas e-commerce is more narrowly centered on the buying and selling of goods and services over the Internet.

Interactive Session: Technology: Vail Ski Resorts Goes High-Tech for High Touch

Case Study Questions

1. **List and describe the types of systems described in this case study.**

   Transaction Processing Systems: collect basic data such as the number of skiers using each lift at any time; number of meals sold at each food outlet; how many vertical feet each skier skies each day; the race time of each skier in the EpicMix Racing program.
   Management Information Systems: allows instantaneous decisions to offer skiers rewards for switching to a different lift to keep lines shorter; steer skiers to different food outlets based on demand; determine the most popular places skiers visit and how to improve them or how to improve those places skiers are not frequenting often enough.
   Decision-Support Systems: help managers understand which ski lifts are being used most often so maintenance schedules can be properly adjusted; which customers should receive special promotions; which customers to target for return visits; which amenities are used most often and those not used very much.

Executive Support Systems: help executives determine the most effective marketing campaigns that will draw the largest number of return skiers; which lifts are used most often and whether to upgrade others; where to invest dollars that will ensure the biggest return on investment.

2. **How do these systems improve the operation of the business?**

   Rather than guessing which customers to target in marketing campaigns, the information systems used by Vail Ski Resort can help executives make sure they are targeting those who will return and spend the most money. Vail Ski Resorts can offer more amenities to customers than other competitors thus ensuring skiers pick its resort over others. Executives can use the data to make better decisions about features to offer that will increase the resort's attractiveness and increase its customer base.

   Because the information systems collect more data and more accurate data, employees, managers, and executives can make better short- and long-term decisions. No more guessing about the right decisions to make.

3. **How do these systems support decision making? Identify three different decisions that can be supported by these systems.**

   In reference to question 1, three decisions that the Vail Ski Resort information systems support are:
   - Marketing campaigns: which customers should receive more advertisements, discounts, and enticements? Which customers promise the greatest return on investment?
   - Maintenance/upgrade of equipment: which lifts should receive more maintenance and how frequently? Which lifts are most popular and why? Should the features already in place be improved, changed, or even done away with if they aren't producing expected results.
   - Improve profitability: The new SAS system will give Vail even more data upon which the resort can increase guest motivations and anticipate customer desires while identifying profitable segments to which they might be steered.

4. **Why is improving the guest experience so important at Vail Mountain Resort?**

   In a single word—competition. All of the amenities offered by Vail Mountain Resort turn a ski vacation into an experience that can be shared with family and friends, increasing emotional attachment and promoting customer retention. That allows Vail to keep a competitive edge over other ski resorts and draw even more customers.

Section 2.3 "Why are systems for collaboration and social business so important and what technologies do they use?" Students have probably used most of these systems without even realizing their business value. Your task is to relate these increasingly 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.

One exercise you can use to reinforce the usefulness of team collaboration is to have small student groups explore social networking sites or Twitter to see how many postings by businesses they can find. For instance, Twitter has tweets for Free Honey Bunches of Oats at Walmart and a tweet for an article about General Electric's solar technology. Businesses also make use of the popular YouTube.com to post videos of their products. This exercise will help demonstrate how businesses must constantly adapt their marketing strategies to reach customers. You can also generate a discussion about students' experience on these kinds of sites in relation to business uses and ask them to relate how effective these new methods of engaging customers are.

Table 2.2 emphasizes the benefits of collaboration while Figure 2.7 highlights the necessity of having the appropriate organization structure and culture, along with the right technology, to successfully use collaboration in an organization. Discuss how the absence of even one of these three can hinder or prevent collaboration. Ask students to draw on their own experiences to compare and contrast firms with a collaborative culture to those without.

Many times people and businesses decide which collaborative tools to use based on which ones they are most familiar with rather than which are the most appropriate tool for the task at hand.

You can have student teams evaluate one or more collaborative programs for an organization to which they belong like a sports team, sorority/fraternity, workplace, or even their use in your classroom. Have them use the time/space matrix in Figure 2.8 and the information in the section "Checklist for Managers: Evaluating and Selecting Collaboration Software Tools" to help select the best tool.

Have students explore the use of business wikis first-hand by visiting SAP's Enterprise Solution Wiki at http://wiki.sdn.sap.com/wiki/display/ESpackages/ES+Wiki+Home, or IBM's Notes and Domino Wiki at http://www-10.lotus.com/ldd/dominowiki.nsf/. Both wikis will help demonstrate the usefulness of having so much knowledge at your fingertips plus the ease with which companies are gathering, storing, and disseminating knowledge.

Interactive Session: Management: Is Social Business Working Out?

Case Study Questions

1. **Identify the management, organization, and technology factors responsible for impeding adoption of internal corporate social networks.**

Management: Employees that are used to collaborating and doing business in more traditional ways need an incentive to use social software. Most companies are not providing that incentive: Only 22 percent of social software users believe the technology to be necessary to their jobs.

Organization: Companies that have tried to deploy internal social networks have found that employees are used to doing business in a certain way and overcoming the organizational inertia can prove difficult. Enterprise social networking systems were not at the core of how most of the surveyed companies collaborate. About half of the survey respondents said that internal social networks had "very little impact" on employee retention, the speed of decision making, or the reduction of meetings.

Technology: Ease of use and increased job efficiency are more important than peer pressure in driving adoption of social networking technologies. A majority of IT professionals consider their own internal social networks to be merely average or below average and the biggest reason they cite is low adoption rates on the part of employees. Content on the networks needs to be relevant, up-to-date, and easy to access; users need to be able to connect to people that have the information they need, and that would otherwise be out of reach or difficult to reach.

2. **Compare the experiences implementing internal social networks of the two organizations. Why was one more successful than the other? What role did management play in this process?**

   NASA's Goddard Space Flight Center used a custom-built enterprise social network called Spacebook to help small teams collaborate without e-mailing larger groups. User profiles, group workspaces like file sharing, wikis, discussion forums, and groups were included in the platform. Spacebook failed because it didn't focus enough on people and didn't take the organization's culture and politics into consideration. No one knew how Spacebook would help them do their jobs.

   The Red Robin hamburger restaurant chain took a viral approach to drive adoption of its social networking system that uses Microsoft Yammer software. The company's CIO sees a movement away from e-mail and collaboration portals such as SharePoint toward social networking and texting. He wants to let people create conversations, perform status updates, upload and share files, and set up workgroups for small project teams.

3. **Should all companies implement internal enterprise social networks? Why or why not?**

   Yes, companies should implement internal enterprise social networks, if for no other reason than they are cheaper and easier than other systems to operate and reduce expenses in other areas. The systems also improve productivity, in some cases dramatically. Companies should provide incentives if they must to encourage adoption of the new collaboration methods. Executives should be the first to use them

which will speed their adoption. Executives must also tie these networks to financial results. Management must also encourage the necessary organizational cultural changes to help make the social networking tools a success.

Section 2.4. "What is the role of the information systems function in a 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 IT 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 IT staff is responsible for the well-being of all users in an organization. Users and the IT staff are teammates not polarizing opposites.

Review Questions

2-1 What are business processes? How are they related to information systems?

Define business processes and describe the role they play in organizations.

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. (Learning Objective 2.1: What are business processes? How are they related to information systems? AACSB: Application of knowledge.)

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.

(Learning Objective 2.1: What are business processes? How are they related to information systems? AACSB: Application of knowledge.)

2-2 How do systems serve the different management groups in a business and how do systems that link the enterprise improve organizational performance?

Describe the characteristics of transaction processing systems (TPS) and the roles 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.

(Learning Objective 2.2: How do systems serve the different management groups in a business and how do systems that link the enterprise improve organizational performance? AACSB: Application of knowledge.)

Describe the characteristics of management information systems (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.

Although 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 inherent in MIS systems. MIS are generally not flexible and provide little analytical capabilities. In contrast, DSS are designed for analytical purposes and are flexible. (Learning Objective 2.2: How do systems serve the different management groups in a business and how do systems that link the enterprise improve organizational performance? AACSB: Application of knowledge.)

Describe the characteristics of decision-support systems (DSS) and how they benefit businesses.

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.

(Learning Objective 2.2: How do systems serve the different management groups in a business and how do systems that link the enterprise improve organizational performance? AACSB: Application of knowledge.)

Describe the characteristics of executive support systems (ESS) and explain how these systems differ from DSS.

Executive support systems (ESS) 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.

(Learning Objective 2.2: How do systems serve the different management groups in a business and how do systems that link the enterprise improve organizational performance? AACSB: Application of knowledge.)

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. (Learning Objective 2.2: How do systems serve the different management groups in a business and how do systems that link the enterprise improve organizational performance? AACSB: Analytical thinking.)

Define enterprise systems, supply chain management systems, customer relationship management systems, and knowledge management systems and describe their business benefits.

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.

Business benefits include:

- 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.

In short, **supply chain management (SCM) 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

Customer relationship management (CRM) 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.

Knowledge management systems (KMS) 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.

Business benefits include:

- 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.

(Learning Objective 2.2: How do systems serve the different management groups in a business and how do systems that link the enterprise improve organizational performance? AACSB: Application of knowledge.)

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 provide input and output for users. (Learning Objective 2.2: How do systems serve the different management groups in a business and how do systems that link the enterprise improve organizational performance? AACSB: Analytical thinking.)

2-3 Why are systems for collaboration and social business so important and what technologies do they use?

Define collaboration and social business and explain why they have become so important in business today.

Collaboration is working with others to achieve shared and explicit goals. It focuses on task or mission accomplishment and usually takes place in a business, or other organizations, and between businesses. Collaboration can be short-lived or longer term, depending on the nature of the task and the relationship among participants. It can be one-to-one or many-to-many.

Social business is part of an organization's business structure for getting things done in a new collaborative way. It uses social networking platforms to connect employees, customers, and suppliers. The goal of social business is to deepen interactions with groups inside and outside a company to expedite and enhance information sharing, innovation, and decision making.

Collaboration and social business are important because:

- *Changing nature of work.* 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 ides.

- *Growth of professional work.* Professional jobs in the service sector require close coordination and collaboration.
- *Changing organization of the firm*. Work is no longer organized in a hierarchical fashion as much as it is now organized into groups and teams who are expected to develop their own methods for accomplishing tasks.
- *Changing scope of the firm.* Work is more geographically separated than before.
- *Emphasis on innovation.* Innovation stems more from groups and teams than it does from a single individual.
- *Changing culture of work and business*. Diverse teams produce better outputs, faster, than individuals working on their own.

(Learning Objective 2.3: Why are systems for collaboration and social business so important and what technologies do they use? AACSB: Application of knowledge.)

List and describe the business benefits of collaboration and social business.

The general belief is that the more a business firm is collaborative in nature, the more successful it will be and that collaboration within and among firms is more essential than in the past. The overall economic benefits of collaboration and social business are significant.

The business benefits of collaboration and social business are listed in Table 2.3:

- *Productivity:* people working together accomplish tasks faster, with fewer errors, than those working alone.
- *Quality:* people can communicate errors and correct them faster when working together versus working alone.
- *Innovation:* people working in groups can generate more innovative ideas than if they were working alone.
- *Customer service:* people working in teams can solve customer complaints and issues faster and more effectively versus working in isolation.
- *Financial performance:* collaborative firms have superior sales, sales growth, and financial performance.

(Learning Objective 2.3: Why are systems for collaboration and social business so important and what technologies do they use? AACSB: Application of knowledge.)

Describe a supportive organizational culture and business processes for collaboration.

Historically, organizations were built on hierarchies which did not allow much decision making, planning, and organizing at lower levels of management or by employees. Communications were generally vertical through management levels rather than horizontal between groups of employees.

A collaborative culture relies on teams of employees to implement and achieve results for goals set by senior managers. Policies, products, designs, processes, and systems

are much more dependent on teams at all levels of the organization to devise, to create, and to build. Rather than employees being rewarded for individual results, they are rewarded based on their performance in a team. The function of middle managers in a collaborative business culture is to build the teams, coordinate their work, and monitor their performance. In a collaborative culture, senior management establishes collaboration and teamwork as vital to the organization, and it actually implements collaboration for the senior ranks of the business as well. (Learning Objective 2.3: Why are systems for collaboration and social business so important and what technologies do they use? AACSB: Application of knowledge.)

List and describe the various types of collaboration and social business tools.

Some of the more common enterprise-wide information systems that businesses can use to support interaction jobs include:

- Internet-based collaboration environments such as IBM Notes 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 one another.
- 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.
- Virtual worlds house online meetings, training sessions, and "lounges" where real-world people meet, interact, and exchange ideas.
- Google tools, cyberlockers, and cloud collaboration allow users to quickly create online group-editable Web sites that include calendars, text, spreadsheets, and videos for private, group, or public viewing and editing.
- Microsoft SharePoint software makes it possible for employees to share their Office documents and collaborate on projects using Office documents as the foundation.

(Learning Objective 2.3: Why are systems for collaboration and social business so important and what technologies do they use? AACSB: Application of knowledge.)

2-4 What is the role of the information systems function in a business?

Describe how the information systems function supports a business.

The information systems department 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. (Learning Objective 2.4: What is the role of the information systems function in a business? AACSB: Application of knowledge.)

Compare the roles played by programmers, systems analysts, information systems managers, the chief information officer (CIO), chief security officer (CSO), chief data officer (CDO) and 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 mangers, or database specialists.
- Chief information officer is a senior manager who oversees the use of information technology in the firm.
- Chief security officer 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 data officer is responsible for enterprise-wide governance and utilization of information to maximize the value the organization can realize from its data. The CDO ensures the firm is collecting appropriate data, analyzing it appropriately, and using the results to support business decisions.
- Chief knowledge officer helps design programs and systems to find new sources of knowledge or to make better use of existing knowledge in organizational and management processes.

(Learning Objective 2.4: What is the role of the information systems function in a business? AACSB: Analytical thinking, Application of knowledge.)

Discussion Questions

2-5 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.

Student answers to this question will vary.

2-6 Identify the steps that are performed in the process of selecting and checking a book out from your college library and the information that flows among these activities. Diagram the process. Are there any ways this process could be improved to improve the performance of your library or your school? Diagram the improved process.

Student answers to this question will vary.

2-7 Use the Time/Space Collaboration and Social Tool Matrix to classify the collaboration and social technologies used by Kluwer?

Student answers to this question will vary.

Hands-On MIS Projects

Management Decision Problems

2-8 **Don's Lumber Company:** The price of lumber and other building materials are constantly changing. When a customer inquiries about the price on prefinished wood flooring, sales representatives consult a manual price sheet and then call the supplier for the most recent price. The supplier in turn uses a manual price sheet, which has been updated each day. Often the supplier must call back Don's sales reps because the company does not have the newest pricing information immediately on hand. Assess the business impact of this situation, describe how this process could be improved with information technology, and identify the decisions that would have to be made to implement a solution. Who would make those decisions?

Manually updating price sheets 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. (Learning Objective 2.1: What are business processes? How are they related to information systems? AACSB: Analytical thinking, Reflective thinking, Application of knowledge.)

2-9 Henry's Hardware: Owners do not keep automated, detailed inventory or sales records. Invoices are not maintained or tracked (other than for tax purposes). The owners use their own judgment in identifying items that need to be reordered. What is the business impact of this situation? How could information systems help Henry and Kathleen run their business? What data should these systems capture? What decisions could the systems improve?

The 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. (Learning Objective 2.2: How do systems serve the different management groups in a business and how do systems that link the enterprise improve organizational performance? AACSB: Analytical thinking, Application of knowledge.)

Improving Decision Making: Using a Spreadsheet to Select Suppliers

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

2-10 Although the format of the student's answers will vary, a suggested solution can be found in the Microsoft Excel File named: *MIS14ch02_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. (Learning Objective 2.2: How do systems serve the different management groups in a business and how do systems that link the enterprise improve organizational performance? AACSB: Written and oral communication, Analytical thinking, Application of knowledge.)

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

Software skills: Internet-based software
Business skills: Transportation planning

2-11 Obviously, the shortest amount of time is more cost effective than the shortest distance because 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!) (Learning Objective 2.2: How do systems serve the different management groups in a business and how do systems that link the enterprise improve organizational performance? AACSB: Analytical thinking, Application of knowledge.)

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

Collaboration and Teamwork Project

2-12 In MyMISLab, you will find a Collaboration and Teamwork Project dealing with the concepts in this chapter. You will be able to use Google Drive, Google Docs, Google Sites, Google +, or other open source collaboration tools to complete the assignment.

Case Study: Should a Computer Grade Your Essays?

2-13 Identify the kinds of systems described in this case

The software programs used to grade student essays use both management information systems and decision-support systems. All of the programs use artificial intelligence technology. The e-rater uses syntactic variety, discourse structure and content analysis based on natural language processing technology. It applies statistical analysis to linguistic features such as argument formation and syntactic variety to determine scores while also giving weight to vocabulary and topical content. Metrics used to determine score included overall length, paragraph length, number of words per sentence, word length, and the use of conjunctive adverbs. (Learning Objective 2.2: How do systems serve the different management groups in a business and how do systems that link the enterprise improve organizational performance? AACSB: Analytical thinking, Application of knowledge.)

2-14 What are the benefits of automated essay grading? What are the drawbacks?

The two biggest benefits of automated essay grading are speed and cost. The e-rater program can score 16,000 essays in 20 seconds. Many of the AES programs are free or share revenues with the universities and colleges that use them.

The drawbacks include the inability of AES programs to distinguish fact from fiction. The programs put more emphasis on length of essays rather than quality. If the use of AES programs continue to proliferate, writing instruction may be dumbed down to meet the limited and rigid metrics machines are capable of measuring rather than increasing the quality of writing.

Another major drawback may come from the number of teaching positions that could be eliminated if the programs are more widely used on campuses or in online educational courses. (Learning Objective 2.2: How do systems serve the different management groups in a business and how do systems that link the enterprise improve organizational performance? AACSB: Analytical thinking, Application of knowledge.)

2-15 Can automated essay grading replace a human grader? Why or why not?

Automated essay scoring (AES) systems use artificial intelligence technology to score essays and short test answers primarily in college courses. The systems immediately score students' work and provide feedback in a short time. The feedback allows students to revise, rewrite, and resubmit their work in an effort to improve their skills and grades. When humans review and grade the work, it may take much longer to provide feedback to students.

From a pedagogical standpoint, immediate feedback and the ability for students to directly act on it is an optimal learning environment. But there are shortcomings in the AES systems that may be very difficult to overcome.

Any artificial intelligence program or system is only as smart and effective as the humans who build it. If the knowledge base and inference engines are not correctly created, any AI system will be flawed.

Opinions vary on the effectiveness of AES grading systems. One program, e-rater, uses syntactic variety, discourse structure, and content analysis and is based on natural language processing technology. It applies statistical analysis to linguistic features such as argument formation and syntactic variety to determine scores, but also gives weight to vocabulary and topical content.

However, none of the programs so far can distinguish fact from fiction. The programs cannot pick up obvious errors in statements saying that "men are better writers than women because they're older." Humans obviously can readily determine that that statement is false.

The programs use hard metrics such as overall length, number of words per sentence, word length, and the use of conjunctive adverbs such as "however" and "moreover."

Those are not the only hallmarks of good writing. Because computer programs cannot divine meaning, essay length is a proxy for writing fluency, conjunctive adverb use for complex thinking, and big words for vocabulary aptitude. (Learning Objective 2.1: What are business processes? How are they related to information systems? AACSB: Analytical thinking, Application of knowledge.)

2-16 What management, organization, and technology factors should be considered when deciding whether to use AES?

Management: professors, instructors, and teachers in high schools, colleges, and universities must have their say in how the programs are used, to what extent they are incorporated in courses, and whether the programs are allowed to supplant humans or supplement them. Students must be given the opportunity to learn proper writing skills and not be subject to a simple pass/fail system.

Organization: universities and colleges must ensure that faculty is given the greatest amount of consideration and not just the bottom line of profit and loss. Economic motives to use AES systems to cut costs must not outweigh the desire and requirement to provide students with first-rate quality instruction. Educational standards must continue to be more important than the bottom line.

Technology: limitations in the program construction must be recognized and taken into account when the systems are used. The knowledge base and inference engines must continually be improved and proper "learning" techniques must be included in the programs. (Learning Objective 2.2: How do systems serve the different management groups in a business and how do systems that link the enterprise improve organizational performance? AACSB: Analytical thinking, Application of knowledge.)

2-17 Would you be suspicious of a low grade you received on a paper graded by AES software? Why or why not? Would you request a review by a human grader?

Student answers will vary. However, most students will probably be suspicious of a low grade they receive on a paper graded by AES software because of the lack of human understanding that's inherent in the programs. Most students probably will request a review by a human grader if they receive a low grade. The problem is actually on the flip side—if they receive a high score from an AES program they will not request a review and will assume their writing is excellent when in reality it may not be. (Learning Objective 2.1: What are business processes? How are they related to information systems? AACSB: Analytical thinking, Application of knowledge.)

2-18 Identify and describe the capabilities of enterprise social networking software.

Visit MyMISLab for suggested answers.

2-19 Describe the systems used by various management groups within the firm in terms of the information they use, their outputs, and groups served.

Visit MyMISLab for suggested answers.

For an example illustrating the concepts found in this chapter, view the videos in mymislab.com.