Chapter 5

E-Business and E-Commerce

Information Technology For Management 6th Edition
Turban, Leidner, McLean, Wetherbe
Lecture Slides by L. Beaubien, Providence College

John Wiley & Sons, Inc.

Learning Objectives

- Describe electronic commerce, its scope, benefits, limitations, and types

- Understand auctions and bartering

- Describe the major applications of business-to-consumer commerce, including service industries, and major issues faced by e-tailers

- Describe business-to-business applications

- Describe emerging EC applications such as intrabusiness and B2E commerce

Learning Objectives (Continued)

- Describe e-government activities and consumer-to-consumer e-commerce

- Describe the e-commerce support services, specifically payments and logistics

- Discuss the importance and activities of online advertising

- Discuss some ethical and legal EC issues

- Describe EC failures and strategies for success

Overview of E-Business and E-Commerce

- **Electronic Commerce (EC or E-Commerce)** : process of buying, selling, transfering, serving or exchanging products, services or information via computer networks, including the internet.

- **E-Business :** broader definition of EC, not just buying and selling of goods and services, but also servicing customers, collaborating with business partners, conducting e-learning, and conducting electronic transactions within an organization.
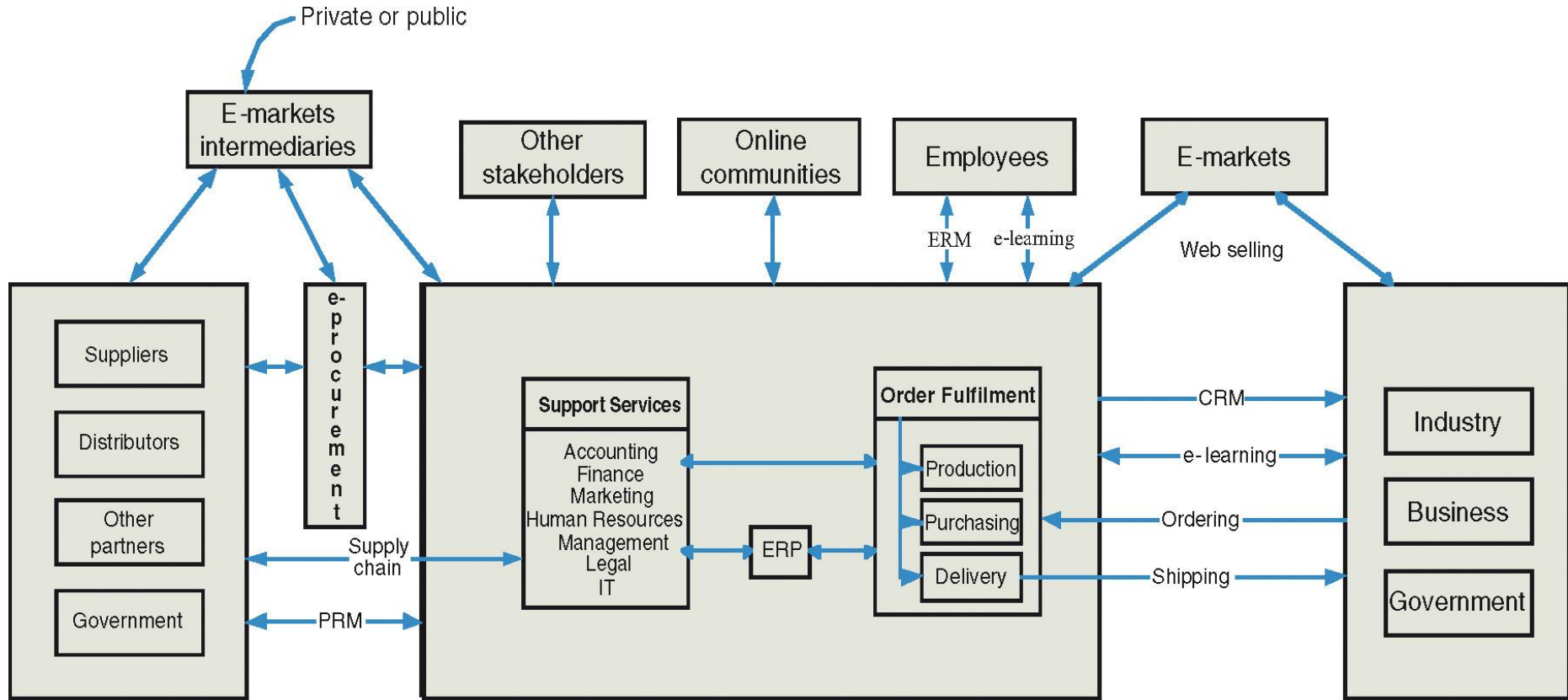
Overview of E-Business and E-Commerce

- **Pure Vs Partial EC**
  - **EC** can take several forms depending on the degree of digitization – the transformation from phsical to digital –involved. The Degree od digitization can relate to (1) the product (service) sold, (2) the process, or (3) the delivery agent (or intermediary)

- **Example :**
  - **Buy Book from Amazon.com (partial EC)**
  - **Buy E-Book From Amazon.com (pure EC)**

The Structure of E-Commerce

Private or public

E-markets intermediaries

Other stakeholders

Online communities

Employees

E-markets

ERM   e-learning

Web selling

Suppliers
Distributors
Other partners
Government

e-procurement

Supply chain

PRM

Support Services
Accounting
Finance
Marketing
Human Resources
Management
Legal
IT

ERP

Order Fulfilment
Production
Purchasing
Delivery

CRM

e-learning

Ordering

Shipping

Industry

Business

Government

Suppliers Partners

Our Company

Customers

E-Business – Transaction Medium

Most e-commerce is done over the Internet.

EC can also be conducted via:

• Private networks, such as *value-added networks* (*VANs, networks that add communication services to existing common carriers*)

• Local area networks (LANs)

• Wide area networks (WANs)

E-Business – Transaction Types

E-commerce transactions can be done between various parties.

- **Business-to-business (B2B):** Both the sellers and the buyers are business organizations

- **Collaborative commerce (c-commerce):** In c-commerce, business partners collaborate electronically

- **Business-to-consumers (B2C):** The sellers are organizations, and the buyers are individuals

- **Consumers-to-businesses (C2B):** Consumers make known a particular need for a product or service, and suppliers compete to provide it

E-Business – Transaction Types (Continued)

E-commerce transactions can be done between various parties.

- **Consumer-to-consumer (C2C):** Individuals sell products or services to other individuals

- **Intrabusiness (intraorganizational) commerce:** An organization uses EC internally to improve its operations. A special case is known as B2E (business to its employees)

- **Government-to-citizens (G2C):** A government provides services to its citizens via EC technologies

- **Mobile commerce (m-commerce):** When e-commerce is done in a wireless environment

Components of EC

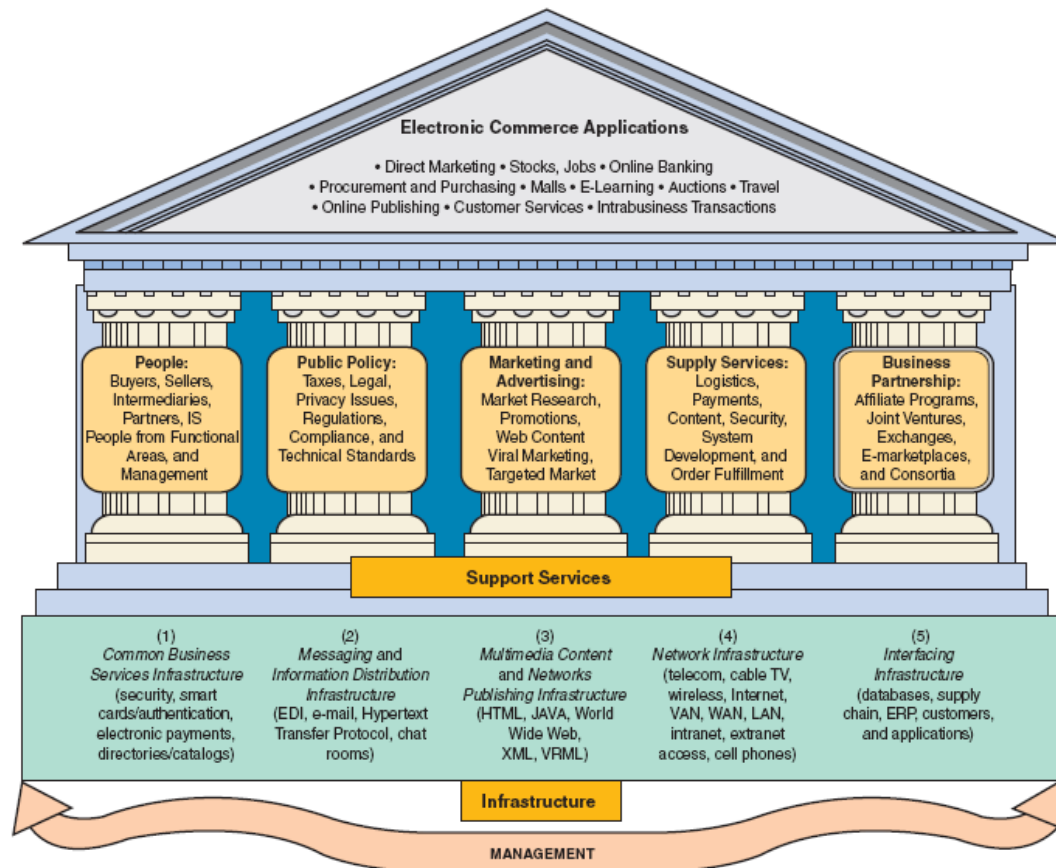The field of e-commerce is broad, and there are many of EC applications

Figure 5.2 A framework for E-commerce. (*Source:* Drawn by E. Turban.)

Components of EC (Continued)

To execute these applications, companies need the right information, infrastructure, and support services. As shown:

- **_People_:** Sellers, buyers, intermediaries, information systems specialists and other employees, and any other participants

- **_Public policy_:** Legal and other policy and regulating issues, such as privacy protection and taxation

- **_Marketing and advertising_:** Like any other business, EC usually requires the support of marketing and advertising

- **_Support services_:** Many services are needed to support EC. They range from payments to order delivery and content creation

- **_Business partnerships_:** Joint ventures, e-marketplaces, and partnerships are some frequently occurring relationships in e-business

Auctions and Bartering

The major mechanism for buying and selling on the Internet is the electronic catalog. There are two common mechanisms used in its implementation: electronic auctions and bartering online

- Electronic Auctions (e-Auctions): A market mechanism by which sellers place offers and buyers make sequential bids

- Forward auctions are auctions where sellers place items at sites for auction and buyers bid continuously for the items.

- Reverse auctions, have one buyer, usually an organization, that wants to buy a product or a service. Suppliers are invited to submit bids.

Auctions are used in B2C, B2B, C2B, e-government, and C2C commerce

Auctions and Bartering (Continued)

Electronic bartering, the exchange of goods or services *without a monetary transaction*

- Individual-to-individual bartering

- Corporate e-bartering *(e.g., barterbrokers.com)*

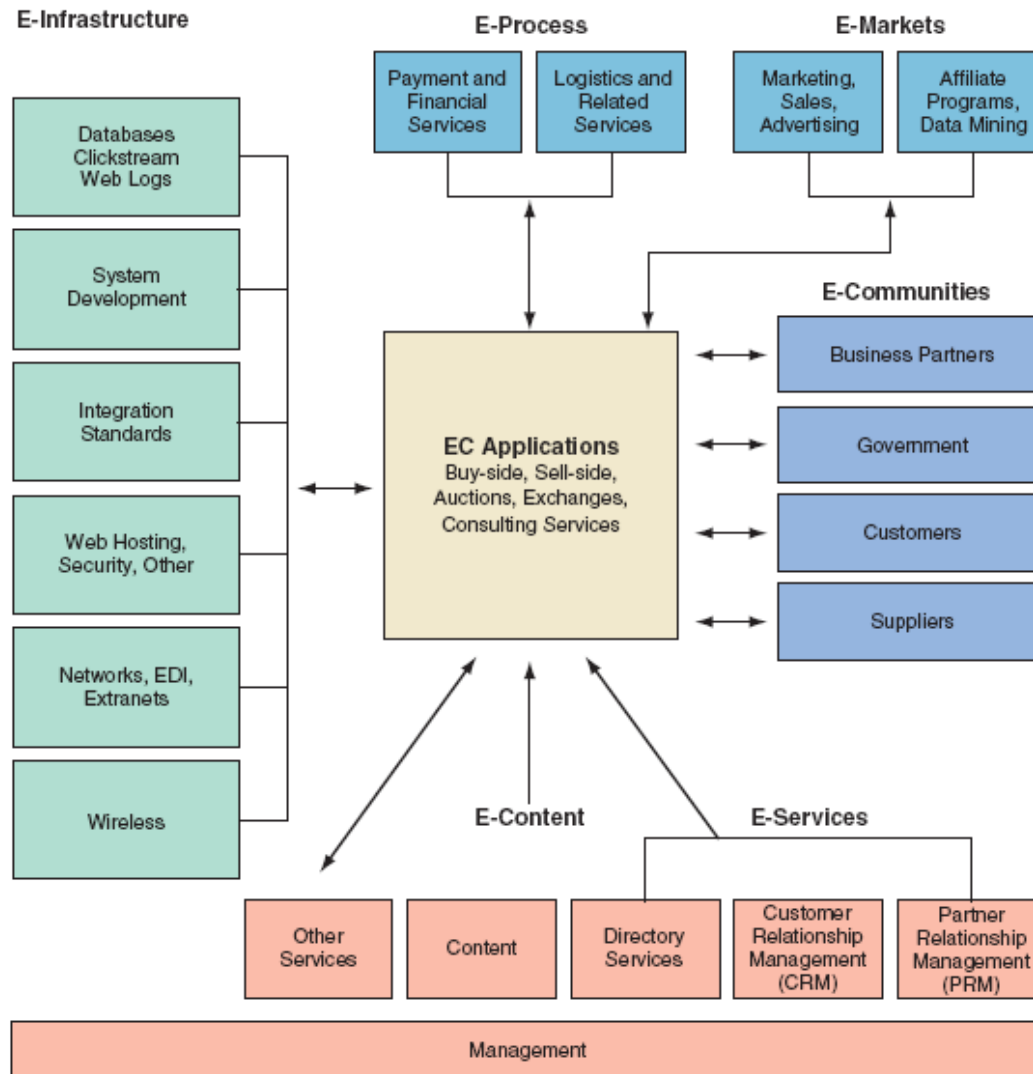# Newcomers to the EC game

- Bloggers

- Friendster, Craigslist, MySpace, and similar social networking sites

- Pandora

- Neopets
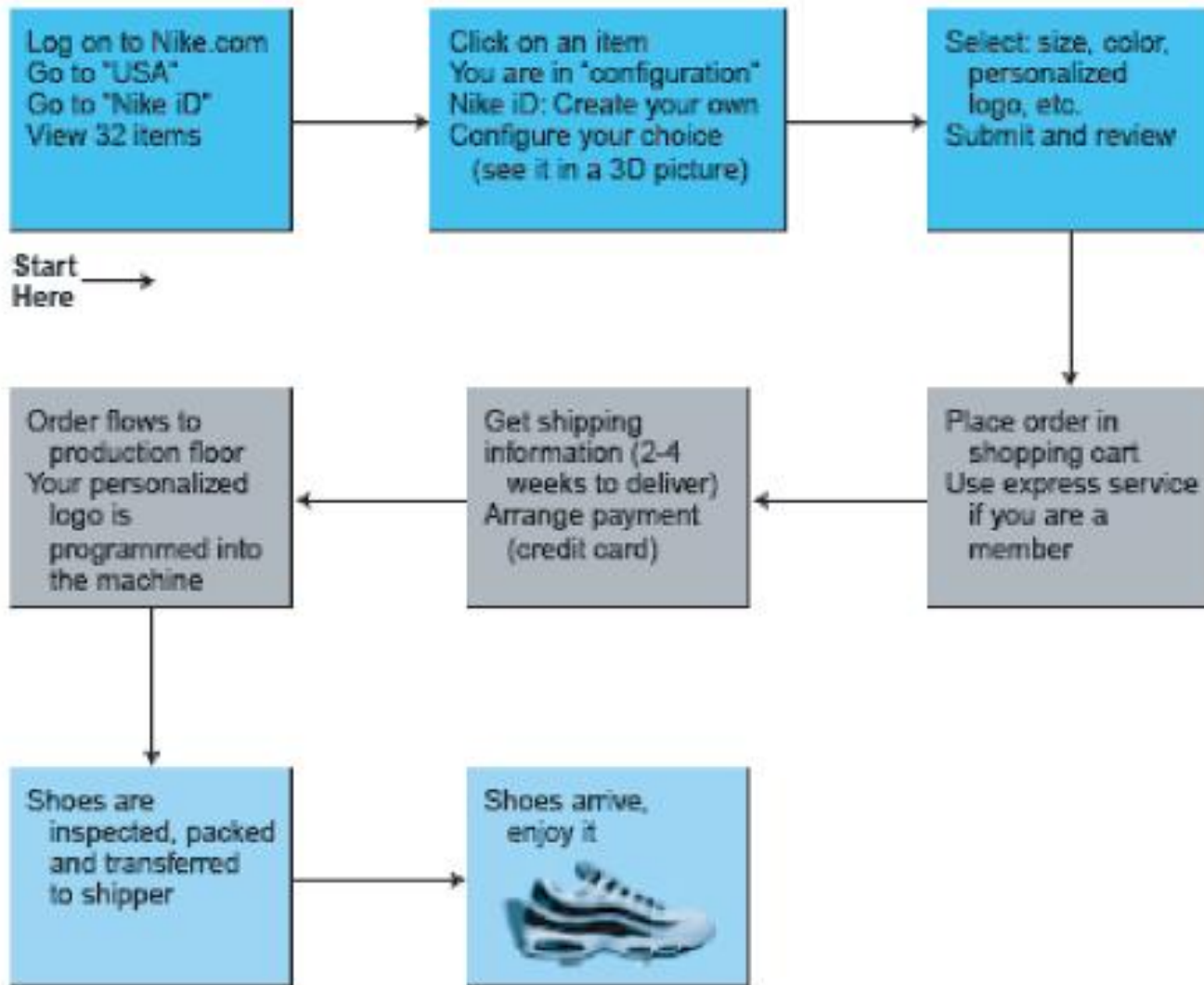
Issues in E-Tailing Market Research – B2C

To successfully conduct electronic commerce, especially B2C, it is important to find out who are the actual and potential customers and what motivates them to buy. Finding out what specific groups of consumers want is done via **segmentation**, dividing customers into specific segments, such as age or gender.

Market researchers have tried to understand consumer behavior and develop models to help vendors understand how a consumer makes a purchasing decision. If the process is understood, a vendor may be able to influence the buyer's decision through advertising or special promotions.

E-Commerce Support Services

E-Infrastructure

- Databases Clickstream Web Logs
- System Development
- Integration Standards
- Web Hosting, Security, Other
- Networks, EDI, Extranets
- Wireless

E-Process
- Payment and Financial Services
- Logistics and Related Services

E-Markets
- Marketing, Sales, Advertising
- Affiliate Programs, Data Mining

EC Applications
Buy-side, Sell-side, Auctions, Exchanges, Consulting Services

E-Communities
- Business Partners
- Government
- Customers
- Suppliers

E-Content / E-Services
- Other Services
- Content
- Directory Services
- Customer Relationship Management (CRM)
- Partner Relationship Management (PRM)

Management

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Customization in E-Commerce

Log on to Nike.com
Go to "USA"
Go to "Nike iD"
View 32 items

Start Here →

Click on an item
You are in "configuration"
Nike iD: Create your own
Configure your choice
(see it in a 3D picture)

Select: size, color, personalized logo, etc.
Submit and review

Place order in shopping cart
Use express service if you are a member

Get shipping information (2-4 weeks to deliver)
Arrange payment (credit card)

Order flows to production floor
Your personalized logo is programmed into the machine

Shoes are inspected, packed and transferred to shipper

Shoes arrive, enjoy it

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Electronic Payment Systems

- **Types of payment method :**
  - **Electronic Credit Card**
  - **Online Banking**
  - **Bill Consolidator /Payment Gateway**
  - **Micropayment**
  - **E-Wallet**

- **Security In Electronic Payments :**
  - **Authentication**
  - **Integrity**
  - **Nonrepudiation**
  - **Privacy**
  - **Safety**

Managerial Issues

- **Managing resistance to change.** Electronic commerce can result in a fundamental change in how business is done. Resistance to change from employees, vendors, and customers may develop. Education, training, and publicity over an extended time period offer possible solutions to the problem.

- **Integration of e-commerce into the business environment.** E-commerce needs to be integrated with the rest of the business. Integration issues involve planning, competition for corporate resources with other projects, and interfacing EC with databases, existing IT applications, and infrastructure.

- **Lack of qualified personnel and outsourcing.** Very few people have expertise in e-commerce. There are many implementation issues that require expertise, such as when to offer special promotions on the Internet, how to integrate an e-market with the information systems of buyers and sellers, and what kind of customer incentives are appropriate under what circumstances. For this reason, it may be worthwhile to outsource some e-commerce activities.

Managerial Issues (Continued)

- **Alliances.** It is not a bad idea to join an alliance or consortium of companies to explore e-commerce. Alliances can be created at any time. Some EC companies (e.g., Amazon.com) have thousands of alliances. The problem is which alliance to join, or what kind of alliance to form and with whom.

- **Implementation plan.** Because of the complexity and multifaceted nature of EC, it makes sense to prepare an implementation plan. Such a plan should include goals, budgets, timetables, and contingency plans. It should address the many legal, financial, technological, organizational, and ethical issues that can surface during implementation.

- **Choosing the company's strategy toward e-commerce.** Generally speaking there are three major options: (1) Lead: Conduct large-scale innovative e-commerce activities. (2) Watch and wait: Do nothing, but carefully watch what is going on in the field in order to determine when EC is mature enough to enter it. (3) Experiment: Start some e-commerce experimental projects (learn by doing).

Managerial Issues (Continued)

- **Privacy.** In electronic payment systems, it may be necessary to protect the identity of buyers. Other privacy issues may involve tracking of Internet user activities by intelligent agents and cookies, and in-house monitoring of employees' Web activities.

- **Justifying e-commerce by conducting a cost-benefit analysis is very difficult.** Many intangible benefits and lack of experience may produce grossly inaccurate estimates of costs and benefits. Nevertheless, a feasibility study must be done, and estimates of costs and benefits must be made.

- **Order fulfillment.** Taking orders in EC may be easier than fulfilling them.

- **Managing the impacts.** The impacts of e-commerce on organizational structure, people, marketing procedures, and profitability may be dramatic. Therefore, establishing a committee or organizational unit to develop strategy and to manage e-commerce is necessary.

Chapter 5

Transaction Processing, Functional Applications & Integration

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Chapter Objectives

- Relate functional areas and business processes to the value chain model

- Identify functional management information systems

- Describe the transaction processing system and demonstrate how it is supported by IT

- Describe the support provided by IT and the Web to production/operations management, including logistics

Chapter Objectives (Continued)

- Describe the support provided by IT and the Web to marketing and sales

- Describe the support provided by IT and the Web to accounting and finance

- Describe the support provided by IT and the Web to human resources management

- Describe the benefits and issues of integrating functional information systems

Functional Areas – Value Chain Perspective

The value chain model views activities in organizations as either primary (*reflecting the flow of goods and services*) or secondary (*supporting the primary activities*). The organizational structure of firms is intended to support both of these types of activities.

Functional Areas in a Business
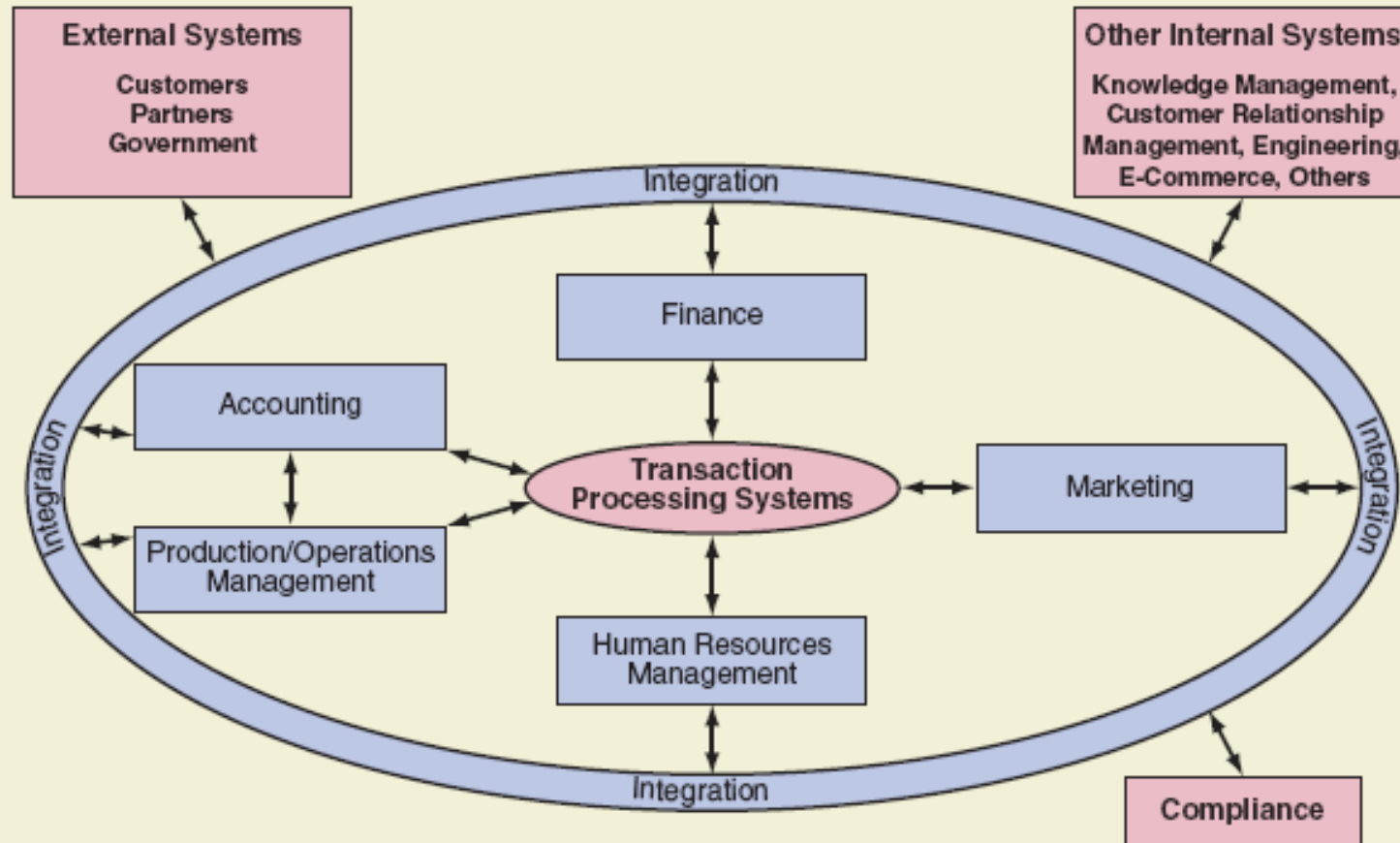
Figure 7.1 The functional areas, TPS, and integration connection. Note the flow of information from the TPS to the functional systems. Flow of information between and among functional systems is done via the integration component.

Transaction Processing Information Systems
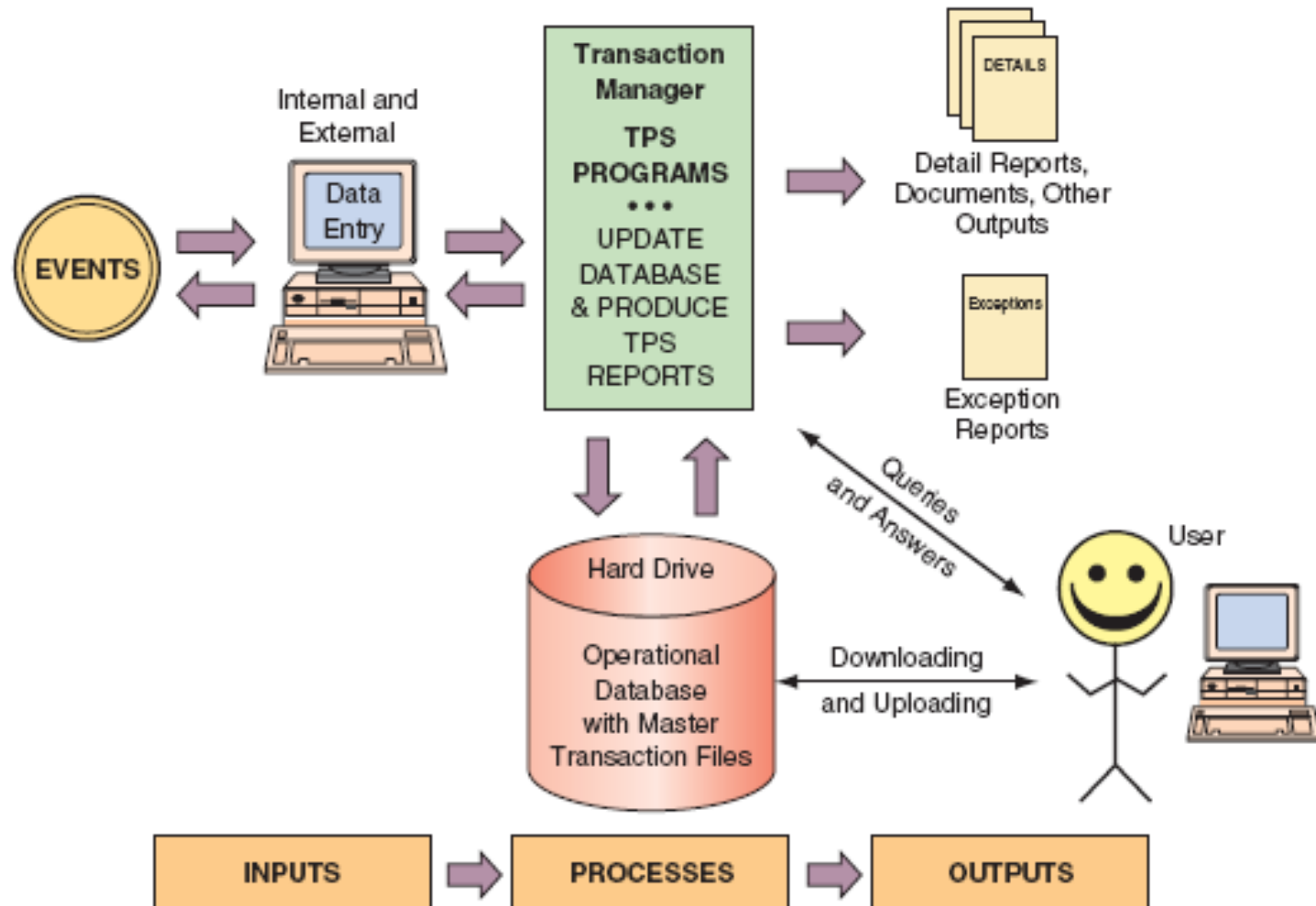
TPS – Online Transaction Processing Systems

- With OLTP and Web technologies such as an extranet, suppliers can look at the firm's inventory level or production schedule in real time. The suppliers themselves, in partnership with their customers, can then assume responsibility for inventory management and ordering.

- Interactive Internet TPS expands OLTP to provide enhanced real time transaction processing over the Internet or intranets. Multi-store chains can access a centralized computer system no longer requiring in-store processors.

TPS – Managing Production/Operations & Logistics

The production and operations management (POM) function in an organization is responsible for the processes that transform inputs into useful outputs. In comparison to the other functional areas, POM is very diversified as are the supporting TPS. It also differs considerably among organizations.

- A few of the IT supported POM areas are:
  - In-house logistics and materials management
  - Planning production/operations
  - Computer-integrated manufacturing (CIM)
  - Product lifecycle management (PLM)
  - Automating design work and manufacturing

TPS – Managing Production/Operations & Logistics

TPS – In-House Logistics & Materials Management

Logistics management deals with ordering, purchasing, inbound logistics (receiving), and outbound logistics (shipping) activities. These logistical activities cross several primary and secondary activities on the value chain.

- Inventory management determines how much inventory to keep. Overstocking can be expensive; so are understock conditions.

- Manufacturing quality-control systems can be stand-alone systems or part of an enterprise-wide total quality management (TQM) effort. They provide information about the quality of incoming material as well as the quality of work-in-process and finished goods.

TPS – Planning Production/Operations

POM planning is a major component of operational systems

- **Material Requirements Planning (MRP)** is software that facilitates the plan for purchasing or producing parts, subassemblies, or materials in the case of interdependent items. It integrates Master Production Schedules, BOM's, and Inventory levels.

- **Manufacturing Resource Planning (MRP II)** adds functionalities to a regular MRP system by determining the costs of parts and the associated cash flow. It also estimates costs of labor, tools, equipment repair, and energy while generating a requirements report.

- **Just-in-Time Systems** is an approach that attempts to minimize waste of all kinds (space, labor, materials, energy, etc.) and to continuously improve processes and systems. The JIT concept is used in mass customization and build-to-order environments.

- **Project Management.** A project is usually a one-time effort composed of many interrelated activities, costing a substantial amount of money, and lasting for weeks or years. Software tools such as: *program evaluation and review technique (PERT)* and the *critical path method* (*CPM*) are used to manage milestones, resources, costs, etc.

- **Work Management Systems (WMS)** automatically manages the prioritization and distribution of work. These systems deal with resource allocation and reallocation.

TPS – Computer-Integrated Manufacturing

CIM is a concept that promotes the integration of various computerized factory systems. It has three basic goals: (1) the *simplification* of all manufacturing technologies and techniques, (2) *automation* of as many of the manufacturing processes as possible, and (3) *integration and coordination* of all aspects of design, manufacturing, and related functions via computer hardware and software.

- Typical integrated technologies are:

  - FMS - Flexible-manufacturing systems

  - JIT – Just-in-Time

  - MRP – Materials Requirements Planning

  - CAD – Computer Aided Design

  - CAE – Computer Aided Engineering

  - GT - Group technology

TPS – Computer-Integrated Manufacturing
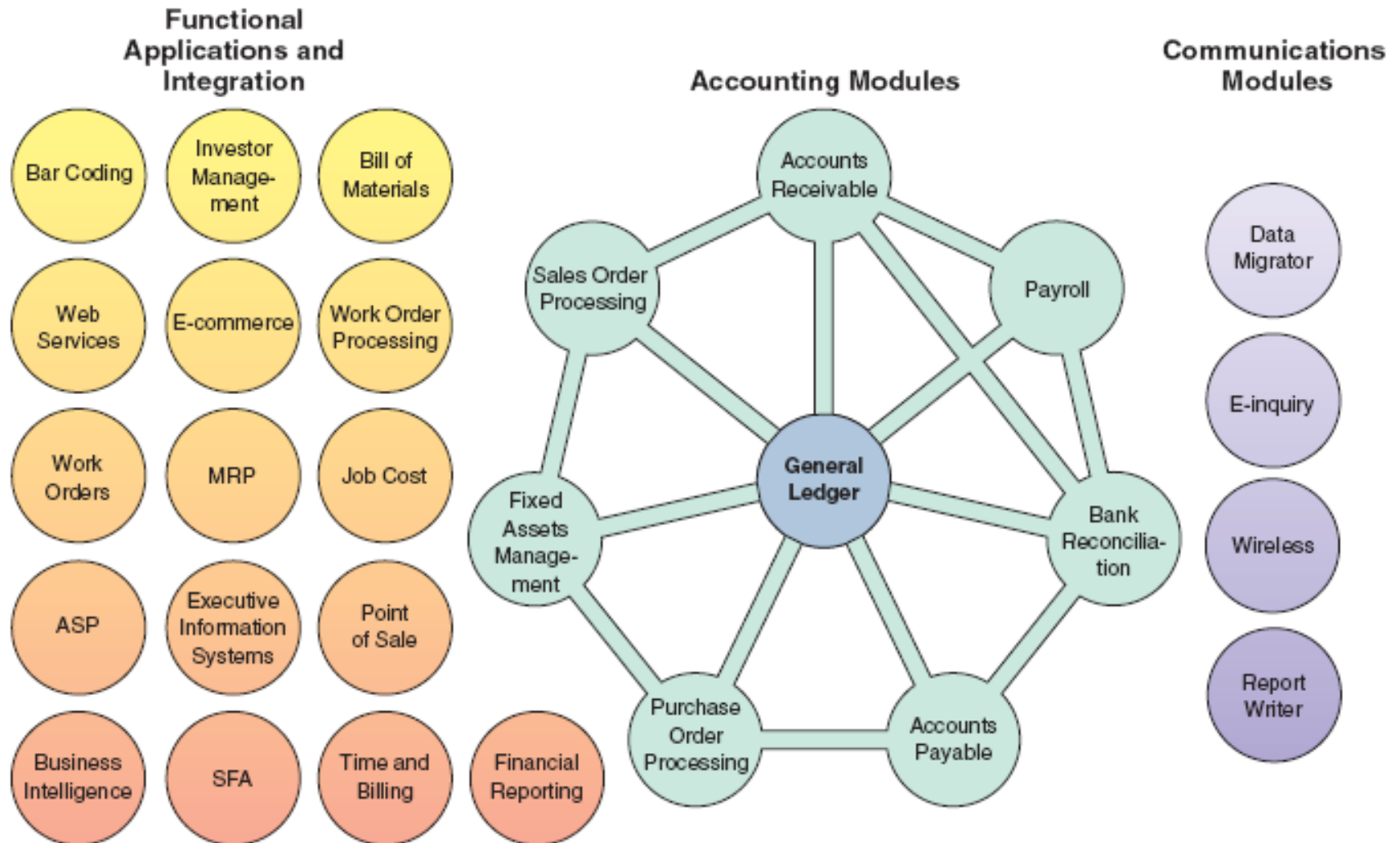
TPS – Product Lifecycle Management

PLM is a business strategy that enables manufacturers to control and share product-related data as part of a products design and development effort. Web-based supply chains and other technologies are employed to automate this collaborative effort.

- *This electronic-based collaboration can reduce*
  - *product cost*
  - *travel expenses*
  - *costs associated with product-change management*
  - *time it takes to get a product to market*

TPS – Product Lifecycle Management
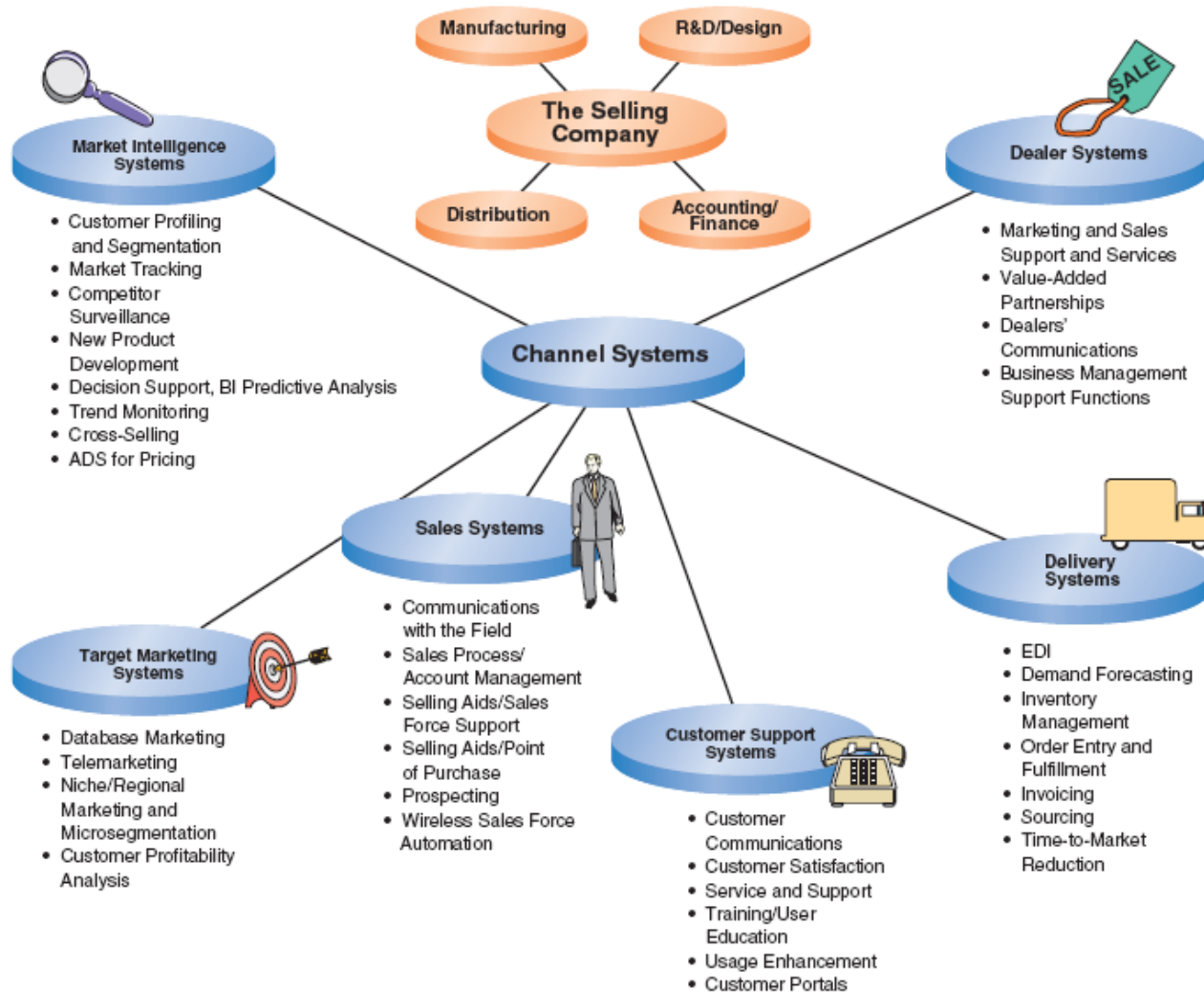

Figure 7.4 Marketing channel systems.

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TPS – Marketing and Sales Systems

Channel systems are the TPS involved in the process of getting a product or service to customers and dealing with their needs. These systems link and transform marketing, sales, procurement, logistics, and delivery activities with other corporate functional areas.

- *Some of the channel-system activities are:*
  - customer relations
  - distribution channels and in-store innovations
  - marketing management
  - telemarketing

Marketing and Sales Systems

TPS – Customer Relations

It is essential for companies to know who their customers are and to treat them properly. Innovative products and services, successful promotions, customization, and customer service are a necessity for most organization.

- **Customer Profiles and Preference Analysis.** Sophisticated information systems are being developed to collect data on existing and potential customers, their demographics (age, gender, income level), and preferences.

- **Prospective Customer Lists and Marketing Databases.** All firms need to know and track who their existing and potential customers are. These prospective-customer lists can be analyzed and sorted by classification for direct mailing, e-mailing, or telemarketing.

- **Mass Customization.** Today's customers prefer customized products. Through *mass customization, the* practice of maintaining WIP inventory, manufacturers can offer different product configurations at reasonable prices.

- **Personalization.** Special product offers are made, based on where the customer spent their time and on what they may have purchased.

- **Advertising and Promotions.** Special promotions or coupons are presented to the customer via mails, email, wireless and pervasive computing applications.

TPS – Distribution Channels & In-Store Innovations

Organizations can distribute their products and services through a variety of delivery channels. A company may use its own outlets, mfg. Representatives, or distributors (to name a few).

- **IT-Supported Distribution Channels**
  - Internet
  - Location Based Mapping
  - Self-service convenience stores
- **Improving Shopping and Checkout at Retail Stores**
  - Hand-held wireless devices that scan the bar code UPC
  - Smart card or credit card
  - Information kiosk enable customers to view catalogs in stores
  - Self-checkout machines
  - Check-writers attached to cash registers
  - Computerization of various activities in retail stores
  - Video-based systems count and track shoppers in a physical store

Marketing and Sales Systems

TPS – Marketing Management

Many marketing management decision applications are supported by computerized information systems.

- **Pricing of Products or Services.** Sales volumes are largely determined by the prices of products or services as is profit.

- **Salesperson Productivity.** Salespeople differ from each other in selling skill. Sales-force automation increases salesperson productivity by providing them with mobile devices, access to information, etc.

- **Profitability Analysis** profit contribution of certain products and services can be derived from cost-accounting systems

- **Sales Analysis And Trends**. Marketing. TPS collect sales figures that can be searched for trends and relationships.

- **New Products, Services, and Market Planning**. New products and services can be an expensive risk. "Will it sell?" Requires careful analysis, planning, forecasting, and market research.

- **Web-Based Systems** support marketing and sales through data capture

TPS – Accounting and Finance Systems

Accounting and finance functional areas manage the inflow and outflow of organizational assets. This involves all functions of an organization including payroll, billing, cash management, etc.

- Financial Planning and Budgeting
  - Financial and Economic Forecasting
  - Planning for Incoming Funds
  - Budgeting
  - Capital Budgeting
- Managing Financial Transactions
  - Financial and Economic Forecasting
  - Planning for Incoming Funds
  - Budgeting
  - Capital Budgeting

TPS – Accounting and Finance Systems (Continued)

- E-Commerce Applications of Financial Transactions
  - Global stock exchanges and multiple currencies
  - E-Bonds
  - Factoring online
  - Electronic re-presentment of checks
  - Electronic bill presentment and payments
- Virtual Close
- Expense Management Automation
- Investment Management
  - Financial Analysis
  - Access to Financial and Economic Reports
- Control and Auditing
  - Budgetary Control and Auditing
  - Financial Ratio Analysis
  - Profitability Analysis and Cost Control
  - Product Pricing

TPS – Human Resources Systems

Web-based systems have increased the popularity of human resources information systems which provide applications mainly related to acquiring, hiring, rewarding, developing, training, protecting and retaining human resources.

- Recruitment is finding employees, testing them, and deciding which ones to hire. The Web has enhanced the recruitment process.
  - Position Inventory
  - HRM Portals and Salary Surveys
  - Employee Selection
- Human Resources Maintenance and Development
  - Performance Evaluation
  - Training and Human Resources Development

TPS – Human Resources Systems (Continued)

- Human Resources Planning and Management
  - Personnel Planning
  - Labor –Management Negotiations
  - Payroll and Employees' Records
  - Benefits Administration
  - Employee Relationship Management

Managerial Issues

- Integration of functional information systems

- Priority of transaction processing

- Finding Innovation Applications

- Using the Web

- Systems Integration

- Ethical Issues

Chapter 6