

Chap-05, Electronic Commerce & Transaction Processing Systems

Principles and Learning Objectives

- E-commerce is a new way of conducting business, and as with any other new application of technology, it presents both opportunities for improvement and potential problems.
- E-commerce requires the careful planning and integration of a number of technology infrastructure components.
- An organization's transaction processing system (TPS) must support the routine, day-to-day activities that occur in the normal course of business and help a company add value to its products and services.
- Implementation of an enterprise resource planning (ERP) system enables a company to achieve many benefits by creating a highly integrated set of systems.

An Introduction to Electronic Commerce

- Business-to-consumer (B2C) e-commerce:** customers deal directly with the organization, avoiding any intermediaries
- Business-to-business (B2B) e-commerce:** participants are organizations
- Consumer-to-consumer (C2C) e-commerce:** participants are individuals, with one serving as the buyer and the other, the seller

[An organization's supply chain describes the flow of materials, information money and service from raw material suppliers through factories and warehouses to the end customers.]

- Supply chain management is a key value chain composed of:
 - Demand planning (anticipating market demand)
 - Supply planning (allocating the right amount of enterprise resources to meet demand),
 - Demand fulfillment (fulfilling demand quickly and efficiently)
- E-commerce supply chain management allows businesses an opportunity to achieve:
 - Increased revenues and decreased costs
 - Improved customer satisfaction
 - Inventory reduction across the supply chain

Mobile Commerce

- Mobile commerce (m-commerce) relies on the use of wireless devices, such as personal digital assistants, cell phones, and smart phones, to place orders and conduct business
 - Issues confronting m-commerce
 - User-friendliness of the wireless device
 - Network speed
 - Security
 - Handheld devices used for m-commerce have limitations that complicate their use
- North America lags behind Western Europe and Japan. In North America, responsibility for network infrastructure is fragmented among many providers; and most Americans are unfamiliar with mobile data services. In most Western European countries, communicating via wireless devices is common, and consumers are much more willing to use m-commerce. Japanese consumers are generally enthusiastic about new technology and more likely to use mobile technologies for making purchases.

E-Commerce Applications:

Retail and Wholesale

- Electronic retailing (e-tailing):** the direct sale from business to consumer through electronic storefronts, typically designed around an electronic catalog and shopping cart model
- Cybermall:** a single Web site that offers many products and services at one Internet location
- Manufacturing, repair, and operations (MRO) goods and services

Manufacturing

- **To raise profitability and improve customer service, many manufacturers move their supply chain operations onto the Internet**

- **Electronic exchange:** an electronic forum where manufacturers, suppliers, and competitors buy and sell goods, trade market information.

Marketing

- **Market segmentation:** the identification of specific markets to target them with advertising messages

- **Technology-enabled relationship management:** use of detailed information about a customer's behavior, preferences, needs, and buying patterns to set prices, negotiate terms, tailor promotions, add product features, and otherwise customize the entire relationship with that customer

Investment and Finance

- Online stock trading
 - Portfolio tracker
- Online banking
 - Electronic bill presentment

E-commerce Technology, Infrastructure, and Development

Hardware

- Storage capacity and computing power required of the Web server depends on:
 - Software that will run on the server
 - Volume of e-commerce transactions
- Web site hosting

Software

- Security and identification
- Retrieving and sending Web pages
- Web page construction
 - Static Web page
 - Dynamic Web page
- E-commerce software must support:
 - Catalog management
 - Product configuration
 - Shopping-cart facilities

Electronic Payment Systems

- **Digital certificate:** an attachment to an e-mail message or data embedded in a Web page that verifies the identity of a sender or a Web site
- **Electronic cash:** an amount of money that is computerized, stored, and used as cash for e-commerce transactions. Consumers arrange this with their banks.
- **Electronic wallet:** Sellers store credit card information, electronic cash, owner identification, and address information. Speeds up shopping for buyers.
- **Credit card:** Buy now, pay later. Can pay balances off with monthly payments.
- **Charge card:** Buy now, pay all at end of month.
- **Debit card:** Buy now. Pay now. (Cash immediately withdrawn from associated bank account)
- **Smart card:** embedded microchip with data. Not widely available yet.

An Overview of Transaction Processing Systems

- The first business application of computers(in the mid- 1950s) performed repetitive. High-volume, transaction –computing tasks. The computers” crunched numbers” summarizing and organizing transactions and data in the accounting, finance, and human resources areas. Such systems are generally called transaction processing systems (TPSs)

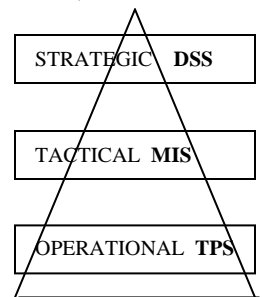
- Provide data for other business processes:
 - Management information system/decision support system (MIS/DSS)
 - Special-purpose information systems
 - Process the detailed data necessary to update records about the fundamental business operations
- Include order entry, inventory control, payroll, accounts payable, accounts receivable, and the general ledger.

Traditional Transaction Processing, Methods and Objectives

- Batch processing system:** method of computerized processing in which business transactions are accumulated over a period of time and prepared for processing as a single unit or batch eg: Payroll
- Online transaction processing (OLTP):** computerized processing in which each transaction is processed immediately, without the delay of accumulating transactions into a batch. eg: Buy tickets

Transaction Processing Activities

- TPSs**
 - Capture and process data that describes fundamental business transactions
 - Update databases
 - Produce a variety of reports
- Transaction processing cycle:** the process of data collection, data editing, data correction, data manipulation, data storage, and document production
- Data collection**
 - Should be collected at source
 - Should be recorded accurately, in a timely fashionm



- Data editing**
- Data correction**
- Data manipulation**
- Data storage**
- Document production and reports**

Basic TPS Applications

Order Processing Systems

•Order entry	•Sales configuration
•Shipment planning	•Shipment execution
•Inventory control	•Invoicing
•Customer relationship management	•Routing and scheduling

Purchasing and Accounting Systems

- Purchasing transaction processing systems include:**

–Inventory control	–Purchase-order processing
–Receiving	–Accounts payable

- Accounting transaction processing systems include:**

–Budget	–Accounts receivable
–Payroll	–Asset management
–General ledger	–

TPS Control and Management Issues

- Business continuity planning:** identification of the business processes that must be restored first in the event of a disaster and specification of what actions should be taken and who should take them to restore operations
- Transaction Processing System Audit**
 - Does the system meet the business need for which it was implemented?
 - What procedures and controls have been established?
 - Are these procedures and controls being used properly?
 - Are the information systems and procedures producing accurate and honest reports?

•International Issues

- Issues that multinational corporations face in planning, building, and operating their TPSs
 - Different languages and cultures
 - Disparities in IS infrastructure
 - Varying laws and customs rules
 - Multiple currencies

Enterprise Resource Planning:

An Overview of Enterprise Resource Planning

- Enterprise resource planning (ERP) systems are used in large, midsized, and small companies
- Real-time monitoring of business functions
- Timely analysis of key issues, such as quality, availability, customer satisfaction, performance, and profitability
- Steps in running a manufacturing organization using an ERP system:
 - Develop demand forecast
 - Deduct demand forecast from inventory
 - Determine what is needed for production
 - Check inventory for needed raw materials
 - Schedule production
 - Assess need for additional production resources
 - Financial forecasting

Advantages and Disadvantages of ERP

- Elimination of costly, inflexible legacy systems [Systems in use for many years]
- Improvement of work processes
- Increase in access to data for operational decision making
- Upgrade of technology infrastructure
- Expense and time in implementation
- Difficulty implementing change
- Difficulty integrating with other systems
- Risks in using one vendor
- Risk of implementation failure

Summary

- In business-to-consumer (B2C) e-commerce, customers deal directly with the organization
- In business-to-business (B2B) e-commerce, the participants are organizations
- In consumer-to-consumer (C2C) e-commerce, the participants are individuals
- Supply chain management is composed of demand planning, supply planning, and demand fulfillment
- Mobile commerce (m-commerce) uses wireless devices to place orders and conduct business
- Transaction processing systems (TPSs) process the detailed data necessary to update records about the fundamental business operations
- Transaction processing cycle: data collection, data editing, data correction, data manipulation, data storage, and document production
- Order processing TPSs: order entry, sales configuration, shipment planning, shipment execution, inventory control, invoicing, customer relationship management, and routing and scheduling
- Purchasing TPSs: inventory control, purchase-order processing, receiving, and accounts payable
- Accounting TPSs: budget, accounts receivable, payroll, asset management, and general ledger
- Enterprise resource planning (ERP) systems permit timely analysis of key issues, such as quality, availability, customer satisfaction, performance, and profitability

Key Terms

- **Audit trail:** Documentation that allows the auditor to trace any output from the computer system back to the source documents
- **Batch processing system:** A method of computerized processing in which business transactions are accumulated over a period of time and prepared for processing as a single unit or batch
- **Best practices:** The most efficient and effective ways to complete a business process
- **Business continuity planning:** Identification of the business processes that must be restored first in the event of a disaster and the specification of what actions should be taken and who should take them to restore operations
- **Business-to-business (B2B) e-commerce:** A form of e-commerce in which the participants are organizations
- **Business-to-consumer (B2C) e-commerce:** A form of e-commerce in which the participants deal directly with the organization, avoiding any intermediaries
- **Catalog management software:** Software that automates the process of creating a real-time interactive catalog and delivering customized content to a user's screen
- **Consumer-to-consumer (C2C) e-commerce:** A form of e-commerce in which the participants are individuals, with one serving as the buyer and the other as the seller
- **Cybermall:** A single Web site that offers many products and services at one Internet location
- **Data collection:** The process of capturing and gathering all data necessary to complete transactions
- **Data correction:** The process of reentering miskeyed or misscanned data that was found during data editing
- **Data editing:** The process of checking data for validity and completeness
- **Data manipulation:** The process of performing calculations and other data transformations related to business transactions
- **Data storage:** The process of updating one or more databases with new transactions
- **Digital certificate:** An attachment to an e-mail message or data embedded in a Web site that verifies the identity of a sender or Web site
- **Document production:** The process of generating output records and reports
- **E-commerce software:** Software that supports catalog management, product configuration, and shopping cart facilities
- **Electronic bill presentment:** A method of billing whereby the biller posts an image of your statement on the Internet and alerts you by e-mail that your bill has arrived
- **Electronic cash:** An amount of money that is computerized, stored, and used as cash for e-commerce transactions
- **Electronic data interchange (EDI):** An intercompany, application-to-application communication of data in standard format for business transactions
- **Electronic exchange:** An electronic forum where manufacturers, suppliers, and competitors buy and sell goods, trade market information, and run back-office operations
- **Electronic retailing (e-tailing):** The direct sale from business to consumer through electronic storefronts, typically designed around an electronic catalog and shopping cart model
- **Electronic shopping cart:** A model commonly used by many e-commerce sites to track the items selected for purchase, allowing shoppers to view what is in their cart, add new items to it, and remove items from it
- **Electronic wallet:** A computerized stored value that holds credit card information, electronic cash, owner identification, and address information
- **Market segmentation:** The identification of specific markets to target them with advertising messages
- **Mobile commerce (m-commerce):** The use of wireless devices such as PDAs and cell phones to place orders and conduct business

- **Online transaction processing (OLTP):** Computerized processing in which each transaction is processed immediately, without the delay of accumulating transactions into a batch
- **Order processing systems:** Systems that process order entry, sales configuration, shipment planning, shipment execution, inventory control, invoicing, customer relationship management, and routing and scheduling
- **Product configuration software:** Software used by buyers to build the product they need online
- **Smart card:** A credit card–sized device with an embedded microchip to provide electronic memory and processing capability
- **Supply chain management:** A key value chain composed of demand planning, supply planning, and demand fulfillment
- **Technology-enabled relationship management:** The use of detailed information about a customer’s behavior, preferences, needs, and buying patterns to set prices, negotiate terms, tailor promotions, add product features, and otherwise customize the entire relationship with that customer
- **Transaction processing cycle:** The process of data collection, data editing, data correction, data manipulation, data storage, and document production
- **Transaction processing system audit:** An examination of the TPS to answer whether the system meets the business need for which it was implemented, what procedures and controls have been established, whether these procedures and controls are being used properly, and whether the information systems and procedures are producing accurate and honest reports
- **Web page construction software:** Software that uses Web editors and extensions to produce both static and dynamic Web pages
- **Web site development tools:** Tools used to develop a Web site, including HTML or visual Web page editor, software development kits, and Web page upload support
- **Wireless application protocol (WAP):** A standard set of specifications for Internet applications that run on handheld, wireless devices