



E-COMMERCE

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IV. B.Tech II semester

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BY

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CO's

Course outcomes

CO1	Understand the basic concepts of E-commerce
CO2	Demonstrate an retailing in E-commerce by using the effectiveness of market research
CO3	Describe Internet trading relationships including Business to Consumer, Business-to-Business, Intra-organizational
CO4	Describe about Consumer Search and Resource Discovery
CO5	Describe the key features of Internet, Intranets and Extranets and explain how they relate to each other

UNIT- I

CLOs	Course Learning Outcome
CLO1	Understand about the frame Work and Media Coverage
CLO2	Describe about the anatomy of e-commerce applications
CLO3	Demonstrate about the E-commerce consumer applications
CLO4	Explain about E-commerce organization applications

Commerce

- Commerce means the whole system of an economy that constitutes an environment for business.
- The system includes legal, economic, political, social, cultural, and technological systems that are in operation in any country.
- Commerce is a system or an environment that affects the business prospects of an economy or a nation-state.
- We can also define it as a second component of business which includes all activities, functions and institutions involved in transferring goods from producers to consumers.

Overview of e-Commerce

- Commerce
 - Conducting business in which buyers and sellers come together in a market place to exchange information, products, services and payments
 - Conducted in buildings, personal interactions also involved
- Electronic Commerce
 - Market place is electronic. Business transactions occur across a telecommunications network (Electronic market place – Market space) where buyers, sellers and others involved in the business transaction.

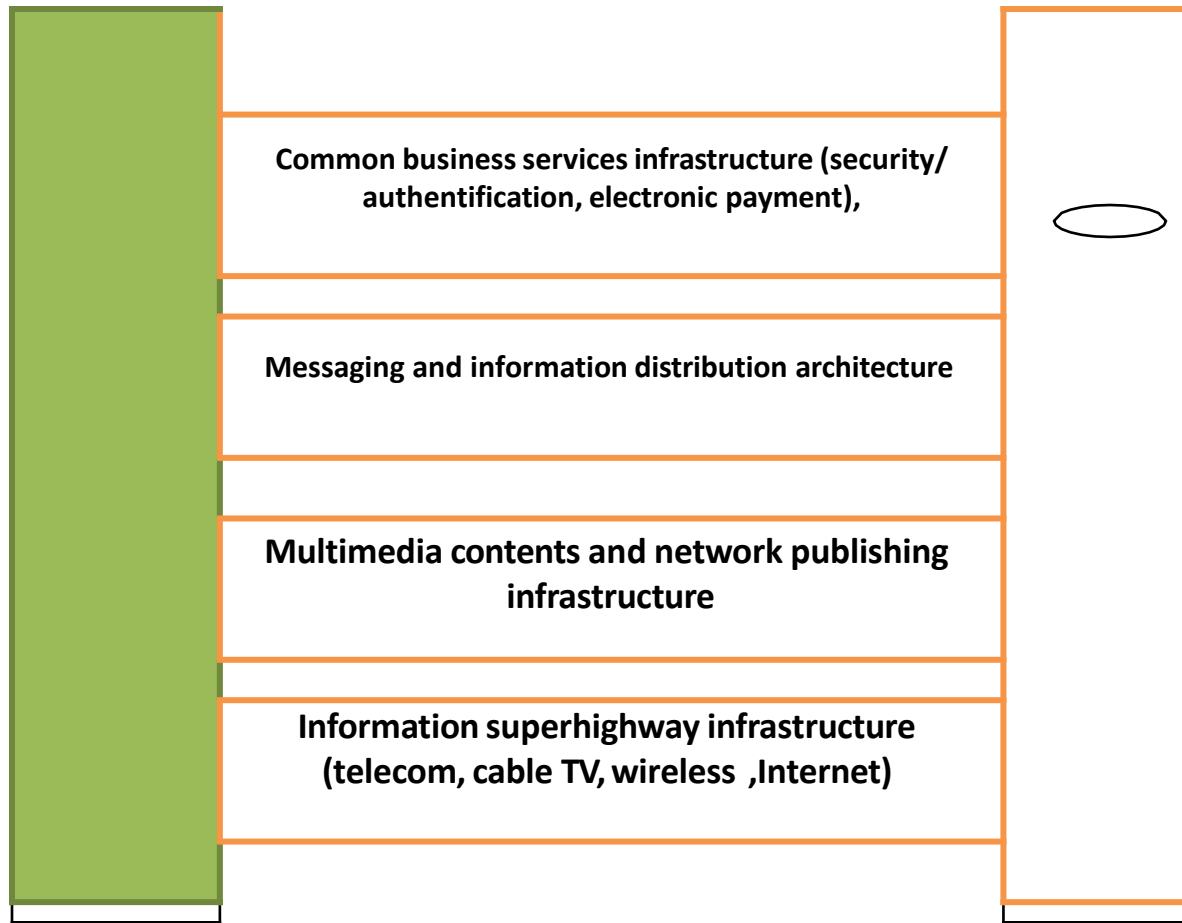
Overview of e-Commerce

- Electronic commerce is a modern business methodology that addresses the needs of organizations, merchants and consumers to cut costs while improving the quality of goods and services and increasing the speed of service delivery.
- e-commerce is associated with the buying and selling of information, products and services over the Internet

Overview of e-Commerce

- Information processing in e-commerce can be categorized as
 - Transactions between a company and the consumer over public networks for the purpose of home shopping home banking using encryption for security and electronic cash, credit or debit tokens for payment.
 - Transactions with trading partners using Electronic Data Interchange(EDI).
 - Transactions for information distribution with prospective customers, including interactive advertising, sales and marketing.

e-Commerce – Framework



- Public policy legal and privacy issues

Technical Stds for electronic docs, multimedia and network protocols

e-Commerce – Framework

- Building Blocks in the infrastructure
 - Common business Services, for facilitating the buying and selling processes
 - Messaging and information distribution.
 - Multimedia contents and network publishing – for creating a product and a means to communicate about it.
 - The Information super high way – for providing the high way system along which all e-commerce must travel
- Two supporting pillars for e-commerce are
 - Public policy to govern such issues as universal access, privacy and information pricing
 - Technical standards, to dictate the nature of information publishing, user interfaces and transport in the interest of compatibility across the network.

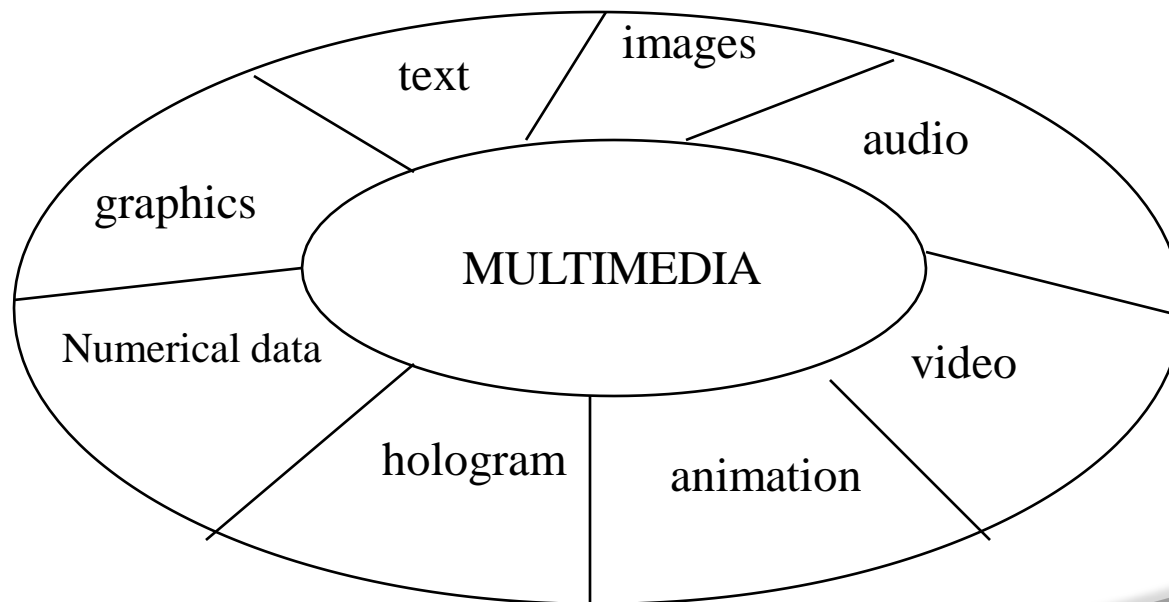
- Elements of the framework:
 - Any successful e-commerce application will require the I-way infrastructure in the same way that regular commerce needs the interstate high way network to carry goods from point to point.
 - On the I-way the nature of vehicular traffic is extremely important. The information and multimedia content determines what type of vehicle is needed.
 - Movies = Video + Audio
 - Digital games = Music + Video + Software
 - Electronic Books = Text + data + Graphics + Music + Photographs + video

e-Commerce – Framework

- Elements of the framework:
 - On the I- way messaging software moves the information from one point to another in the form of e-mail, EDI, or point-to-point file transfers.
 - Encryption and decryption methods have been developed to ensure security of the contents while traveling the I-way and at their destination and numerous electronic payment schemes are being developed to handle highly complex transactions with high reliability.
 - In information traffic, public policy issues deal with the cost of accessing information, regulation to protect consumers from fraud and to protect their right to privacy and the policing of global information traffic to detect information pirating

The Anatomy of e-Commerce Applications

- Multimedia Contents for e-Commerce Applications
 - Multimedia is the use of digital data in more than one format, such as the combination of text, video, audio, and graphics in a computer file/document.



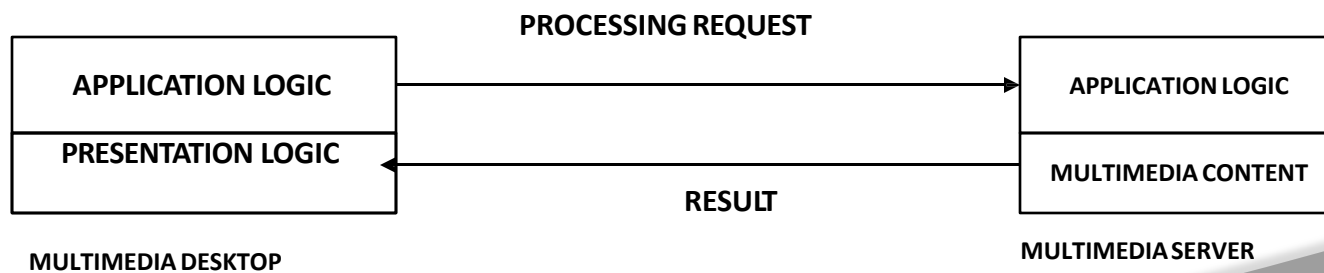
The Anatomy of e-Commerce Applications

- Multimedia mimics the natural way people communicate. Its purpose is to combine the interactivity of a user friendly interface with multiple forms of content.
- The success of e-commerce application depends on the variety and innovativeness of multimedia content and packaging. Multimedia Storage servers and e-commerce applications.
- e-commerce requires robust servers to store and distribute large amounts of digital content to consumers. These servers must handle large scale distribution, guarantee security and complete reliability.

The Anatomy of e-Commerce Applications

Client Server Architecture in E-Commerce:

- All e-commerce applications follow the client server model.
- The client server model allows the client to interact with the server through a request reply sequence governed by a paradigm known as message passing.



The Anatomy of e-Commerce Applications

Internal Processes of Multimedia Servers:

- Internal processes involved in the storage, retrieval and management of multi media data objects are integral to e- commerce applications. Most multimedia servers provide a core set of functions to display, create, and manipulate multimedia documents over computer networks and to store and retrieve multimedia documents

A multimedia server must do the following:

- Handle thousands of simultaneous users
- Manage the transactions of these users

The Anatomy of e-Commerce Applications

- Video Servers and Electronic Commerce:
 - Video servers are an important link between the content providers and transport providers.
 - Video Servers are designed to deliver information to hundreds of consumers simultaneously via public telecommunications and cable networks
- Information Delivery/ Transport and e-commerce Applications
 - Transport providers are principally telecommunications, cable, and wireless industries, computer networks.

The Anatomy of e-Commerce Applications

Different route providers are

- Cable based : Depend on coaxial cable as transport roads and will help determine which broadband application and services the viewing public prefers.
- Computer network based: These providers are often dial-up linkages of lower bandwidth when compared to telecom and cable high ways.
- Wireless: Are typically radio based cellular, satellite and light based.
- Currently about 65% of e-commerce applications are delivered on-line via computers equipped with modems.

The Anatomy of e-Commerce Applications

- Consumer Access Devices:
 - Number of devices can provide access to information: Video phones, PCs capable of handling multimedia, personal digital assistants, televisions capable of two-way transmission, cellular phones, mobile and portable computers.

Information consumers	Access Devices
Computers with audio and video capabilities	Personal/Desk top computing mobile computing
Consumer Electronics Television + Set-top box game systems	Television + Set-top box game systems
Personal digital assistants (PDAs), Pen based computing Voice driven computing, Software agents	Pen based computing Voice driven computing, Software agents

- Electronic commerce application architecture consists of six layers of functionality or services.
 - Applications
 - Brokerage services, data or transaction management
 - Interface and support layers
 - Secure messaging, security and electronic document interchange
 - Middleware and structured document interchange
 - Network infrastructure and basic communication services

Architectural Framework for E-Commerce



Application Services

Customer –to-business
Business-to-business
Intra-organizational

Brokerage and data management

Order Processing-mail-order houses
Payment schemes-electronic cash
Clearing house or virtual mail

Interface layer

Interactive Catalogs
Directory Support functions
Software agents

Secure Messaging

Secure hypertext transfer protocol
Encrypted e-mail, EDI
Remote Programming (RPC)

Middleware Services

Structured documents (SGML,HTML)
Compound documents(OLE,OpenDoc)

Network Infrastructure

Wireless – cellular, radio
Wireline –coaxial, fiber optic

- Electronic Commerce Application Services
 - Three distinct classes of electronic commerce applications
 - Customer to business
 - Business to Business
 - Intra organization
- Consumer-to-Business Transaction
 - This is called market place transaction. In a market place transaction, customers learn about products differently through electronic publishing, buy them differently using electronic cash and secure payment systems and have them delivered differently.

Architectural Framework for E-Commerce

- Business-to-Business Transactions
 - This is called market link transaction. Businesses, government and other organizations depend on computer-to-computer communication as a fast, an economical, and a dependable way to conduct business transactions. Business- to-Business transactions include the use of EDI and electronic mail for purchasing goods and services, buying information and consulting services, submitting requests for proposals and receiving proposals.

- Intraorganizational Transactions:
 - A company becomes market driven by dispersing throughout the firm information about its customers and competitors; by spreading strategic and tactical decision making so that all units can participate.
 - Three major components of market driven transactions are
 - customer orientation through product and service customization;
 - cross-functional coordination through enterprise integration
 - advertising, marketing and customer service.

Architectural Framework for Electronic Commerce



Architectural Framework for Electronic Commerce

- Information Brokerage and Management:
 - Information brokerage and management layer provides service integration through the notion of information brokerages, the development of which is necessitated by the increasing information resource fragmentation.
 - Information brokers are becoming necessary in dealing with the voluminous amounts of information on the networks. With the complexity associated with large number of on-line databases and service bureaus, it is impossible to expect humans to do searching. Information brokers or software agents that act on the searchers behalf.

Architectural Framework for Electronic Commerce

- Information Brokerage and Management:
 - Ex: In foreign exchange trading, information is retrieved about the latest currency exchange rates in order to hedge currency holdings to minimize risk and maximizing profit.
 - Brokerage function supports data management and traditional transaction services. This is accomplished by tools such as software agents, distributed query generator, the distributed transaction generator, and the declarative resource constraint base – which describes a business's rule and environment information.

Architectural Framework for Electronic Commerce

- Interface and Support Services
 - This layer provides interfaces for electronic commerce applications such as interactive catalogs and will support directory services – functions necessary for information search and access.
 - Interactive catalogs are the customized interface to consumer applications such as home shopping.
 - Directories operate behind the scenes and attempt to organize the enormous amount of information and transactions generated facilitate electronic commerce.

Architectural Framework for Electronic Commerce

- Secure Messaging and structured Document Interchange Services
 - Messaging is the software that sits between the network infrastructure and the clients or electronic commerce applications, masking the peculiarities of the environment.
 - Messaging services offer solutions for communicating non-formatted data – letters, memos, reports – as well as formatted data such as purchase orders, shipping notices, and invoices.

Architectural Framework for Electronic Commerce

- Secure Messaging and structured Document Interchange Services
 - Unstructured messaging consists of Fax, e-mail, and form based systems like Lotus Notes. Structured documents messaging consists of the automated interchanging standardized and approved messages between computer applications. Ex: EDI
 - Messaging supports both synchronous and asynchronous message delivery and processing. It is not associated with any particular communication protocol. With messaging tools, people can communicate and work together more effectively.

Architectural Framework for Electronic Commerce

- Secure Messaging and structured Document Interchange Services
 - Due to lack of standards, there is often no interoperability between different messaging vendors leading to islands of messaging.
 - Security, privacy and confidentiality through data encryption and authentication techniques are important issues that need to be resolved for ensuring the legality of the message based transactions.

Architectural Framework for Electronic Commerce

- Middleware Services
 - With the growth of networks, Client–Server technology, and all other forms of communicating between / among unlike platforms, the problems of getting all the pieces to work together became a necessity.
 - Middleware helps to mediate between diverse software programs that enables them talk to one another. To achieve data-centric computing, middleware services focus on three elements; transparency, transaction security and management and distributed object management and services.

Architectural Framework for Electronic Commerce

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Architectural Framework for Electronic Commerce

- Middleware Services
 - Transparency:
 - Transparency implies that users should be unaware that facilitates a distributed computing environment.
 - Transparency is accomplished using middleware that facilitates a distributed computing environment. This gives users and applications transparent access to data, computation, and other resources across collections of multi vendor, heterogeneous systems.

Architectural Framework for Electronic Commerce

- Middleware Services
 - Transaction Security and Management
 - Security and management are essential to all layers in the electronic commerce model.
 - At the transaction security level, two broad general categories of security services exist; authentication and authorization. For electronic commerce, middleware provides the qualities expected in a standard TP system: ACID properties.

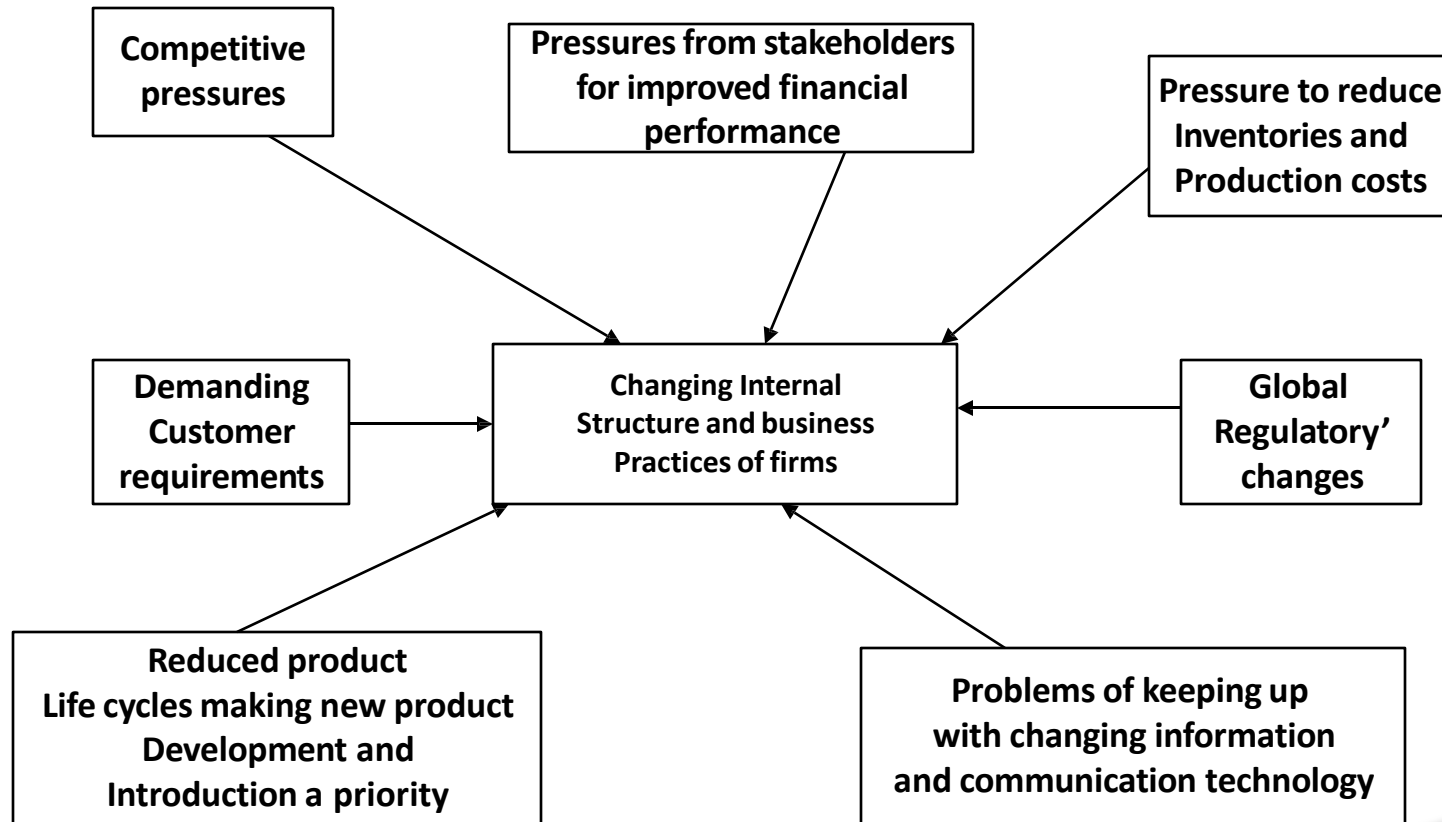
Architectural Framework for Electronic Commerce

- Middleware Services
 - Distributed Object Management and Services
 - Object orientation is proving fundamental to the proliferation of network based application.
 - Instance of an object in electronic commerce is a document. The term object is being used interchangeably with document resulting in a new form of computing called document oriented computing. The trend is moving from single data type documents to integrated documents known as compound architectures

- Entertainment on-demand
 - Video on-demand
 - News on-demand
- Electronic Retailing via catalogs and kiosks
- Home shopping
- Interactive distance education
- Collaboration through desktop video conferencing
- Medical consultations

- Changing Business Environment
 - The traditional business environment is changing rapidly as customers and businesses seek the flexibility to change trading partners, platforms, carriers, and networks at will. The Information Superhighway allow business to exchange information among constantly changing sets of customers, suppliers, and research collaborators in government and academia on a global basis. It will become a powerful business tool that no organization can do without.

e-commerce Organization Applications



Pressures influencing business

e-commerce Organization Applications

- Electronic Commerce and Retail Industry
 - Consumers are pushing retailers to the wall, demanding lower prices, better quality, a large selection of in-season goods. Retailers are slashing back-office costs, reducing profit margins, reducing in times, buying more wisely, and making huge investments in technology. They are putting the pressure on the manufacturing and supplier end of the pipeline

e-commerce Organization Applications

- Marketing and Electronic commerce
 - Electronic commerce is forcing companies to rethink the existing ways of doing target marketing, relationship marketing, and event marketing.
 - Interactive marketing is accomplished in electronic markets via interactive multimedia catalogs that give the same look and feel as a shopping channel. Consumer information services are a new type of catalog business.

- Inventory Management and Organizational Applications
 - One often-targeted business process is inventory management. Just-in-time Manufacturing - Just-in-time is viewed as an integrated management system consisting of a number of different management practices dependent on the characteristics of specific plants.
The JIT is based on two principles:
 - » Elimination of waste
 - » Empowering workers

e-commerce Organization Applications

- Inventory Management and Organizational Applications
 - The following management practices are typically associated with JIT systems
 - Focused factors
 - Reduced set-up times
 - Group technology
 - Total productive maintenance
 - Multifunction employees
 - Uniform workloads
 - JIT purchasing
 - Total quality control
 - Quality circles

e-commerce Organization Applications

- Inventory Management and Organizational Applications
 - Quick Response Retailing:
 - Quick Response (QR) is a version of JIT purchasing tailored for retailing.
 - QR provides for a flexible response to product ordering and lowers costly inventory levels.
 - QR retailing focuses on market responsiveness while maintaining low levels of stocks.

e-commerce Organization Applications

- Supply Chain Management
 - Inventory Management: The goal is to shorten the order-ship-bill cycle.
 - Distribution Management: The goal is to move documents related to shipping. Paperwork that typically took days to cycle in the past can now be sent in moments and contain more accurate data, thus allowing improved resource planning.
 - Channel Management: The goal is to quickly disseminate information about changing operational conditions to trading partners. Electronically linking production with their international distributor and reseller networks eliminates thousands of labor hours per week in the process.

e-commerce Organization Applications

- Supply Chain Management
 - Payment Management: The goal is to link the company and the suppliers and distributors so that payments can be sent and received electronically.
 - Financial Management: The goal is to enable global companies to manage their money in various foreign exchange accounts.
 - Sales Force Productivity: The goal is to improve the communication and flow of information among the sales, customer, and production functions.
 - Supply chain management process increasingly depends on electronic markets.

e-commerce Organization Applications

- Work Group Collaboration Applications
 - For work group applications, e-commerce represents the critical component of connectivity. A ubiquitous inter-network that enables easy and inexpensive connection of various organizational segments to improve communications and information sharing among employees and to gather and analyze competitive data in real time.
 - E-commerce facilitates sales force automation by enabling sales people to carry product and reference information in one portable device.

UNIT- II

Course learning outcomes

CLO's	Course Learning outcomes
CLO5	Explain about the Types of electronic payment systems
CLO6	Describe about the digital token credit based electronic payment system
CLO7	Demonstrate about credit card payment system
CLO8	Explain about the design of electronic payment system card

Electronic Payment Systems

- Electronic payment systems and e-commerce are intricately linked given that on-line consumers must pay for products and services.
- An important aspect of e-commerce is prompt and secure payment, clearing, and settlement of credit or debit claims. On-line sellers face a problem of paying for goods and services. What currency will serve as the medium of exchange in this new market place.
- Payment and settlement is a potential bottleneck in the fast-moving electronic commerce environment if one depends on conventional payment methods such as cash, checks, bank drafts, or bills of exchange.

Electronic Payment Systems

- Electronic payment systems are getting used in banking, retail, health care, on-line markets and even government. The emerging electronic payment technology was labeled as Electronic Fund Transfer (EFT). EFT is defined as “any transfer of funds initiated through an electronic terminal, telephonic instrument, or computer or magnetic tape so as to order, instruct, or authorize a financial institution to debit or credit an account”. EFT utilizes computer and telecommunication components both to supply and to transfer money or financial assets.

Electronic Payment Systems

- Work on EFT can be segmented into three broad categories:
 - Banking and Financial Systems:
 - Large scale or wholesale payments
 - (Ex: Bank – to- Bank Transfer)
 - Small scale or retail payments (Ex: ATM and Cash dispensers)
 - Home banking (Ex: Bill Payment)
 - Retailing Payments:
 - Credit Cards (Ex: VISA/Master Cards)
 - Private label Credit/debit cards (Ex: JcPenny Card)
 - Charge Cards (Ex: American Express)

- Work on EFT can be segmented into three broad categories:
 - On-line electronic Commerce Payments
 - Token based payment systems
 - Electronic Cash(Ex: Digicash)
 - Electronic Cheques ((Ex: Netchegue)
 - Smartcards or debit cards
 - Credit Card based payment systems
 - » Encrypted Credit Cards
 - » Third party authorization numbers

Electronic Payment Systems

- Digital token-based electronic payment systems
 - These assumptions may not hold for e-commerce and so many of these payment mechanisms are being modified and adapted for the conduct of business over networks. New forms of financial instruments are being developed like “electronic tokens” in the form of electronic cash / money or cheques. Electronic tokens are designed as electronic analogs of various forms of payment backed by a bank or financial institution. Electronic tokens are equivalent to cash that is backed by a bank.

- Dimensions that are used for analyzing the different initiatives:
 - The nature of the transaction for which the instrument is designed. The parties involved, the average amounts, and the purchase interaction are to be identified
 - The means of settlement used – tokens must be backed cash, credit, electronic bill payments etc.
 - Approach to security, anonymity and authentication – encryption can help with authentication and asset management

Electronic Payment Systems

- Electronic Cash:
 - Electronic Cash combines computerized convenience with security and privacy that improve on paper cash. E-cash focuses on replacing cash as the principal payment vehicle in consumer oriented electronic payments.
 - Properties of Electronic Cash:
 - E-cash must have the following four properties:
 - Monetary value – E-cash must be backed by either cash, bank authorized credit or a bank certified cashier's check.

Electronic Payment Systems

- Properties of Electronic Cash:
 - E-cash must have the following four properties:
 - Retreivability – E-cash must be storable and retrievable. Remote storage and retrieval would allow users to exchange e-cash from home or office or while travelling.
 - Security – E-cash should not be easy to copy or transfer with while being exchanged; this includes preventing or detecting duplication and double spending.

Electronic Payment Systems

- Purchasing e-cash from currency servers:
 - The purchase of e- cash from an on-line currency server involves two steps.
 - Establishment of an account and
 - Maintaining enough money in the account to back the purchase.
 - All customers must have an account with a central on-line bank
 - Consumers use the e-cash software on the computer to generate a random number, which serves as the “note”. In exchange for money debited from the customer’s account, the bank uses its private key to digitally sign the note for the amount requested and transmits the note back to the customer.

Electronic Payment Systems

Two types of transactions are possible:

- Bilateral -Typically transactions involving cash are bilateral or two party transactions where by the merchant checks the veracity of the note's digital signatures by using the bank's public key.
- Trilateral Transactions involving financial instruments other than cash are usually trilateral or three party transactions, where by the "notes" are sent to the merchant, who immediately sends them directly to the digital bank. The bank verifies the validity of these "notes" and that they have not been spent before.

Electronic Payment Systems

- Drawback of e-cash is its inability to be easily divided into smaller amounts.
Customers are issued a single number called an “open check” that contains multiple denomination values sufficient for transactions up to a pre-described limit. At payment time, the e-cash software on the client’s computer would create a note of the transaction value from the “open check”.
- Business Issues and Electronic Cash:
 - Electronic cash fulfils two main functions: as a medium of exchange and as a store of value.

Electronic Payment Systems

- Operational Risk and Electronic Cash:
 - Operational risk associated with e-cash can be mitigated by imposing constraints such as limits on:
 - The time over which a given electronic money is valid
 - How much can be stored on and transferred by electronic money
 - Number of exchanges that can take place before a money needs to be redeposited with a bank or financial institution
 - The number of such transactions that can be made during a given period of time.

Electronic Payment Systems

- Legal Issues and Electronic Cash:
 - Transaction based taxes account for a significant portion of state and local government's revenue. If e-cash really is made to function the way paper money does, payments could be made in this new forms of currency because there would be no problems of bulk and no risk of robbery.
 - Any thing that makes cash substantially easier to use in a broader range of transactions holds the potential to expand the underground economy to proportions posing even more serious threats to the existing legal order.

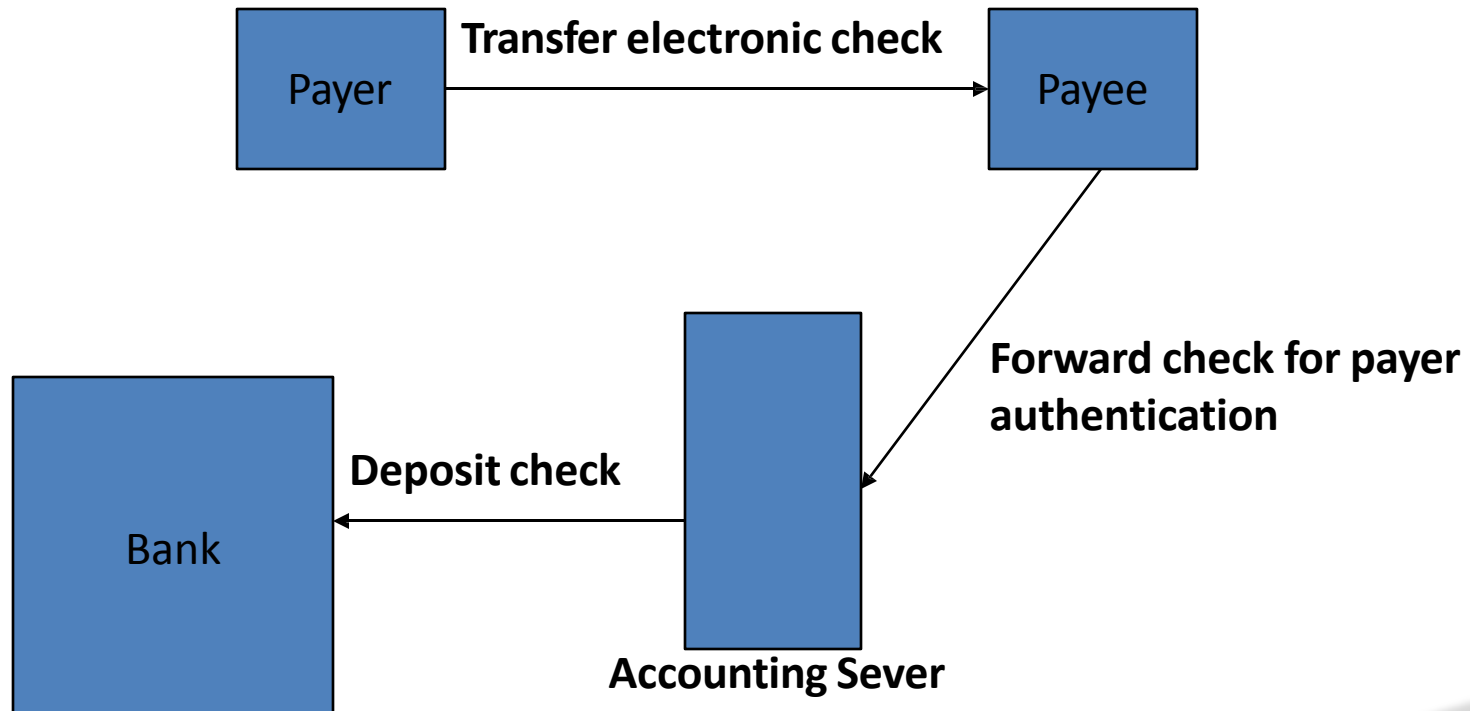
- Electronic Checks:
 - Electronic checks are another form of electronic tokens. They are designed to accommodate the many individuals and entities that might prefer to pay on credit or through some mechanism other than cash.
 - Buyers must register with a third party account server before they are able to write electronic checks. The accounts server also acts as a billing service. Once registered a buyer can then contact sellers of goods and services.

Electronic Payment Systems

- Electronic Checks:
 - Electronic Checks have the following advantages:
 - They work in the same way as traditional checks, thus simplifying customer education.
 - Electronic checks are well suited for clearing micro payments.
 - Electronic checks create float and the availability of float is an important requirement for commerce.
 - Financial risk is assumed by the accounting server and may result in easier acceptance.

Electronic Payment Systems

- **Electronic Checks:**



Payment transaction sequence in an electronic check system

Smart card payment

- Smart Cards and Electronic Payment Systems:
 - Smart Cards are credit and debit cards and other card products enhanced with microprocessors capable of holding more information than the traditional magnetic stripe.
 - Smart card technology is widely used in countries such as France, Germany, Japan and Singapore to pay public phone calls, transportation and shopper loyalty programs.
- Smart cards are basically of two types:
 - Relationship based smart credit cards
 - Electronic purses also known as debit cards.

- Electronic Purses and Debit Cards:
 - “Electronic Purses” are wallet sized smart cards embedded with programmable microchips that store sums of money for people to use instead of cash. After the purse is loaded with money it can be used to pay for in a vending machine equipped with a card reader.
 - When the balance on an electronic purse is depleted, the purse can be recharged with more money.
 - For merchants, smart cards are a very convenient alternative to handling cash.

Smart card payment Systems

- Smart-card readers and smart phones
 - Benefits of smart cards will rely on the availability of devices called smart card readers that can communicate with the chip on a smart card. In addition to reading from and writing to smart cards, these devices can also support a variety of key management methods.
 - Card readers in the form of screen phones are becoming more prominent. The phone prompts users through transactions using menus patterned after those found on automated teller machines
 - Smart card readers can be customized for specific environments

- Credit Card based Electronic Payment Systems:
 - To avoid the complexity associated with digital cash and electronic checks, consumers and vendors are looking at credit card payments on the Internet as one possible time-based alternative.
 - Credit Card Payment on on-line networks can be categorized as
 - Payments using plain credit card details: The easiest method of payment is the exchange of unencrypted credit cards over a public network such as telephone lines or the Internet.

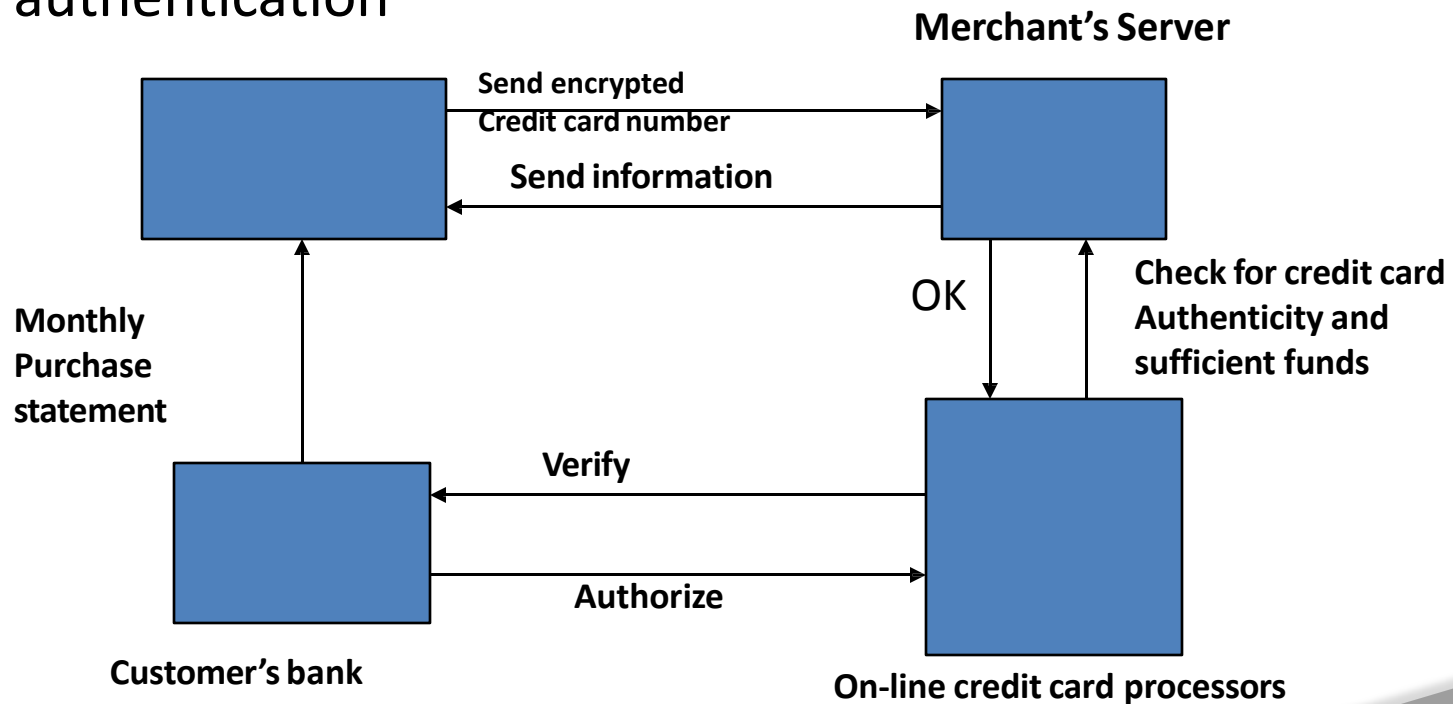
Credit card payment systems

Credit Card based Electronic Payment Systems:

- Payments using encrypted credit card details: Though encryption of credit card makes sense the cost would prohibit low-value payments by adding costs to the transaction.
- Payments using third party verification: One solution to security and verification problems in the introduction of a third party. A company that collects and approves payments from one client to another.

Credit card payment systems

- The bank or processing party relays the information to the customer's bank for authorization approval.
- The customer's bank returns the credit card data charge authentication



Processing payments using encrypted credit cards

Credit card payment systems

- Third-party processors and credit cards
- In third party processing, consumers register with a third party on the Internet to verify electronic microtransaction. On-line third party (OTTP) have created a process that they believe will be a fast and efficient way to buy information on- line
 - The consumer acquires an OTTP account number by filling out a registration form.
 - To purchase an article on-line, the consumer requests the item from the merchant by quoting the OTTP account number
 - The merchant contacts the OTTP payment server with the customer's account number

Risk in Electronic Payment system

- Risk and Electronic Payment Systems:
- Operation of the payment systems incurs three major risks.
 - » Fraud or mistake
 - » Privacy Issues
 - » Credit Risk
- Risks from Mistake and Disputes:
 - All electronic payments systems need some ability to keep automatic records.
 - Features of these automatic records include
 - » Permanent storage
 - » Accessibility and traceability
 - » A payment system database
 - » Data transfer to payment maker, bank or monetary authorities

- Managing Information Privacy:
 - The electronic payment system must ensure and maintain privacy. Privacy must be maintained against eavesdroppers on the network and against unauthorized insiders. For many types of transactions, trusted third party agents will be needed to vouch for the authenticity and good faith of the involved parties.
- Managing Credit Risk: Credit or systemic risk is a major concern in net settlement systems because a bank's failure to settle its net position could lead to a chain reaction of bank failures.

- Designing Electronic Payment Systems: The following factors must be addressed before any new payment method can be successful.
- Privacy: A user expects to trust in a secure system
- Security: A secure system verifies the identity of two party transactions through “user Authentication” and reserves flexibility to restrict information/services through access control.
- Initiative Interface: The payment interface must be an easy to use as a telephone.
- Database Integration: Banks should integrate all databases together and to allow customers access to any of them while keeping the data up-to-date and error free.

UNIT-III

Course learning outcomes

CLO's	Course Learning outcomes
CLO9	Discuss about the Inter organizational commerce
CLO10	Demonstrate about the Intra organizational commerce
CLO11	Describes about supply chain management
CLO12	Explain about the Corporate digital library
CLO13	Understand about the advertising and marketing

Intra-organizational Electronic Commerce



- Electronic commerce cannot be fully utilized if it addresses customer-organization interorganizational, or disconnected internal automation activities. For companies to be fully effective, these three activities must be integrated and the corresponding software applications developed together.
- Public commerce built on foundation of World Wide Web and other technologies over which firms, suppliers, and consumers engage in on-line transactions. The technologies and methods associated with electronic commerce are used extensively within firms, like enterprise integration, process control system, business process reengineering, and work-flow management

- Business has to consistently deliver superior value to its customers through better coordination and work-flow management, product and service customization and supply chain management
- Work-flow management concerns with methods to optimize work flows by pruning unneeded operational steps and moving much of their internal paper handling onto computer networks.
- Product or service customization focuses on two issues: time-to-market and flexible operations.

Work-flow automation and coordination

- A workflow provides the movement of a business process and its associated tasks among workers and the operations required to process relevant information as it moves from initiation to completion.
- Work-flows are decomposed into steps or tasks, which are then ordered to determine which should be done first, second, and so on. A simple workflows typically involve one or two tasks. A complex work flow may involve several other work flows, some of may execute simultaneously

Work-flow automation and coordination

- Work-flow coordination
 - Companies have developed horizontal structures around small multifunctional teams that can move more quickly and easily than businesses that use the traditional function-by-function, sequential approach
- Work-flow-related technology
 - Work-flow software electronically supports real-world collaborative activity. Work can be routed in ways that correspond to interoffice communications, in sequential routes, alternative routes, routes with feedback loops, circular routes, and more.

Supply Chain Management (SCM)

- Supply chain management is an integrating process based on the flawless delivery of basic and customized services.
- SCM optimizes information and product flows from the receipt of the order, to purchase of raw materials, to delivery and consumption of finished goods.
- SCM plays an important role in the management of processes that cut across functional and departmental boundaries
- SCM is important in retailing because it helps manage the demand and supply functions.

Supply Chain Management (SCM)

- Supply Chain management has the following characters
 - The ability to manage information not only within a company but across industries and enterprises
 - The seamless integration of all supply chain processes and measurements, including third-party suppliers, information systems, cost accounting standards, and measurement system
 - The development and implementation of accounting models such as activity-based costing that link cost to performance are used as tools for cost reduction

Push-based vs pull based SCM

Manufacturer
 Financial/ Market driven forecast
 Master Scheduling
 Replenishment based on distribution
 Center inventory

Retail distribution center
 Order point based on warehouse
 Inventory and historical forecasts
 Deals, promotions, and forward buying
 Manual purchase order processing

Retail Stores
 Order point based on shelf and forecasts
 Promotions
 Manual entry of items to be recorded

Consumers Purchase Merchandise

Retail Store
 POS data collection
 Perpetual inventory tracked UPC
 Level
 Automatic replenishment using
 EDI services

Retail Distribution center
 Automatic replenishment
 Shipping container marking
 Cross-dock receiving
 EDI services

Manufacturer
 Demand driven forecast based on POS data and
 product movement
 Micromarket-driven
 Short cycle manufacturing
 Advanced shipping notice and EDI Services
 Barcode scanners and UPC ticketing

Supply Chain Management (SCM)

- The model contain three primary elements
 - Integrated Logistics and distribution
 - Deals with the integration of materials management and physical distribution. Logistics applies to the coordination and handling of all aspects of the movement of raw materials, components, semifinished goods, and finished goods. When products are manufactured, the logistics function is involved in getting them to the customer. Components of logistics will include handling the movement of raw materials and goods for resale, warehousing, customs brokerage, and distribution to a final destination

Supply Chain Management (SCM)

- The model contain three primary elements
 - Integrated marketing and distribution
 - Deals with integrating customer directly and react to changes in demand by modifying the supply chain. Marketing must define the way a company does business. Technology is changing firms' marketing edge in the areas of manufacturing and logistics planning, in management analysis of new markets, in identifying and targeting customers, in promotion of the allied areas of direct marketing and telemarketing and in postsales through on-line customer service. This is achieved by efficient customer response systems

Supply Chain Management (SCM)

- Efficient Customer Response (ECR)
 - ECR is expected to reduce costs by reforming the retail industry's buying habits and moving toward continuous product replenishment to get inventory into the stores faster. ECR uses the data-architecture developed to make transaction-level data from point-of-sale systems useful and legible to front-office buyers, logistics personnel, and senior managers. Effective inventory management – having just the right amount of the right merchandise on the shelves for just the right amount of time – minimizes overstocking and boosts profitability

Supply Chain Management (SCM)

- Efficient Customer Response (ECR)
 - Better in-house systems enable managers and buyers to do things like analyzing the performance of standard and trend items in stores, spot on a daily basis, upswings and downturns in the performance of trend merchandise, and replenish or authorize markdowns for trend items as necessary
 - Detailed analysis of item performance, what-if scenario evaluation, and exception reporting and handling

Supply Chain Management (SCM)

– Agile Manufacturing

- Agile manufacturing calls for flexibility and quick response to changing market conditions, customer demands, and competitor actions.
- Agility implies breaking out the mass-production mold and producing highly customized products – when and where the customer wants them.
- Agility includes such concepts as rapid formation of multicompany alliances to introduce new products to the market

Supply Chain Management (SCM)

- Agile Manufacturing
 - Agility requires
 - Customers electronically transmitting their requirements to remote locations capable of quickly manufacturing and distributing these products
 - Companies rapidly form alliances to produce new products, employing advanced manufacturing concepts
 - Small and medium-sized companies advertise their manufacturing capabilities over computer networks and efficiently bid on projects required by other companies

Supply Chain Management (SCM)

- Agile Manufacturing
 - Agility requires
 - “Software system brokers” connect users who need temporary access to sophisticated manufacturing tools
 - Manufacturers and suppliers use “intelligent” procurement systems to facilitate and speed parts procurement, billing and payment transactions, reducing costs, improving accuracy, and meeting customer demands in a timely manner

Supply Chain Management (SCM)

- Agile Manufacturing
 - Agile manufacturing enterprise aim to achieve
 - Greater product customization or manufacturing to order, would come at relatively low unit cost
 - Rapid introduction of new or modified products
 - Interactive customer relationships transform the physical production into a platform for providing an evolving set of value-adding services
 - Dynamic reconfiguration of production processes would accommodate swift changes in product designs or entire new product lines

What is a Digital library



- A library in which a significant proportion of the resources are available in digital (machine-readable) format, as opposed to print or microform.
- The process of digitization began with indexes and abstracting services, then moved to periodicals and reference books, and is now entering the field of book publication.
- Compare with virtual library.

Advantages of a Digital Library



- Faster addition to the collection
- Better quality control
- Improved search functionality
- Faster access to information found
- More freedom
- Reduced bureaucracy for individual users.

Achieving these advantages depends not only on efforts traditionally undertaken by computer scientists, but also on the highest quality engineering for human usability.

OLTP vs. Warehousing



- Organized by transactions vs. Organized by particular subject
- More number of users vs. less
- Accesses few records vs. entire table
- Smaller database vs. Large database
- Normalised data structure vs. Unnormalized
- Continuous update vs. periodic update

- A data warehouse is a subject-oriented, integrated, time-variant and non-volatile collection of data in support of managements decision making process.
- It is the process whereby organizations extract value from their informational assets through use of special stores called data warehouses

- Operational Data Store: Operational data mirror. Eg: Item in stock.
- Enterprise data warehouse: Historical analysis, Complex pattern analysis.
- Data Marts

Evolution Dynamics - Traditional libraries are stable and slowly evolving; digital libraries are highly dynamic, ephemeral and versioned.

Object Structure - Traditional libraries hold atomic objects of mostly print in big crisp chunks; digital libraries hold inter-linked, multimedia objects which are multi-size, fractal, and ill-defined.

What is online marketing



- Marketing is a process for creating and delivering goods, services, and ideas to customers
- e-Business components involved:
 - e-commerce
 - business intelligence
 - supply chain management

E Marketing objectives

- Recognizing customer needs and filling them better than the competition
- Helping to make a company's offerings something that customers want to buy

E-Marketing to traditional marketing?

- E-marketing affects traditional marketing in two ways:
 - Increases efficiency in traditional marketing functions
 - Use of Internet technology transforms many marketing strategies.
- ⇒ Results: new business models that add customer value and/or increase company profitability.

The impact of the Internet

- Product – new products, new delivery mechanisms
- Price – dynamic pricing, comparison pricing, bartering, bidding
- Place – direct distribution of digital products, supply chain management, channel integration
- Promotion – new communications media, advertising efforts

- Shift away from a selling orientation toward a customer-focused or customer-centric orientation
- The 4 Ps become the 4 Cs (Albert and Sanders 2002)
 - Customer focused solution
 - Cost (increase in value)
 - Convenience
 - Communication

- Internet means:
 - new channels for selling and marketing
 - new pricing and promotion options
 - new forms of market research and new products
 - improved distribution and customer service
- Most important is a shift toward customer power

Consumer Needs

What do customers want in the information economy?

- Privacy: Customers want marketers to keep their data confidential + don't want to be bothered by sales calls at home during dinner.
- Want marketers to ask permission before sending commercial e-mail messages.
- Want e-commerce to provide convenience, self-service, speed, good customer service, personal attention, and value.

Market Research vs Marketing Research

Market Research

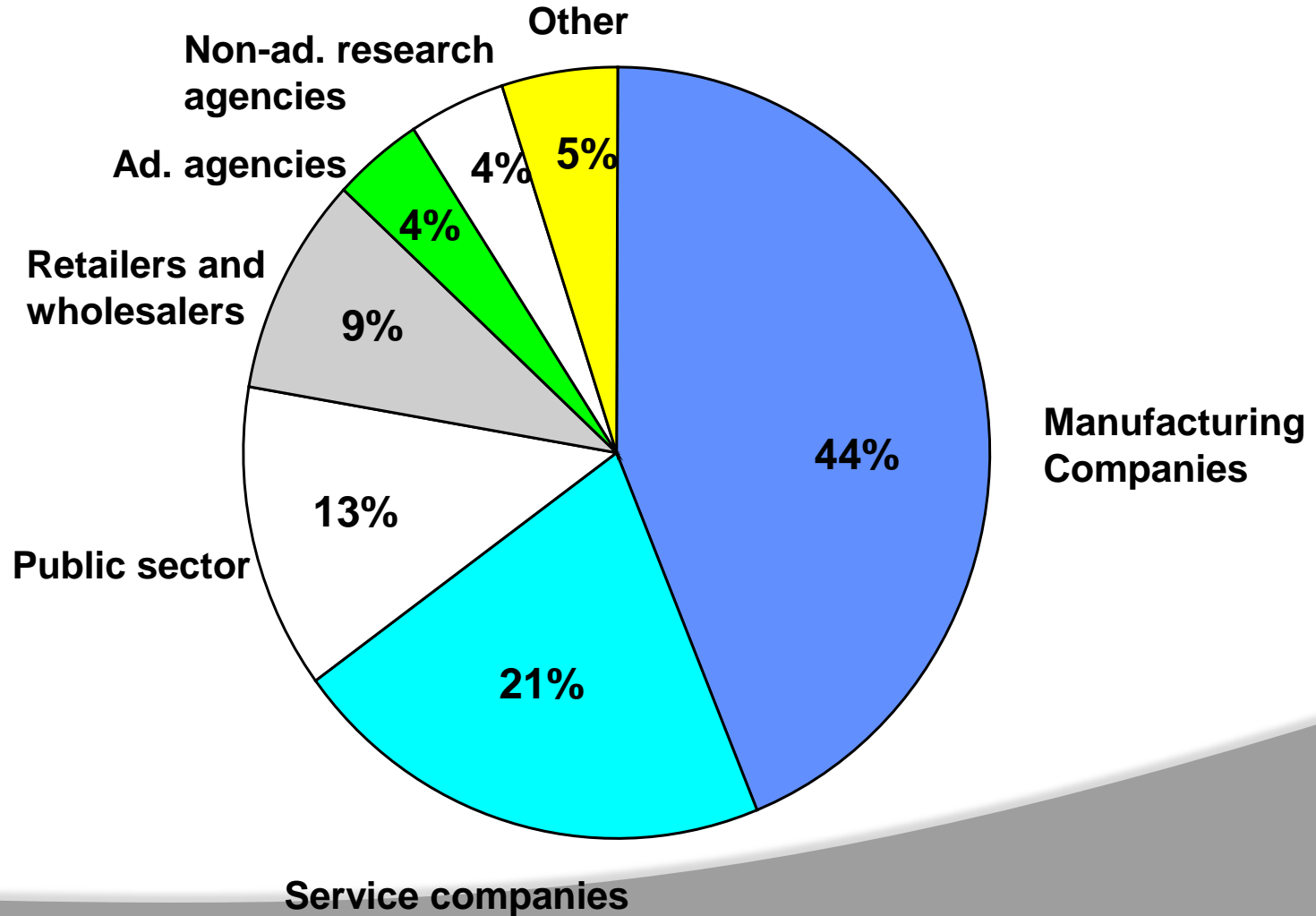
Researching the immediate competitive environment of the marketplace, including customers, competitors, suppliers, distributors and retailers

Marketing Research

Includes all the above plus:

- companies and their strategies for products and markets
- the wider environment within which the operates (e.g. political, social, etc)

Spending on Market Research by Sector in the UK



Market Research Budgets

1- 2% of company sales = total budget

of this:

50% - 80% in-house

85% of Fortune 500 companies have internal departments

20% - 50% externally

1. Syndicated - service research firms
2. Custom research firms
3. Specialty research firms

Types

Description

- | | |
|--|---|
| 1. Syndicated - service research firms | Data gathered periodically from customers and distribution channels and then sold to clients (e.g. A.C. Nielson) |
| 2. Custom market research firms | Hired to carry out specific research projects for clients. The firm conducts the survey and the results are the property of one client only (e.g. Research International) |
| 3. Specialty line research firms | Firms providing a specialised service to other market research firms, e.g. a firm selling field interviewing services (e.g. Continental Research) |

- Exploratory
Preliminary data needed to develop an idea further. Eg outline concepts, gather insights, formulate hypotheses
- Descriptive
Describe an element of an ideas precisely. Eg who is the target market, how large is it, how will it develop
- Causal
Test a cause and effect relationship, e.g. price elasticity. Done through experiment

UNIT-IV

Course learning outcomes

CLO's	Course Learning outcomes
CLO14	Understand the search and resource discovery paradigms
CLO15	Describe information search and retrieval
CLO16	Demonstrate about the commerce and catalogues
CLO17	Explain about information filtering

Consumer-oriented Electronic Commerce

- Consumer-Oriented Services:**

Consumer Life-style needs	Complementary Multimedia Services
Entertainment	Movies on demand, video cataloging, interactive ads, multiuser games, on-line discussions
Financial Services and information	Home banking, financial services, financial news
Essential Services	Home shopping, electronic catalogs, telemedicine, remote diagnostics
Education and training	Interactive education, multiuser games, video conferencing, on-line databases

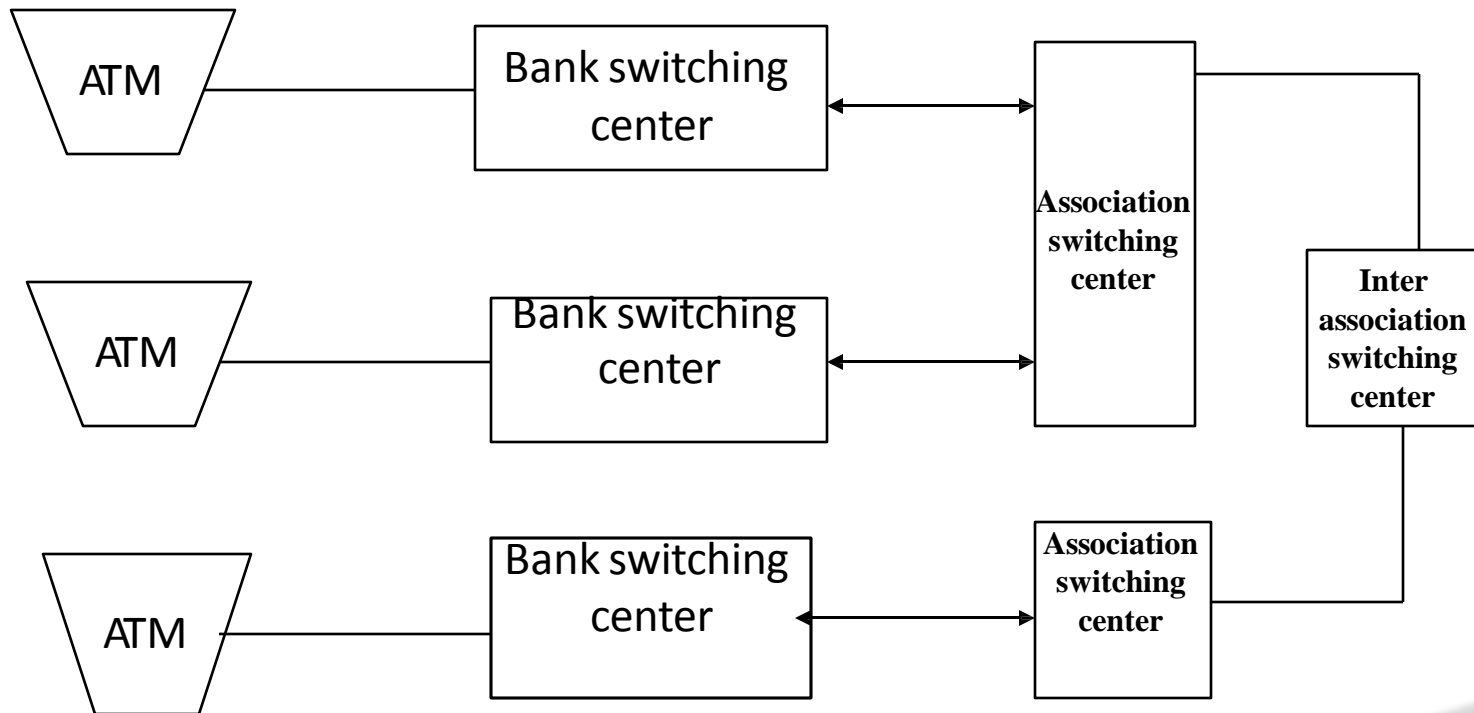
Consumer-oriented Electronic Commerce

- Consumer-Oriented Services:
 - Consumer applications can be classified into entertainment, financial services, information, essential services, and education and training.
 - Four types of application areas can be envisaged.
 - Personal Finance Management (Remote Banking)
 - Home banking services are often categorized as basic, intermediate, and advanced.
 - Basic Services relate to:
 - » Account statement reporting
 - » Round the clock banking with automated teller machines

Consumer-oriented Electronic Commerce

- Consumer-Oriented Applications:
 - Basic Services relate to:
 - Bill Payment
 - Account reconciliation
 - Status of Payments or “stop payment requests”
 - Banks introduced ATMs in the 1970s to automate deposits and cash extraction. As the ATM network expanded, customer loyalty became a thing of the past as customers began to look at technology and service as the differentiation, not the individual bank’s name.

Consumer Oriented e-commerce



Structure of ATM network

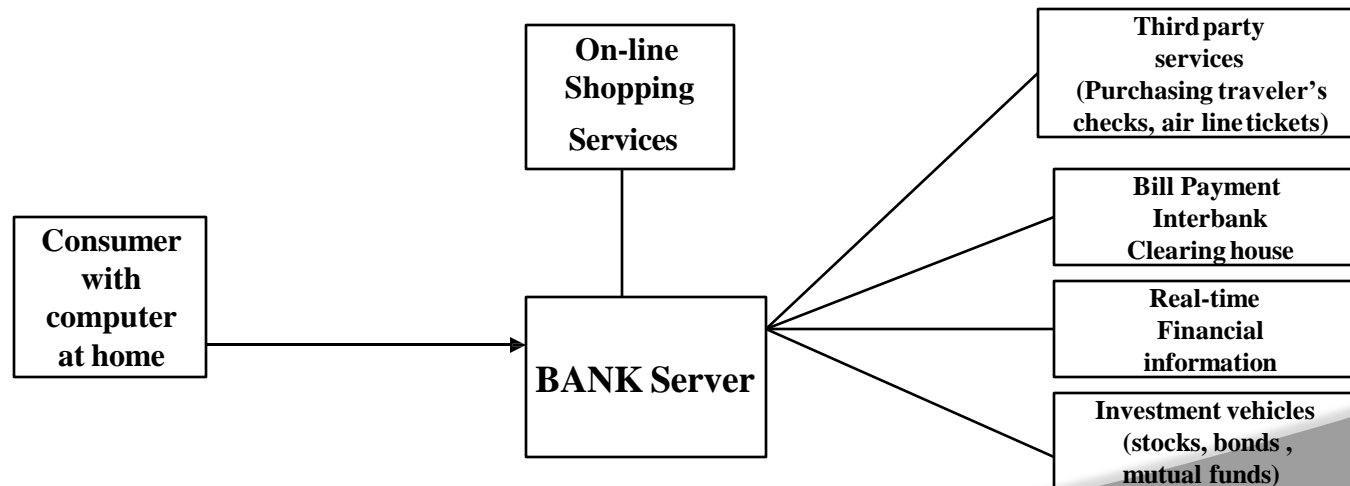
Consumer-oriented Electronic Commerce

- Intermediate Services
 - Include a growing array of home financial management services like
 - Household budgeting
 - Updating stock portfolio values
 - Tax return preparation
 - For the sophisticated customer, home banking offers the facility of paying bills, transferring funds, and opening new accounts from home.

Consumer-oriented Electronic Commerce

- **Advanced Services**

- There is a growing push in the banking and brokerage community to develop systems that support advanced services. They require extra-ordinary integration of computer systems at the branch, central office, and partners' levels.



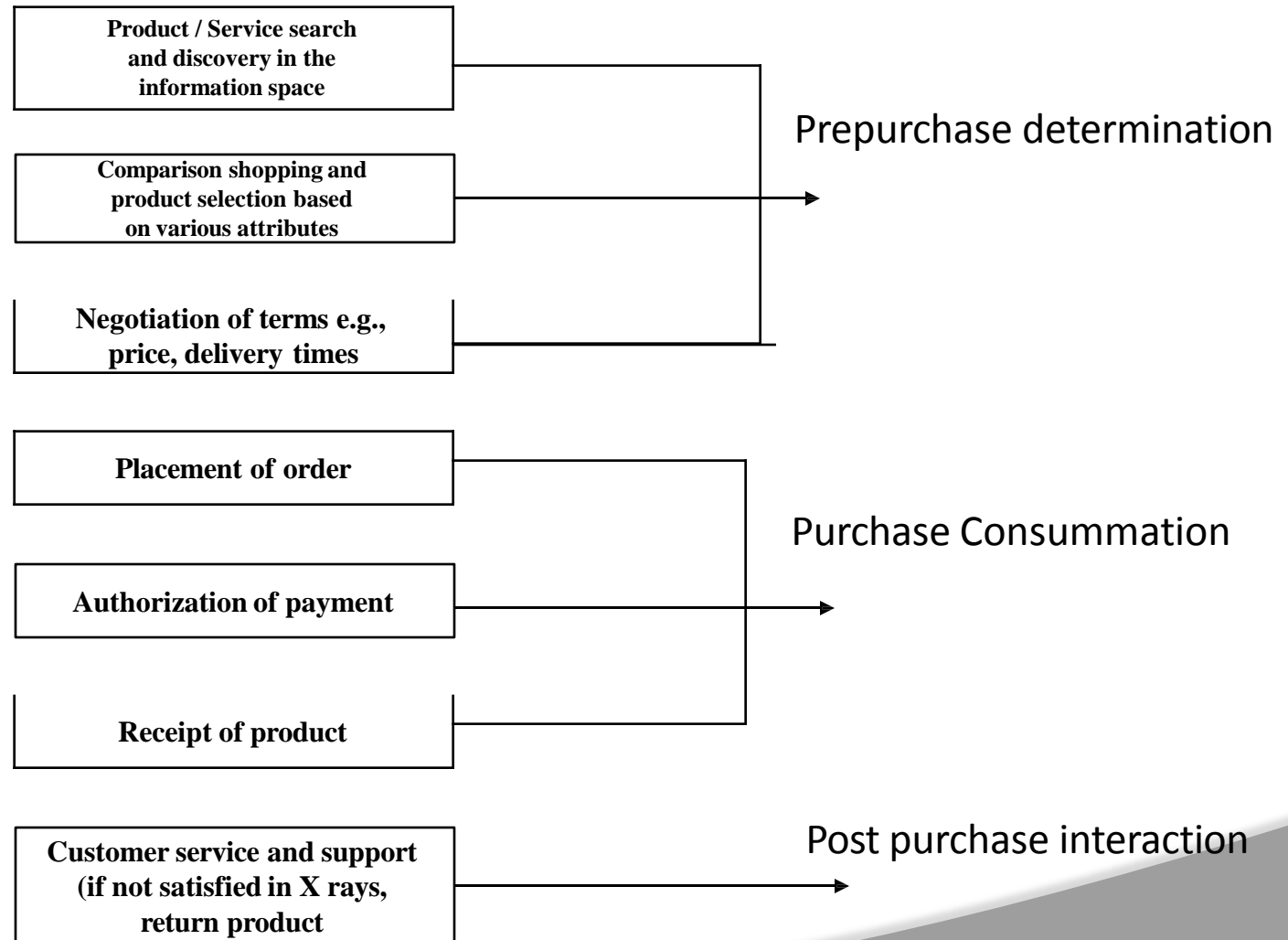
Consumer-oriented Electronic Commerce

- Home Shopping
 - Home shopping can be categorized as
 - Television based Shopping:
 - TV shopping has evolved over the years to provide a wide variety of goods ranging from collectibles, clothing, small electronics, house wares, jewelry and computers.
 - A customer uses remote control to shop different channels with the touch of a button. To target customers, channels are often specialized like fashion channel, style channel, spot light channel etc.

- Home Shopping
 - Catalog Based Shopping
 - Using a computer connected to the internet, an enquiry can be made to search various vendor catalogs which are available on line.
 - The on-line catalog business consists of brochures, CD-ROM catalogs and on-line interactive catalogs. Most on-line catalogs are some form of electronic brochures.
 - An extension of the electronic brochure concept is a multi product comprehensive on-line catalog system typically put in kiosks.

- Home Shopping
 - Home Entertainment
 - In the entire home entertainment area, the key element is the notion of customer control over programming. Entertainment services are expected to play a major role in e-commerce. Entertainment market is potentially a multibillion dollar one.
 - To serve the information needs of the customer, service providers whose product is information delivered over the I-way are creating an entirely new industry.

Mercantile Process Models



Mercantile model from the consumer's perspective

- Repurchase preparation
 - In general consumers can be categorized as
 - Impulsive buyers, who purchase products quickly
 - Patient Buyers, who purchase products after making some comparisons
 - Analytical buyers, who do substantial research before making the decision to purchase products or services.
- In most retailing sectors, impulse/unplanned purchasing is a major factor.

Mercantile Process Models

- Prepurchase preparation
 - Marketing researchers have isolated several types of purchasing.
 - Specially planned Purchase: The need was recognized on entering the store and shopper bought the exact item planned.
 - Generally Planned Purchase: The need was recognized, but the shopper decided in store on the actual manufacturer of the item to satisfy the need.
 - Reminder Purchases: The shopper was reminded of the need by some store influence.

Mercantile Process Models

- Prepurchase preparation
 - Consumer Information Search Process
 - Information search is defined as the degree of care, perception and effort directed toward obtaining data or information related to the decision problem. In the context of e-commerce, information search can be classified into two categories – Organizational and consumer search.

Mercantile Process Models

- Prepurchase preparation
- Information Brokers and Brokerages
 - To facilitate better consumer and organizational search, intermediaries called information brokers or brokerages are coming into existence.
 - Information brokerages are needed for three reasons – compassion shopping, reduced search costs and integration. Information formerly found at more or less the same high prices on all the on-line database search services can sometimes be found at other service bureaus at minute fractions of those charges.

- Purchase Consummation

A mercantile transaction is defined as the exchange of information between the buyer and seller followed by the necessary payment.

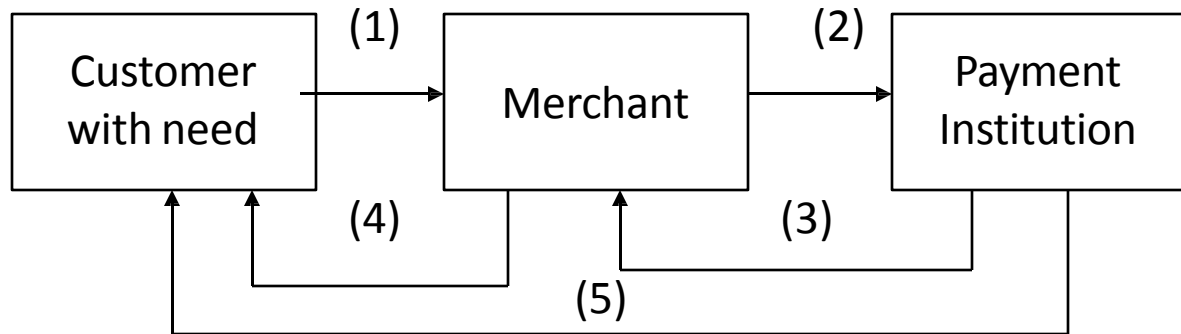
A Simple mercantile model would require the following transactions.

1. Buyer contacts vendor to purchase product or service. This dialogue might be interactive on-line-through world wide web (WWW), e-mail, off-line through an electronic catalog and telephone.
2. Vendor states price.
3. Buyer and vendor may or may not engage in negotiation

Mercantile Process Models

- Purchase Consummation
 - Vendor contacts his or her billing service to verify the encrypted authorization for authentication.
 - Billing service decrypts authorization and checks buyer's account balance or credit and puts a hold on the amount of transfer.
 - Billing service gives the vendor the “green light” to deliver product and sends a standardized message giving details of transaction for merchants records.

Mercantile Process Models



1. Buy Request
2. Remittance Request
3. Approval
4. Delivery
5. Monthly Statement

On-line Mercantile Model

Mercantile Process Models

Mercantile Process Using Digital Cash

Electronic cash is similar to paper currency and has the benefits of being anonymous and easily transmitted electronically. The following is a generic mercantile protocol based on the use of e-cash.

1. Buyer obtains anonymous e-cash from issuing bank.
2. Buyer contacts seller to purchase product
3. Seller states price.
4. Buyer sends e-cash to seller
5. Seller contacts his bank or billing service to verify the validity of the e-cash.

- Mercantile Transaction Using Credit Cards
 - Two major components comprise credit card transactions in the mercantile process - Electronic authorization and settlement.
 - In retail transaction, a Third Party Processor (TPP) captures information at the point of the sale, transmits the information to the credit card issuer for authorization, communicates a response to the merchant, and electronically stores the information for settlement and reporting.

Mercantile Process Models

- Mercantile Transaction Using Credit Cards
Steps involved in a retail transaction:
 - Once in the network, the system verifies the source of the transaction and routes it to the appropriate authorization source, where the cardholder's account record is reviewed. An authorization code is then sent back through the network for display on the point-of-sale device.
 - Periodically the retail location initiates a “close-out” transaction that bundles completed transaction information into a “batch”.

- Mercantile Transaction Using Credit Cards
 - Steps involved in a retail transaction:
 - The pricing of electronic transaction services provided by TPP to merchant clients takes one of two forms.
 - In the first form, merchants are charged a flat fee per transaction for authorization and data capture services.
 - The other form of billing allows merchants to pay a “bundled” price for authorization, data capture and settlement

- Other challenges that may arise are:
 - Inventory Issues: If the item is in stock, a company must be able to assign that piece to the customer and remove it from available inventory. Otherwise the disappointed customer tries to find alternative products.
 - Data Base and compatibility Issues: User can be able to access instantly the information from the vendor computers
 - Customer service issue: Customer's questions should be resolved on on-line basis for a better service.

- Mercantile Models - Merchant's Perspective
 - To fully realize and maintain a competitive advantage in the on-line environment, a company must build a robust vision of what its order- to-delivery cycle, and all the business processes that support it.
 - The order management cycle (OMC) includes eight distinct activities. OMC has the following generic steps.
 - Order Planning and Order Generation:
 - Order planning leads to order generation. Orders are generated in a number of ways in the e-commerce environment. The sales force broadcasts ads, sends personalized e-mail to customers or creates a WWW page..

Mercantile Process Models

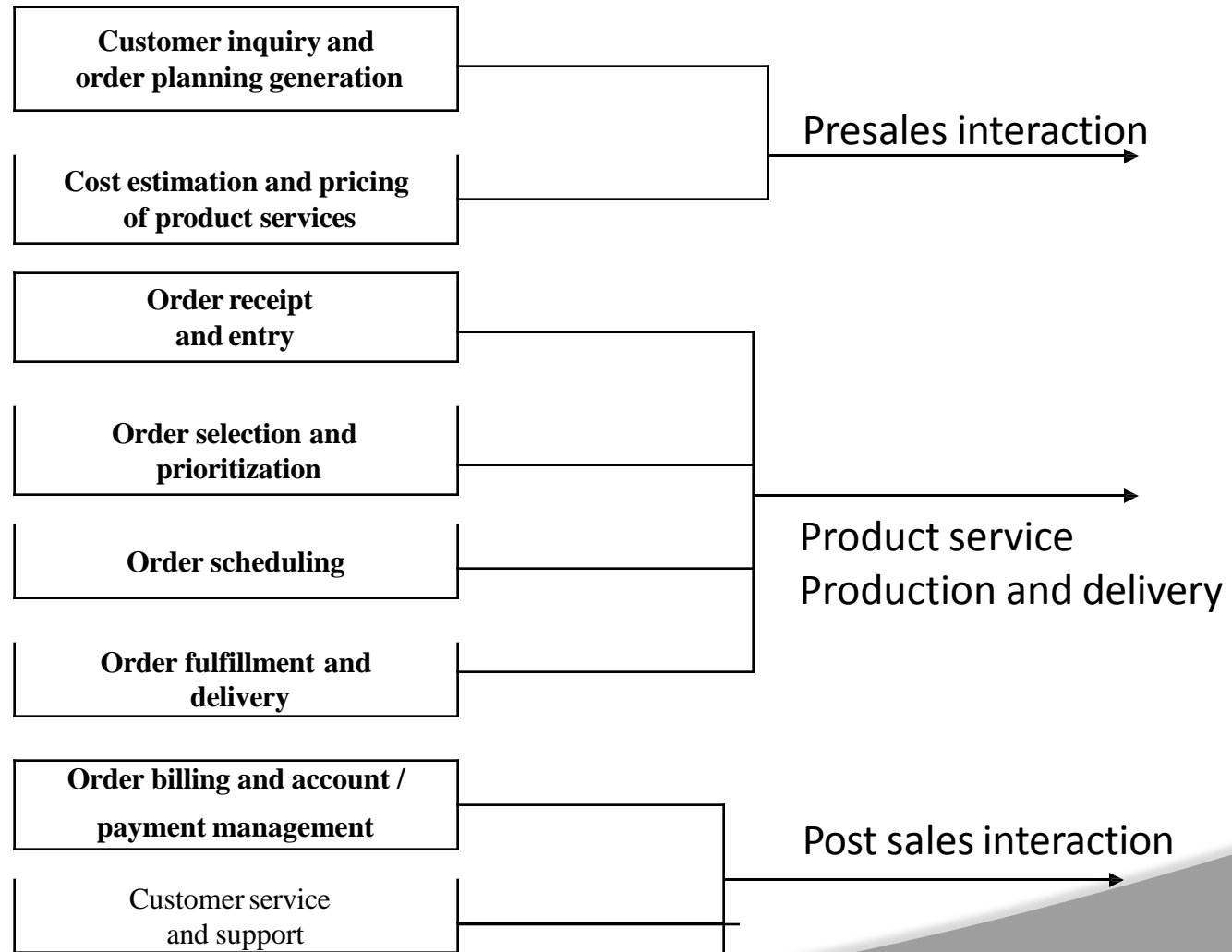
- Mercantile Models - Merchant's Perspective
 - Cost Estimation and Pricing:
 - Pricing is the bridge between customer needs and company capabilities. Pricing at the individual order level depends on understanding the value to the customer that is generated by each order, evaluating the cost of filling each order instituting a system that enables the company to price each order based on its value and cost.
 - Order receipt and Entry:
 - After an acceptable price quote, the customer enters the order receipt and entry phase of OMC.

- Mercantile Models - Merchant's Perspective
 - Order Selection and Prioritization:
 - Customer service representatives are also often responsible for choosing which orders to accept and which to decline. There is little recognition of the importance that should be placed on order selection and prioritization in e-commerce.
 - Order Scheduling:
 - During the ordering scheduling phase the prioritized orders get slotted into an actual production or operational sequence.

Mercantile Process Models

- Mercantile Models - Merchant's Perspective
 - Order Billing and Account/Payment Management:
 - After the order has been fulfilled and delivered billing is typically handled by the finance staff.
 - Postsales Service:
 - This phase plays an increasingly important role in all elements of a company's profit equation: Customer value, price and cost.

Mercantile Process Models



Order Management Cycle in e-commerce

UNIT- V

Course learning outcomes

CLO's	Course Learning outcomes
CLO18	Understand about the key multimedia concepts
CLO19	Demonstrate about the digital video and electronic commerce
CLO20	Explain the desktop video processing and desktop video conferencing

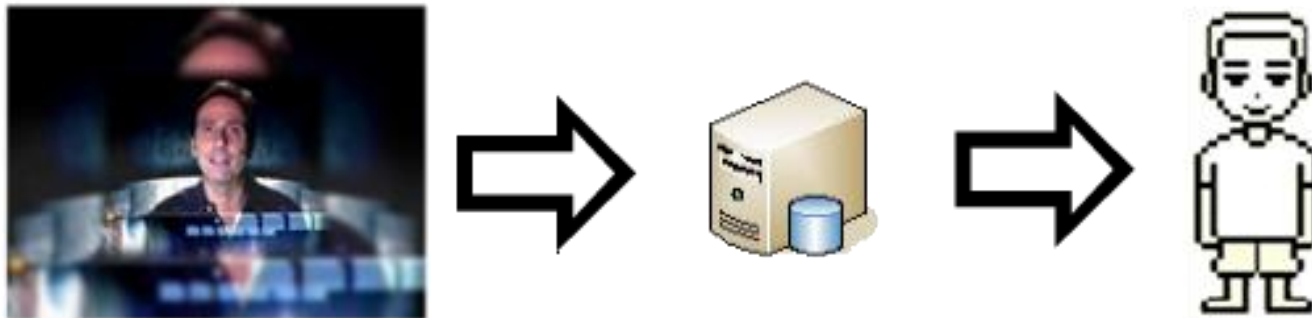
Multimedia Definition

- The term multimedia usually implies that at least one of text (structured/unstructured, hypertext, etc), graphics (drawings), or image (discrete media) is associated with either audio or motion video information (continuous media).

Multimedia streaming

- Multimedia streaming is the overlapping the play out of the data at the receiver with the transmission by the sender.
 - ❖ A video stream consists of a sequence of images or frames.
 - A frame consists of a grid of pixels.
 - ❖ An audio stream consists of a sequence of audio samples.

- Streaming vs. downloading
- What Is The Difference Between Downloading and Streaming?
 - When you download a video, you have to copy the entire file to your hard disk before you can play it.



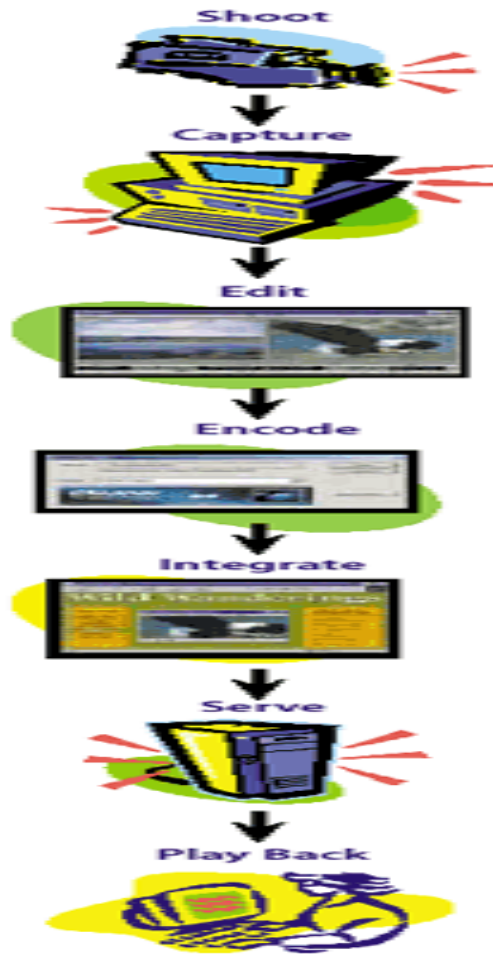


Figure 3. Capturing Video

- Two different types of real-time streaming:
 - Live streaming
 - ❖ used to deliver a live event while it is occurring.
Examples: live soccer game, live concerts, live radio, and videoconferences.
 - On-demand streaming
 - ❖ used to deliver archived media streams.
Examples: video clips, movies, and lectures.

- How does streaming work?

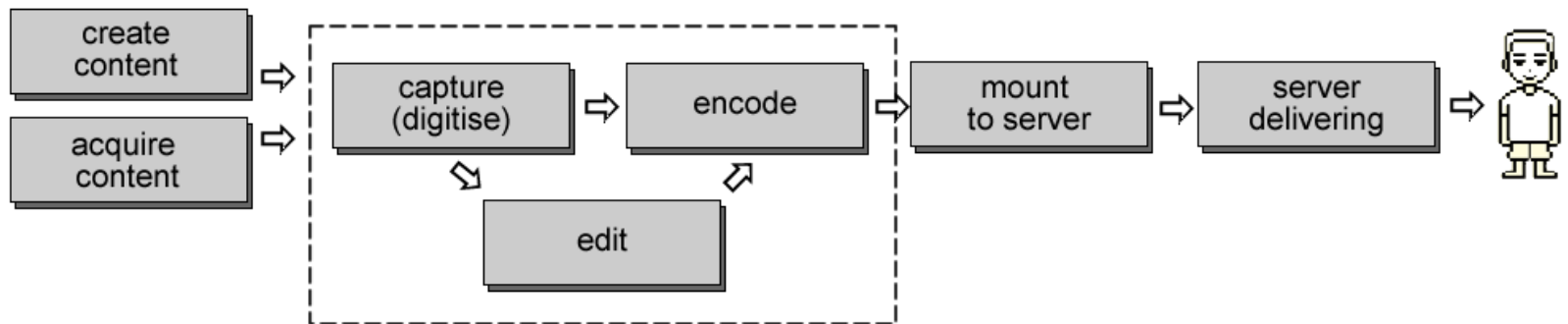


Figure 4. Streaming media development process

Multimedia Compression

- Compression is the process of eliminating redundant information to decrease file size.
- Compression converts frames and pixels to mathematical algorithms that the computer can understand.
- Decompression converts mathematical algorithms back to frames and pixels for playback.

Multimedia Compression

- Two compression methods are:

Lossless compression

- Run-Length coding
- Huffman coding
- Arithmetic coding

Lossy compression

- Transform coding

Lossless compression

- Lossless compression retains all of the data of the original file as it's converted to a smaller file size.
- In lossless compression the information is recovered without any alteration after the decompression stage.
- When a lossless file is opened, algorithms restore all compressed information, creating a duplicate of the source file.

Lossless compression

- It generally preferred for creating high-quality or professional applications.
- Lossless compression is applied where the accuracy of the information is essential, such as in medical imaging where it's important to retain fine detail.
- Lossless compression is also called bit-preserving compression.

Compression/Coding Standards

- The MPEG Standards
 - MPEG standards developed and managed by Motion Picture Experts Group (MPEG)
 - ❖ MPEG-1: VCD
 - ❖ MPEG-2: DVD, HDTV
 - ❖ MPEG-4: Content-based video coding
 - ❖ MPEG-7: Multimedia indexing and retrieval
 - ❖ MPEG-21: Multimedia delivery and consumption

Codec

- Codec stands for Coder/Decoder or Compression/Decompression.
- Codec is a piece of software or a driver that is mostly for compression to reduce file size but may also do some formatting.
- Compression is the primary function of the Codec.

E-Commerce: Digital Markets



- E-commerce: use of the Internet and Web to transact business; digitally enabled transactions.
- Began in 1995 and grew exponentially; still growing even in a recession.
- Companies that survived the dot-com bubble burst and now thrive.

The Growth of E-Commerce

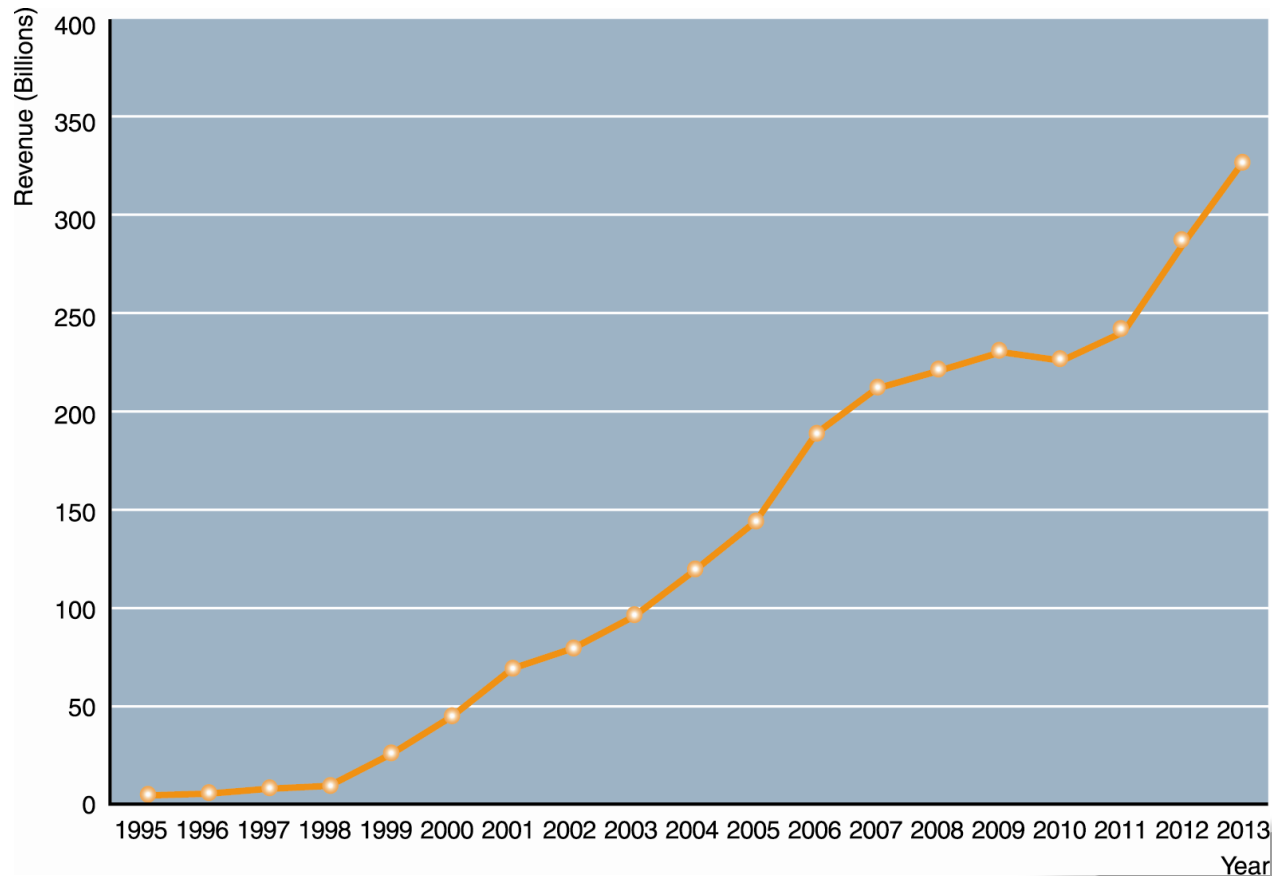


Figure 9-1

- Why E-Commerce Is Different

- Ubiquity

- Internet/Web technology available everywhere: work, home, and so on, anytime.
- Effect:
 - Marketplace removed from temporal, geographic locations to become “market space”
 - Enhanced customer convenience and reduced shopping costs

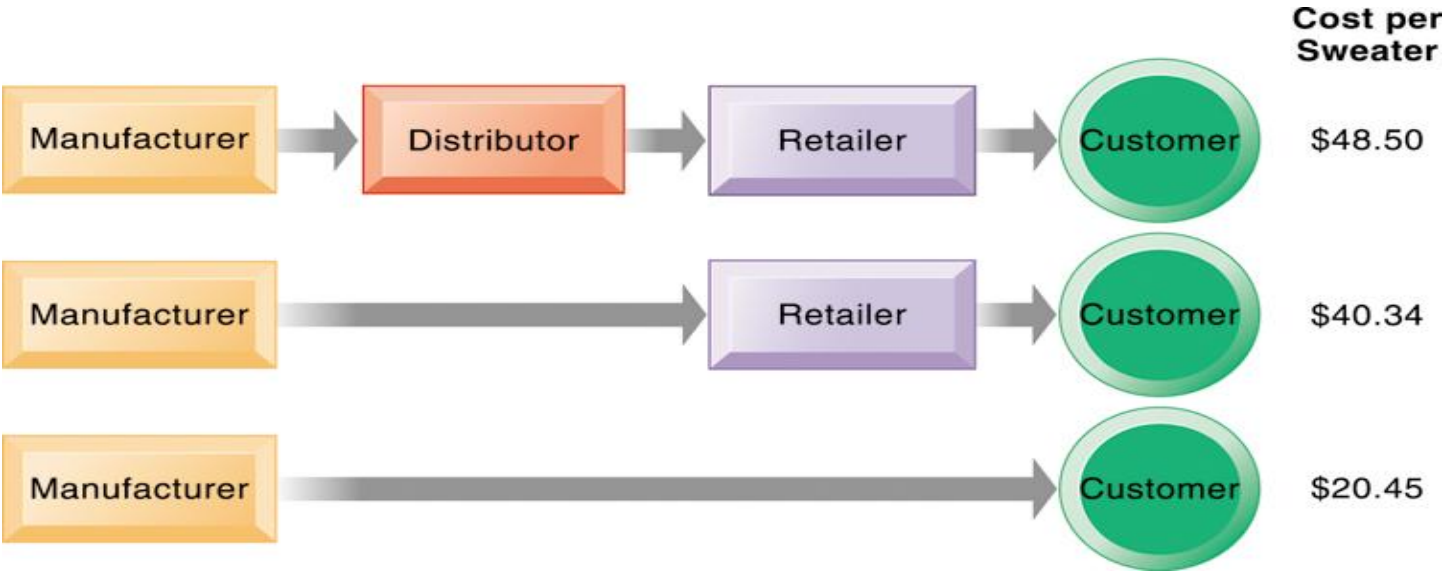
Unique Features of E-commerce Technology

- Global reach
 - The technology reaches across national boundaries, around Earth
 - Effect:
 - Commerce enabled across cultural and national boundaries seamlessly and without modification.
 - Market space includes, potentially, billions of consumers and millions of businesses worldwide.

Digital markets reduce

- Information asymmetry - when one party in a transaction has more information that is important for the transaction than the other party
- Search costs - the effort to find suitable products
- Transaction costs - the cost of participating in a market
- Menu costs - merchants' costs of changing prices

The Benefits of Disintermediation to the Consumer



- Digital goods
 - Goods that can be delivered over a digital network
 - E.g., music tracks, video, software, newspapers, books
 - Cost of producing first unit almost entire cost of product: marginal cost of producing 2nd unit is about zero
 - Costs of delivery over the Internet very low
 - Marketing costs remain the same; pricing highly variable
 - Industries with digital goods are undergoing revolutionary changes (publishers, record labels, etc.)

- M-commerce
 - In 2012 is 10% of all e-commerce
 - Fastest growing form of e-commerce
 - Some areas growing at 50%
 - Four billion mobile phone users worldwide
 - Main areas of growth
 - Retail sales at top Mobile 400 (Amazon, eBay, etc.)
 - Sales of digital content (music, TV, etc.)
 - Local search for restaurants, museums, stores

Consolidated Mobile Commerce Revenues

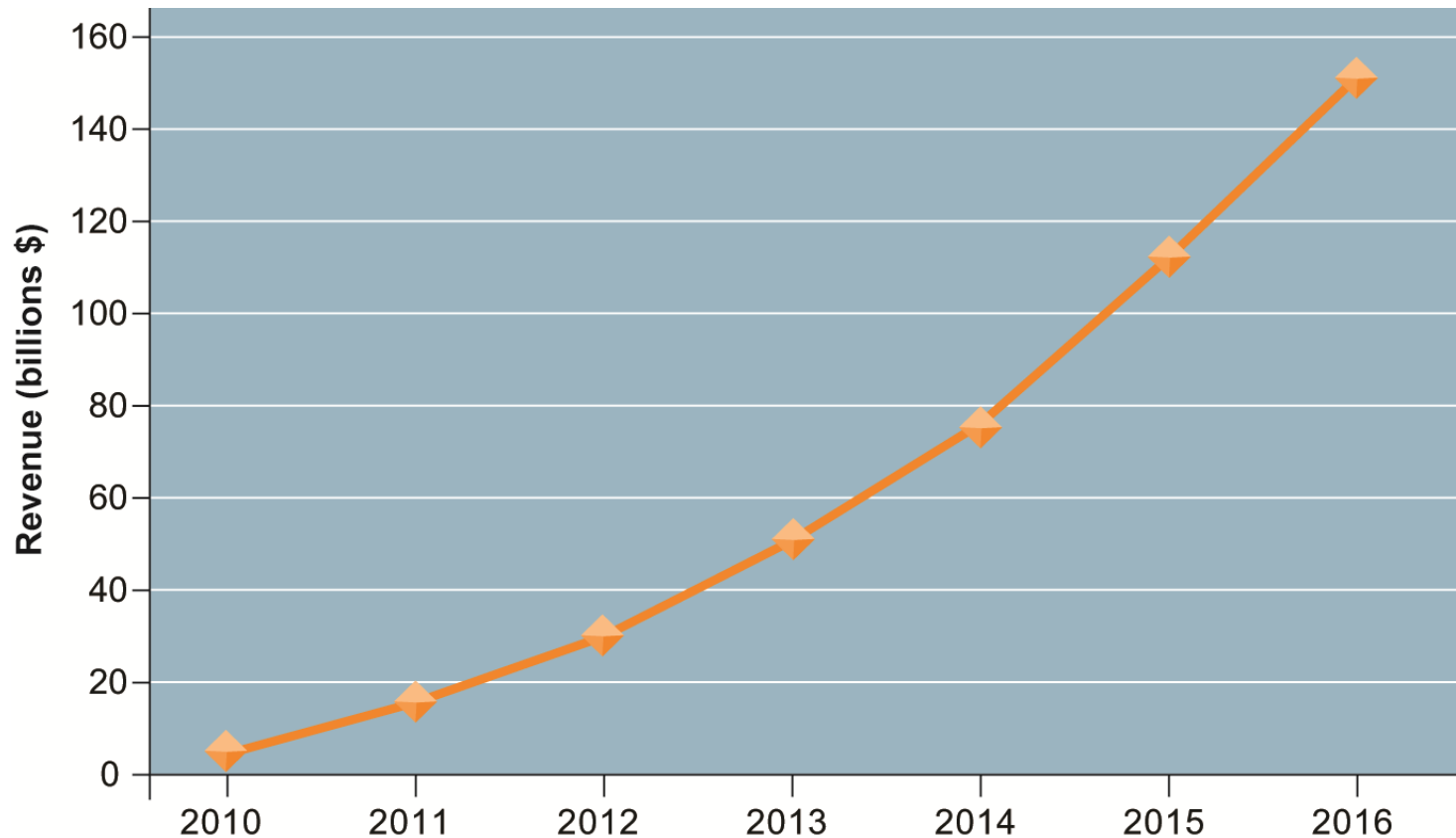


Figure 10-9

Mobile e-commerce is the fastest growing type of B2C e-commerce although it represents only a small part of all e-commerce in 2011.

Desktop Internet Videoconferencing

1. Fast PC. 300 MHz minimum. 450 MHz best.
2. Good quality video conferencing equipment.
Forget “web cameras”.
Forget software like Net meeting.
3. Good Internet connection.
Most large university networks are good.
Forget 56K modem dial-in.
Cable modems and DSL are possible.

Video Conferencing Products

Software-based

Generally slow and non-standard; not very satisfactory.

Examples: Microsoft NetMeeting, White Pine SeeMe.

Hardware-based, plug into PC USB Port.

- Newest approach; will become ubiquitous

Examples: Polycom ViaVideo, VCON ViGo

Hardware-based, PCI-bus cards install inside PC.

Added features and controls, beyond USB systems.

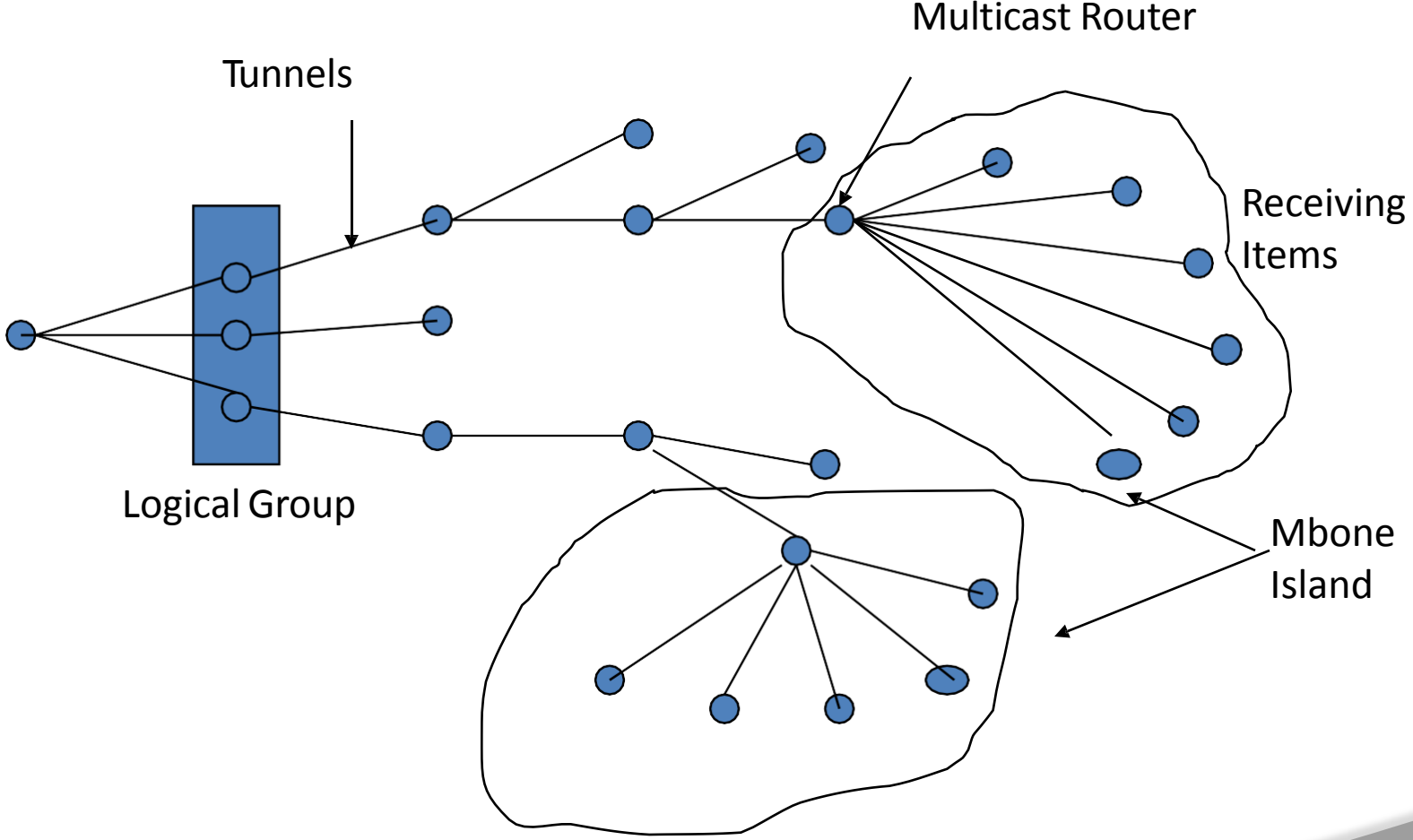
Examples: Zydacron Z340, VCON Escort 25.

Hardware-based, standalone, no PC involved.

Easiest to use, best quality.

Example: Polycom Viewstation 128

Desktop Video Conferencing



MBONE configuration