

MANAGEMENT INFORMATION SYSTEMS

Chapter 2

Global E-business and Collaboration

Learning Objectives

1. **Define** and **describe** business processes
2. **Evaluate** the role played by systems serving the various levels of management
3. **Explain** how enterprise applications improve organizational performance
4. **Explain** the importance of collaboration and teamwork in business and how they are supported by technology
5. **Assess** the role of the information systems function in a business

Information Systems

- **Problem:** Need to capture employee knowledge as 40% of workforce nears retirement
- **Solutions:** New technology for collaborative knowledge sharing

For example,

- Microsoft SharePoint Server 3010 provided companywide platform for collaboration, knowledge acquisition and transfer, and social tools. SharePoint demonstrates the IT's role in collaboration and documenting knowledge
- However, there is a need to change organizational culture and business processes to use information systems effectively

Information Systems

- In the previous chapter, we agreed that information systems make a difference in an organization's ability to innovate, execute, and in the case of business firms, grow profits
- For instance, the case study in the book, Oracle won the America's Cup because it had learned how to apply new technology to improve the processes of designing and sailing a competitive sailboat.

Information Systems

To increase efficiency (operate efficiently),

- Firms must collect many different pieces of information about suppliers, customers, employees, invoices and payments, and of course their products and services
- Firms must organize work activities or business processes
- Then, information systems make it possible for firms to manage all their information, make better decisions, and improve the execution of their business processes

Business Processes

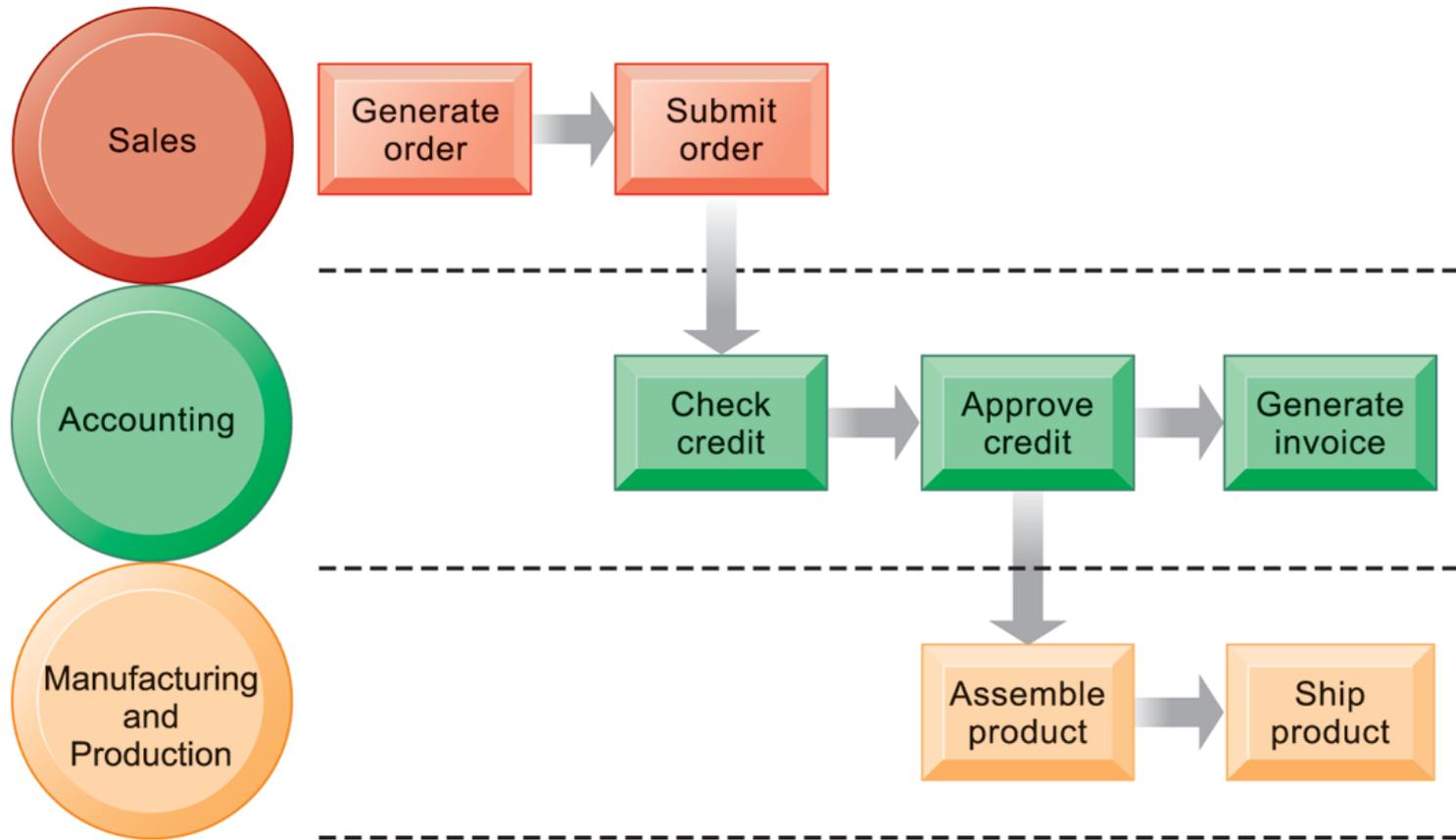
Business Processes: refer to the manner in which work is organized and coordinated. It include:

- Collection of activities, steps, or tasks, required to produce a product or service
- These activities are supported by flows of material, information, knowledge among the participants in business processes
- May be tied to functional area or be cross-functional
- To a large extent, the performance of a business firm depends on how well its business processes are designed and coordinated.

Business Processes

- Examples of functional business processes
 - Manufacturing and production
 - Assembling the product
 - Sales and marketing
 - Identifying customers
 - Finance and accounting
 - Creating financial statements
 - Human resources
 - Hiring employees

Business Processes



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

Business Processes

In the order fulfillment,

- To efficiently perform all these steps requires a great deal of information.
- The required information must flow rapidly both within the firm from one decision maker to another; with business partners, such as delivery firms; and with the customer.
- Computer-based information systems make this possible.

Business Processes and Information Systems

Information technology enhances business processes by:

- Increasing efficiency of existing processes
 - Automating steps that were manual
 - e.g. checking a client's credit, or generating an invoice and shipping order
- Making it possible for many more people to access and share information
- Replace sequential steps with parallel steps
- Eliminate delays in decision making
- Support new business models

Systems for Different Management Groups

- Because there are different interests, specialties, and levels in an organization, there are different kinds of systems.
- A typical firm has different systems supporting the decision-making needs of each of the main management groups , i.e. operational management, middle management, and senior management
- Therefore, no single system can provide all the information an organization needs.

Systems for Different Management Groups

Management information systems (MISs) as the study of information systems in business and management, two types:

- **Transaction Processing Systems**
- **Business Intelligence Systems**
 - Management Information Systems
 - Decision-support Systems
 - Executive Support Systems

Systems for Different Management Groups

Transaction Processing Systems (TPS)

- **Perform and record daily routine transactions** necessary to conduct business (e.g. sales, payroll, flow of materials in a factory, shipping, number of parts in inventory, Ahmad's payment status, etc.)
- **Serve operational managers** and staff by monitoring the status of internal operations

Systems for Different Management Groups

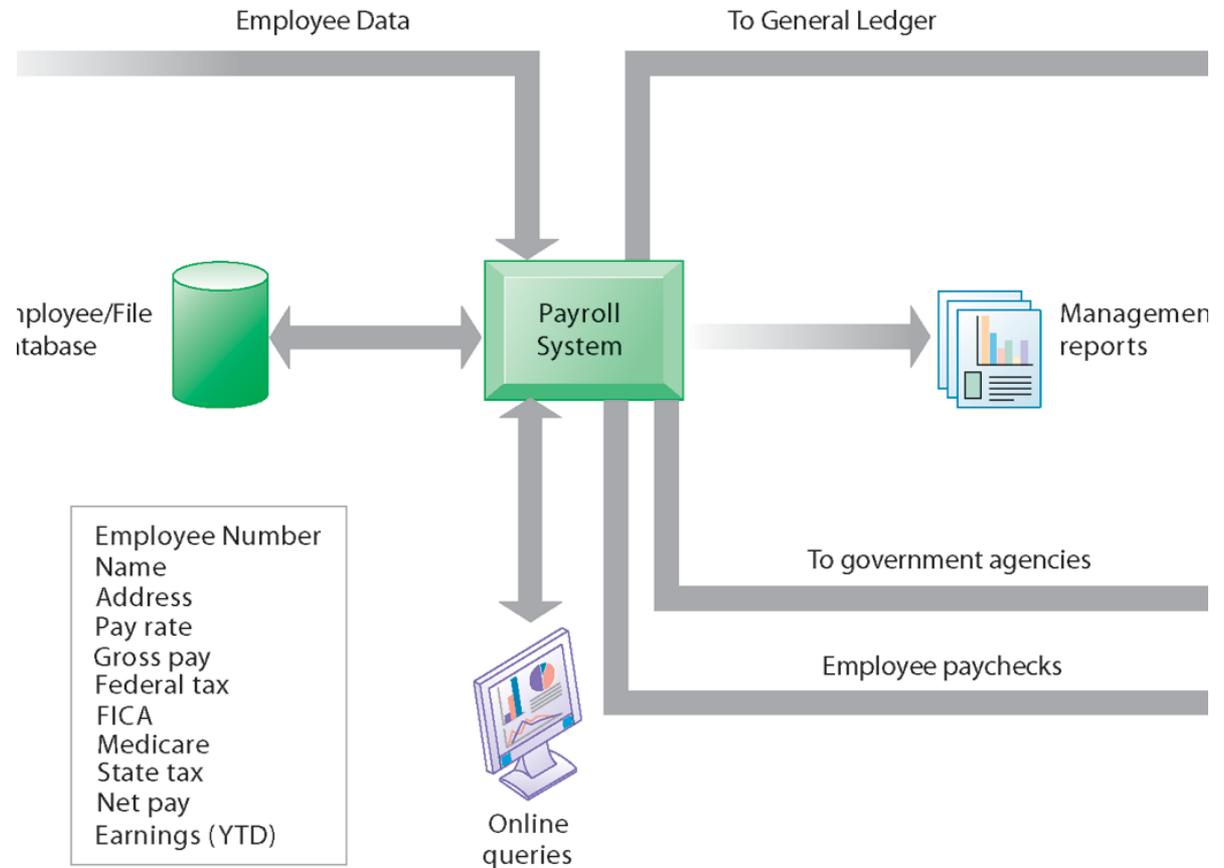
Transaction Processing Systems (TPS)

- **Major producer of information for other systems**, (e.g. the payroll system, along with other accounting TPS, supplies data to the company's general ledger system, which is responsible for maintaining records of the firm's income and expenses and for producing reports such as income statements and balance sheets. It also supplies employee payment history data for insurance, pension, etc.)
- **Structured goals and decision making based on a predefined criteria** (e.g. assigning a credit to a customer follows a predefined criteria)

Systems for Different Management Groups

Transaction Processing Systems (TPS)

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



Employee Number
Name
Address
Pay rate
Gross pay
Federal tax
FICA
Medicare
State tax
Net pay
Earnings (YTD)

Payroll data on master file

Systems for Different Management Groups

Business intelligence

- Software for organizing and analyzing data
- Used to help managers and users make improved decisions

Business intelligence systems

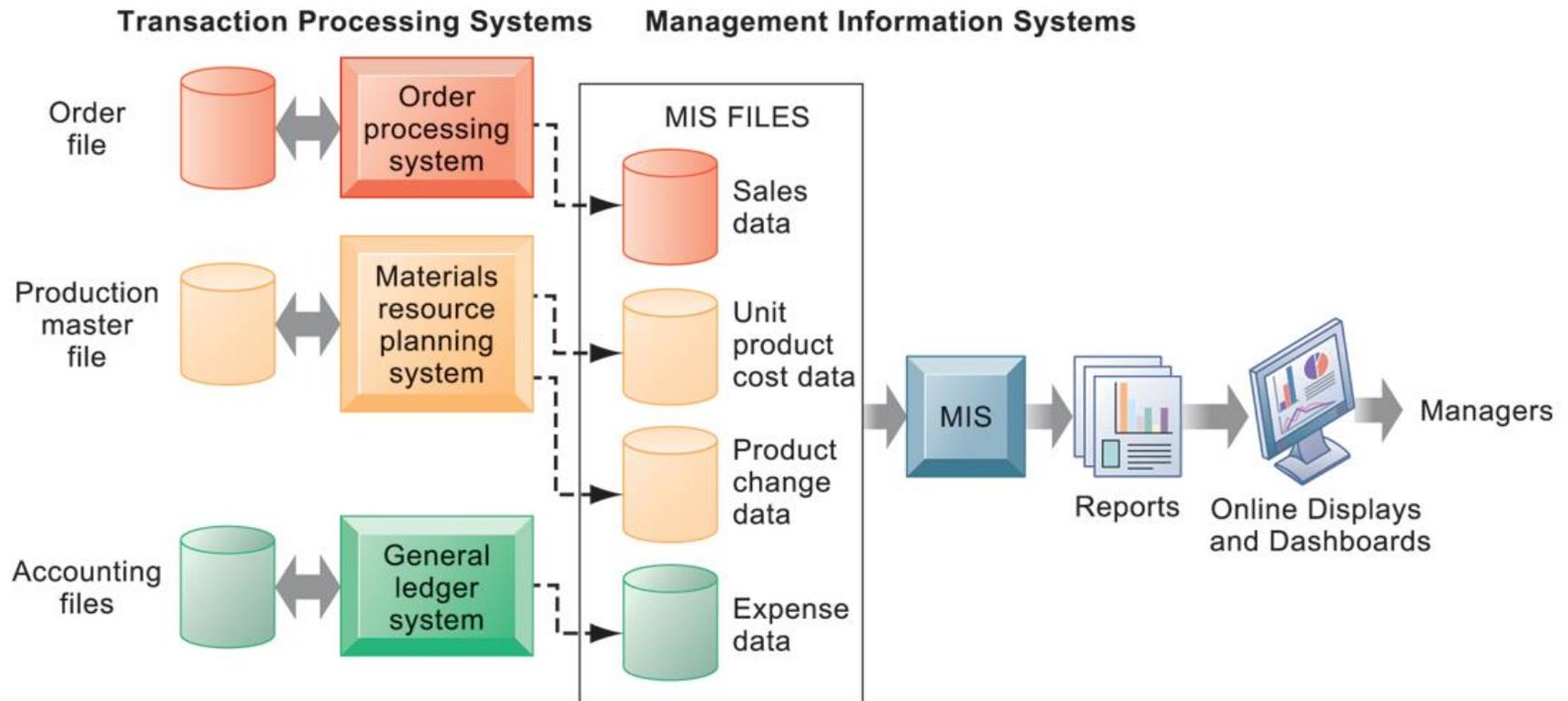
- Management information systems
- Decision support systems
- Executive support systems

Systems for Different Management Groups

Management Information Systems

- **Designates** a specific category of information systems serving middle management.
- **Provide** reports on firm's current performance. The basic transaction data from TPS are compressed and usually presented in reports that are produced on a regular schedule.
- **Provide** answers to routine questions that have been specified in advance (summaries and comparisons)
- Typically **have little analytic capability**, (e.g. MIS reports might list the total pounds of lettuce used this quarter by a fast-food chain or compare total annual sales figures for specific products to planned targets)

Systems for Different Management Groups



In the system illustrated by this diagram, three TPS supply summarized transaction data to the MIS reporting system at the end of the time period. Managers gain access to the organizational data through the MIS, which provides them with the appropriate reports.

Systems for Different Management Groups

Consolidated Consumer Products Corporation Sales by Product and Sales Region: 2013

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
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

This report, showing summarized annual sales data, was produced by the MIS

Systems for Different Management Groups

Decision Support System (DSS)

- **Serve** middle management
- Support **non-routine** decision making

Example: What is the impact on production schedule if December sales doubled, shipment is delayed, etc?

- Although DSS **use internal information from TPS and MIS**, they often **bring in information from external sources**, such as current stock prices or product prices of competitors, logistical issues such as checkpoints, political situation, etc.
- They focus on problems that are **unique**

Systems for Different Management Groups

Decision Support System (DSS)

- These systems **use a variety of models** to analyze the data and are designed so that users can work with them directly
- Model driven DSS
 - e.g. Voyage-estimating systems
- Data driven DSS
 - e.g. Intrawest' s marketing analysis systems

Systems for Different Management Groups

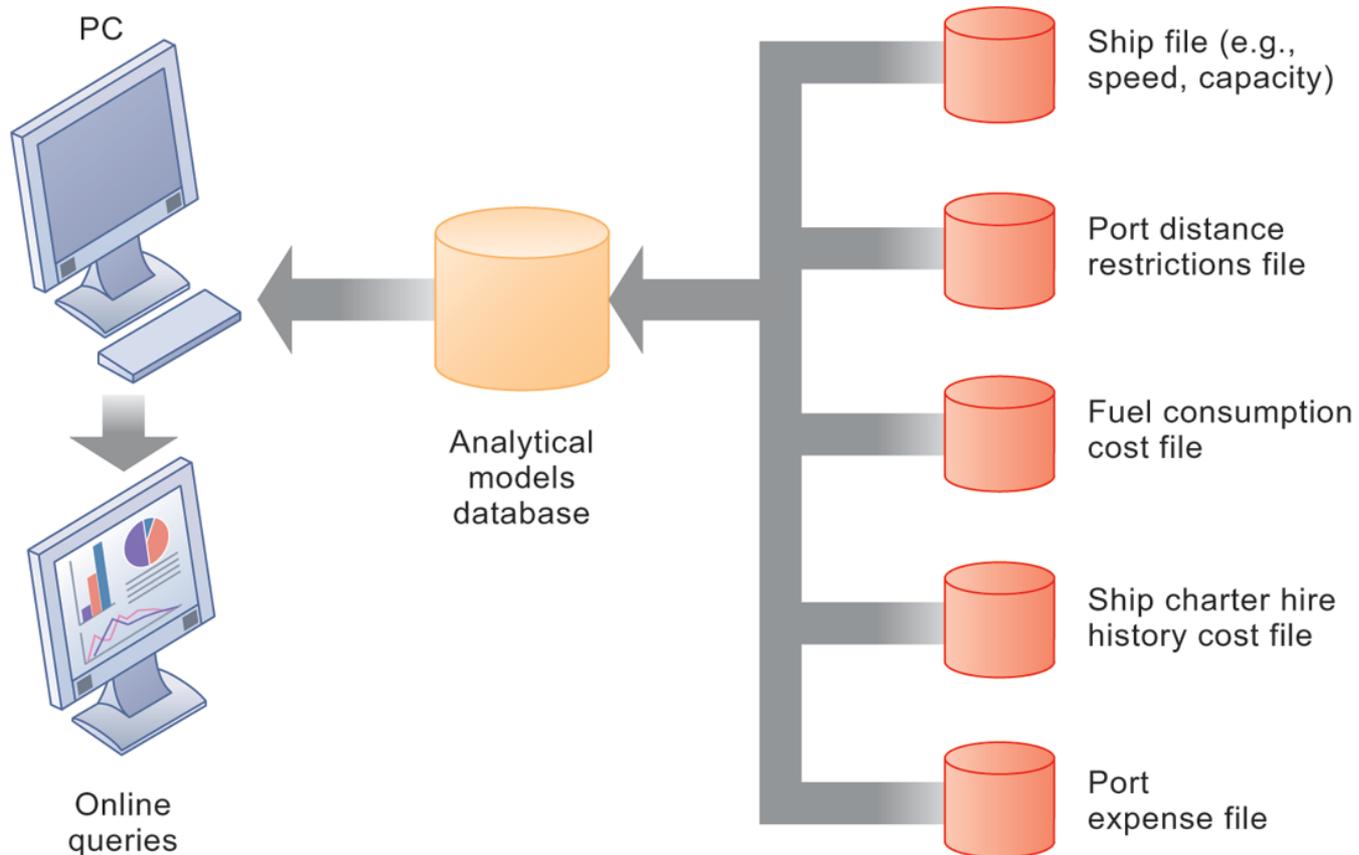
Decision Support Systems (DSS):

For Voyage-estimating systems, example:

American metals company that exists primarily to carry bulk cargoes of coal, oil, and finished products. The firm owns some vessels, charters others, and bids for shipping contracts in the open market to carry general cargo. A voyage-estimating system calculates financial and technical voyage details. Financial calculations include ship/time costs (fuel, labor, capital), freight rates for various types of cargo, and port expenses. Technical details include a myriad of factors, such as ship cargo capacity, speed, port distances, fuel and water consumption, and loading patterns (location of cargo for different ports).

Systems for Different Management Groups

Decision Support Systems (DSS): Voyage-estimating systems



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

Systems for Different Management Groups

Executive Support Systems (ESS)

- **Support** senior management
- **Address** non-routine decisions
 - Requiring judgment, evaluation, and insight
- **Incorporate** data about external events (e.g. or competitors) as well as **summarized** information from internal MIS and DSS
- ESS **present** graphs and data from many sources through an interface that is easy for senior managers to use.
- Answer Questions: What will employment levels be in five years? What are the long-term industry cost trends? What products should we be making in five years?

Enterprise Applications

The challenge is to make all these systems work together

- Corporations are put together both through normal “organic” growth and through acquisition of smaller firms.
- Over a period of time, corporations end up with a collection of systems, most of them older, and face the challenge of getting them all to “talk” with one another and work together as one corporate system.

Enterprise Applications

The challenge is to make all these systems work together

Solution: is to implement enterprise applications, which are systems that span functional areas, focus on executing business processes across the business firm, and include all levels of management.

Enterprise applications are used to ensure that TPS, MIS, DSS, and ESS work together smoothly. Enterprise applications are used to manage the information used in the systems discussed previously

Enterprise Applications

Four major applications:

- Enterprise systems
 - Supply chain management systems
 - Customer relationship management systems
 - Knowledge management systems
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- Each of these enterprise applications integrates a related set of functions and business processes to enhance the performance of the organization as a whole.

Enterprise Applications

Enterprise Systems or Enterprise Resource Planning (ERP)

- Integrate business processes in manufacturing and production, finance and accounting, sales and marketing, and human resources into a single software system.
- Pull information from many parts of the firm and enable processes both across the firm, at different organizational levels, as well as with suppliers and customers.
- Information that was previously fragmented in many different systems is stored in a single comprehensive data repository where it can be used by many different parts of the business.

Enterprise Applications

Enterprise Systems or Enterprise Resource Planning (ERP)

Example, when a customer places an order, the order data flow automatically to other parts of the company that are affected by them. The order transaction triggers the warehouse to pick the ordered products and schedule shipment. The warehouse informs the factory to replenish whatever has been depleted. The accounting department is notified to send the customer an invoice. Customer service representatives track the progress of the order through every step to inform customers about the status of their orders. Managers are able to use firm-wide information to make more precise and timely decisions about daily operations and longer-term planning

Enterprise Applications

Supply Chain Management (SCM) Systems

- Manage firm's relationships with suppliers
- Share information about:
Orders, production, inventory levels, delivery of products and services
- Goal:
Right amount of products to destination with least amount of time and lowest cost

Enterprise Applications

Customer relationship management (CRM) systems:

- Provide information to coordinate all of the business processes that deal with customers
 - Sales
 - Marketing
 - Customer service
- Helps firms identify, attract, and retain most profitable customers

Enterprise Applications

Knowledge management systems (KMS)

- Support processes for capturing and applying knowledge and expertise
 - How to create, produce, deliver products and services
- Collect internal knowledge and experience within firm and make it available to employees
- Link to external sources of knowledge

Intranets and Extranets

- Enterprise applications create deep-seated changes in the way the firm conducts its business, offering many opportunities to integrate important business data into a single system.
- They are often costly and difficult to implement.
- **Solution:** Intranets and extranets is an alternative tool for increasing integration. Intranets and extranets use Internet technology to communicate internally to employees, allow employees to communicate with one another and share documents, and to help communication with suppliers and customers.

Intranets and Extranets

- Intranets:

 - Internal company Web sites accessible only by employees

- Extranets:

 - Company Web sites accessible externally only to vendors and suppliers

 - Often used to coordinate supply chain

E-business, E-commerce, and E-government

Systems and technologies we have just described are transforming firms' relationships with customers, employees, and suppliers into digital relationships using networks and the Internet. Businesses are now enabled by or based upon digital networks, i.e. e-businesses.

- **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:**

- Governments use internet technology to deliver information and services to citizens, employees, and businesses

Systems for Collaboration

- **Collaboration** is working with others to achieve shared and explicit goals.
- Can be:
 - Short-lived or long-term
 - Informal or formal (teams)
 - One to one, or many to many

Systems for Collaboration

- **Teams** are a formal approach to collaborate
- Teams are part of the organization's business structure for getting things done.
- Teams have a specific mission.
- The members of the team need to collaborate on the accomplishment of specific tasks and collectively achieve the team mission

Systems for Collaboration

A number of factors are leading to a growing emphasis on collaboration and teamwork in the firm:

- Changing nature of work
- Growth of professional work—“interaction jobs”
- Changing organization of the firm
- Firms operate in many locations
- Emphasis on innovation
- Changing culture of work

Systems for Collaboration

- Business benefits of collaboration and teamwork
 - Investments in collaboration technology can bring organization improvements, returning high ROI
 - needs a supportive business firm culture
 - Benefits:
 - **Productivity:** complete a complex task faster
 - **Quality:** communicate errors, and correct actions faster
 - **Innovation:** come up with more innovative ideas
 - **Customer service:** teams can solve customer complaints and issues faster
 - **Financial performance**
 - Profitability, sales, sales growth

Systems for Collaboration

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

Collaboration Capability

- Open culture
- Decentralized structure
- Breadth of collaboration

Collaboration Technology

- Use of collaboration technology for implementation and operations
- Use of collaborative technology for strategic planning

The function of middle managers is to build the teams, coordinate their work, and monitor their performance (instead of command and control – old approach)

Collaboration Quality

Firm Performance

Systems for Collaboration

- Building a collaborative culture and business processes
 - “Command and control” organizations
 - No value placed on teamwork or lower-level participation in decisions
 - Collaborative business culture
 - Senior managers rely on teams of employees.
 - Policies, products, designs, processes, and systems rely on teams.
 - The managers purpose is to build, coordinate, and monitor teams.

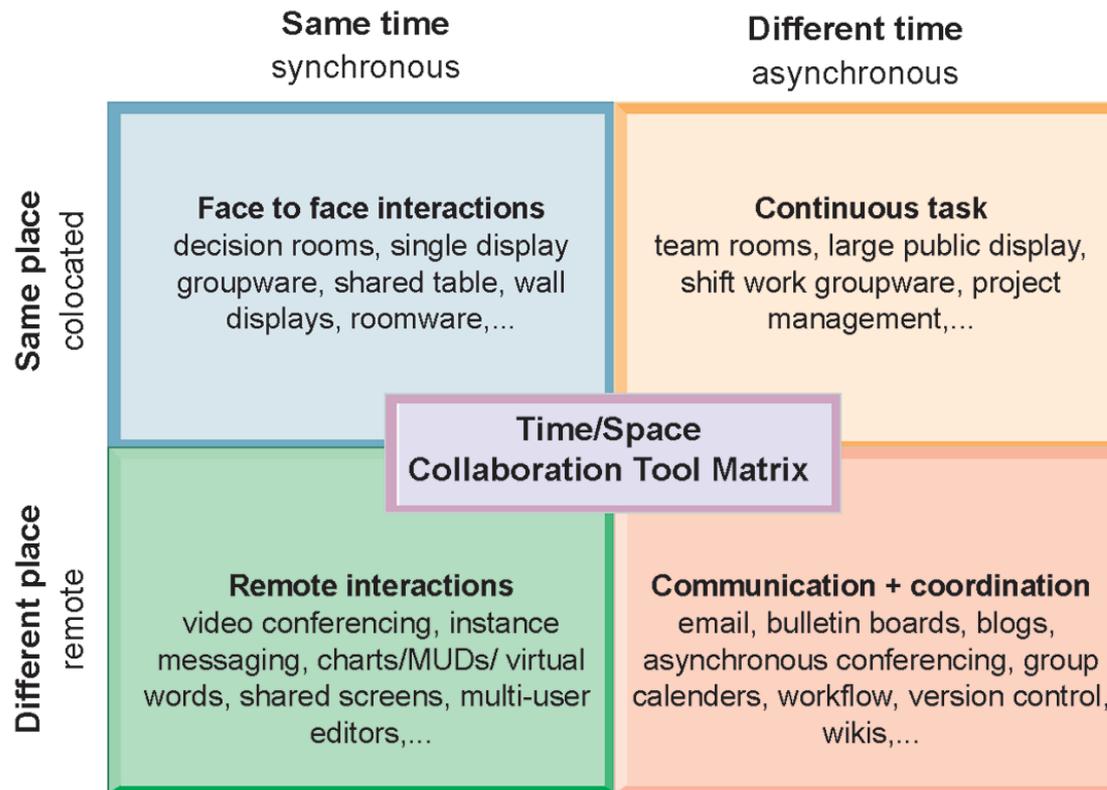
Systems for Collaboration

- Tools for collaboration and teamwork
 - E-mail and instant messaging
 - Wikis
 - Virtual worlds
 - Collaboration and social business platforms
 - Virtual meeting systems (telepresence)
 - Google Apps/Google sites
 - Cyberlockers
 - Microsoft SharePoint: SharePoint is a browser-based collaboration and document management platform, combined with a powerful search engine.
 - Lotus Notes
 - Enterprise social networking tools

Systems for Collaboration

- Two dimensions of collaboration technologies
 - Space (or location)—remote or co-located
 - Time—synchronous or asynchronous
- Six steps in evaluating 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. Evaluate product vendors.

Systems for Collaboration



Collaboration technologies can be classified in terms of whether they support interactions at the same or different time or place or whether these interactions are remote or co-located.

The Information Systems Department

- Information systems department:
 - Formal organizational unit responsible for information technology services
 - Often headed by chief information officer (CIO)
 - Other senior positions include chief security officer (CSO), chief privacy officer (CPO)
 - Programmers
 - Systems analysts
 - Information systems managers

The Information Systems Department

- End users
 - Representatives of other departments for whom applications are developed
 - Increasing role in system design and development

Source:

>> Management Information Systems, Managing the Digital Firm, 13 Edition (2014), Laudon and Laudon.