Essentials of MIS 12th edition Laudon Solutions Manual

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Learning Track 3: Challenges of Using Business Information Systems

Organizations still need different types of information systems serving various organizational levels, functions, and business processes, and they increasingly need systems providing enterprise-wide integration. These needs create both opportunities and challenges.

Opportunities

Businesses face extraordinary opportunities to apply information systems throughout the firm to achieve higher levels of productivity, earnings, and ultimately advance share prices. Today information systems support virtually all levels and functions in the firm. In addition they enhance decision making of both managers and employees, providing information where and when it is needed in a format that is easily integrated into everyday business life.

Management Challenges

There are challenges to achieving these objectives.

INTEGRATION AND THE WHOLE FIRM VIEW

In the past, information systems were built to serve the narrow interests of different business functions (such as marketing, finance, or operations) or to serve a specific group of decision makers (such as middle managers). The problem with this approach is that it results in the building of thousands of systems that cannot share information with one another and, worse, makes it difficult for managers to obtain the information they need to operate the whole firm. Building systems that both serve specific interests in the firm, but also can be integrated to provide firmwide information is a challenge.

MANAGEMENT AND EMPLOYEE TRAINING

With so many systems in a large business firm, and with fairly high employee turnover typical of the last few years, training people how to use the existing systems, and learn new systems, turns out to be a major challenge. Obviously, without training or when training is limited, employees and managers cannot use information systems to maximum advantage, and the result can be a low return on investment in systems.

continued

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ACCOUNTING FOR THE COST OF SYSTEMS AND MANAGING DEMAND FOR SYSTEMS

As the cost of information falls because of the power of information technology, demands for information and technology services proliferate throughout the firm. Unfortunately, if employees and managers believe information services are free, their demands will be infinite. One of the challenges facing business managers is understanding which systems are truly necessary, truly productive with high returns on investment, and which are merely conveniences that cost a great deal but deliver little.

Solution Guidelines

A number of solutions exist to the challenges we have just described.

INVENTORYING THE FIRM'S INFORMATION SYSTEMS FOR A 360-DEGREE VIEW OF INFORMATION

You should develop a list of firmwide information requirements to get a 360-degree view of the most important information needs for your company as a whole. Once you have this list developed, examine how your existing systems—most built to service specific groups and levels in the firm—provide this information to corporate-wide systems. You'll need to inventory your firm's existing information systems and those under construction. (Many firms have no idea of all the systems in their firm, or what information they contain.) Identify each system and understand which group or level in the firm benefits from the system.

EMPLOYEE AND MANAGEMENT EDUCATION

Systems are usually not obvious or self-taught for most people. You will need to ensure that you understand how much training is required to support new systems, and budget accordingly. Once you have an inventory of just the major systems in a firm that are used every day by thousands of employees, try to identify how they learn how to use the system, how effective their training is, and how well they use the systems. Do they exploit all the potential value built into the systems?

ACCOUNTING FOR THE COSTS AND BENEFITS OF INFORMATION SYSTEMS

To manage the demand for information services, you'll need an accounting system for information services. It is worthwhile to examine the methods used in your industry and by industry competitors to account for their information systems budgets. Your system should use some method for charging the budgets of various divisions, departments, and groups that directly benefit from a system. And there are other services that should not be charged to any group because they are a part of the firm's general information technology (IT) infrastructure and serve everyone. For instance, you would not want to charge various groups for Internet or intranet services

continued

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because they are services provided to everyone in the firm, but you would want to charge the manufacturing division for a production control system because it benefits that division exclusively. Equally important, management should establish priorities on which systems most deserve funding and corporate attention.

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Learning Track 4: Organizing the Information Systems Function

There are many types of business firms, and there are many ways in which the IT function is organized within the firm (see Figure 1-1). A very small company will not have a formal information systems group. It might have one employee who is responsible for keeping its networks and applications running, or it might use consultants for these services. Larger companies will have a separate information systems department, which may be organized along several different lines, depending on the nature and interests of the firm.

Sometimes you'll see a decentralized arrangement where each functional area of the business has its own information systems department and management that typically reports to a senior manager or chief information officer. In other words, the marketing department would have its own information systems group as would manufacturing and each of the other business functions. The job of the CIO is to review information technology investments and decisions in the functional areas. The advantage of this approach is that systems are built that directly address the business needs of the functional areas. However, central guidance is weak and the danger is high that many incompatible systems will be built, increasing costs as each group makes its own technology purchases.

In another arrangement, the information systems function operates as a separate department similar to the other functional departments with a large staff, a group of middle managers, and a senior management group that fights for its share of the company's resources. You'll see this approach in many large firms. This central information systems department makes technology decisions for the entire company, which is more likely to produce more compatible systems and more coherent long-term systems development plans.

Very large "Fortune 1,000"-size firms with multiple divisions and product lines might allow each division (such as the Consumer Products Division or the Chemicals and Additives Division) to have its own information systems group. All of these divisional information systems groups report to a high-level central information systems group and CIO. The central IS group establishes corporate-wide standards, centralizes purchasing, and develops long-term plans for evolving the corporate computing platform. This model combines some divisional independence with some centralization.

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FIGURE 1-1 Organization of the Information Systems Function

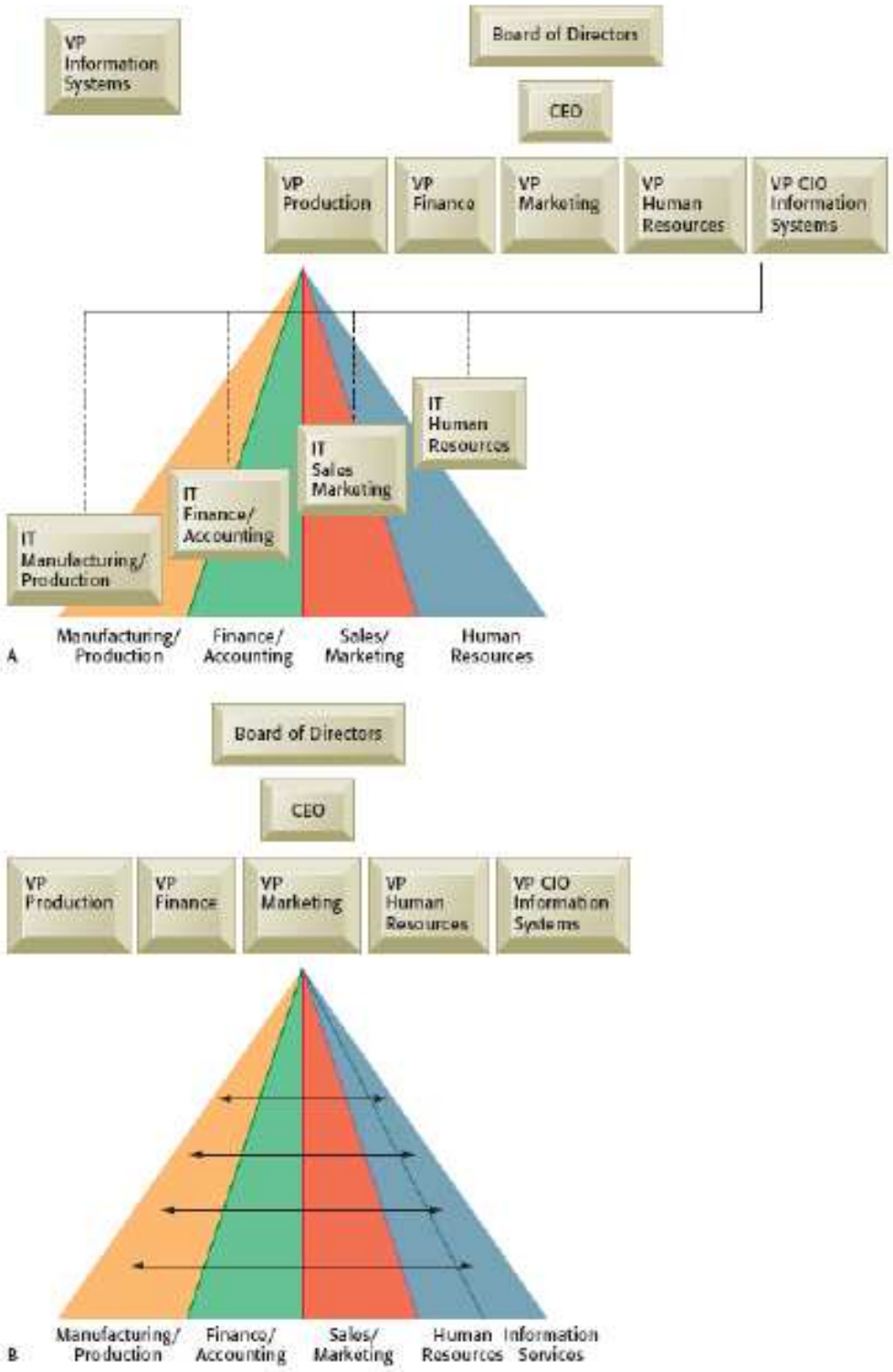

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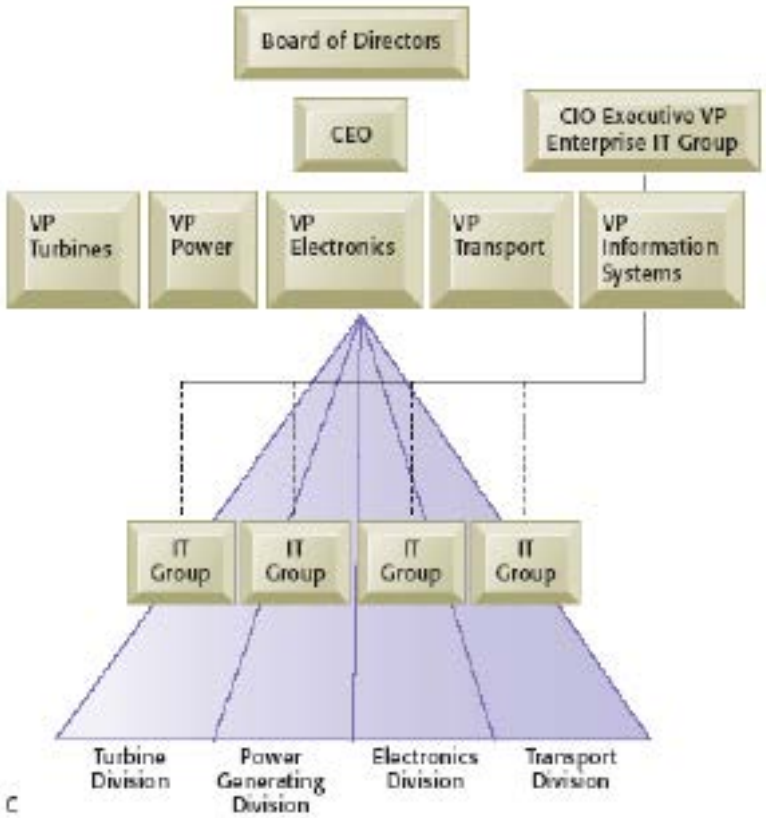
FIGURE 1-1 Organization of the Information Systems Function (continued)



There are alternative ways of organizing the information systems function within the business.: within each functional area (A), as a separate department under central control (B), or represented in each division of a large multidivisional company but under centralized control (C).

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Chapter 2 Running Case Solution Description

The spreadsheet solution file for this case uses a line chart to show the 5-year trend in Dirt Bikes' total sales (number of units sold) and a stacked column chart of 5-year sales trends to show how much international and domestic sales (measured by units sold) contribute to the total. One can see from these graphs that sales (measured by units sold) dipped slightly during 2014 but that overall, sales have been growing. The portion of overall sales represented by international sales has not changed significantly, suggesting that there may be opportunities for Dirt Bikes to grow its international sales. The income statement data show a continuing rise in operating expenses and cost of goods sold and combined with declines in gross and net margins. Dirt Bikes needs some way to bring down its costs, and new information systems might help. The balance sheet shows that Dirt Bikes has sufficient assets so that it could afford to invest in new product development and new information systems.

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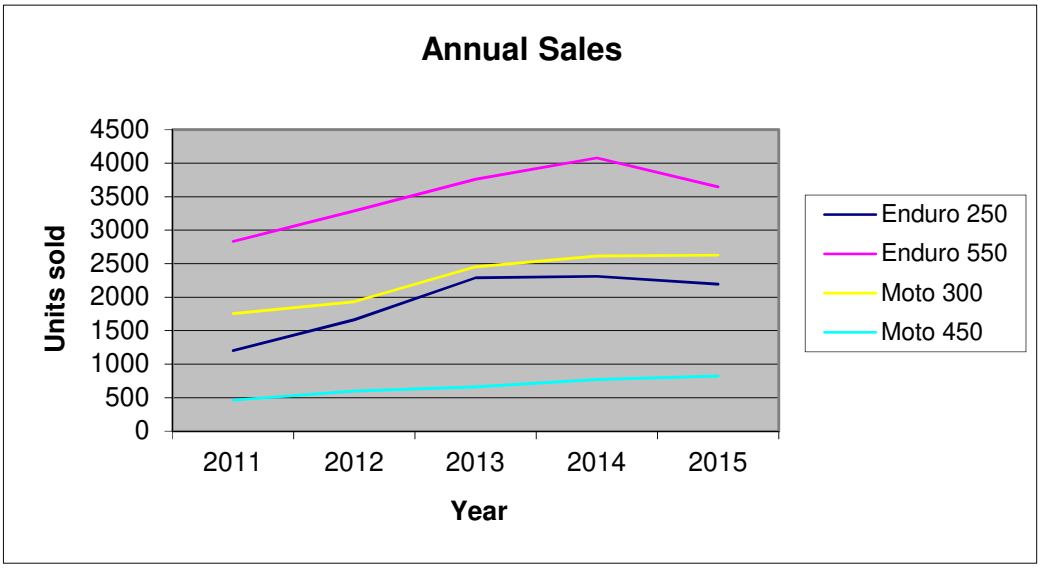
This worksheet shows the number of Dirt Bikes motorcycles sold between 2011 and 2015
Worksheet name: Sales
Amounts are in units sold

Sales by Model

Model	**2011**	**2012**	**2013**	**2014**	**2015**
Enduro 250	1201	1663	2291	2312	2195
Enduro 550	2832	3290	3759	4078	3647
Moto 300	1755	1932	2454	2615	2627
Moto 450	463	598	661	773	823
TOTAL	6251	7483	9165	9778	9292



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This worksheet shows Dirt Bikes' income statements and summary balance sheets from 2013-2015
Worksheet name: Statements
Amounts are in thousands

Consolidated Satements of Income (in thousands)

	2015	2014	2013
Revenue			
Net sales	60,144	64,063	61,529
Cost of goods sold	45,835	43,155	41,072
Gross profit/(loss)	14,309	20,908	20,457
Gross margin	23.8%	32.6%	33.2%
Operating expenses			
Sales and markering	4,733	4,537	3,944
Engineering and product development	3,141	2,992	2,339
General and administrative	1,913	1,601	1,392
Total operating expenses	9,787	9,130	7,675
Operating income/loss	4,522	11,778	12,782
Other income/expense			
Interest income/expense	1,747	175	80
Other income/(expense)	(6,254)	(2,914)	(3,080)
Income before provision for income taxes	15	9,039	9,782
Income taxes	1,459	1,729	535
Net income/(loss)	(1,444)	7,310	9,247
Net margin	-2%	11%	15%

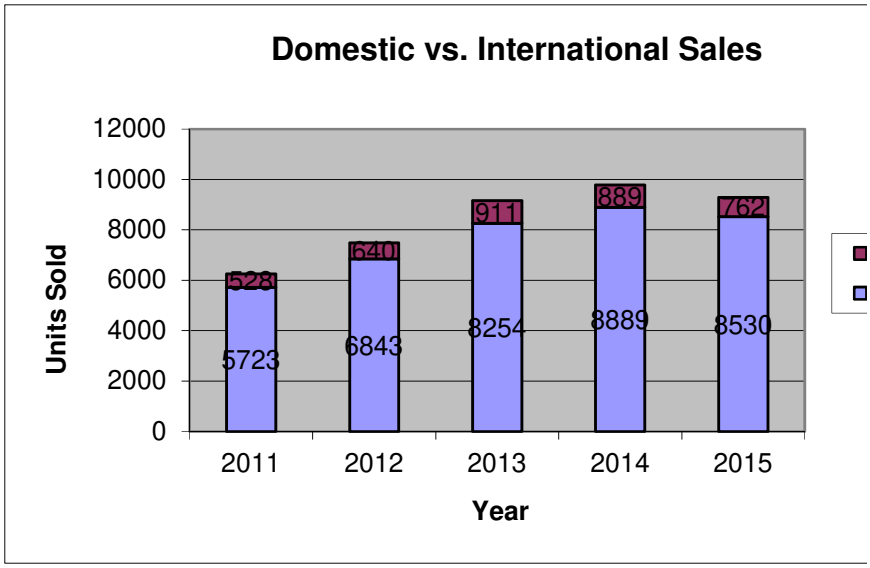
Summary Balance Sheet Data

At December 31	2015	2014	2013
Current assets			
Cash and cash equivalents	6,994	7,197	6,891
Accounts reveivable	13,083	12,981	12,872
Inventories	6,315	5,931	5,843
Total current assets	26,392	26,109	25,606
Property plant, and equipment	36,920	34,515	32,002
Other assets	1,765	1,903	1,834
Total assets	65,077	62,527	59,442
Current liabilities			
Accounts payable	8,943	8,694	7,592
Accrued expenses and other liabilities	10,877	9,382	8,654
Total current liabilities	19,820	18,076	16,246
Long-term debt	9,772	9,338	8,890
Total liabilities	29,592	27,414	25,136
Shareholders' equity	35,485	35,113	34,306
Total liabilities + shareholders' equity	65,077	62,527	59,442

This worksheet shows number of Dirt Bikes' domestic vs. interational motorcycles sold between 2011 and 2(
Worksheet name: International
Amounts are in units sold

Domestic vs. International Sales

	2011	2012	2013	2014	2015
Domestic	5723	6843	8254	8889	8530
International	528	640	911	889	762
TOTAL	6251	7483	9165	9778	9292
% International	8.4%	8.6%	9.9%	9.1%	8.2%



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Chapter 2 Hands-on MIS Application Software Exercise Solution

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 delivery time for each order. The delivery time can be calculated by subtracting the Order Date from the Arrival Date. Vendors with the shortest delivery times are obviously desirable.

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 or the SUMIF and COUNTIF functions 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.

Ess12 Chapter 10 Hands-on MIS Application Exercise Instructions

Downloading the Data into a Spreadsheet

Use the Convert Text to Columns Wizard in your spreadsheet software to arrange the 10-K data you downloaded into spreadsheet columns and rows. From the Excel menu, select Data and then select the Text to Columns option. The software brings up a Wizard to convert the imported text into spreadsheet columns. Although you can decide to create line breaks, it may be easiest to accept the default settings (Fixed Width, General format) and then adjust column widths after the Wizard has arranged the data in spreadsheet columns.

Financial Statements

Financial statements are used to evaluate the performance of a business and diagnose its strengths and weaknesses. The two primary financial statements are income statements and balance sheets. The income statement, also called an operating statement or profit and loss statement, shows the income and expenses of a firm over a period of time, such as a year, a quarter, or a month. Gross profit is calculated by subtracting the cost of goods sold from revenues, or sales. The gross margin is calculated by dividing gross profit by revenues (or sales). Net profit (or loss) is calculated by subtracting all other expenses, including operating expenses and income taxes from gross profit. Operating expenses are all business costs (such as expenditures for sales and marketing, general and administrative expenditures, and depreciation) other than those included in the cost of goods sold. Net margins are calculated by dividing net profit (or loss) by revenues (or sales).

A balance sheet provides a snapshot of a company's financial assets and liabilities on a given date, usually the close of an accounting period. It lists what material and intangible assets the business owns and what money the business owes either to its creditors (liabilities) or to its owners (shareholders' equity, also known as net worth). At any given time a business's assets equals the sum of its liabilities plus its net worth. Current assets include cash, securities, accounts receivable, or other investments that are likely to be converted into cash within one year. Liabilities are outstanding obligations of the firm. Current liabilities are debts that are due within one year. Long-term debt consists of liabilities that are not due until after a year or more. If too much debt has been used to finance the firm's operations, problems may arise in meeting future interest payments and repaying outstanding loans. By examining a series of balance sheets, one can identify and analyze trends in the financial strength of a business.

Chapter 2
Global E-Business and Collaboration

Learning Objectives

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

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Chapter Outline

2-1 *What major features of a business are important for understanding the role of information systems?*
- Organizing a Business: Basic Business Functions
- Business Processes
- Managing a Business and Firm Hierarchies
- The Business Environment
- The Role of Information Systems in a Business

2-2 *How do systems serve different management groups in a business and how do systems that link the enterprise improve organizational performance?*
- Systems for Different Management Groups
- Systems for Linking the Enterprise
- E-Business, E-Commerce and E-Government

2-3 *Why are systems for collaboration and social business so important and what technologies do they use?*
- What is Collaboration?
- What is Social Business?
- Business Benefits of Collaboration and Social Business
- Building a Collaborative Culture and Business Processes
- Tools and Technologies for Collaboration and Social Business

2-4 *What is the role of the information systems function in a business?*
- The Information Systems Department
- Information Systems Services

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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.

Business, 41
Business intelligence, 48
Business processes, 42
Chief data officer (CDO), 67
Chief information officer (CIO), 66
Chief knowledge officer (CKO), 67
Chief privacy officer (CPO), 66
Chief security officer (CSO), 66
Collaboration, 56
Customer relationship management (CRM) systems, 55
Cyberlockers, 61
Data workers, 44
Decision-support systems (DSS), 49
Digital dashboard, 51
E-government, 56
Electronic business (e-business), 56
Electronic commerce (e-commerce), 56
End users, 67
Enterprise applications, 53
Enterprise systems, 54
Executive support systems (ESS), 50
Information systems department, 66
Information systems managers, 66
Interorganizational system, 55
Knowledge management systems (KMS), 55
Knowledge workers, 44
Management information systems (MIS), 48
Middle management, 44
Operational management, 44
Portal, 51
Production or service workers, 44
Programmers, 66
Senior management, 44
Social business, 57
Supply chain management (SCM) systems, 54
Systems analysts, 66
Teams, 56
Telepresence, 61
Transaction processing systems (TPS), 47

Teaching Suggestions

The opening vignette, "Enterprise Social Networking Helps ABB Innovate and Grow," provides an outstanding example of how the company embraced social business tools to significantly reduce its expenses all the while it increased the amount of learning and education available to its employees. These technologies are the very same ones every business needs to succeed.

Collaboration and sharing information are essential for ABB's continued growth and business success among its 140,000 employees in 100 countries. Even though the company already had an intranet, it was too static and outmoded to meet its current needs for empowering and energizing employees. Employees were storing information in a variety of places other than the intranet including wikis, local file servers, and other knowledge platforms.

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ABB needed a central resource that would support dynamic knowledge sharing and give employees tools to help them work more closely together. A dynamic and social-media enabled platform called Inside+ gave ABB employees a single entry point to all the information and tools they need including Microsoft Yammer, Office 365, and SharePoint.

Inside+ integrates all the key internal platforms that employees use while making Yammer conversations searchable through archives. Employees use the new tools to collaborate on projects, share ideas, and discover people in other departments with useful expertise. Discussions are more productive and have improved employee engagement. Staff can access Inside+ from smartphones and tablets making them more productive. The company has also saved on conference costs using online tools. And thanks to the new system, many more employees feel closely involved with the business as a whole.

Section 2-1, "What major features of a business are important for understanding the role of 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 2-2 to compare how the order fulfillment process can be accomplished sequentially, as the figure shows, versus simultaneously, as a new information system would allow.

The explanation of firm hierarchies sets the basis for the rest of the text as it explains the various levels of management. Senior management requires a different type of information than does middle management, operational management, knowledge workers, data workers, and production or service workers. Throughout the text, students will need this information to understand how and why each type of information system is necessary.

Section 2-2, "How do systems serve 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 (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	Interactive; simulations; analysis	Professionals, staff managers

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	analysis tools.		
Executive Support Systems (ESS)	Aggregate data; external, internal	Projections; responses to queries	Senior managers

It's likely that 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 initial source 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: Organizations: New Systems Help Plan International Manage Its Human Resources

Case Study Questions

1. Describe the problem faced by Plan International. What people, organization, and technology factors contributed to this problem?

Plan International is a worldwide organization that promotes rights and opportunities for children in need. While headquartered in the United Kingdom, it has operations in 70 countries and has worked with 81.5 million children in more than 86,676 communities. It requires a highly coordinated approach when emergencies strike. It must locate and deploy the most appropriate resources wherever they are required within hours or days.

People: Plan's old system was outdated and decentralized, causing much of the work to be done manually. It kept track of employees by using a patchwork of 30 human resources systems, spreadsheets, and documents. There was no way for individual employees to update their own records with new training or experiences.

Organization: Plan International did not have a way to track the skills people bring when they are hired and any additional training or experiences they have acquired for disaster response emergencies.

Technology: Plan International must sift through data on all its 10,000 aid workers in 70 countries to see which people have the appropriate skills and experience in medical aid, child protection, education, and shelter management. When a disaster struck, Plan had to send an email to everyone, asking whether the staff knew any people who could speak the appropriate language, had the appropriate disaster management skills, and were available to help.

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2. Describe the system solution to this problem. Describe the types of systems used for the solution.

Plan now has the ability to see data about all its workers' skills the moment an emergency occurs because of its new human resources systems. The cloud-based HR system was implemented in only 16 weeks at Plan's headquarters and all international regions were brought onto the system by 2014. It is accessible through the Internet for all users. Employees can now update all their own information, creating an easily searchable directory that every employee can access.

3. Why is human resources so important at Plan International?

When disaster strikes, it is people who make the difference in the recovery. Because Plan International did not have a way to track experience, training, skills, or expertise of its employees, it was not able to deploy the appropriate resources to the disaster site in a timely basis.

4. How did these systems improve operational efficiency?

Plan International's new human resource systems provide a bird's eye view of the entire workforce. Managers know immediately how many people work for Plan, where they are, what skills they possess, their job responsibilities, and their career paths. Employees can access their own records online and update information such as address, family details, and emergency contacts. Plan can also show its donors exactly how their contributions were spent and what the results are.

Much of this information used to take days or months to compile. Now all it takes is the press of a button. The new HR system saves valuable human resources staff time that can be directed towards more value-adding work.

5. How did these systems improve decision making? Give examples of 2 decisions improved by Plan's new systems.

With the new technology, Plan International staff can identify and dispatch relief workers to disaster areas within hours. Two examples of improved decision making are:

--Workers can now be deployed to disaster sites within 72 hours. Being able to deploy staff to emergencies so rapidly has saved more lives.

--The improved response time has helped Plan International secure new sources of funding by giving it more credibility with governments, corporations, and other sources of grants and donations.

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 show how data and information can flow seamlessly through an organization.

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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.

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, while e-commerce is more narrowly centered on the buying and selling of goods and services over the Internet.

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

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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' experiences 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 (page 58) emphasizes the benefits of collaboration while Figure 2.10 (page 59) 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.

Because most of the online collaborative tools listed in Table 2.4 (page 63) are relatively unknown, you can have teams of students explore one or two of them and then present to the class a list of characteristics, capabilities, advantages, and disadvantages for each one.

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 2.11 (page 63) 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 https://wiki.sdn.sap.com/wiki/display/ESpackages/Home or IBM's LotusNotes Wiki at http://www-10.lotus.com/ldd/dominowiki.nsf/dx/wiki-help. 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. The home page of IBM's LotusNotes Wiki also has a great list of how to perform various wiki tasks. Students can see how easy it is to navigate wikis by reading these instructions.

Interactive Session: People: Is Social Business Working Out?

Case Study Questions

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

   People: 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 is 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 collaborated. 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 emailing 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.

   Bayer Material Sciences, a division of Bayer, made social collaboration a success by making the tools more accessible, demonstrating the value of these tools in pilot projects, employing a reverse mentoring program for senior executives, and training employee experts to spread know-how of the new social tools and approaches within the company and demonstrate their usefulness.

   Working with company information technology and business leaders, Bayer Material Sciences management established an ambitious set of goals for growing social business along with seven key performance indicators (KPIs) to measure success. The goals included fostering global collaboration, creating stronger networks across regions and departments, creating a less hierarchical culture of sharing, and reducing the confusion about which tools are intended for which job.

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These efforts are now paying off; 50 percent of employees are now routinely active in the company's enterprise social network. Although ROI on social business initiatives has been difficult to measure, Bayer Material Sciences has benefited from faster knowledge flows, increased efficiency, and lower operating costs.

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 system's 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 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.

Review Questions

2-1 What major features of a business are important for understanding the role of information systems?

Define a business and describe the major business functions.

A business is a formal organization whose aim is to produce products or provide services for a profit. That is, to sell products at a price greater than the costs of production. Every business, large or small, has these four major functions: Manufacturing and production; sales and marketing; human resources; and finance and accounting. (Learning Objective 1: What major features of a business are important for understanding the role of information systems?, AACSB: Application of knowledge.)

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

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organize work activities, information, and knowledge to produce their valuable products or services.

Business processes for the manufacturing and production area include product assembling, quality checking, and producing bills of materials. For the sales and marketing area, business processes include identifying customers, making customers aware of the product, and selling the product. For finance and accounting, business processes include paying creditors, creating financial statements, and managing cash accounts. For human resources, business processes include hiring employees, evaluating employees' job performance, and enrolling employees in benefits plans. (Learning Objective 1: What major features of a business are important for understanding the role of information systems?, AACSB: Application of knowledge.)

Identify and describe the different levels in a business firm and their information needs.

From highest to lowest, the three levels of the organizational hierarchy are senior, middle, and operational management.

- Senior managers need summary information that quickly informs them about the overall performance of the firm, such as gross sales revenues, sales by product group and region, and overall profitability.
- Middle managers need more specific information on the results of specific functional areas and departments of the firm, such as sales contacts by the sales force, production statistics for specific factories or product lines, employment levels and costs, and sales revenues for each month or even each day.
  - Knowledge workers, such as engineers, scientists, or architects, design products or services and create new knowledge for the firm. They may need access to external scientific databases or internal databases with organizational knowledge.
- Operational managers need transaction-level information, such as the number of parts in inventory each day or the number of hours logged on Tuesday by each employee.
  - Production or service workers actually produce the product and deliver the service. Production workers need access to information from production machines. Service workers need access to customer records so they can take orders and answer questions from customers.

Types of information systems include transaction processing at the operational level, decision-support systems and management information systems at the middle level, and executive support systems at the senior level. (Learning Objective 1: What major features of a business are important for understanding the role of information systems?, AACSB: Application of knowledge.)

Explain why environments are important for understanding a business.

Business environments are constantly changing. New developments in technology, politics, customer preferences, and regulations happen all the time. In general, when businesses fail, it is often because they failed to respond adequately to changes in their environments. A firm

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must monitor changes in its environment and share information with key entities in that environment in order to stay in business.

External business environmental forces include: technology and science; economy, international change, and politics.

Internal business environmental forces include: customers, suppliers, stockholders, regulations, and competitors. (Learning Objective 1: What major features of a business are important for understanding the role of information systems?, AACSB: Application of knowledge.)

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

Define business intelligence systems.

Business intelligence systems focus on delivering information to support management decision making. These systems use data and software tools for organizing, analyzing, and providing access to data to help managers and other enterprise users make more informed decisions. Business intelligence addresses the decision making needs of all levels of management.

Business intelligence systems for middle management help with monitoring, controlling, decision making, and administrative activities in an organization. (Learning Objective 2: How do systems serve 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 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.

(Learning Objective 2: How do systems serve different management groups in a business and how do systems that link the enterprise improve organizational performance?, AACSB: Application of knowledge.)

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Describe the characteristics of management information systems (MIS), decision support systems (DSS), and executive support systems (ESS) and explain how each type of system helps managers make decisions.

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 TPS. 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 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.

Examples include sales and profit per customer and per region, relocation summary and analysis, inventory control, capital investment analysis, and even a report on students who were here in the fall but did not to return in the spring.

While MIS have an internal orientation, DSS will often use data from external sources, as well as data from TPS and MIS. DSS support "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.

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.

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- 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: 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: 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.)

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.

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.

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

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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 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 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

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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: 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 improve business performance.

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. (Learning Objective 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.)

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.

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- *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 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, page 59:

- *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 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 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

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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 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 like Lotus Notes, Groove, and WebEx provide online storage space for documents, team communications (separate from email), calendars, and audio-visual tools members can use to meet face-to-face.
- Email 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.
- Virtual worlds house online meetings, training sessions, and "lounges" where real-world people meet, interact, and exchange ideas.
- Google Apps/Google sites and cloud collaboration allow users to quickly create online group-editable websites 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 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 system's 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 4: What is the role of the information systems function in a business?, AACSB: Application of knowledge.)

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Compare the roles programmers, systems analysts, information systems managers, the chief information officer (CIO), chief security officer (CSO), chief data officer (CDO), chief privacy officer (CPO), and chief knowledge officer (CKO) play.

- 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 privacy officer is responsible for ensuring that the company complies with existing data privacy laws.
- 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 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 2.2? 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.

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2-7 Use the Time/Space Collaboration and Social Tool Matrix to classify the collaboration and social technologies ABB uses.

Student answers to this question will vary.

Hands-on MIS Projects

Management Decision Problems

2-8 Don's Lumber Company: The prices of lumber and other building materials are constantly changing. When a customer inquiries about the price on pre-finished 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 1: What major features of a business are important for understanding the role of 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: 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

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

Although the format of the students' answers will vary, a suggested solution can be found in the Microsoft Excel File named: *ESS12ch02_solutionfile.xls.*

2-10 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 30 net 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: 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

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!) (Learning Objective 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 min; 506.56 miles
Shortest time: 8 hours, 35 minutes; 533.61 miles

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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.

Business Problem-Solving Case: *How much Does Data-Driven Planting Help Farmers?*

2-13 List and describe the technologies used in this case study.

Farmers are using global positioning system navigation systems running on tablet computers to manage equipment and issue instructions during planting and harvesting seasons. Farmers and agricultural companies are using data analysis technologies to determine the right kinds and amounts of seed to plant, how much fertilizer to add, and the right amount of water to use during the growing season. Computerized planting equipment follows recommendations from agricultural companies and historic data collected by farmers. (Learning Objective 3. Why are systems for collaboration and social business so important and what technologies do they use?, AACSB: Analytical thinking, Application of knowledge.)

2-14 How do the systems described in this case provide operational intelligence?

Prescriptive planting uses data provided by farmers on field boundaries, historic crop yields, and soil conditions to agricultural data analysis companies which analyze that data along with data about seed performance and soil types in different areas. The company sends a computer file with recommendations back to the farmer, who uploads the data into computerized planting equipment. The data analysis company monitors weather and other factors to advise farmers how to manage crops as they grow.

Monsanto's software application called FieldScripts takes into account variables such as the amount of sunlight and shade and variations in soil nitrogen and phosphorous content when determining the type and amount of seed to plant. The data are analyzed in conjunction with the genetic properties of the seeds and combines all the information with climate predictions. Precise planting instructions or scripts are delivered to iPads connected to planting equipment in the field. These kinds of tools allow farmers to pinpoint areas that need more or less fertilizer, saving them the cost of spreading fertilizer everywhere, while boosting their yields in areas that have performed more poorly and reducing the amount of excess fertilizer that enters the water table. (Learning Objective 3. Why are systems for collaboration and social business so important and what technologies do they use?, AACSB: Analytical thinking, Application of knowledge.)

2-15 How does predictive planting support decision making? Identify three decisions that you can support.

Prescriptive planting takes much of the guess work out of planting and harvesting crops. Just the right amount of seed and fertilizer are laid down to improve the average corn harvest, thereby increasing profits. Three decisions prescriptive planting supports include the amount of seed and the type of seed for the soil conditions; the amount of fertilizer to add in each area of the fields;

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weather and other factors to help farmers manage crops as they grow. (Learning Objective 3. Why are systems for collaboration and social business so important and what technologies do they use?, AACSB: Analytical thinking, Application of knowledge.)

2-16 How helpful is predictive planting to individual farmers and the agricultural industry? Explain your answer.

Monsanto estimates that data-driven planting advice could increase worldwide crop production by about $20 billion a year. However, output from predictive planting system has not achieved those levels yet. Small farmers will be hard-pressed to afford the technology required by the new programs because of the cost of the service itself along with the cost of retrofitting existing planting equipment or buying more modern equipment that includes the electronic gear. Large farmers will have an easier time of purchasing the software and retrofitting their equipment.

Regardless of whether the farm is big or small, the impact of the new data-driven software programs will be minimal in good years because yields would be high regardless of the decisions made. The technology is likely to have a bigger impact in years when conditions aren't so propitious.

Many farmers are worried about the intrusion of big data into their once-insular businesses and are especially suspicious of what the big seed companies might do with the collected data. Other farmers worry about seed prices rising too much since the companies that developed predictive planting technology are the same ones that sell seeds. Farmers also fear that rivals could use the data to their own advantage. The American Farm Bureau Federation has warned members that seed companies touting higher crop yields from prescriptive planting have a vested interest in persuading farmers to plant more. (Learning Objective 3. Why are systems for collaboration and social business so important and what technologies do they use?, AACSB: Analytical thinking, Application of knowledge, Reflective thinking.)

MyMISLab

Go to the Assignments section of your MyLab to complete these writing exercises.

2-17 Identify and describe the capabilities of enterprise social networking software.

Visit MyMISLab for suggested answers.

2-18 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.

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Essentials of Management Information Systems, 12E

Laudon & Laudon

Lecture Files by Barbara J. Ellestad

Chapter 2 Global E-Business and Collaboration

As we discussed in Chapter 1, the "digital firm" means more than just plunking down computers that have all the latest bells and whistles on every desk. The digital firm must connect each functional area and each management level to one another. Data input to a system in manufacturing must be made available to sales, accounting, and shipping. Managers in the human resources department must have access to appropriate information regardless of its origin. Information integration is the key to the electronic business.

As we go through this chapter, we'll look at the types of information systems organizations use at each management level. It will provide you with an early, consolidated view of information systems. To help distinguish between the type of function each one is designed to accomplish and to fit them all together, we're going to look at them in the context of manufacturing candy bars. Yep, candy bars. Everyone likes them and everyone has eaten one, so they will be easy to relate to. We'll call the company WorldWide Candy, Inc. and we'll give the candy bar the timely name of "Cybernuts."

2-1 What major features of a business are important for understanding the role of information systems?

A **business** is very similar to the information systems we described in Chapter 1. Both information systems and businesses require inputs and some sort of processing, both have outputs, and both depend on feedback for successful completion of the loop.

Information systems use data as their main ingredient and businesses rely on people. However, the similarities are remarkable. Both are a structured method of turning raw products into useful entities.

Organizing a Business: Basic Business Functions

Whether you are a one-person show or a huge conglomerate, your business still needs four basic functions in order to be successful. Figure 2.1 shows you these functions.

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Figure 2.1: The Four Major Functions of a Business

In a successful business, the four basic functions will work seamlessly together to serve five entities:

- Suppliers
- Customers
- Employees
- Invoices/payments
- Products and services

Business Processes

What would happen if you walked into work one day and the management told the employees they could do anything, anything at all, they wanted to do that day. If Jimmy from production decided he wants to work in sales and marketing, he could. If Sally, who normally works in accounting, wants to spend the day in shipping, she could. No one would have to follow any rules or established procedures. They could accomplish the work any way they choose.

Sally decides that she doesn't want to use FedEx to ship out products that day even though the company has a contract that saves them lots of money. She decides to use an alternate shipping service that will cost the company more and slow down the shipment significantly. She doesn't see a need to tell accounting about the change.

Sam decides not to use appropriate packing materials when he's preparing glass bowls for movement across the country. He determines that it's faster if he just plops the bowls into a box, closes the lid, and sends them down the line. Unfortunately, his co-worker Tim (who doesn't know anything about Sam's decision) is responsible for answering customer complaints.

Bill in accounting decides that he needs a pay raise. Normally, he would require his supervisor's approval to change any pay record. Since he decided not to use established procedures, he simply enters the new salary data in the system. While he's at it, he also gives five of his friends pay raises. While Bill's friends may like the idea, the rest of the employees in the company are pretty upset.

You can imagine how quickly chaos would reign in the organization without established **business processes** that integrate functions throughout an organization. Processes that deliver the best product for the lowest cost in the most efficient manner are imperative to success.

The way a business organizes its workflows, the method it uses to accomplish tasks, and the way it coordinates its activities among employees, customers, and suppliers, determines its business processes.

Businesses, from the smallest one- or two-person group to the largest you can imagine, must have orderly processes that all divisions can understand. No part of the organization can work in isolation from any other part. That's why a successful business needs information integration.

How Information Technology Enhances Business Processes

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Smart businesses use information technology to do more than just automate simple business processes. Here's how technology can improve current business processes and even create new ones:

- Change the flow of information and give access to it to many more people.
- Replace sequential tasks with ones that can be performed simultaneously.
- Eliminate delays in decision making.
- Drive new business models.

Before you give in to temptation and simply start changing things, you need to fully understand your current business processes. We'll give you the tools to do that in future chapters.

Managing a Business and Firm Hierarchies

You'll see at the end of this discussion the integral role each type of system plays – from determining which kind of candy bar to make (**senior management**); to how many people the company will need to make the candy bar (**middle management**); to tracking customer orders (**operational management**). Within these three levels, we'll discuss the four major types of systems typically used to make an organization successful. In addition to management, **knowledge workers** need access to information about the ingredients used in candy bars and how they affect each other. **Data workers** require a method of entering and using information to support managers and other employees. **Production and service workers** must have access to information in order to carry out their assigned tasks.

As we work through this chapter, you'll gain an understanding of how each level of the firm hierarchy and each functional area require a different type of information. For instance, production workers and managers need to know how many candy bars to produce but don't need to know how the customer is paying for them. Human resource workers and managers must have access to employee training records to ensure there are enough trained employees available in the organization; however, they don't require access to invoices and payments.

So, while information integration throughout the firm is necessary, the information must also be partitioned into sections that best serve the user.

The Business Environment

WorldWide Candy, Inc. is a very successful company because it pays close attention to its environment. It understands its customers and the type of candy they like. The company monitors changes in the external environment that may impact its supply costs thereby impacting its profits. For instance, when gasoline prices increase, shipping costs go up. If the government changes the law requiring what product information must be placed on the candy bar wrapper, WorldWide Candy, Inc. must make changes also. If a competitor introduces a new product in the market, WorldWide Candy, Inc. must evaluate it against its products.

Figure 2.4 below gives you an idea of all the environmental entities WorldWide Candy must consider. Information to and from those environmental forces is a required element of every information system in order for WorldWide to remain successful.

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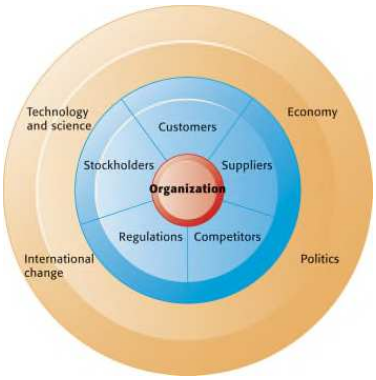

Figure 2.4: The Business Environment

The Role of Information Systems in a Business

Organizations and businesses have always relied on a steady flow of information. What's different in today's world is the amount of information and how it is accessed. Islands of information can doom a company as can too much information delivered at the wrong time to the wrong people. We mentioned in Chapter 1 that a business ideally uses information to effectively meet its objectives of:

- Operational excellence
- Develop new products or services
- Customer and supplier intimacy
- Improve decision making
- Achieve competitive advantages
- Ensure survival

Even with as much progress as we've made in the last 50 years, digitization still has a long way to go. Computing will become more ubiquitous, which will lead to new opportunities and challenges for all businesses and organizations.

Bottom Line: Every business has four functional areas: production and manufacturing, sales and marketing, accounting and finance, and human resources. Business processes help clarify tasks and maintain order in an organization. A good information system serves all three management levels and helps a firm monitor its environment. It also helps a firm achieve some or all of the six business objectives.

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

There is no one single information system that will satisfy all of the needs of an organization. At first glance it can be difficult to comprehend all the different systems in a business, and even more difficult to understand how they relate to one another.

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Systems for Different Management Groups

You'll see at the end of this discussion the integral role each type of system plays — from determining which kind of candy bar to make (strategic level systems); to how many people the company will need to make the candy bar (management level systems); to tracking customer orders (operational level systems). Within these three levels we'll discuss the four major types of systems typically used to make an organization successful.

Transaction Processing Systems

The operational level of an organization includes various units such as order processing, material movement control, payroll, accounts payable, and employee record keeping. This level is responsible for daily operations. The information systems used in this level of the organization are **transaction processing systems (TPS)**, so called because they record the routine transactions that take place in everyday operations. TPS combine data in various ways to fulfill the hundreds of information needs a company requires to be successful. The data are very detailed at this level. For instance, a TPS will record how many pounds of sugar are used in making our Cybernuts candy bar. It also records the time it takes from beginning to end to make the candy bar. And it can record the number of people working on the assembly line when our candy bar is made and what functions they perform.

People using transaction processing systems usually need information to help them answer routine questions such as: "How many Cybernuts candy bars did we produce yesterday?" or "How much sugar do we have on hand for today's production run?"

Since there's more to making the Cybernuts bar than just running the assembly line, a TPS will record the sales and marketing transactions as well. The system will record not just the number of dollars used in the marketing program, but also how many stores are actually stocking the candy bar and where the product is located inside the stores.

You have to remember that a lot of work is required to get the product from the manufacturing plant to the store shelves. How much did the company pay to package the product, store the product, and ship the candy bar to the stores? All that data can be recorded in a TPS, right down to how many truck drivers are required to deliver products to local convenience stores.

As you can visualize, the operational level of an organization also includes functions not directly associated with the actual production of the Cybernuts bar, but vital in keeping the company running smoothly. The people in accounting may not be pouring the chocolate over the nuts on the assembly line, but those workers do appreciate the fact that they get a paycheck every two weeks. Production workers also like to know that the human resource division is keeping track of training programs that may help them advance within the company. Each of these divisions requires an information system that helps it keep track of the many details that make the production worker happy and productive. The best transaction processing system will be integrated throughout the organization to supply useful information to those who need it, when they need it.

Bottom Line: The transaction processing system records the data from everyday operations throughout every division or department in the organization. Each division/department is tied together through the TPS to provide useful information to management levels throughout the company.

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Systems for Business Intelligence

Think about the functions of managers that you may have learned about in other classes: directing, controlling, communicating, planning, and decision making. Each manager takes on these roles countless times in a day. Managers review endless amounts of data that make their jobs easier and more efficient.

Businesses and organizations collect billions and billions of pieces of data on everything from customers to suppliers to business partners. Collecting the data is the easy part – almost too easy. Once the data are collected, it's much more difficult for managers and executives to actually use them to make smart decisions. That conundrum has given rise to **business intelligence** software applications that help users make sense of all that data. Decision makers can discern hidden patterns and trends in the data and use the information to the organization's benefit.

Management information systems (MIS) are designed to produce information on a periodic basis instead of on a daily recurring basis like those using a transaction processing system. Managers also require information on an exception basis. That is, they need to know if production is higher or lower than the targeted rate or if they are over or under their budgets. They also need to know about trends instead of straight numbers. The questions they may ask of the system would be: "How far behind in production are we for this quarter?" or "How many more workers would we need if we increased production by 10,000 candy bars per quarter?" or "If we do adopt the new Cybernuts recipe, what positions are open for the 25 excess workers and what skills do they possess that the company can use elsewhere?"

Before integrated systems, managers received periodic printed reports that gave them lots of data, but often didn't supply information that they could utilize to make timely decisions. Planning was sometimes a wasted effort because the information the managers needed just wasn't there when they needed it.

If there was a problem getting a shipment out to the convenience store in Paducah, Kentucky, the shipping manager may not have known about it until a customer cancelled her account six months later. The human resources department manager would likely not be able to find out about new job opportunities in a different part of the company until after the workers were laid off and had found other employment. Worse yet, production might have to stop the assembly lines because accounting hadn't purchased enough supplies to cover the increase in the number of candy bars rolling off the line.

With the integration of information systems up and down the management levels, and throughout the corporation, managers can often get needed information in a real-time mode. The data are kept online, the system can gather the precise information managers need to make a decision, and the information can be cross-integrated into all departments of the company. All divisions in the company can see what's going on throughout the corporation. Information can be passed from department to department so that they are all working "on the same page."

Bottom Line: A management information system is used by managers throughout the organization to help them in directing, planning, coordinating, communicating, and decision making. The MIS will help answer structured questions on a periodic basis.

Decision-support systems (DSS) also serve the management level of an organization, but in a somewhat different way from MIS. MIS use internal data to supply useful information. DSS use internal data but also combine it with external data to help analyze various decisions management must make. Analyzing complex, interactive decisions is the primary reason for a company to use DSS.

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The sales and marketing management of WorldWide Candy would use DSS to answer a semistructured question such as: "What price should we charge for the Cybernuts candy bar so that we can maximize our profits, minimize our costs, and still remain competitive?" Using DSS, the manager in charge of the manufacturing division could determine the best answer to this semistructured question: "How does the change in the size and packaging of the Cybernuts candy bar affect the other products we produce, not just in shipping, but also on the display shelf at the convenience store?"

You'll notice we describe decisions at this level as semistructured. Not all decisions required for an organization to function smoothly are cut-and-dried. There are a lot of gray areas in successfully managing an organization and the larger the company, the more diverse the decision-making process becomes.

As a company is affected not only by what goes on solely within the company, but also by external forces not under its control, decision-support systems can help upper-level management. What happens to the pricing structure and availability of the raw materials for the Cybernuts bar if civil war breaks out in the sugar producing countries of Central America? The price of electricity can greatly affect the profit and loss of the Cybernuts bar. Fluctuating gasoline prices affect the profit margins by increasing or decreasing the distribution costs of the product. All these external events can be put into context in a decision-support system so that WorldWide's management can make effective decisions.

Bottom line: Decision-support systems are used for complex "what-if" questions that require internal and external data. Decisions at this management level are mostly semistructured so the information system must respond to the unique requirements of the executives.

Executive support systems (ESS) are used at the very upper echelons of management. At the strategic level, the typical decision is very unstructured. Often there is no specific question, but rather a series of undefined situations executives may face. There are no easy, definable answers. These executives require summarized, historical information gleaned from all other levels of the organization, coupled with large amounts of external data gathered from many sources.

Let's assume that the Cybernuts bar is the most successful, most popular candy bar ever made. (You could say its success is due to the effective use of the previous three information systems!) The Universal Food Products Corporation just can't create a product that comes close to the success of Cybernuts (their information systems aren't as good) and is very envious of WorldWide Candy. So Universal Food Products offers to buy the Cybernuts product from WorldWide for what seems to be an astronomical amount of money. WorldWide executives can use their executive support system to determine if this offer is in the best interest of all. They can analyze the information gathered from all of the internal information systems and couple that with external data to help them make the decision. With ESS, company executives can make their decision based on information, not on emotion.

Senior executives often access information through the use of a **portal**. Basically, a portal is a web interface designed to present integrated personalized business content from a variety of sources.

As executives haven't been using computers that long or don't have time to fiddle around learning how to type, executive support systems use **digital dashboards** to make the system easy to use and provide information in a real-time mode. The ESS must be able to incorporate external information with internal data to offer concise, complete information for the imprecise and incomplete scenarios executives face.

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Interactive Session: Organizations: New Systems Help Plan International Manage Its Human Resources (see p. 52 of the textbook) discusses how an international organization uses a cloud-based Human Resources system that can handle its growing global workforce, support common processes across all regions, and deliver information on a secure mobile platform in regions where technology infrastructure is not well-developed.

Bottom Line: Executive support systems help managers make strategic decisions affecting the entire company. The decisions use internal and external data to give executives the information they need to determine the proper course of action in unstructured situations.

Systems for Linking the Enterprise

It's not unusual to find an organization with three or more different information systems that act as islands. The systems don't exchange information very well, if at all. Accounting and finance may have a system that serves their needs very well, but they can't collect information from the system used by manufacturing and production. Sales and marketing is doing its own thing with its system and losing valuable information from the other systems, which could help it do a better job.

Enterprise Applications

No business can afford disjointed information systems that don't work together to produce a coherent picture of the entire organization. All the functions of a business must be integrated across traditional lines of demarcation. Islands of information can be devastating to a company if data cannot be shared throughout the company. Even worse, the islands of information can create problems if each faction of an enterprise has differing information that conflict with other islands of information. These kinds of problems are what gave rise to **enterprise applications** that share the same data anywhere it's needed in an organization. As networks of all kinds take hold, from the Internet to intranets to extranets, web-based enterprise applications are increasingly widespread.

The following sections are an overview of four major enterprise applications: enterprise, supply chain management, customer relationship management, and knowledge management systems. We'll also study each of these systems in depth in future chapters.

Enterprise systems (also known as *enterprise resource planning (ERP)* systems) are used to bridge the communication gap between all departments and all users of information within a company. If the WorldWide Candy Company production department enters information about its processes, the data are available to accounting, sales, and human resources. If sales and marketing is planning a new advertising campaign for the CyberNuts candy bar, anyone anywhere within the organization will have access to that information. Enterprise systems truly allow a company to use information as a vital resource and enhance the bottom line.

The greatest enticement of enterprise systems is the chance to cut costs firm-wide and enhance the ability to pass information throughout the organization. The biggest drawbacks to building enterprise information systems are time, money, and people. Because the installation of the system is so invasive, it takes a tremendous amount of time to install the hardware and software, train people to use it, and rework business processes that will then inevitably change. Many companies find it more trouble than they care to handle.

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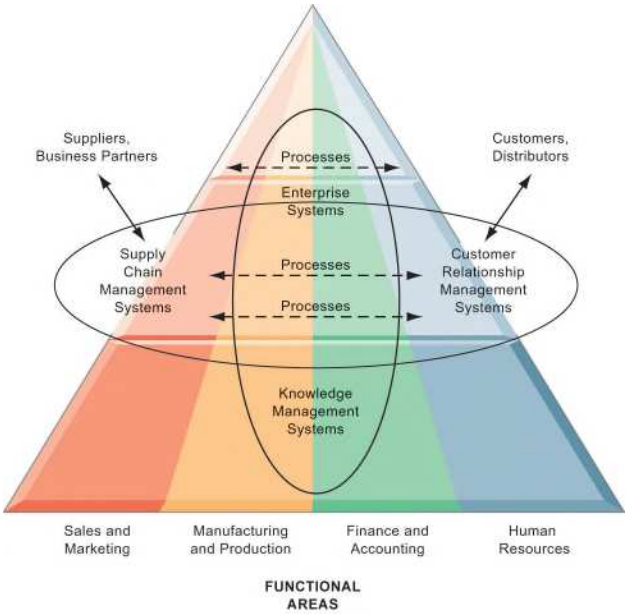

Figure 2.9: Enterprise Application Architecture

Even if you properly manage your processes, wring out excess costs from every corner of the organization, and above all, have the best products at the lowest cost, if you can't get your products to the right customers at the right time what good is all the rest? Managing your supply chain and getting products or services to customers efficiently and effectively is the real key to success.

Supply chain management systems offer new opportunities for companies to integrate data and information with their suppliers and customers and ultimately, lower costs for everyone. When WorldWide Candy installed their supply chain management system, a form of **interorganizational systems**, they created a cohesive network for buying raw materials, creating the candy bars, and getting the packaged goods to retail outlets.

Do you wait for the customer to complain about your poor service before you take a critical look at your business processes? Do you spend more time and money acquiring new customers than you do in keeping your existing ones? Does each functional area of your organization have a completely different and separate viewpoint of your customers? Does your sales and marketing department make promises to your customers that manufacturing and production can't possibly keep? If you answered yes to one or more of these questions, you're in serious need of a good **customer relationship management** system.

CRM technology isn't just a nice looking website for customers to click through or more reports dumped on managers' desks that they don't have time to review. CRM systems involve business processes in all the functional areas and every management level of a firm. The ideal CRM system provides end-to-end customer care from receipt of order through product delivery.

Because of technological limitations in the past, many companies created islands of information in the various functional areas. Sales and marketing at Cybernuts may tell a customer that the product order would ship by the fifteenth. Meanwhile manufacturing and production was experiencing a delay in producing the Cybernuts candy bar because the finance department didn't purchase enough raw goods. The islands of information prevented

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each functional area from knowing the situations in other areas. CRM systems help solve some of these disjointed snafus.

CRM also helps a firm cut the costs of keeping good customers by supplying the entire organization with a consolidated view of the customers' needs. Unprofitable customers are more easily identified with a CRM system and the time and energy spent can be retargeted to more profitable customers.

You may not think of a **knowledge management system** as an integral part of the overall information system of an organization. Most of the other systems have been recognized for many years, but this one may be thought of as relatively new. Knowledge management systems (KMS) enable organizations to better manage processes for capturing and applying knowledge and expertise.

Knowledge workers are those who promote the creation of new knowledge and integrate it into the organization. Research scientists may discover new methods of mixing sugar and cocoa beans and dairy products to make a better chocolate. Maybe a team of engineers will develop a new method of packaging the Cybernuts bar to make it easier to open. The legal knowledge workers may spend their time determining the copyright protections that could be afforded to the Cybernuts product name.

Intranets and Extranets

Enterprise applications are often costly to implement. Companies that don't have the resources to invest in enterprise applications can still achieve some measure of information integration by using intranets and extranets.

Intranets and extranets use Internet technology and standards to assemble information from various systems and present it to the user in a web page format. Extranets make portions of private corporate intranets available to outsiders.

Both of these tools make it easy for companies to disseminate information through a standard platform that requires very little work to maintain. It's a low-cost way to connect internal employees with each other or external users to company information.

E-Business, E-Commerce, and E-Government

The Internet, extranets, and intranets offer new opportunities to do business in cyberspace. The amount of **electronic commerce** and **electronic business** conducted online continues to grow exponentially year after year without any signs of slowing down. The two terms, e-commerce and e-business, are often confused with one another. E-commerce is limited to the buying and selling of goods and services on networks. E-business encompasses not only e-commerce but a broader range of tasks like coordinating training seminars for customers.

Even with the rising popularity of these new ways of doing business, you should take caution. It's easy to put up a snazzy, colorful website that looks very pretty and may even be easy to use. It may be a site on the Internet, an intranet, or an extranet. You must consider though, how you're going to incorporate that part of your business with your other, more established methods of doing business. What internal processes must you change or adapt? What new processes must you establish? What training must you do with the people who will run the e-

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business, both technical and nontechnical? You can't keep doing your job the same old way. Lots of businesses have tried and lots of businesses have lost big bucks.

The electronic delivery of government services via the Internet has been fairly successful. Citizens have easy access to forms necessary in many **e-government** programs such as tax payments. Rather than waste time standing in line for vehicle registration and licenses, people can complete these kinds of tasks on the Internet. Perhaps most importantly, e-government has opened the lines of communications between citizens and elected officials and made information access easier and timelier.

Bottom Line: Integrating functions and business processes cut costs and allow systems development that involves the whole firm or industry. Customer resource management and supply chain management give a company the added advantages of end-to-end customer care. Enterprise systems have many challenges but the benefits, when executed properly, are enormous. Knowledge management systems allow an organization to fully integrate their newly acquired knowledge into the current systems.

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

Globalization now allows companies to work around the clock, around the world. It's not unusual for major corporations to shift work from one time zone to another, one country to another. Somehow, the people in all the geographically separated locations have to be able to easily communicate and share information with each other. Working in teams is now becoming the de facto in the business world.

What is Collaboration?

Let's first determine exactly what the term **collaboration** means to businesses and to you:

- Working with others to achieve shared and explicit goals.
- Focuses on a particular task or mission.
- Takes place in a business and/or between businesses.
- Can be short- or long-term.
- Can be one-to-one or many-to-many.
- Can be informal or structured, formal **teams**.

Collaboration and teamwork has grown in popularity over the last few years because new technology has made it much easier for people to communicate and share information, files, and documents. Imagine how difficult it would be to collaborate with a colleague across the country if you had to pass documents back and forth using snail-mail.

Collaboration and teamwork are central to the success of many businesses. Here are six reasons why businesses promote collaboration and teamwork:

- **Changing nature of work** – traditionally work was organized into silos. Now, most new jobs require interaction among employees, suppliers, and customers.
- **Growth of professional work** – most professional jobs require close coordination and sharing information and opinions with other professionals.

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- **Changing organization of the firm** – traditionally, organizations used a managerial hierarchy. Now, many firms have been "flattened" and expertise and decision-making powers are pushed down to groups and teams.
- **Changing scope of the firm** – globalization has created organizations that are disbursed to many geographically separated locations that require close coordination.
- **Emphasis on innovation** – innovation comes more from teams and groups than from a single individual. Collaborative practices and technologies increase the likely success of innovation.
- **Changing culture of work and business** – diverse teams tend to produce better outputs and do it faster than individuals.

What is Social Business?

Collaboration among employees, suppliers, and customers is becoming an important tool in increasing a company's competitive advantage. Social networking platforms like Facebook, Twitter, and Pinterest help improve a company's **social business** to establish and improve interactions with groups inside and outside the organization. Information sharing, innovation, and decision making are enhanced through these technologies.

Communications among managers, executives, and employees can be improved and streamlined through the use of social business. Table 2.2 provides a list of social business applications and their descriptions.

SOCIAL BUSINESS APPLICATION	DESCRIPTION
Social Networks	Connect through personal and business profiles
Crowdsourcing	Harness collective knowledge to generate new ideas and solutions
Shared workspaces	Coordinate projects and tasks, co-create content
Blogs and Wikis	Publish and rapidly access knowledge; discuss opinions and experiences
Social commerce	Share opinions about purchasing or purchase on social platforms
File sharing	Upload, share, and comment on photos, videos, audio, text documents
Social marketing	Use social media to interact with customers, derive customer insights
Communities	Discuss topics in open forums, share expertise

Table 2.2: Applications of Social Business

Business Benefits of Collaboration and Social Business

Many major corporations are embracing collaboration and teamwork not just within their own company but also with people outside the organization.

> "Collaboration in the workplace has always had an influence on the culture of a company, but not as impactful as changing the work environment into a culture of innovation that online tools has helped spur. An innovative culture shares the same goals for the team and new hires, works to change the industry landscape from within by experimenting constantly, even if there is the possibility of failure. Online collaboration has helped facilitate innovative culture by eliminating unnecessary processes, allowing for collaborative discussion and helping to disseminate the values of the culture company-wide.

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> Collaboration in the digital age can help spur original thinking with connections happening across locations and departments that couldn't have previously occurred. By nature, collaboration brings different voices, teams, specialties and opinions together to solve an existing problem or develop something completely new. The collaborative tools of today bring major value to innovative thinkers by echoing their goals, thoughts, notes, discussions, documents, and brainstorming sessions to an entire company." (www.HuffingtonPost.com, "The Unexpected Value of Business Collaboration," Brian Honigman, Posted: 01/07/2014)

Table 2.3 emphasizes the benefits of collaboration and social business: increased productivity, increased quality of work, more and better innovation, improved customer service, and increased profitability, sales, and sales growth. Figure 2.10 highlights the necessity of having the appropriate organizations structure and culture, along with the right technology.

BENEFIT	RATIONALE
Productivity	People interacting and working together can capture expert knowledge and solve problems more rapidly than the same number of people working in isolation from one another. There will be fewer errors.
Quality	People work collaboratively can communicate errors, and corrective actions faster than if they work in isolation. Collaborative and social technologies help reduce time delays in design and production.
Innovation	People working collaboratively can come up with more innovative ideas for products, services, and administration than the same number working in isolation from one another. Advantages to diversity and the "wisdom of crowds."
Customer service	People working together using collaboration and social tools can solve customer complaints and issues faster and more effectively than if they were working in isolation from one another.
Financial performance (profitability, sales, and sales growth)	As a result of all of the above, collaborative firms have superior sales, sales growth, and financial performance.

Table 2.3: Business Benefits of Collaboration and Social Business

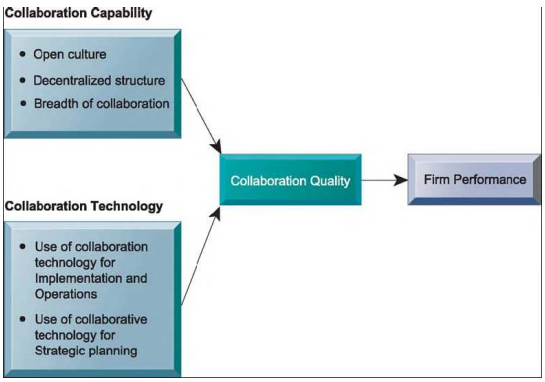

Figure 2.10: Requirements for Collaboration

Building a Collaborative Culture and Business Processes

Trying to mesh a typical hierarchical management structure with a true collaborative environment simply won't hack it for one major reason. In a hierarchical organization structure, communications are passed up the management ladder from employees, across to another management ladder, and back down to employees. That's

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extremely slow, cumbersome, and has an awful lot of "filters" as messages are passed from one person to another.

Collaboration and social business requires much faster communications and information sharing. In essence, it requires managers to set specific goals and then "get out of the way." Teams develop products, design new ideas or processes, and create new systems and technologies. Individuals are rewarded based on the success of the team rather than their own individual merits. Managers build the teams, coordinate the work, and monitor performance.

But in order for all this to work well, an organization must have the right tools and technologies in place.

Tools and Technologies for Collaboration and Social Business

Many new systems for interacting with other employees, managers, vendors, and customers have been developed. You probably use some of them without realizing how essential they've become in creating an environment that supports a collaborative culture.

- **E-mail and instant messaging:** billions of messages flow every day between employees, managers, suppliers, and customers.
- **Social networking:** more than just a way to socialize among friends, these tools give corporations another way for users to share ideas and collaborate with each other.

  "Before he helped create the world's largest online professional networking site, Allen Blue lectured on theatrical scenery and lighting design at Stanford University, designed marketing programs at PayPal, and was a self-employed web designer. Now, as co-founder of LinkedIn, an online professional network with more than 350 million users, Allen knows a thing or two about job searching.

  "As job seekers we need to change," says Allen. "We need to think differently about how we go about it. There's no one there who's going to be holding our hands through the entire thing. We've got to pick up the tools that are available and use them."

  LinkedIn is used by people all around the world – in 200 countries and territories.

  The platform has also changed the way employers screen candidates as job seekers connect with new opportunities – proving, once and for all, it really is all about "who you know" in the world.

  "The world of work is changing now faster than it's ever changed," adds Allen. "Those kinds of moments when the door might shut or a particular kind of work no longer exists, those are going to happen with greater and greater frequency in the next 10, 15, 20 years. So, it's going to be a radically different world."
  (http://www.cctv-america.com/2015/09/19/allen-blue-reinventing-social-networking#ixzz3mIbZafuI, "Allen Blue: Reinventing Social Networking," Mike Walter, Sep 19, 2015)

Even though social networking sites first began as a way to share information, photos, and messages with friends and family members, businesses soon realized how valuable these technologies were as a business tool. When you think about it, it makes sense to go where your customers are. If they aren't watching traditional

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television that much anymore, why spend your marketing dollars in an area where you stand to gain very little benefit?

- **Wikis:** gaining in popularity as a way to share knowledge and ideas among collaborators. They are much easier to use and manage than more sophisticated knowledge management systems.
- **Virtual worlds:** able to house online meetings, training sessions, and lounges, this type of tool is gaining popularity as a way to meet, interact, and exchange ideas.

Collaboration and Social Business Platforms: Let's assume you are part of a team working on a new candy product for WorldWide Candy Corporation. You work in Atlanta, Georgia, while your teammates work in New York City, Seattle, and Dallas. Sure, you could all fly to a central meeting place once a month to collaborate on the new candy bar. But imagine how cumbersome and slow that would be. Not to mention expensive and time-consuming.

Virtual Meeting Systems: With a virtual meeting system, you can hold strategy sessions once or twice a week instead. You would feel like all of your teammates are physically located in the same place if you use **telepresence** technology. You can share ideas and documents in real-time. Best of all, you don't have all the travel hassles and you can sleep in your own bed.

Cloud Collaboration Services: Google Tools and Cyberlockers: While your WorldWide Candy team is collaborating on the new candy bar, you'll find it necessary to share word documents, spreadsheets, calendars, and perhaps audio and video files. Rather than create the online structure for all this, not to mention spending big dollars, your team can use Google Tools that include Google Drive, Google Docs, Google Apps, Google Sites, and Google + to easily set up the necessary technology infrastructure you need. You'll have the benefit of email, instant messaging, and threaded discussion, so all of you can communicate in real-time. You're also able to save and archive all your communications for future reference. You can't necessarily do that in a face-to-face meeting.

Online file-sharing services that allow you to upload files to secure online storage sites are called **cyberlockers**. Your files are available from a multitude of other computing devices including tablet computers, smartphones, or any networked computer. Microsoft OneDrive and Dropbox are two popular examples of this new technology.

Microsoft SharePoint and IBM Notes: WorldWide Candy already uses Microsoft servers and networking products, along with the Microsoft Office suite of Word, Excel, Outlook, and PowerPoint. Your team can use all of these as a base for collaboration by developing a website that organizes and stores information in one location. The host website provides the following benefits:

- Coordinate work activities
- Collaborate on and publish documents
- Maintain task lists
- Implement workflows
- Share information via wikis and blogs

A third Internet-based collaboration environment your team could use is IBM Notes. It provides all the basic collaboration tools as Google Apps/Google Sites and SharePoint do but with a few added features. It has social networking enhancements and the ability for your team to develop its own custom applications. The most

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beneficial feature of IBM Notes for very large corporations is the higher levels of security and reliability along with the ability to keep control over sensitive information.

Enterprise Social Networking Tools: These tools, like Jive and Yammer, help connect an organization's members through profiles, updates, and notifications but are restricted to internal corporate uses. Some include user profiles, communities, email, instant messaging, web meetings, calendars, personal dashboards, and file-sharing.

Interactive Session: Management: Is Social Business Working Out? (see page 64 of the text) describes the failure of social networking in one organization and the success of it in another business. Whether social business works or not depends on how well it is accepted by employees, and whether they see it as a valuable tool for their individual success and the success of their teams.

Checklist for Managers: Evaluating and Selecting Collaboration and Social Software Tools

Sometimes the decision about which of these tools to use may be up to you. How do you decide which one is best? Figure 2.11 gives you a matrix that will help you sort through all the hype and make a decision based on your needs. The matrix uses two dimensions, time and space, to compare the tasks you want to accomplish with the best way to do so. For instance, will your team use synchronous (same time) or asynchronous (different time) to meet? Mostly, you need to analyze the collaboration tools from a cost/benefit point of view.

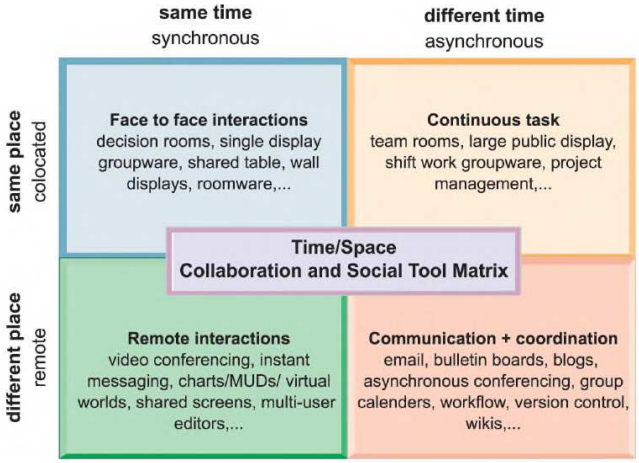

Figure 2.11: The Time/Space Collaboration and Social Tool Matrix

You can also use these six steps to help you select the best product for the task at hand:

- What are my challenges in terms of time and space?
- What solutions are available for each of the challenges?
- What are the costs and benefits of each solution?
- What security risks and vulnerabilities are associated with each solution?
- What are the implementation and training issues associated with each solution?
- Choose the collaboration tools and seek presentations from the vendors.

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Bottom Line: Collaboration and teamwork is the name of the game in today's corporate world. There are many different tools and technologies that help enable collaboration. The firm must have a collaborative culture that encourages employees to work together as a team to ensure success.

2-4 What is the role of the information system's function in a business?

Many people focus on the job losses caused by technological advances and changes. On the other hand, many new jobs have been created because of technology. **Information systems departments**, previously a tiny group of people usually assigned to the financial group, have moved into the mainstream of most companies.

The Information Systems Department

Programmers have taken on more important positions within organizations. They must understand not only the technical side of computing, but they must also know business processes so they can adapt the technology to the needs of their company. **Systems analysts** serve as the bridge between the techies and the nontechies. Heading this group of people are the **information systems managers**. Their importance to businesses has grown as the emphasis on technology's role within organizations has grown.

Just as most organizations have a Chief Financial Officer, the position of **Chief Information Officer** has been created to handle the myriad of problems and opportunities businesses face in today's technologically driven environment. Very large corporations appoint a **Chief Security Officer** who's responsible for enforcing the firm's information security policy and training users and information systems technologists about security. The CSO keeps other executives and managers aware of security threats and maintains security tools and policies.

Chief Privacy Officer protects an organization's data from misuse and abuse and makes sure the company complies with data privacy laws. Another new position, **Chief Knowledge Officer**, has been created in larger corporations to deal with effectively using knowledge management systems.

Some major corporations are establishing a position for a **Chief Data Officer** who is responsible for enterprise-wide governance and utilization of information that is gleaned from all the data an organization collects and stores. Making sure the company is collecting appropriate data, analyzing the data properly, and using the results to support good business decisions is the CDO's main responsibility.

Perhaps the most important role of all, though, is the **end user**. The responsibility for successful integration of information systems has extended past the "techies" and become part of everyone's job. As we've seen so far, no functional area or level of organizational hierarchy is exempt from understanding information systems and how they can help businesses meet their objectives.

Information Systems Services

Deciding how to organize the information systems function within a business is not as easy as deciding how to organize other functional areas. After all, sales and marketing has a much different mission than production and manufacturing. Information systems on the other hand, has similar tasks regardless of the functional area it is supporting. Sales and marketing needs access to data the same as production and manufacturing.

Some of the services the information systems function provides to an organization include:

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- Maintaining computer platforms
- Providing telecommunications
- Managing data, including storage and analysis capabilities
- Providing application software
- Planning and developing IS infrastructure
- Determining which technologies will be used, when, and how
- Educating employees and training managers about information technologies
- Researching future projects and investments in information systems

Bottom Line: The IS department is an integral part of any successful business. Programmers, analysts, IS managers, and the CIO are major players in the IS function. The most important role in effectively using technology belongs to the users. Large corporations use a chief security officer, chief privacy officer, chief data officer, and a chief knowledge officer to ensure investments in information technology pay big dividends to the firm.

Discussion Questions:

1. How can a transaction processing system help an organization's management information system and decision-support system?

2. Which of the four major types of information systems do you think is the most valuable to an organization?

3. Discuss the benefits and challenges of enterprise systems and explain why a firm would want to build one.

4. Discuss why a typical hierarchical management structure is not conducive to a collaborative business culture.

5. Discuss the tools and technologies for collaboration and social business that are available and how they provide value to an organization.

Answers to Discussion Questions:

1. A transaction processing system gathers data about the day-to-day operations of the organization from all functional areas. The data can be fed into the other systems to help the business meet its objectives. It can also help prevent islands of information in the organization.

2. Opinions will vary about which type of information system is the most valuable. Answers should include information about why the student thinks the one they have chosen is most valuable.

3. Benefits of an enterprise system include a consolidated view of the organization, unified platforms, more efficient operations, and customer-driven business processes. Challenges include daunting implementation, high up-front costs, unpredictable future benefits, inflexibility, and difficulty in realizing strategic values in the company. Organizations are enticed to build enterprise systems because they offer enormous cost

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savings in the long-run, increased efficiencies in business processes, and give the firm an advantage over its competitors.

4. Business firms, especially large firms, had in the past a reputation for being "command and control" organizations where the top leaders thought up all the really important matters, and then ordered lower-level employees to execute senior management plans. The job of middle management supposedly was to pass messages back and forth, up and down the hierarchy. A collaborative business culture is very different. Senior managers are responsible for achieving results, but rely on teams of employees to achieve and implement the results. 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. Teams are rewarded for their performance, and individuals are rewarded for their performance in a team. The function of middle managers is to build the teams, coordinate their work, and monitor their performance.

5. The tools and technologies for collaboration and social business include email, cell phones and wireless handhelds, social networking, wikis, and virtual worlds. Social networking sites give corporations another way for users to share ideas and collaborate with each other. Businesses can use them as a way to communicate with and reach out to customers. If done correctly, they can be a great tool to sell products, service customers, and communicate to the masses. Wikis are specially created websites that provide a way for users to contribute and edit text content and graphics about a wide-ranging assortment of topics. They are generally less costly than formal knowledge management systems and may be more dynamic and current. As companies increase the need for storing and sharing employee knowledge and insights, wikis will grow in popularity. Businesses can use virtual worlds to house online meetings, training sessions, and lounges for employees to communicate with one another.

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Chapter 2 Global E-Business and Collaboration

Case 1: Walmart's Retail Link Supply Chain

1. Where does Walmart's supply chain start? What triggers Walmart's Retail Link system to ship goods to local Walmart Stores?

Walmart's Retail Link is triggered by consumer purchases in local stores by point-of-purchase cash register data. This is in contrast to more traditional supply chains which often start with a manufacturer or distributor shipping goods to local stores based on forecast sales or the hope of making more sales by flooding isles with products ("push" driven supply chains). In the case of Walmart, the supply chain is driven by consumer behavior which "pulls" replacement stock from inventory.

2. Why is a detailed knowledge of consumer purchases at each store important to Walmart's success?

There are regional and local differences among all of Walmart's stores in the United States. These differences may involve weather patterns, ethnic composition of customers, local economic conditions, and regional cultures as well. Therefore, each store is in reality a unique entity with its own patterns of consumption. By adjusting inventory to each store, Walmart is able to meet different customer needs, and optimize sales revenue.

3. Why can't other large retailers easily duplicate Walmart's Retail Link?

Retail Link has been built over several decades, and the experience and knowledge that Walmart has developed cannot be easily transferred to other firms. Moreover, the financial investment is substantial. Nevertheless, other large retailers like Target and Costco have developed powerful and competitive systems to compete with Walmart. Because the technology has fallen in cost over the last decades, new comers have an advantage over legacy systems like Retail Link.

4. Why does Walmart encourage its vendors to learn how to use Retail Link?

Walmart is able to off load some of the cost of keeping its shelves full to vendors. Vendors monitor the stock of their goods in all Walmart stores and are incentivized to keep goods in stock (avoid stock-outs). Is there a danger of vendors overstocking Walmart shelves? Probably. But Walmart's own managers oversee the inventory system and can quickly spot those vendors who would take advantage of their access to Retail Link.

Case 2 CEMEX: Becoming a Social Business

Answers:

1. Why might social business be especially useful for global companies?

Social business tools like networking and shared workspaces are especially useful for global companies because they allow far-flung coworkers to collaborate more effectively.

2. What were some of the benefits that IBM social tools can provide for businesses like the fictitious Greenwell Couture?

Benefits include faster decision making, greater productivity, and improved customer service. Different types of employees derived different benefits.

3. What made Cemex a good candidate for a company-wide social network?

Cemex is a global company with thousands of employees across 50 countries. A company-wide social network allowed employees around the world to share ideas and collaborate. This led to new product innovation.

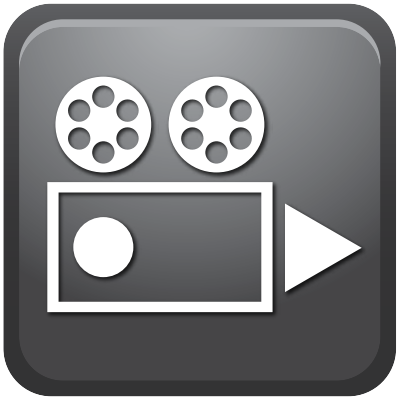
4. What types of things can go wrong when changing the culture of an organization to be more social and collaborative?

If employees are not trained in the proper use of social media, they may harm the company or its brand. If employees do not see the value in a collaborative workplace, social initiatives may not take root.

CHAPTER 2 GLOBAL E-BUSINESS AND COLLABORATION

CASE 1

Walmart's Retail Link Supply Chain



SUMMARY An introduction to Walmart's Retail Link system, one of the largest B2B supply-chain systems in the world. Retail Link connects consumer purchase data to the Walmart purchasing system and to vendor supply systems. Retail Link plays a key role in Walmart's corporate strategy to become the dominant low-cost provider of retail goods. L=7:13.

URL http://www.youtube.com/watch?v=SUe-tSabKag

CASE Walmart is a well-known leader in the application of network technology to coordinate its supply chain. Walmart's supply chain is the secret sauce behind its claim of offering the lowest prices everyday. It's able to make this promise because it has possibly the most efficient B2B supply chain in the world. It doesn't hurt to also be the largest purchaser of consumer goods in the world. With sales of more than $482 billion for the 2014 fiscal year, Walmart has been able to use information technology to achieve a decisive cost advantage over competitors. As you might imagine, the world's largest retailer also has the world's largest supply chain, with more than 60,000 suppliers worldwide. In the next five years, the company plans to expand from around 5,000 retail stores in the United States (including Sam's Clubs) to over 5,500 and increase its selection of goods. Internationally, Walmart has over 5,200 additional stores in 26 countries outside the United States, giving it a total of over 10,000 retail units. The rapid expansion in Walmart's international operations will require an even more capable private industrial network than what is now in place.

In the late 1980s, Walmart developed the beginnings of collaborative commerce using an Electronic Data Interchange (EDI)-based supply chain management system that required its

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large suppliers to use Walmart's proprietary EDI network to respond to orders from Walmart purchasing managers. In 1991, Walmart expanded the capabilities of its EDI-based network by introducing Retail Link. This system connected Walmart's largest suppliers to Walmart's own inventory management system, and it required large suppliers to track actual sales by stores and to replenish supplies as dictated by demand and following rules imposed by Walmart. Walmart also introduced financial payment systems that ensure that Walmart does not own the goods until they arrive and are shelved.

In 1997, Walmart moved Retail Link to an extranet that allowed suppliers to directly link over the Internet into Walmart's inventory management system. In 2000, Walmart hired an outside firm to upgrade Retail Link from being a supply chain management tool toward a more collaborative forecasting, planning, and replenishment system. Using demand aggregation software provided by Atlas Metaprise Software, Walmart purchasing agents can now aggregate demand from Walmart's 5,000 separate stores in the United States into a single RFQ from suppliers. This gives Walmart tremendous clout with even the largest suppliers.

In addition, suppliers can now immediately access information on inventories, purchase orders, invoice status, and sales forecasts, based on 104 weeks of online, real-time, item-level data. The system does not require smaller supplier firms to adopt expensive EDI software solutions. Instead, they can use standard browsers and PCs loaded with free software from Walmart. There are now over 20,000 suppliers—small and large—participating in Walmart's Retail Link network.

By 2012, Walmart's B2B supply chain management system had mastered on a global scale the following capabilities: cross docking, demand planning, forecasting, inventory management, strategic sourcing, and distribution management. The future of Walmart's SCM lies in business analytics—working smarter—rather than simply making the movement and tracking of goods more efficient. For instance, in 2012 Walmart purhased Quintiq Inc., a supply chain management tool for improving load assignment and dispatch of trucks for large retailers. Quintiq's software will enable Walmart's managers to optimize the loading of its trucks and to reduce the time required to supply its retail stores.

Despite the economic slowdown in the recession of 2008–2012, Walmart's sales continued to grow. In 2011, Walmart's revenues of $443 billion were up 6.4 percent from 2010, and its net income was $15.77 billion, up from $15.36 billion. In 2014 Walmart sales grew slowly at 2% to $482 billion. In 2014 Walmart was the largest corporation in the world based on revenues. In comparison, Apple generated $182 billion in 2014 revenues. Walmart's slowing growth in 2015 is in part related to the growth of e-commerce where Walmart is making significant investments to keep up with the growth in retail e-commerce, particularly Amazon.

continued

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VIDEO CASE QUESTIONS

1. Where does Walmart's supply chain start? What triggers Walmart's Retail Link system to ship goods to local Walmart Stores?
2. Why is a detailed knowledge of consumer purchases at each store important to Walmart's success?
3. Why can't other large retailers easily duplicate Walmart's Retail Link?
4. Why does Walmart encourage its vendors to learn how to use Retail Link?

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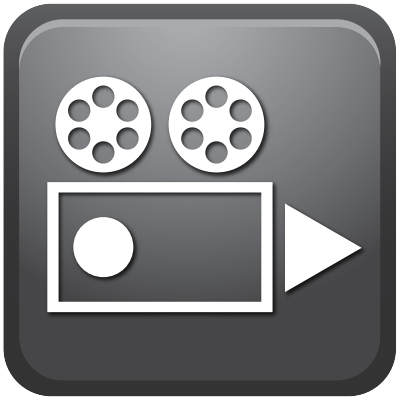
CHAPTER 2 GLOBAL E-BUSINESS AND COLLABORATION

CASE 2 CEMEX: Becoming a Social Business



(a) Greenwell

URL https://www.youtube.com/watch?v=nZEVCab_s3E; L=5:53

(b) Cemex

URL https://www.youtube.com/watch?v=a3WbmUVLO-4; L=2:55

SUMMARY IBM Social Business tools empower different types of businesses to become more social and collaborative. Find out how.

CASE As the world continues its movement towards all things social, businesses have followed suit. Modern businesses can use social networking platforms to engage employees, customers, and suppliers and to deepen interactions between these groups within the firm. The conversations that happen on social media represent opportunities to gain information, deepen relationships, and improve all areas of a business. Some of the many applications of social business include crowdsourcing, blogs, wikis, and shared workspaces. Many businesses have also opted to create company-wide social networks where its employees can share information, find other employees with the information they need, and contribute ideas.

For global companies, social business is critical to allow people from all parts of the world to connect and contribute to shared solutions together. IBM is a leading provider of tools that enable this kind of social business. In the first video, IBM portrays a fictitious clothing

continued

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company (Greenwell Couture) making use of social business tools to strengthen its global brand and improve collaboration across the firm. Benefits include faster decision making, greater productivity, and improved customer service. IBM Global Business Services drives the shift in business culture and technology towards social business, IBM Connections encourages collaboration and provides a variety of ways to share media and information with colleagues, and IBM Exceptional Digital Experience Suite allows Greenwell to provide individualized social marketing offers to customers.

Although modern employees are increasingly comfortable with social media and social networking platforms, social business is still unlikely to take hold within a company without the necessary efforts to build a collaborative culture and instill business processes that make use of social tools. Senior management must ensure that the company's employees consider collaboration and teamwork to be essential. Employees also need to engage with coworkers and customers in a way that doesn't compromise the company or the brand. In the Greenwell video, the company's hypothetical employees were active on social networks, but had minimal ability to connect to other coworkers within the company. Using IBM social business tools, Greenwell employees were able to make these connections. They also gained the ability to share stories and videos with their colleagues. As the video states, employees and customers turned into something more: advocates for the company and its brand.

The IBM tools also allowed different types of employees to their jobs more effectively with social technologies. Greenwell's top fashion designers blog about the latest fashion trends, the human resources staff finds the best candidates for job openings more efficiently with IBM Workforce Solutions, and data analysts better understand sentiment towards the company on the part of both employees and customers via Cognos Insights and IBM Digital Analytics. Because Greenwell prides itself on customized service, its customers are highly engaged and loyal to the company. Maintaining this level of service is easier with IBM social media tools. Individual customer service queries can be answered more efficiently and accurately. The company can monitor social media platforms for any instances of negative feedback and respond as soon as possible to resolve the issue.

But what about real companies? Fictitious clothiers are one thing, but multinational manufacturers with 47,000 employees over 50 countries are another. The latter describes Cemex, the third largest building materials company in the world. The Mexico-based company operates cement plants, ready-mix-concrete facilities, quarries, distribution centers, and marine terminals, and earned over $15 billion in revenues in 2014. Founded in 1906, Cemex doesn't seem like a perfect candidate for social business at first glance. But even Cemex has found major value in going social and improving collaboration.

Cemex used IBM social tools to create an internal social network available to Cemex employees. Of its 47,000 employees, 17,000 had joined this network.

continued

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Cemex used the network to allow employees across the globe to contribute to innovation initiatives and to form communities focused on individual tasks within the firm. Using the network, Cemex developed the first global brand of ready-mix cement. The network has also driven a host of other innovation initiatives. Although shifting the culture of the company towards collaboration and usage of the network was a challenge, Cemex officials consider the network to be a success. Social networking allows a big company to feel like a small company.

VIDEO CASE QUESTIONS

1. Why might social business be especially useful for global companies?
2. What were some of the benefits that IBM social tools can provide for businesses like the fictitious Greenwell Couture?
3. What made Cemex a good candidate for a company-wide social network?
4. What types of things can go wrong when changing the culture of an organization to be more social and collaborative?

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Kenneth C. Laudon • Jane P. Laudon

Chapter 2: Global E-business and Collaboration

Learning Track 1: Systems from a Functional Perspective

We will start by describing systems using a functional perspective because this is the most straightforward approach, and, in fact, because this is how you will likely first encounter systems in a business. For instance, if you are a marketing major and take a job in marketing, you will be working on the job first with marketing information systems. If you are an accounting major, you will be working with accounting and financial systems first. From a historical perspective, functional systems were the first kinds of systems developed by business firms. These systems were located in specific departments, such as accounting, marketing and sales, production, and human resources. Let's take a close look at systems from this functional perspective.

Sales and Marketing Systems

The sales and marketing function is responsible for selling the organization's products or services. Marketing is concerned with identifying the customers for the firm's products or services, determining what customers need or want, planning and developing products and services to meet their needs, and advertising and promoting these products and services. Sales is concerned with contacting customers, selling the products and services, taking orders, and following up on sales. Sales and marketing information systems support these activities.

Table 2-1 shows that information systems are used in sales and marketing in a number of ways. Sales and marketing systems help senior management monitor trends affecting new products and sales opportunities, support planning for new products and services, and monitor the performance of competitors. Sales and marketing systems aid middle management by supporting market research and by analyzing advertising and promotional campaigns, pricing decisions, and sales performance. Sales and marketing systems assist operational management and employees in locating and contacting prospective customers, tracking sales, processing orders, and providing customer service support.

Figure 2-1 illustrates a sales information system used by retailers, such as The Gap or Target. Point-of-sale devices (usually handheld scanners at the checkout counter) capture data about each item sold, which update the sales system's figures about sales and send data about items sold to related systems dealing with items remaining in inventory and with production. These businesses use this information to track which items have been sold, to determine sales revenue, and to identify hot-selling items and other sales trends.

continued

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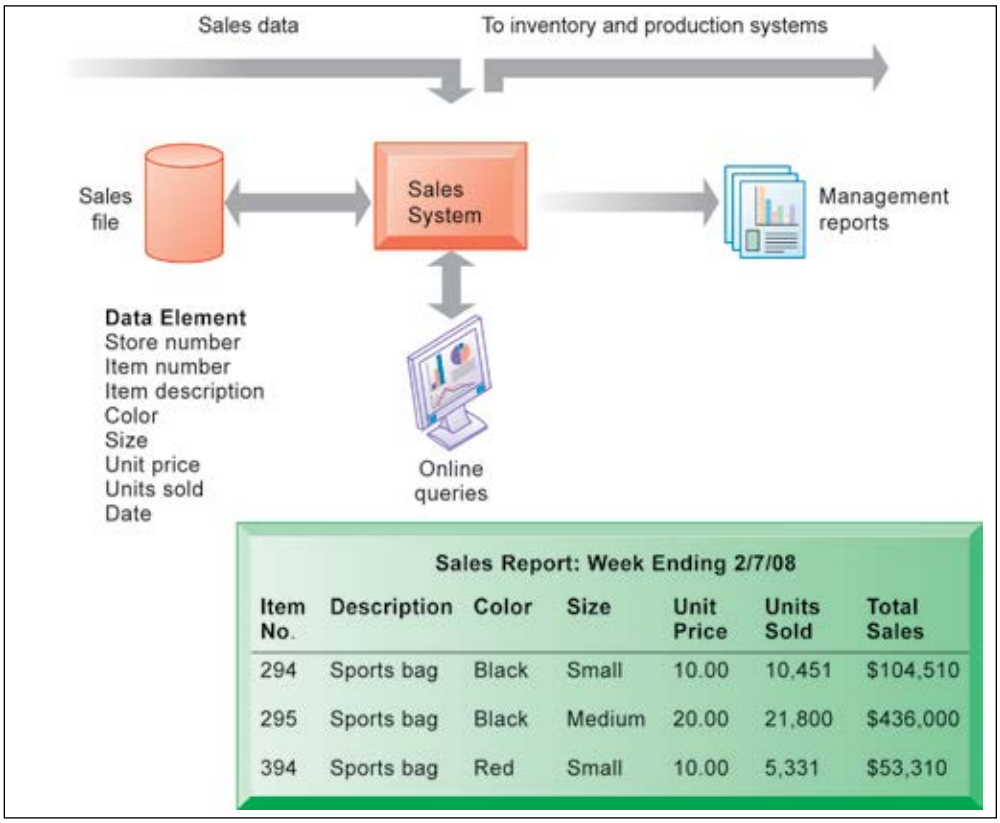
TABLE 2-1 Examples of Sales and Marketing Information Systems

System	Description	Groups Served
Order processing	Enter, process, and track orders	Operational management Employees
Pricing analysis	Determine prices for products and services	Middle management
Sales trend forecasting	Prepare five-year sales forecasts	Senior management

FIGURE 2-1 Example of a Sales Information System



This system captures sales data at the moment the sale takes place to help the business monitor sales transactions and to provide information to help management analyze sales trends and the effectiveness of marketing campaigns.

continued

Manufacturing and Production Systems

The manufacturing and production function is responsible for actually producing the firm's goods and services. Manufacturing and production systems deal with the planning, development, and maintenance of production facilities; the establishment of production goals; the acquisition, storage, and availability of production materials; and the scheduling of equipment, facilities, materials, and labor required to fashion finished products. Manufacturing and production information systems support these activities.

Table 2-2 shows some typical manufacturing and production information systems for each major organizational group. Senior management uses manufacturing and production systems that deal with the firm's long-term manufacturing goals, such as where to locate new plants or whether to invest in new manufacturing technology.

TABLE 2-2 Examples of Manufacturing and Production Information systems

System	Description	Groups Served
Machine control	Controls the actions of machines	Operational management and equipment
Production planning	Decides when and how many products should be produced	Middle management
Facilities location	Decides where to locate new production facilities	Senior management

Manufacturing and production systems for middle management analyze and monitor manufacturing and production costs and resources. Operational management uses manufacturing and production systems that deal with the status of production tasks.

Most manufacturing and production systems use some sort of inventory system, as illustrated in Figure 2-2. Data about each item in inventory, such as the number of units depleted because of a shipment or purchase or the number of units replenished by reordering or returns, are either scanned or keyed into the system. The inventory master file contains basic data about each item, including the unique identification code for each item, a description of the item, the number of units on hand, the number of units on order, and the reorder point (the number of units in inventory that triggers a decision to reorder to prevent a stockout). Companies can estimate the number of items to reorder, or they can use a formula for calculating the least expensive quantity to reorder called the economic order quantity. The system produces reports that give information about such things as the number of each item available in inventory, the number of units of each item to reorder, or items in inventory that must be replenished.

continued

Finance and Accounting Systems

The finance function is responsible for managing the firm's financial assets, such as cash, stocks, bonds, and other investments, to maximize the return on these financial assets. The finance function is also in charge of managing the capitalization of the firm (finding new financial assets in stocks, bonds, or other forms of debt). To determine whether the firm is getting the best return on its investments, the finance function must obtain a considerable amount of information from sources external to the firm.

The accounting function is responsible for maintaining and managing the firm's financial records—receipts, disbursements, depreciation, payroll—to account for the flow of funds in a firm. Finance and accounting share related problems—how to keep track of a firm's financial assets and fund flows. They provide answers to questions such as these: What is the current inventory of financial assets? What records exist for disbursements, receipts, payroll, and other fund flows?

Table 2-3 shows some of the typical finance and accounting information systems found in large organizations. Senior management uses finance and accounting systems to establish long-term investment goals for the firm and to provide long-range forecasts of the firm's financial performance. Middle management uses systems to oversee and control firm's financial resources. Operational management uses finance and accounting systems to track the flow of funds in the firm through transactions, such as paychecks, payments to vendors, securities reports, and receipts.

TABLE 2-3 Examples of Finance and Accounting Information Systems

System	Description	Groups Served
Accounts receivable	Tracks money owed the firm	Operational management
Budgeting	Prepares short-term budgets	Middle management
Profit planning	Plans long-term profits	Senior management

Figure 2-3 illustrates an accounts receivable system, which keeps track of what customers who have made purchases on credit owe to a company. Every invoice generates an "account receivable"—that is, the customer owes the firm money. Some customers pay immediately in cash, but others are granted credit. The accounts receivable system records each invoice in a master file that also contains information on each customer, including that person's credit rating. The system also keeps track of all the bills outstanding and can produce a variety of output reports, both on paper and on the computer screen, to help the business collect bills. The system also answers queries about a customer's credit rating and payment history.

continued

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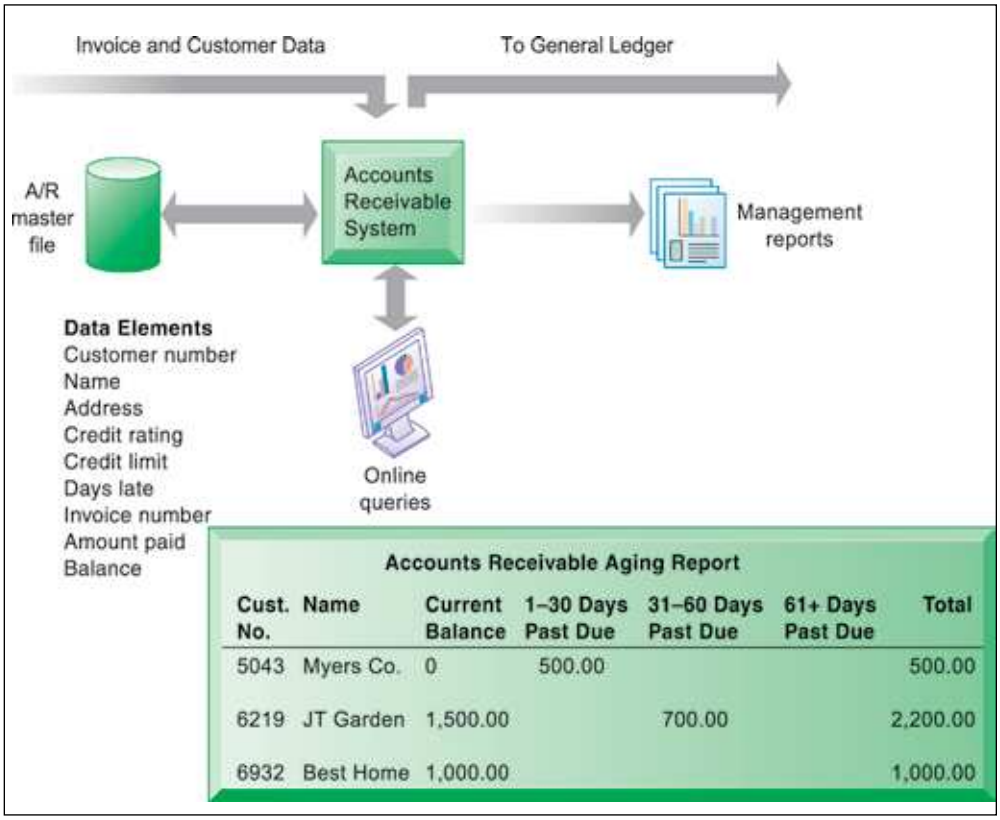
FIGURE 2-3 An Accounts Receivable System



An accounts receivable system tracks and stores important customer data, such as payment history, credit rating, and billing history.

Human Resources Systems

The human resources function is responsible for attracting, developing, and maintaining the firm's workforce. Human resources information systems support activities such as identifying potential employees, maintaining complete records on existing employees, and creating programs to develop employees' talents and skills.

Human resources systems help senior management identify the manpower requirements (skills, educational level, types of positions, number of positions, and cost) for meeting the firm's long-term business plans. Middle management uses human resources systems to monitor and analyze the recruitment, allocation, and compensation of employees. Operational management uses human resources systems to track the recruitment and placement of the firm's employees (see Table 2-4).

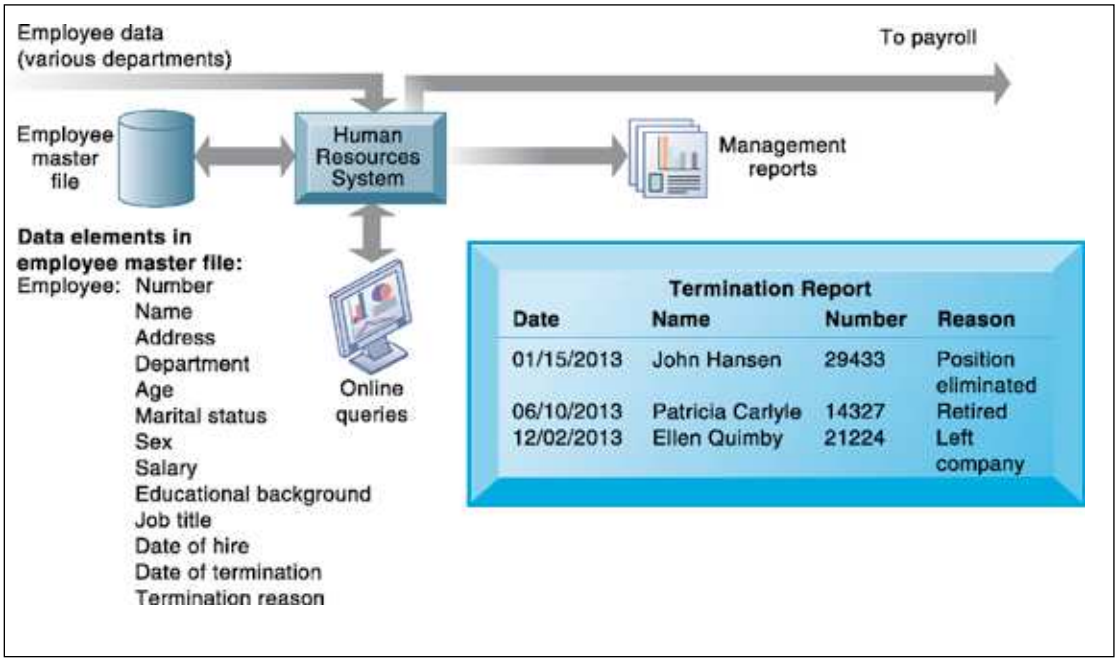
continued

TABLE 2-4 Examples of Human Resources Information Systems

System	Description	Groups Served
Training and development	Tracks employee training, skills, and performance appraisals	Operational management
Compensation analysis	Monitors the range and distribution of employee wages, salaries, and benefits	Middle management
Human resources planning	Plans the long-term labor force needs of the organization	Senior management

Figure 2-4 illustrates a typical human resources system for employee record keeping. It maintains basic employee data, such as the employee's name, age, sex, marital status, address, educational background, salary, job title, date of hire, and date of termination. The system can produce a variety of reports, such as lists of newly hired employees, employees who are terminated or on leaves of absence, employees classified by job type or educational level, or employee job performance evaluations. Such systems are typically designed to provide data that can satisfy federal and state record keeping requirements for Equal Employment Opportunity (EEO) and other purposes.

FIGURE 2-4 An Employee Record Keeping System



This system maintains data on the firm's employees to support the human resources function.

continued

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Google is an example of a company using a human resources system with a strategic orientation. Google is one of the world's most leading-edge, rapidly growing companies. It is best known for its powerful Internet search engine, but it is also the source of numerous other technology-based products and services. Innovation and knowledge are key business drivers. Google obviously has very special human resources requirements and prizes highly intelligent employees who can work in teams yet think outside the box.

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Essentials of Management Information Systems, 12TH ED.

Kenneth C. Laudon • Jane P. Laudon

Chapter 2: Global E-business and Collaboration

Learning Track 2: IT Enables Collaboration and Teamwork

Outline

Introduction: It's a Collaborative World
1.0 Why Are Collaboration and Teamwork So Important Today?
2.0 What Are the Business Benefits of Collaboration?
3.0 What Makes a Good Team Member And Collaborator?
4.0 What Makes a Good Team Leader?
5.0 Building and Managing Teams
6.0 Building a Collaborative Organizational Culture
7.0 IT Systems Enable Collaboration and Teamwork
8.0 Choosing Collaboration Tools: Management To-Do List

RECOMMENDED VIDEOS:

- "Teamwork and Collaboration at Cisco." Cisco CEO John Chambers explains how abandoning command-and-control leadership has enabled the company to innovate more quickly, using collaboration and teamwork.
- See the Video Case Package for this book.

Introduction: It's a Collaborative World

It's a collaborative world that depends on teams of people working together across time zones and continents. It's a world of high bandwidth and "rich" communications, and "interaction" jobs where the value added by the employee is the ability to talk, write, present, persuade, sell and empathize with others. Over 40% of the labor force now has these kinds of jobs.

So what is collaboration, and what's the difference between cooperation, collaboration, and team work (project teams)? Figure 1-1 illustrates the differences and their relationship.

Cooperation (also referred to as "coordination") is working with others to achieve some shared (but not necessarily stated) goals. Cooperation comes from the fact that we are dependent on others, and we need to manage those dependencies somehow. For instance, you cooperate with your neighbors in keeping the neighborhood sidewalks clean; keeping an eye out for strangers; or deciding how to paint a fence that divides your property or a shared entrance. You cooperate with your spouse by putting dirty laundry in the washing machine. You help with the cooking and

continued

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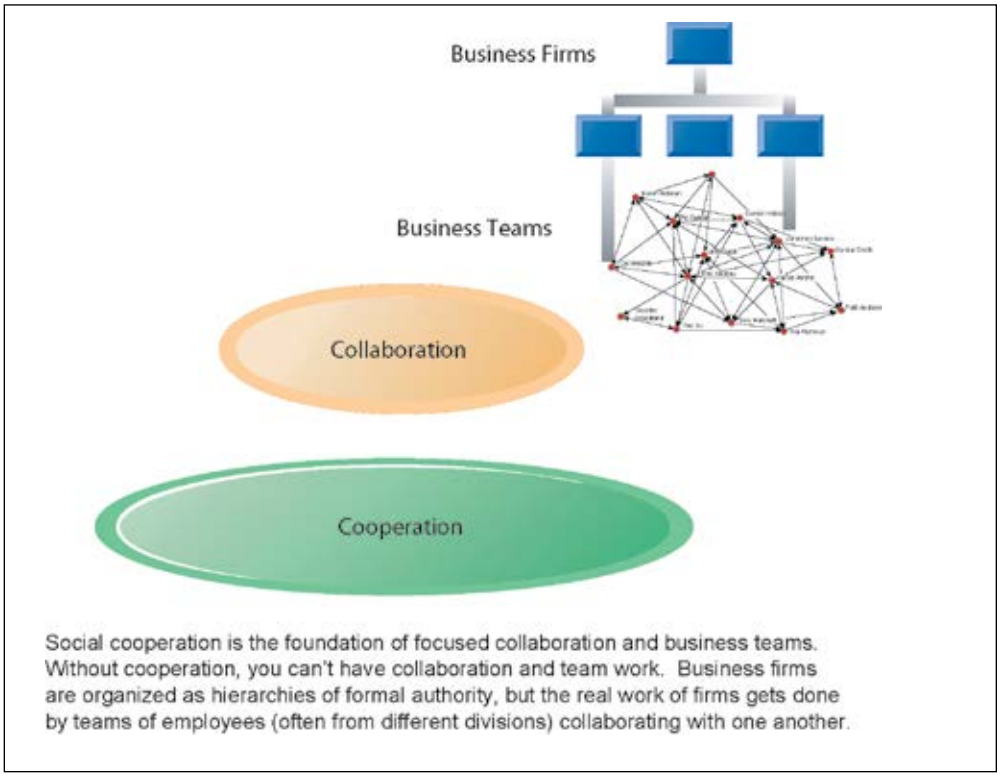
FIGURE 1-1 Cooperation, Collaboration, and Team work



dishes. You cooperate with complete strangers on the street by passing on the right, and you always go through revolving doors in the "right" way. Cooperation is general, broad, and the foundation of any organized social life. It occurs most often without anyone saying anything to one another. Without it, we would not have villages, towns, cities or countries. Or business firms. Now let's take it up a step.

Collaboration is cooperation that's more focused on task or mission accomplishment and usually takes place in a business, or other organization, and between businesses. It is explicit: we generally do talk about, plan and manage collaboration with one another.

You collaborate with a colleague in Tokyo looking for expertise on a topic you know nothing about. You collaborate with many colleagues in publishing a company blog. If you're in a law firm, you collaborate with accountants working in an accounting firm in servicing the needs of a client with tax problems. Collaboration can be short-lived, lasting a few minutes, or longer term if the dependency among participants remains constant. You can collaborate informally with colleagues many times over a period of years through e-mail, voice mail, instant messaging, wikis (collections of documents), and bulletin boards. Collaboration can be one-to-one (among individuals), and many-to-many (collaboration among a number of people). Such collaborative groups are generally not a formal part of the business firm's organizational structure, but are rather informal groups. Now let's step it up one more time to talk about teams.

continued

Teams take all this one step further. Teams are part of the organization's business structure for getting things done. Teams and project groups are interchangeable terms. Teams have a specific mission that someone in the business assigned to them. They have a job to complete. The members of the team need to collaborate on the accomplishment of specific tasks and collectively achieve the team mission. The team mission might be to "win the game," or "increase online sales by 10%," or "prevent insulating foam from falling off a space shuttle." Teams are often short-lived, depending on the problems they tackle and the length of time needed to find a solution and accomplish the mission. Teams often involve people in very different parts of a business firm, often in other time zones.

1.0 Why Are Collaboration and Teamwork So Important Today?

Collaboration and team work are more important today than ever for a variety of reasons.

- **Changing nature of work.** The nature of work has changed from factory manufacturing and pre-computer office work where each stage in the production process occurred independently of one another, and was coordinated by supervisors. Worked was organized into silos. Within a silo, work passed from one machine tool station to another, from one desktop to another, until the finished product was completed. Today the kinds of jobs we have require much closer coordination among the parties involved in producing the service or product. These so-called "interaction" jobs tend to be professional jobs in the service sector that require close coordination, and collaboration. But even in factories, workers today often work in production groups, or pods. Interaction jobs include most office jobs that require close coordination of many different people in order to complete the work. For instance, creating a Web site for a firm requires collaboration among senior management, marketing professionals, Web designers, and information technology specialists who can implement the site; delivering legal services requires a team of lawyers and accountants working together on a single case.
- **Growth of professional work.** In the last 50 years, the professional nature of work has greatly expanded. Professional jobs require substantial education, and the sharing of information and opinions to get work done. Each actor on the job brings specialized expertise to the problem, and all the actors need to take one another into account in order to accomplish the job.
- **Changing organization of the firm.** For most of the industrial age managers organized work in a hierarchical fashion. Orders came down the hierarchy, and responses moved back up the hierarchy. Today, more work is organized into groups and teams, who are expected to develop their own methods for accomplishing the task. Senior managers observe and measure results, but are much less likely to issue detailed orders or operating procedures. In part this is because expertise has been pushed down in the organization, as have decision making powers.

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- **Changing scope of the firm.** The organization of the firm has changed from work at a single location, to work taking place in offices or factories throughout a region, a nation, or even around the globe. For instance, Henry Ford developed the first mass production automobile plant at a single Dearborn, Michigan factory. In 2012, Ford produced 6.5 million automobiles and employed about 245,000 employees at 100 plants and facilities worldwide. More than half of its sales come from outside North America, as do one third of its revenues. With this kind of global presence, the need for close coordination of design, production, marketing, distribution and service obviously takes on new importance and scale. Large global need to have teams working on a global basis.
- **Emphasis on innovation.** While we tend to think of innovations in business and science as coming from great individuals, but more common is that these great individuals are working with a team of brilliant colleagues, and all have been preceded by a long line of earlier innovators and innovations. Think of Bill Gates and Steve Jobs (founders of Microsoft and Apple) both of whom are highly regarded innovators, and both of whom built strong collaborative teams to nurture and support innovation in their firms. Their initial innovations derived from close collaboration with colleagues and partners. Innovation in other words is a group and social process, and most innovations derive from collaboration among individuals in a lab, a business, or government agencies. Strong collaborative practices and technologies are believed to increase the rate and quality of innovation.
- **Changing culture of work and business.** There is growing support for the proposition that collaboration and team work produce better results, faster, than a similar number of people working in isolation from one another. Most research on collaboration supports the notion that diverse teams produce better outputs, faster, than individuals working on their own. Popular notions of the crowd ("crowdsourcing," and the "wisdom of crowds") also provide cultural support for collaboration and team work.

Briefly, collaboration and social networking have become a growing theme of social, political, and business organization in the age of the Internet. Economies, organizations and firms, along with their employees are becoming more informational, more global and above all more networked. Information technologies-from smart phones, netbooks and inexpensive servers, to high capacity broadband and large data centers, are all key components and enablers of collaboration practices.

2.0 What are the Business Benefits of Collaboration?

There are many articles and books that have been written about collaboration, some of them by business executives and consultants, and a great many by academic researchers in a variety of businesses. Nearly all of this research is anecdotal and testimonial rather than empirical assessments of collaboration within or between organizations. Among both business and academic communities there is a general belief that the more a business firm is "collaborative," the more successful it will

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be. Nearly all writers agree that collaboration is now more required within and between firms than was true in the past (for reasons outlined above).

Table 1-1 summarizes some of the benefits of collaboration identified by previous writers and scholars.

TABLE 1-1 Business Benefits of Collaboration and Their Rationale

Benefit	Rationale
Productivity	People working together can complete a complex task faster than the same number of people working in isolation from one another; there will be fewer errors.
Quality	People who work collaboratively can communicate errors, and take corrective actions faster, when they work together than if they worked in isolation. Reduction in buffers and time delay among production units.
Innovation	People working collaboratively in groups can come up with more innovative ideas for products, services, and administration than the same number working in isolation from one another. Advantages to diversity and the "wisdom of crowds."
Customer service	People working together in teams can solve customer complaints and issues faster and more effectively than if they were working in isolation from one another.
Financial performance (profitability, sales, and sales growth)	As a result of all of the above, collaborative firms have superior financial performance

One of the difficulties of obtaining solid empirical evidence of these contributions involves the difficulties in measuring "extent of collaboration." One empirical study sponsored by Verizon Business and Microsoft created a collaboration index to measure the impact of communications culture, and deployment of collaborative technologies. That study concluded that "collaboration is a key driver of overall performance of companies around the world. Its impact is twice as significant as a company's aggressiveness in pursuing new market opportunities (strategic orientation) and five times as significant as the external market environment (market turbulence)… The results show that collaboration can positively impact each of the gold standards of performance - profitability, profit growth and sales growth - to determine a company's overall performance in the marketplace," according to Jaclyn Kostner, Ph.D., best-selling author, and expert on high-performance virtual collaboration. "As a general rule, global companies that collaborate better, perform better. Those that collaborate less, do not perform as well. It's just that simple."

A more rigorous empirical analysis of the diffusion of information in a single corporation found that social networks--the foundation of collaboration-- were exceptionally powerful in moving news information up and down the hierarchy of a firm, while discussions of topics were expedited among peers at that same level in an organization. The overall economic benefit of collaboration

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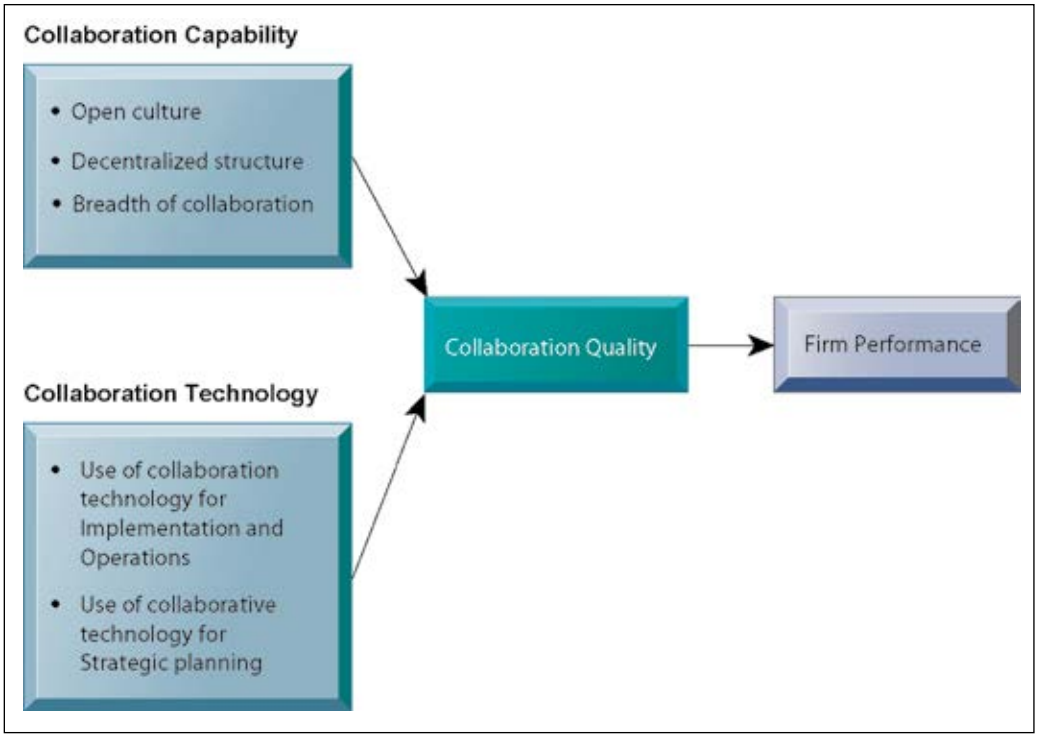
was signficicant: for every word seen by an employee in emails from others, $70 of additional revenue was generated (Aral, Brynjolfsson, and Van Alstyne, 2007).

Figure 1-2 depicts the model which the researchers came up with to explain their findings.

FIGURE 1-2 A Model of Collaboration



While there is scant empirical information to back up these statements, there is a wealth of anecdotal accounts which supports this general framework. While there are many presumed benefits to collaboration, as you can see in Figure 1-2, you really need the right business firm culture and the right decentralized structure before you can achieve meaningful collaboration. And you also need a health investment in collaborative technologies. We talk about these requirements below.

3.0 What Makes a Good Collaborator a Good Team Member?

So what does it take to be a good collaborator, a so-called "team player?" Think about some of the teams and groups you've been a member of, and consider the kinds of qualities of participants you respected. Table 1-2 provides a list of the eleven most important characteristics which are commonly found in the research literature on the qualities of good collaborators. This list is not exhaustive, but seeks to capture the central themes found in discussions of collaboration. These characteristics are in alphabetical order, not in order of importance.

continued

TABLE 1-2 Eleven Important Individual Characteristics for Collaboration

Characteristic	Description
Adaptable	Ability to learn; creative; works with a variety of others; mitigates problems; finds solutions.
Believe in collaboration	See teammates as collaborators; focused on team not self; selfless
Committed	Passionately believes in the mission and success of the team; enthusiastic; persistent.
Communicative	Ability to write, present, support; candid; truthful; believable; relates to others' needs; empathic.
Competent	Ability to complete assigned tasks; detail oriented; consistent
Dependable	Responds consistently to team requirements; individual requests
Disciplined	Hitting schedules, targets; persistence; tenacious
Value adder	Enhancing the abilities of others; teaching; exemplary.
Mission conscious	Big picture orientation; putting details into perspective.
Solutions orientation	Ability to come up with alternative solutions; brainstorming; thinking afresh.
Mission conscious	Big picture orientation; putting details into perspective.
Trustworthy	Dependable; discrete; reliable; integrity.

The characteristics of a good collaborator may seem a little abstract, but think of a basketball, football, or soccer team that you might have played on. Are these the characteristics you would want of your teammates? Are these characteristics they would want of you? Teams in business are not that different from teams in sports.

But this list is an "ideal" list. It's not what really happens in the real world of business (or sports teams). In fact, it would be a rare individual indeed who ranked number 1 on all these characteristics. Most of us might be passable on some, pretty good on others, and a star on a few. However, a good team has diversity: one or more people who are excellent on a few different characteristics. On a team of ten people, you might have two or three excellent learners; two really good communicators; a couple of solutions thinkers; most are highly competent for the mission although in different specialties, and most are committed, dependable, and mission conscious. These last three qualities-committed, dependable, and mission or goal oriented-seem to be absolute minimal requirements for good team members.

The significance of this finding is that it takes a diverse group of people to make a really successful team. You need a lot of different talents to make a team work. Sometimes this is also called synergy: the strengths of each of us complementing the strengths of others on the team. There

continued

are also management consequences discussed later. With a diverse group of talented people, it's possible for the output of a team to be much larger than the output of all the individuals in a group. In this case, the whole is greater than the sum of the parts.

TEAM BUILDING EXERCISE

With a team of 3-5 students, ask each member working alone to rank order the list in Table 1-1 in terms of importance to collaboration based on their own personal experience either in business or sports. Next, ask everyone to rate themselves on each characteristic using a 1 (weak) to 5 (very strong) scale. Come together and compare the rank orders that each person produced. You might find out how many people chose each feature as #1. If you have quantitative skills, you might calculate the rank order correlation coefficient for the rankings. What do you find? Next, compare the lists of individual strengths. What do you find?

From a business point of view, the meaning is obvious. If you could get all your people working together effectively on teams, you would greatly increase the total output, and the productivity of the firm would grow, all without hiring new people. So teamwork becomes integral to having a successful firm.

4.0 Leadership: What Makes a Good Team Leader?

All teams require some kind of leadership, some person or persons who take charge, to get things done and accomplish the mission. When we think of sports teams, from basketball to hockey, they all have leaders, people who call the plays and issue directions. Leaders are very important for collaboration on any team: they keep the team focused, support team work, and provide direction.

What makes for a good team leader? Thousands of books and an even larger number of articles have been written about leadership in business and elsewhere. Some "leaders" are appointed by their superiors (formal leaders like generals, and managers). Other leaders emerge spontaneously among a group of people working together (informal leaders). Quite often the formal leaders and the informal leaders are two different kinds of individuals: formal leaders are chosen by a hierarchy to serve the interests of those who appointed them, and informal leaders are chosen by the members of the team or business to represent the group or team to the larger world.

One way to think about both kinds of leaders is to consider that they generally are thought to have "more" of the key eleven characteristics that make for good team members, or more of the really important characteristics (Table 1-3).

continued

TABLE 1-3 Qualities of Leaders

Adaptable
Believe in collaboration
Committed
Communicative
Competent
Dependable
Disciplined
Value adder
Mission conscious
Solutions orientation
Mission conscious
Trustworthy

For instance, if you ask real world managers how they choose leaders for the teams needed by their business, they will tend to emphasize competence (does this person have the skills to get the job done), and communications capability (can this person talk and/or write, present, and listen). The other qualities are either assumed to be true, or as derived from superior competence and communications ability.

LEADERSHIP EXERCISE

With a team of 3-5 students, ask each member working alone to rank order the list in Table 1-3 in terms of the qualities of leadership they would use as managers when appointing leaders for their teams. You can score the team's performance by asking how people chose each characteristic as number 1. For instance, how many people in your group chose Adaptability as the number 1 quality they would use in choosing a leader. Do this for each characteristic. When finished, compare notes with one another, and examine the list of most favored characteristics. What kind of agreement is observed across members of the team?

Studies of teams and other social networks show that leaders-both formal and informal-are at the center of communications for their team, and also highly connected to other social teams and networks. Leaders are connected people (Figure 1-3).

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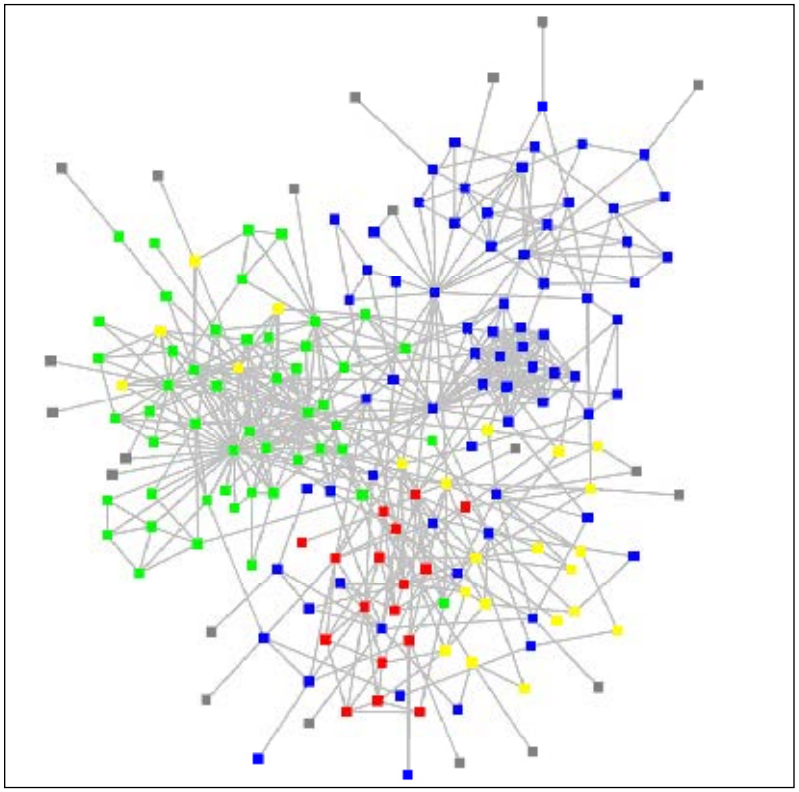
FIGURE 1-3 Social Networks in Crisis: E-mail Analysis



Following the missed deadline of an important project, a social network analysis company developed the above map of e-mail communications in the firm. One goal of the study was to identify the leaders in the company who potentially could get the project back on track, and another goal was discover how the various groups were linked together and the identity of these key people (so-called "bridges") across groups. There are five different colors of nodes (people): blue, grey, red, green, yellow) which represent members of five different groups or teams.

Source: mailchimp.com/blog/using-email-to-uncover-hidden-social-networks.

Examining Figure 1-3, you can see some interesting patterns. The groups blue, red, and green each have real "centers" where a small number of people receive and send a great deal of communications. These people are "leaders" of their teams because they are near the center of communication. You can also see some of these leaders are closely connected to other teams. These leaders are especially important as "bridges" across the organization: they communicate with a lot of people throughout the company as well as with their own members. These people tend to be the ones who can get additional resources for their teams. They are connected not just to people like themselves, but to others in different groups. Yellows, and grays, appear to talk more with other teams than they do among themselves. If you need leaders who can get the organization moving, these very highly connected individuals will be very influential.

5.0 How to Build and Manage a Collaborative Team

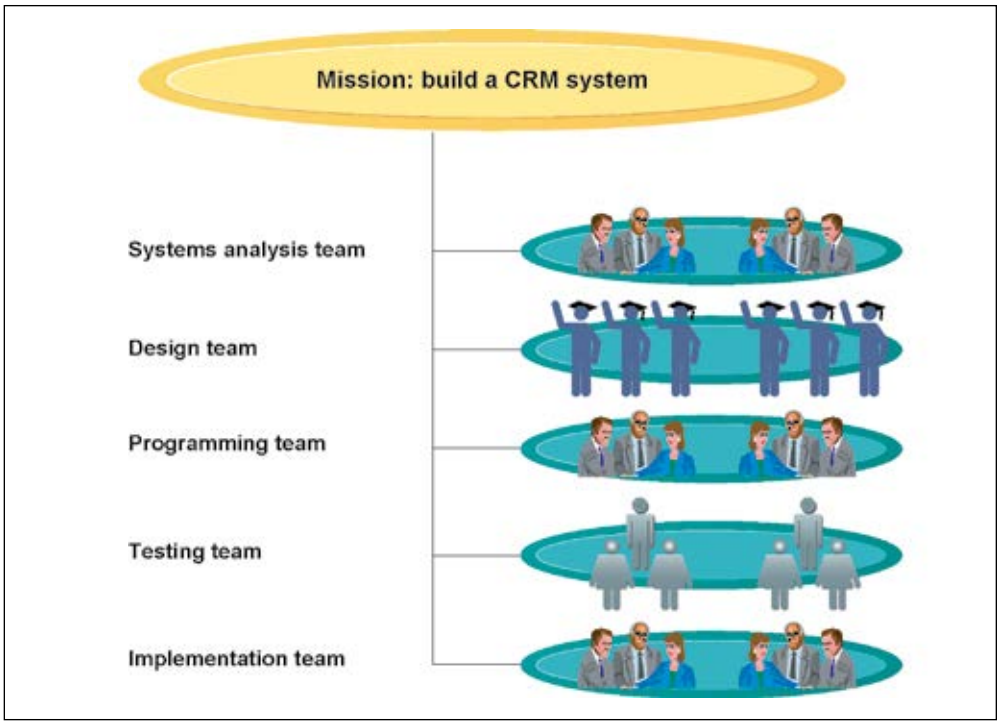
As a manager you will find that your success in large part will depend on the success of the teams you build and manage (Cohen and Prusak, 2001). Learning how to form successful teams in business is very important. Unfortunately, very little is written about how managers should form and manage teams. There are six steps to forming effective, collaborative, business teams.

1. **Identify the mission and teams.** As a manager you have some overarching objectives such as increasing sales to a new market, reducing costs in one part of the firm, or implementing

continued

a new information system. Your job is to break this larger mission down into sub-objectives that smaller teams can be responsible for. Your next job is for the life of the project to integrate (coordinate) the work of all the teams until you achieve the larger mission. For instance, if the mission is to build a new sales force customer relationship management system (CRM), then you will want at least five teams including a systems analysis team to identify the business information requirements; a design team to select from a variety of different technical solutions; a programming team that builds the system (or adapts a packaged system to your firm); a testing team that ensures the system works; and an implementation team that handles the roll out of the system (Figure 1-4). Even if the technology solution involves purchasing a license to use an online CRM system, you may still need a group of technically competent people on staff who can build customized adaptations (e.g. programmers).

FIGURE 1-4 Missions and Teams



2. **Identify the skills required for each team.** Once you have identified the sub-objectives, and the teams, you will need to identify the skills needed for each team. Not all teams have the same requirements. The systems analysis and implementation teams interface directly with users and other business units, generally at a fairly high, middle management level. For these interaction jobs, communications skills are the most important, along with competence. The design, programming, and testing teams require technical competence first, and then the ability to communicate. Some members could be foremost in competence, others will need to be foremost in communication skills. It's the mix that counts. Just because some people don't communicate well does not mean they will not be valuable members of the team, and well respected for the things they can do really well.

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3. **Choose people who have the right qualities.** In all the teams you will need diversity of talent. In choosing people, you can rely on your own past experience with individuals, the recommendations of colleagues or other members of the team. You can choose a Team Leader and ask the Team Leader to choose people who will best help achieve their objectives. If you've been in the firm for a few years, you will know from your personal experience who to choose and why.

4. **Oversight.** Your job as a manager is to hold the team leaders and their teams accountable for meeting their objectives on schedule, and on budget. Call regular meetings with each team leader individually, and with all team leaders meeting as a group to review progress, identify blockages, and come up with solutions. Provide a support collaborative culture by rewarding team work, and providing incentives for teams to succeed. Incentives might something simple like a party celebrating a team success, or a reward ceremony.

In order to build effective teams in a firm, you will need two more elements. You will need a supportive collaborative culture. And you will need a suite of information technology tools and systems to enable the teamwork and collaboration.

6.0 Building a Collaborative Organizational Culture

Collaboration won't take place spontaneously in a business firm, especially if there is no supportive culture. If people are afraid to speak up, there might not even be cooperation, let along working together collaboratively. Business firms, especially large firms, had in the past a reputation for being "command and control" organizations where the top leaders thought up all the really important matters, and then ordered lower level employees to execute senior management plans. There often was a senior management Planning Group that spent most of each year just planning what lower level people should do. The job of middle management supposedly was to pass messages back and forth, up and down the hierarchy.

To some extent this is a caricature of how firms used to behave in the 1950s to1990s, but caricatures often have some truth. Command and control firms required lower level employees to carry out orders without asking too many questions, with no responsibility to improve processes, and with no rewards for teamwork or team performance. If your work group needed help from another work group, that was something for the bosses to figure out. You never communicated horizontally, always vertically, so management could control the process. As long employees showed up for work, and performed the job satisfactorily, that's all that was required. Together the expectations of management and employees formed a culture, a set of assumptions about how things really are. It is surprising how many business firms still operate this way.

A collaborative business culture is very different. Senior managers are responsible for achieving results, but rely on teams of employees to achieve and implement the results. Teams have some decision making power. 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. Teams are rewarded

continued

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for their performance, and individuals are rewarded for their performance in a team. You might be a brilliant star on a failed team and receive only half the rewards. The function of middle managers is to build the teams, coordinate their work, and monitor their performance. That's a far cry from the old style middle manager who was primarily a message processor.

In a collaborative culture, senior management establishes collaboration and teamwork as vital to the organization, and they actually implement collaboration for the senior ranks of the business as well.

You can tell if you work in a collaborative culture by answering six questions:

1. Is it easy to talk with just about anyone in your firm (ease of cooperation) regardless of their position?
2. Does your unit cooperate regularly with other units at work? (frequency of cooperation). You can substitute office, or department, depending on how your firm organizes itself.
3. Are people in other departments easy to access and communicate with?
4. Does your firm reward individuals only, or does it reward teams and individuals?
5. Does your firm extol the virtues of teamwork in public and private conversations?
6. Do your managers and executives work as a team?

7.0 Information Technology and Systems to Enable Collaboration and Team Work

Building a collaborative, team oriented culture will do little good if you don't have the information systems in place to enable that collaboration. This would be like having a house without the plumbing and electrical infrastructure.

Today with the Internet, it is possible for nearly the entire labor force of firms to be online and to collaborate with their respective fellow employees, customers, and suppliers. Research on the various ways in which information technology supports collaboration has been going on since the late 1980s when the Internet was in its infancy, and the first software tools began to appear that supported what was call "group work." These early tools were called "groupware," and the field of study was called "computer supported cooperative work" (CSCW). Groupware included capabilities for sharing calendars, collective writing, e-mail, shared database access, and electronic meetings with each participant able to see and display information to others, and other activities. Today, groupware is one of many software tools and applications for supporting and enhancing collaboration, many of which are Internet-enabled.

Currently there are literally hundreds of tools designed to deal with the fact that, in order to succeed in our jobs, we are all much more dependent on one another, our fellow employees,

continued

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customers, suppliers and managers. For instance, one company enlisted the talents of over 100 groupware experts at a conference and produced a map listing 150 free (or nearly free) online collaborative tools in fifteen categories (Table 1-4 lists the categories or types of collaboration software identified by experts in the field).

TABLE 1-4 Fifteen Categories of Collaborative Software Tools

Collaborative writing
Collaborative reviewing
Event scheduling
Instant messaging
VoIP audio conferencing
Screen sharing
Video conferencing
White boarding
Web presenting
Work grouping
Document sharing (including wikis)
File sharing
Mind mapping
Large audience Webinars
Co-browsing

The entire map of over 150 collaboration tools is too large to reproduce here, but it is available at http://www.mindmeister.com/maps/show_public/12213323. Some of the high-end tools like IBM's Lotus Notes are expensive, but powerful enough for global firms. Others are available online for free (often with premium versions for a modest fee) and are suitable for small businesses.

For example, one of the most widely used "free" online services is Google Apps/Google Sites. Google Sites is a tool that allows users to quickly and easily design group-editable Web sites. Google Sites is one part of the larger Google Apps suite of tools. Google Sites users can put up Web sites in minutes and can, without any advanced technical skills, post a variety of files including calendars, text, spreadsheets, and videos for private, group, or public viewing and editing.

Google Apps include the typical desktop productivity software tools (word processing, spreadsheets, presentation, contact management and mail). Table 1-5 describes some of the capabilities of Google Apps and Google Sites.

continued

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TABLE 1-5 Google Apps / Google Sites Features

Google apps/sites	Description
Google Calendar	Private and shared calendars; multiple calendars (family schedules, business schedules).
Gmail	Google's free online email service is used for e-mail messaging and IM.
Google Docs and Spreadsheets	Word/Excel replacements; simultaneous online editing, sharing, publishing
E-mail, online storage, chat, programming	Premium addition adds make this a full featured collaborative tool
Google Sites	Team collaboration sites for sharing of documents, schedules, calendars, and search documents.
Google Video	Firm wide video sharing and commenting capability

Socialtext, a widely used enterprise collaboration environmennt, takes adifferent approach from Google. Instead of shared applications, Socialtext provides a set of capabilities that support social networking. Socialtext's flagship product, Socialtext Workspace, is the first enterprise wiki and the foundation of the connected collaboration platform. Socialtext People enables enterprise social networking. Socialtext Dashboard provides personalized and customizable widget-based interface for people and teams to manage attention. Socialtext wiki provides enables employees to find expertise within the firm. SocialCalc is the social spreadsheet for distributed teams.

There are many other online collaboration tools (Table 1-6), among them is Microsoft's SharePoint, one of the most widely adopted collaboration environment for small and medium businesses.

TABLE 1-6 Other Popular Online Collaboration Tools

Tool	Description
Socialtext	A server-based collaboration environment which provides social networking, Twitter-like micro-blogging , wiki workspaces, with integrated weblogs, distributed spreadsheets, and a personal home page for every user. Connectors to Microsoft SharePoint and Lotus Connections are also available.
Microsoft SharePoint	A browser-based collaboration and a document-management platform, combined with a powerful search engine. These can be used to host web sites that access shared workspaces and documents, as well as specialized applications like wikis and blogs from a browser. Installed on corporate servers, not software as service.
Zoho Notebook and Project	Collecting and collaborating on text, line drawings, images, Web pages, video, RSS feeds. Project management (task management, work flow, reports, time tracking, forums, and file sharing). Free or $5/project/month for premium service.
Bluetie	Online collaboration with email, scheduling, to-do lists, contact management, file sharing. Free for less than 20 users, $4.99 user/month after that.
Basecamp	Share to-do lists, files, message boards, milestone tracking. Free for a single project, $12/month for 3 projects with 200 megabytes of storage
OneHub	Share documents, calendars, Web bookmarks; email integration and IM. Manage hub resources; bulletin board.
WorkZone	Collaboration with file sharing; project management; customization; security.

continued

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Several of these online services have excellent video introductions to their products. These videos can give you a keen sense of what is available on the Internet for a very low cost or no cost. For a tour of OneHub, point your browser at: http://onehub.com/tour. For Google Sites go to http://www.youtube.com/watch?v=X_KnC2EIS5w.

For small and medium size firms that use Microsoft server products and local area networks, Microsoft SharePoint is the most widely adopted collaboration system. Microsoft's strategy is to take advantage of the fact that it owns the desktop through its Microsoft Office and Windows products. For Microsoft, the path towards enterprise wide collaboration starts with the Office desktop and Microsoft network servers. SharePoint software makes it possible for employees to share their Office documents and collaborate on projects using Office documents as the foundation.

Microsoft SharePoint is a collection of products and technologies that provide an enterprise-level environment for Web-based collaboration. SharePoint can be used to host Web sites that organize and store information in one central location to enable teams to coordinate work activities, collaborate on and publish documents, maintain task lists, implement workflows, and share information via wikis and blogs. Sharepoint has a Web-based interface and close integration with everyday tools such as Microsoft Office desktop software products. Site content is accessible from both a Web browser and client-supported Web services. Because SharePoint stores and organizes information in one place, users can find relevant information quickly and efficiently while working together closely on tasks, projects, and documents.

Here is a list of SharePoint's major capabilities:

- Provides a single workspace for teams to coordinate schedules, organize documents, and participate in discussions, within the organization or over an extranet.
- Facilitates creation and management of documents with the ability to control versions, view past revisions, and enforce document-specific security and maintain document libraries.
- Provides announcements, alerts, and discussion boards to inform users when actions are required or changes are made to existing documentation or information.
- Supports personalized content and both personal and public views of documents and applications
- Provides templates for blogs and wikis to help teams share information and brainstorm.
- Provides tools to manage document libraries, lists, calendars, tasks, and discussion boards offline, and to synchronize changes when reconnected to the network.
- Provides enterprise search tools for locating people, expertise, and content.

continued

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For very large firms (Fortune 1000 and Russell 2000 firms) the most widely used collaboration tool is IBM's Lotus Notes. IBM's strategy is to take advantage of the fact that it dominates the Fortune 1000 data processing and networking environment. IBM's approach to collaboration is therefore to start from the top down through implementation of an enterprise-wide Lotus server solution by the central IS Department. In large multinational corporations with tens of thousands of employees this may be the only enterprise-wide solution and is beyond the capabilities of Microsoft local area networks. Lotus Notes does indeed work with Microsoft Office documents, but has its own proprietary software for other tasks including word processing, spreadsheets, and presentation software.

Lotus Notes is a client-server, collaborative application developed and sold by IBM Software Group. IBM defines the software as an "integrated desktop client option for accessing business e-mail, calendars and applications on an IBM Lotus Domino server." The Notes client is mainly used as an email client, but also acts as an instant messaging client (for Lotus Sametime), browser, notebook, and calendar/resource reservation client, as well as a platform for interacting with collaborative applications. Today Notes also provides blogs, wikis, RSS aggregators, CRM and Help Desk systems.

Thousands of employees at hundreds of large firms use IBM Lotus Notes as their primary collaboration and team work tools. Firmwide installations of Lotus Notes can cost millions of dollars a year for a large Fortune 1000 firm, whereas Google Apps/Google Sites comes in a limited free version or a more sophisticated premium version for $50 per user/per year. A client-server product like Lotus Notes inherently involves the central IS department, and it is a major implementation effort. Online software services are therefore attractive because they do not require any installation on corporate servers, or even the IS Department to be involved. Nevertheless, existing online tools like the Google collaboration services are not as powerful as those found in Lotus Notes, and it is unclear they could scale to the size of a global firm (at least for now).

Very large firms adopt IBM Lotus Notes because of the promised higher level of security, and the sense that the firm retains control over sensitive information. Large firms in general do not feel secure using popular software-as-a-service (SaaS) applications for "strategic" applications because of the implicit security concerns, and the dependency on external servers controlled by, and subject to the fate of, other firms. Most experts agree, however, that these concerns perhaps will lessen as experience with online tools grows, and the sophistication of online software service suppliers increases to protect security and reduce vulnerability.

MAKING SENSE OUT OF COLLABORATION TOOLS

We have avoided trying to formally define contemporary collaboration and team work software tools. Instead we have gathered lists of many popular software tools (both online as a service and as installed client-server applications), and described their capabilities. We have pointed at

continued

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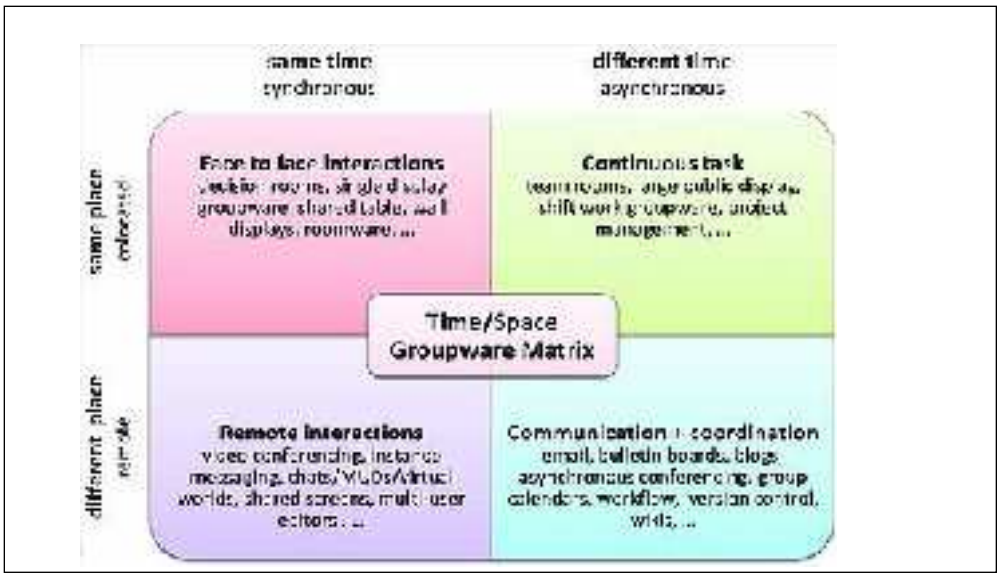
examples. While these lists help you understand the broad range of tools that are available in the marketplace, how do you choose the right tool for your firm? Are these software tools just solutions looking for a problem to solve? What problems do they solve?

To answer these questions you need a framework for understanding just what problems these tools help solve. One framework that has been helpful for us to talk about collaboration tools is the time/space groupware matrix developed in the early 1990s by a number of collaborative work scholars (Figure 1-5).

FIGURE 1-5 The Time/Space Groupware Matrix



The Time/Space matrix focuses on two dimensions of the collaboration problem: time and space. For instance, you need to collaborate with people in different time zones and you cannot all meet at the same time. Midnight in New York is Noon in Bombay, so this makes it difficult to have a video conference (the people in New York are too tired). So time is a problem inhibiting collaboration on a global scale.

Place (location) is also a problem that inhibits collaboration in large global or even national and regional firms. Getting people together for a physical meeting is made difficult by the physical dispersion of distributed firms (firms with more than one location), the cost of travel, and the time limitations of managers.

One way to think about software collaboration tools is to see them as ways of overcoming the limitations of time and space. Table 1-7 above shows four kinds of time/space scenarios (the intersections of the two dimensions in Figure 1-5).

continued

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TABLE 1-7 Collaboration Challenges and Generic Solutions

Scenario	Solution Types
Same time/same place	Face to face meetings; decision rooms; whiteboards; telepresence
Same time/different place	Remote interactions; video conferencing; IM and Twitter; telepresence $5/project/month for premium service.
Different time/same place	Continuous tasks, digital team rooms; project management; asynchronous communication
Different time/different place	Asynchronous communication and coordination; workflow; project management tools; blogs; wikis

You can use this classification scheme to categorize the different collaboration and team work software applications.

8.0 Choosing Collaboration Tools: Management To-Do List

Now let's apply these frameworks. You can use these classification tools to start thinking about how to choose collaboration and team work tools for your firm. As a manager, you will want to purchase and use the tools that solve the issues your firm is facing. Here's a To-Do list to get started:

1. What are the collaboration challenges facing the firm in terms of time and space? Locate your firm in the Time/Space matrix. Your firm can occupy more than one cell in the matrix. Different collaboration tools will be needed for each situation.
2. Within each cell of the matrix where your firm faces challenges, exactly what kinds of solutions are available? Make a list of vendor products.
3. Analyze each of the products in terms of their cost and benefits to your firm. Be sure to include the costs of training in your cost estimates, and the costs of involving the Information Systems Department if needed.
4. Identify the risks to security and vulnerability involved with each of the products. Is your firm willing to put proprietary information into the hands of external service providers over the Internet? Is your firm willing to risk its important operations to systems controlled by other firms? What are the financial risks facing your vendors? Will they be here in three to five years? What would be the cost of making a switch to another vendor in the event the vendor firm fails?

continued

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5. Seek out the help of potential users to identify implementation and training issues. Some of these tools are easier to use than others;

6. Make your selection of candidate tools, and invite the vendors to make presentations.

If you follow these six steps, you should be led to investing in the correct software for your firm at a price you can afford, and within your risk tolerance.

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Chapter 2

Global E-business and Collaboration

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STUDENT LEARNING OBJECTIVES

- **What major features of a business are important for understanding the role of information systems?**
- **How do systems serve different management groups in a business and how do systems that link the enterprise improve organizational performance?**

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STUDENT LEARNING OBJECTIVES

- **Why are systems for collaboration and teamwork so important and what technologies do they use?**
- **What is the role of the information system's function in a business?**

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VIDEO CASES AND LEARNING TRACKS

Learning Tracks

1. Systems from a Functional Perspective
2. IT Enables Collaboration and Teamwork
3. Challenges of Using Business Information Systems
4. Organizing the Information Systems Function

Video Cases

***Case 1*:** Walmart's Retail Link Supply Chain

Case 2: CEMEX – Becoming a Social Business

Instructional Video 1: US Foodservice Grows Market with Oracle CRM on Demand

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ENTERPRISE SOCIAL NETWORKING HELPS ABB INNOVATE AND GROW

- **Problem:** Corporate intranet outmoded, poor search capability, inefficient information storage

- **Solution:** Replace intranet with a newer, more social intranet that supported dynamic knowledge sharing

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ENTERPRISE SOCIAL NETWORKING HELPS ABB INNOVATE AND GROW

- **Inside+ provided single point of entry to shared knowledge and assets, including Microsoft Yammer, Office 365, and SharePoint**
- **Demonstrates IT's role in fostering community and sharing knowledge**
- **Illustrates the benefits of using social tools to improve corporate knowledge**

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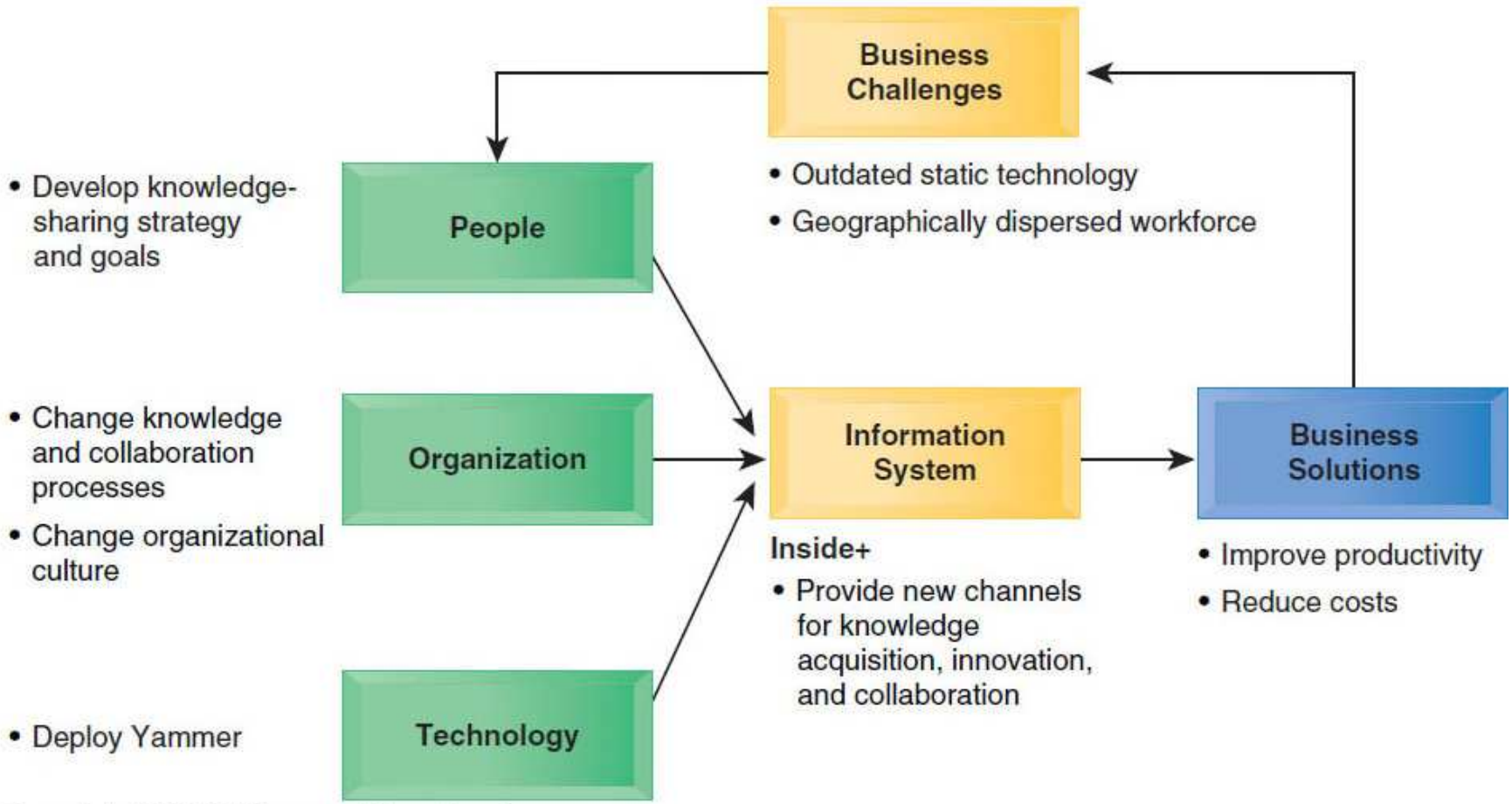
ENTERPRISE SOCIAL NETWORKING HELPS ABB INNOVATE AND GROW



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Major Features of a Business

Business: formal organization that makes products or provides a service in order to make a profit

Organizing a Business: Basic Business Functions

- **Four basic business functions**
  - **Manufacturing and production**
  - **Sales and marketing**
  - **Finance and accounting**
  - **Human resources**

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What major features of a business are important for understanding the role of information systems?

The Four Major Functions of a Business

Every business, regardless of its size, must perform four functions to succeed. It must produce the product or service; market and sell the product; keep track of accounting and financial transactions; and perform basic human resources tasks, such as hiring and retaining employees.

Figure 2.1

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What major features of a business are important for understanding the role of information systems?

Five Basic Business Entities

- Suppliers
- Customers
- Employees
- Invoices/payments
- Products and services

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What major features of a business are important for understanding the role of information systems?

Business Processes

- **Logically related set of tasks that define how specific business tasks are performed**
  - The tasks each employee performs, in what order, and on what schedule
  - E.g., Steps in hiring an employee
- **Some processes tied to functional area**
  - Sales and marketing: identifying customers
- **Some processes are cross-functional**
  - Fulfilling customer order

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What major features of a business are important for understanding the role of information systems?

The Order Fulfillment Process

Fulfilling a customer order involves a complex set of steps that requires the close coordination of the sales, accounting, and manufacturing functions.

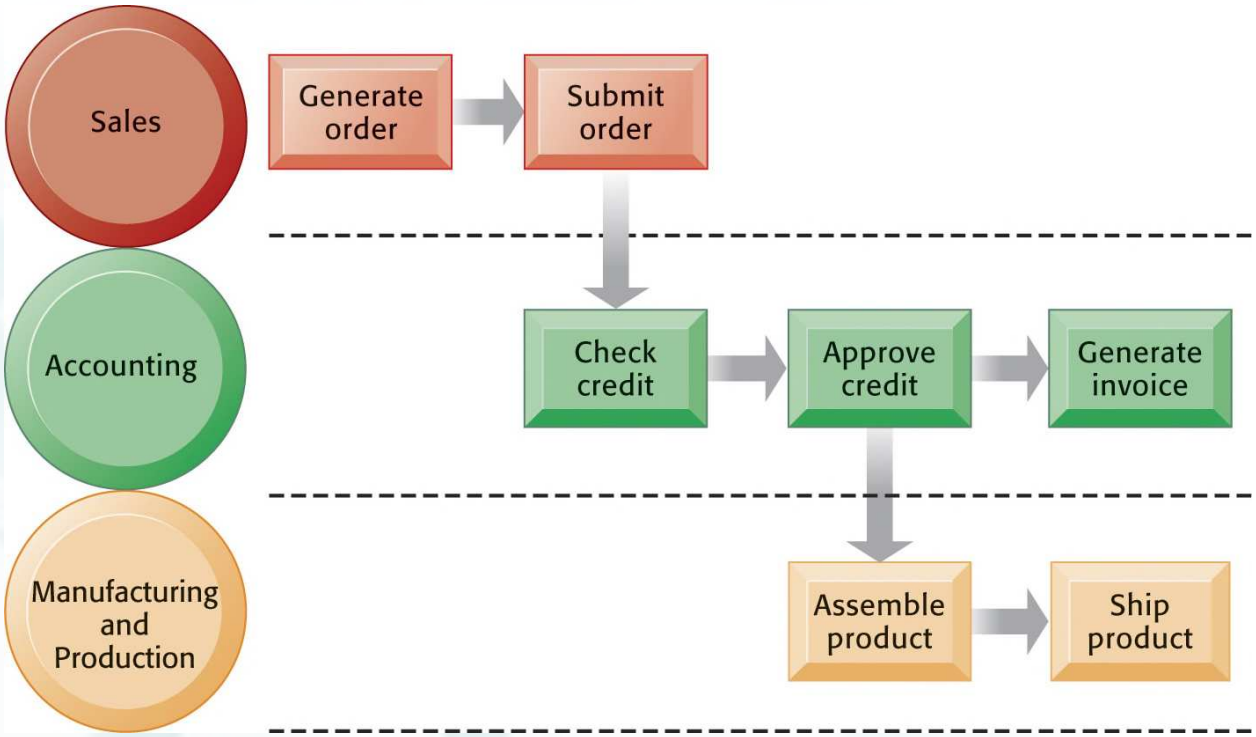

Figure 2.2

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What major features of a business are important for understanding the role of information systems?

How IT Enhances Business Processes

- Automation of manual processes
- Change the flow of information
- Replace sequential processes with simultaneous activity
- Transform how a business works
- Drive new business models

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What major features of a business are important for understanding the role of information systems?

Managing a Business and Firm Hierarchies

- Firms coordinate work of employees by developing hierarchy in which authority is concentrated at top.
  - Senior management
  - Middle management
  - Operational management
  - Knowledge workers
  - Data workers
  - Production or service workers
- Each group has different needs for information.

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What major features of a business are important for understanding the role of information systems?

Levels in a Firm

Business organizations are hierarchies consisting of three principal levels: senior management, middle management, and operational management. Information systems serve each of these levels. Scientists and knowledge workers often work with middle management.

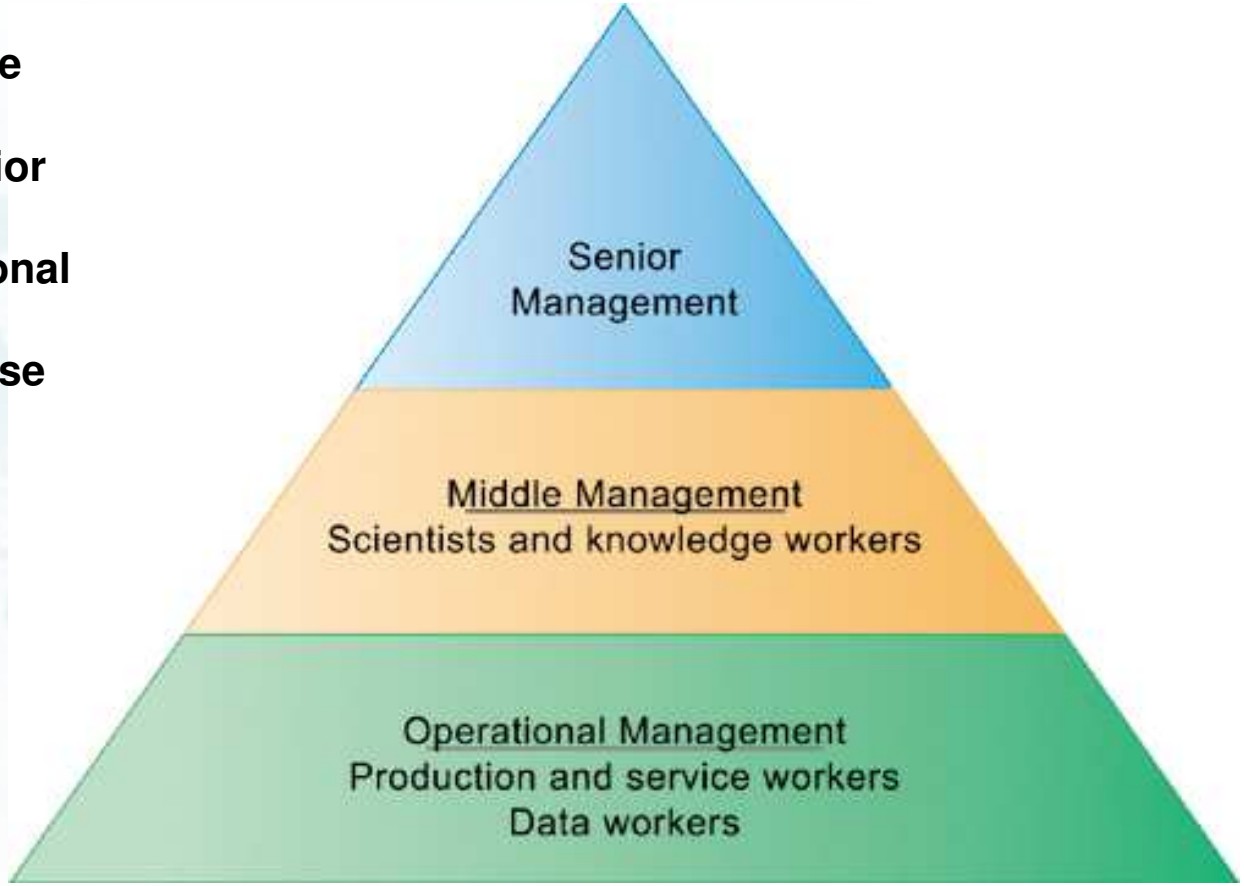

Figure 2.3

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What major features of a business are important for understanding the role of information systems?

The Business Environment

- Global environment factors
  - Technology and science
  - Economy
  - Politics
  - International change
- Immediate environment factors
  - Customers
  - Suppliers
  - Competitors
  - Regulations
  - Stockholders

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What major features of a business are important for understanding the role of information systems?

The Business Environment

To be successful, an organization must constantly monitor and respond to—or even anticipate—developments in its environment. A firm's environment includes specific groups with which the business must deal directly, such as customers, suppliers, and competitors as well as the broader general environment, including socioeconomic trends, political conditions, technological innovations, and global events.

Figure 2.4

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What major features of a business are important for understanding the role of information systems?

The Role of Information Systems in a Business

- Firms invest in information systems in order to:
  - Achieve operational excellence.
  - Develop new products and services.
  - Attain customer intimacy and service.
  - Improve decision making.
  - Promote competitive advantage.
  - Ensure survival.

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Systems for Different Management Groups

- **Transaction processing systems (TPS)**
  - Keep track of basic activities and transactions of organization
- **Systems for business intelligence**
  - Address decision-making needs of all levels of management
    - **Management information systems (MIS)**
    - **Decision support systems (DSS)**
    - **Executive support systems (ESS)**

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How do systems serve managers and and improve organizational performance?

- **Transaction processing systems:**
  - Serve operational managers.
  - Principal purpose is to answer routine questions and to track the flow of transactions through the organization.
    - E.g., inventory questions, granting credit to customer
  - Monitor status of internal operations and firm's relationship with external environment.
  - Major producers of information for other systems.
  - Highly central to business operations and functioning.

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How do systems serve managers and and improve organizational performance?

A Payroll TPS

A TPS for payroll processing captures employee payment transaction data (such as a timecard). System outputs include online and hard copy reports for management and employee paychecks.

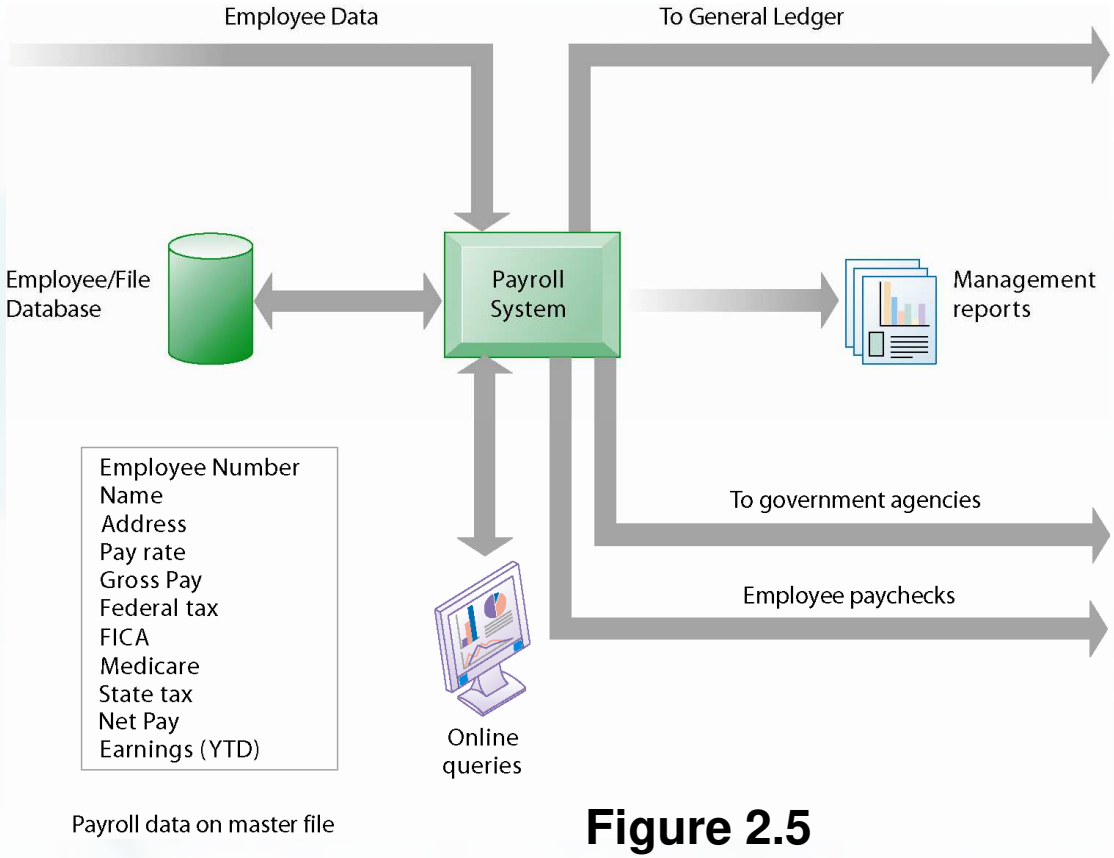

Figure 2.5

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How do systems serve managers and and improve organizational performance?

- **Management information systems:**
  - Provide middle managers with reports on firm's performance, to help monitor firm and predict future performance.
  - Summarize and report on basic operations using data from TPS.
  - Provide weekly, monthly, annual results, but may enable drilling down into daily or hourly data.
  - Typically not very flexible systems with little analytic capability.

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How do systems serve managers and and improve organizational performance?

How MIS Obtain Their Data from TPS

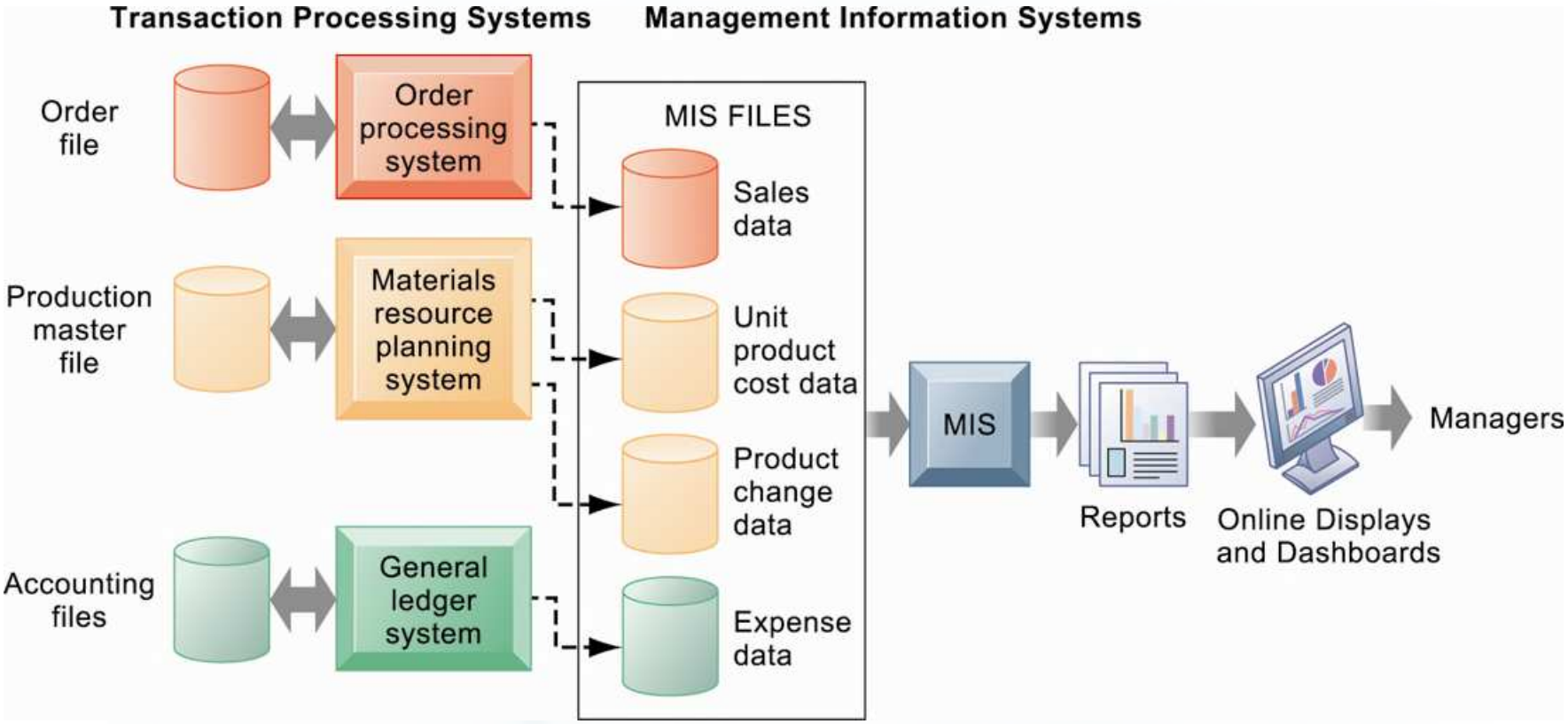

Figure 2.6

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How do systems serve managers and and improve organizational performance?

Sample MIS Report

This report, showing summarized annual sales data, was produced by the MIS in Figure 2-6.

Consolidated Consumer Products Corporation Sales by Product and Sales Region: 2014

PRODUCT CODE	PRODUCT DESCRIPTION	SALES REGION	ACTUAL SALES	PLANNED	ACTUAL versus PLANNED
4469	Carpet Cleaner	Northeast	4,066,700	4,800,000	0.85
		South	3,778,112	3,750,000	1.01
		Midwest	4,867,001	4,600,000	1.06
		West	4,003,440	4,400,000	0.91
	TOTAL		16,715,253	17,550,000	0.95
5674	Room Freshener	Northeast	3,676,700	3,900,000	0.94
		South	5,608,112	4,700,000	1.19
		Midwest	4,711,001	4,200,000	1.12
		West	4,563,440	4,900,000	0.93
	TOTAL		18,559,253	17,700,000	1.05

Figure 2.7

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How do systems serve managers and and improve organizational performance?

- **Decision support systems (DSS):**
  - **Serve middle managers.**
  - **Support nonroutine decision making**
    - Example: What is impact on production schedule if December sales doubled?
  - **Often use external information as well from TPS and MIS**
  - **Model driven DSS**
    - Voyage-estimating systems
  - **Data driven DSS**
    - Intrawest's marketing analysis systems

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How do systems serve managers and and improve organizational performance?

Voyage-Estimating Decision Support System

This DSS operates on a powerful PC. It is used daily by managers who must develop bids on shipping contracts.

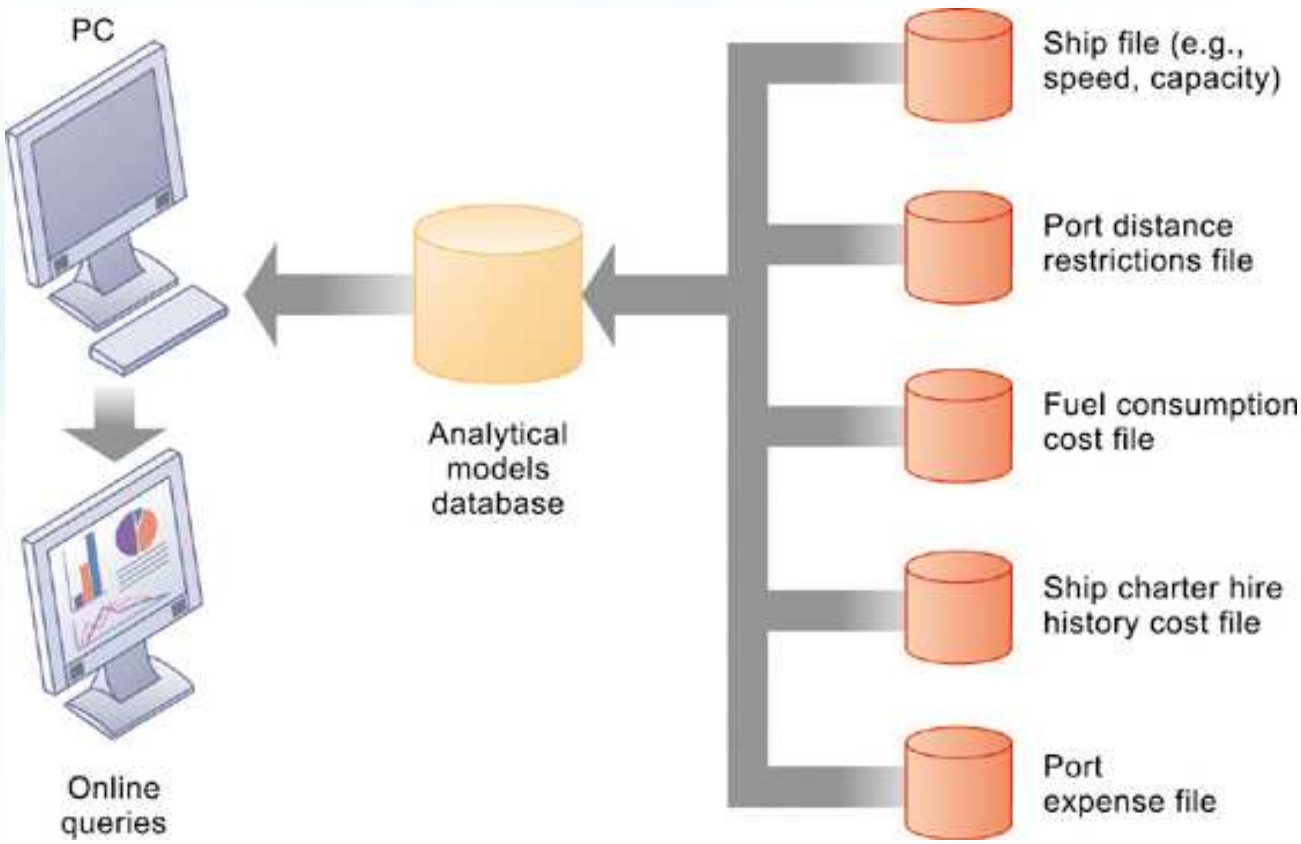

Figure 2.8

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How do systems serve managers and and improve organizational performance?

- **Executive support systems (ESS):**
  - Serve senior managers.
  - Address strategic issues and long-term trends.
    - E.g., what products should we make in five years?
  - Address nonroutine decision making.
  - Provide generalized computing capacity that can be applied to changing array of problems.
  - Draw summarized information from MIS, DSS, and data from external events.
  - Typically use portal with Web interface, or digital dashboard, to present content

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How do systems serve managers and and improve organizational performance?

Digital Dashboard

A digital dashboard delivers comprehensive and accurate information for decision making often using a single screen. The graphical overview of key performance indicators helps managers quickly spot areas that need attention.

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Interactive Session: Organizations
New Systems Help Plan International Manage Its Human Resources

- **Read the Interactive Session and then discuss the following questions:**
  - **Describe the problem faced by Plan International. What people, organization, and technology factors contributed to this problem?**
  - **Describe the system solution to this problem. Describe the types of systems used for the solution.**
  - **Why is human resources so important at Plan International?**
  - **How did these systems improve operational efficiency?**
  - **How did these systems improve decision making? Give examples of two decisions improved by Plan's new systems.**

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Systems for Linking the Enterprise

- Enterprise applications
  - Systems that span functional areas, focus on executing business processes across the firm, and include all levels of management
  - Four major types
    1. Enterprise systems
    2. Supply chain management systems
    3. Customer relationship management systems
    4. Knowledge management systems

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How do systems serve managers and and improve organizational performance?

Enterprise Application Architecture

Enterprise applications automate processes that span multiple business functions and organizational levels and may extend outside the organization.

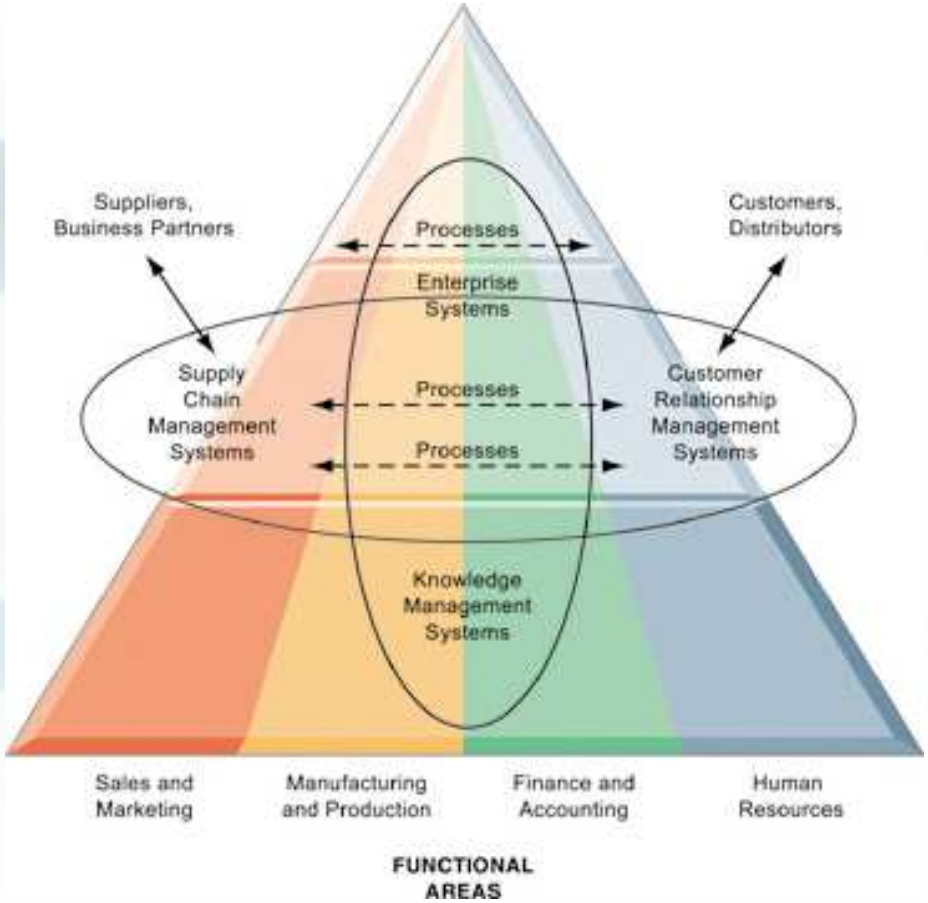

Figure 2.9

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How do systems serve managers and and improve organizational performance?

Enterprise Systems

- Also called enterprise resource planning (ERP) systems
- Integrate data from key business processes into single system.
- Speed communication of information throughout firm.
- Enable greater flexibility in responding to customer requests, greater accuracy in order fulfillment.
- Enable managers to assemble overall view of operations.

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Supply Chain Management (SCM) Systems

- Manage relationships with suppliers, purchasing firms, distributors, and logistics companies.
- Manage shared information about orders, production, inventory levels, and so on.
  - Goal is to move correct amount of product from source to point of consumption as quickly as possible and at lowest cost
- Type of interorganizational system:
  - Automating flow of information across organizational boundaries

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Customer Relationship Management (CRM) Systems

- Help manage relationship with customers.
- Coordinate business processes that deal with customers in sales, marketing, and customer service
- Goals:
  - Optimize revenue
  - Improve customer satisfaction
  - Increase customer retention
  - Identify and retain most profitable customers
  - Increase sales

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Knowledge Management Systems

- Manage processes for capturing and applying knowledge and expertise
- Collect relevant knowledge and make it available wherever needed in the enterprise to improve business processes and management decisions.
- Link firm to external sources of knowledge

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Intranets and Extranets

- Technology platforms that increase integration and expedite the flow of information
  - Intranets:
    - Internal networks based on Internet standards
    - Often are private access area in company's Web site
  - Extranets:
    - Company Web sites accessible only to authorized vendors and suppliers
    - Facilitate collaboration

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How do systems serve managers and and improve organizational performance?

E-Business, E-Commerce, and E-Government

- **E-business:**
  - Use of digital technology and Internet to drive major business processes
- **E-commerce:**
  - Subset of e-business
  - Buying and selling goods and services through Internet
- **E-government:**
  - Using Internet technology to deliver information and services to citizens, employees, and businesses

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

What Is Collaboration?

- **Growing importance of collaboration:**
  - Changing nature of work
  - Growth of professional work
  - Changing organization of the firm
  - Changing scope of the firm
  - Emphasis on innovation
  - Changing culture of work and business

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

What is Social Business?

- Use of social networking platforms to engage employees, customers, suppliers
- Conversations to strengthen bonds
- Requires information transparency
- Seen as way to drive operational efficiency, spur innovation, accelerate decision making

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

Business Benefits of Collaboration and Social Business

- **Investment in collaboration technology can return large rewards, especially in sales and marketing, research and development**
- **Productivity:** Sharing knowledge and resolving problems
- **Quality:** Faster resolution of quality issues
- **Innovation:** More ideas for products and services
- **Customer service:** Complaints handled more rapidly
- **Financial performance:** Generated by improvements in factors above

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

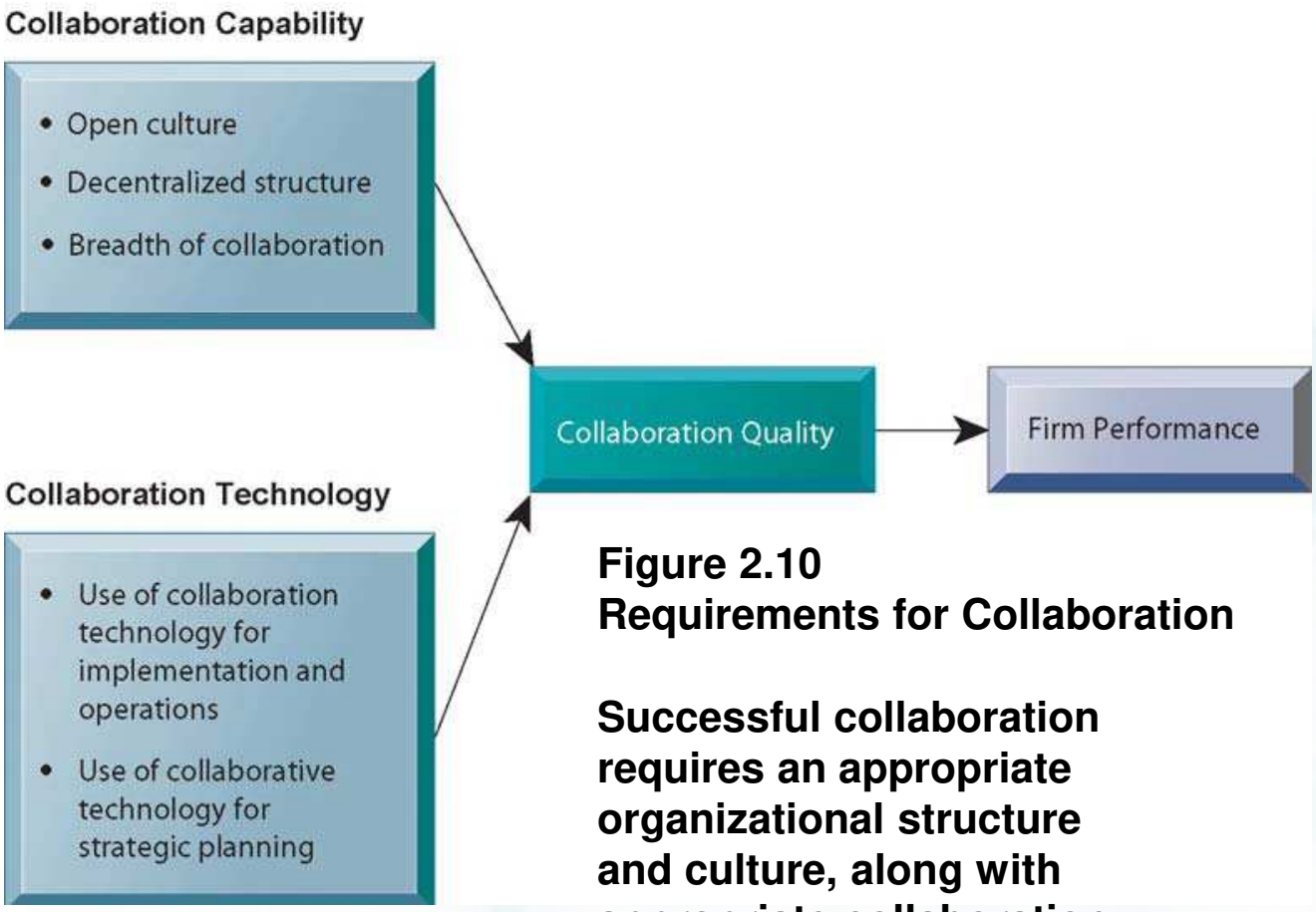

Figure 2.10
Requirements for Collaboration

Successful collaboration requires an appropriate organizational structure and culture, along with appropriate collaboration technology.

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

Tools and Technologies for Collaboration and Teamwork

- E-mail and instant messaging (IM)
- Wikis
- Virtual worlds
- Collaboration and social business environments
  - Virtual meeting systems (telepresence)
  - Cloud collaboration services
    - Google Drive, Dropbox
  - Microsoft SharePoint and IBM Notes
  - Enterprise social networking tools

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

Evaluating and Selecting Collaboration Software Tools

1. What are your firm's collaboration challenges?
2. What kinds of solutions are available?
3. Analyze available products' cost and benefits.
4. Evaluate security risks.
5. Consult users for implementation and training issues.
6. Select candidate tools and evaluate vendors.

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

The Time/Space Collaboration Tool Matrix
Collaboration technologies can be classified in terms of whether they support interactions at the same or different time or place, and whether these interactions are remote or colocated.

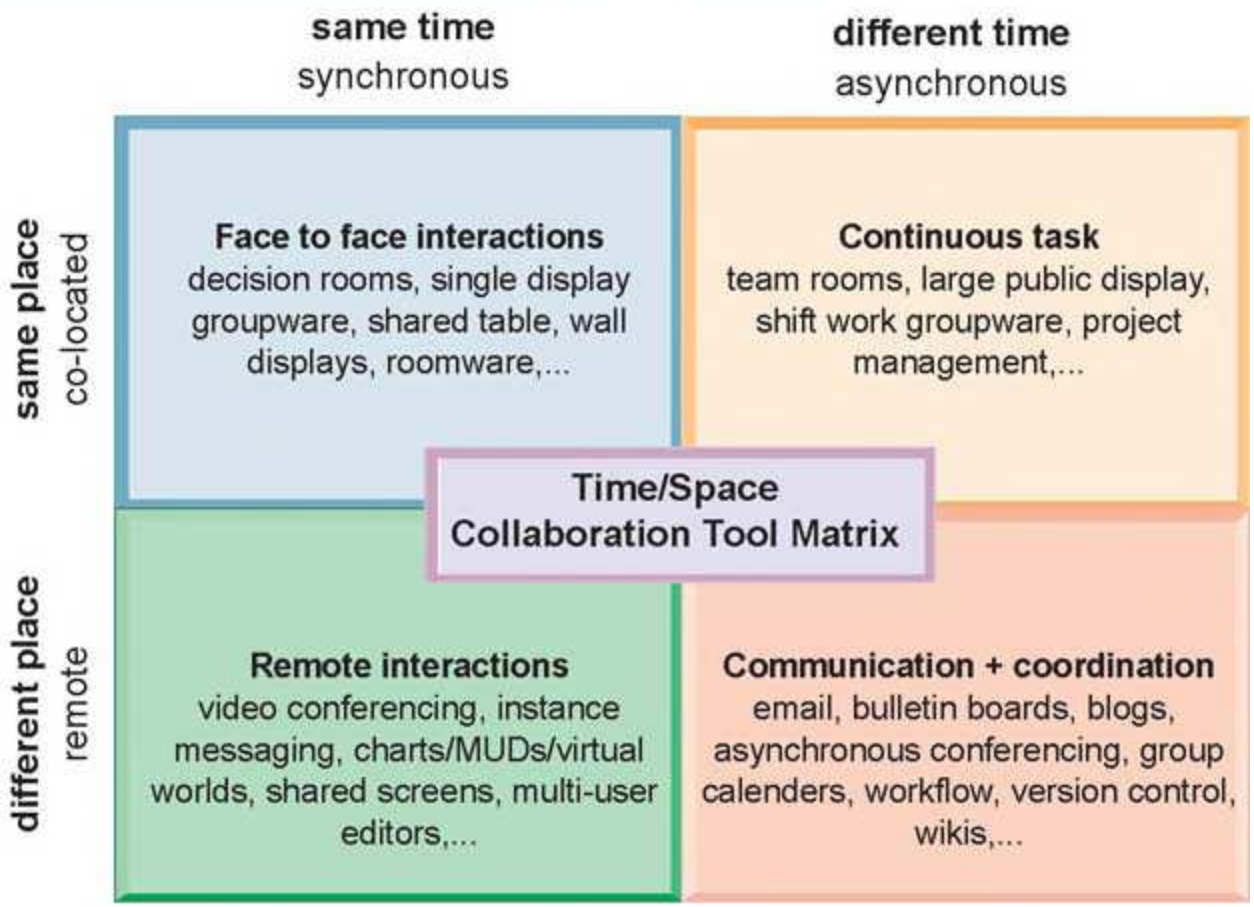

Figure 2.11

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Interactive Session: People
Is Social Business Working Out?

- **Read the Interactive Session and then discuss the following questions:**
- **Identify the people, organization, and technology factors responsible for impeding adoption of internal corporate social networks.**
- **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?**
- **Should all companies implement internal enterprise social networks? Why or why not?**

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

The Information Systems Department

- Programmers
- Systems analysts
  - Principle liaisons to rest of firm
- Information systems managers
  - Leaders of teams of programmers and analysts, project managers, physical facility managers, telecommunications managers, database specialists, managers of computer operations, and data entry staff
- Senior managers: CIO, CPO, CSO, CKO
- End users

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

Information Systems Services

- Computing services
- Telecommunications services
- Data management services
- Application software services
- Physical facilities management services
- IT management services
- IT standards services
- IT educational services
- IT research and development services

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