

UNIT-1

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. – People rarely see / know each other, physically located anywhere in the world.

OVERVIEW OF E-COMMERCE:

Information processing in e-commerce can be categorized as

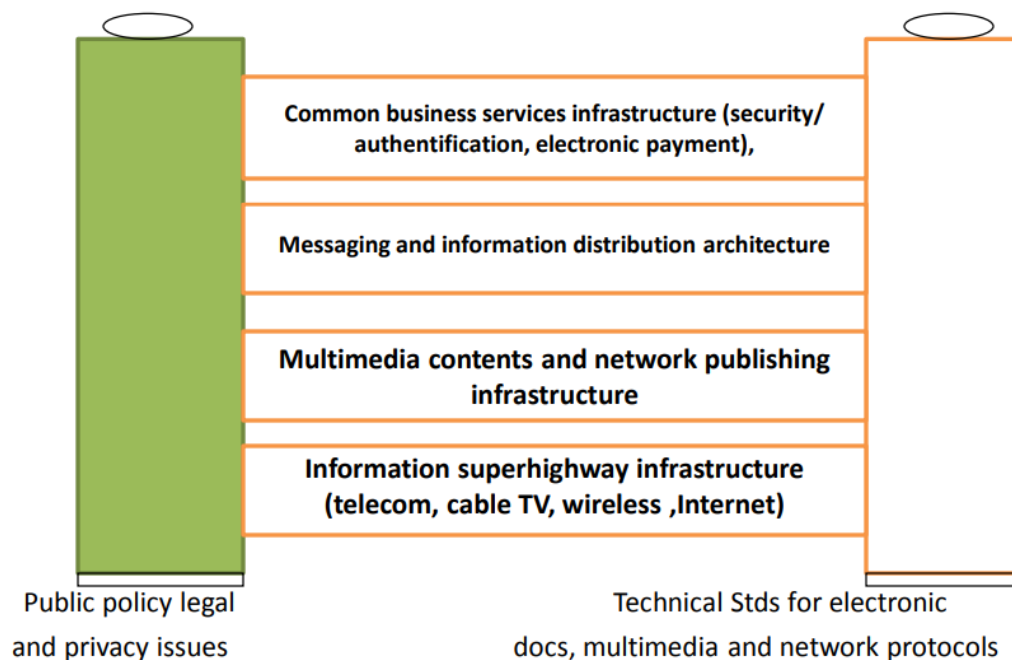
Transactions between a company and the consumer over public networks for the purpose of home shopping home banking using encryption for security and electronic cash, credit or debit tokens for payment.

Transactions with trading partners using Electronic Data Interchange (EDI).

Transactions for information gathering such as market research using bar code scanners, information processing for managerial decision making or organizational problem solving, and information manipulation for operations and supply chain management.

Transactions for information distribution with prospective customers, including interactive advertising, sales and marketing.

ELECTRONIC COMMERCE FRAME WORK:



Electronic Commerce Framework

E-Commerce application will be built on the existing technology infrastructure

A myriad of computers

Communication networks

Communication software

Common business services for facilitating the buying and selling process

Messaging & information distribution as a means of sending and retrieving information

Multimedia content & network publishing, for creating a product & a means to communicate about it

The information superhighway- the very foundation-for providing the high way system along which all e-commerce must travel

The two pillars supporting all e-commerce applications & infrastructure

Any successful e-commerce will require the I-way infrastructure in the same way that regular commerce needs

I-way will be a mesh of interconnected data highways of many forms

Telephone,wires,cable TV wire

Radio-based wireless-cellular & satellite

Movies=video + audio

Digital games=music + video + software

Electronic books=text + data + graphics + music + photographs + video

In the electronic 'highway system' multimedia content is stores in the form of electronic documents

These are often digitized

On the I-way messaging software fulfills the role, in any no. of forms: e-mail, EDI, or point-to-point file transfers

Encryption & authentication methods to ensure security

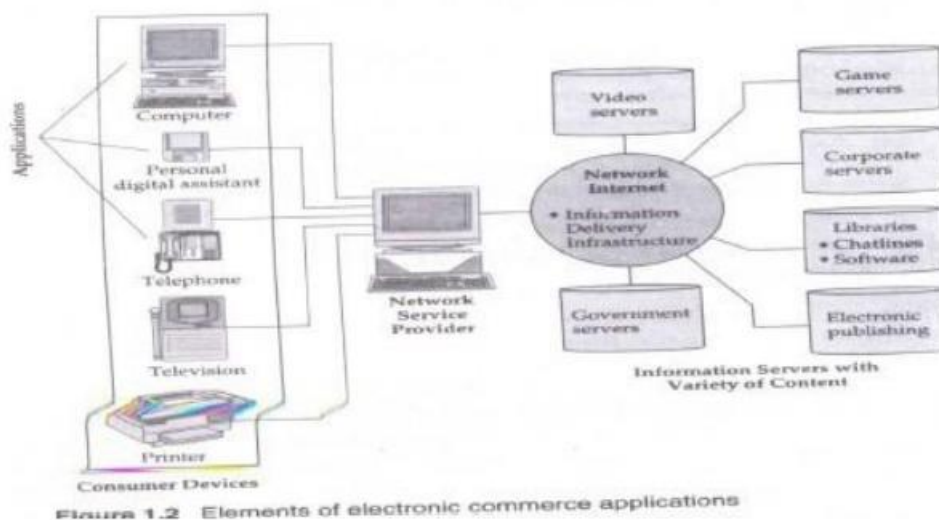
Electronic payment schemes developed to handle complex transactions

These logistics issues are difficult in long-established transportation.

Anatomy of E-Commerce applications :

E-Commerce applications are:

1. Multimedia Content for E-Commerce Applications
2. Multimedia Storage Servers & E-Commerce Applications
 - i. Client-Server Architecture in Electronic Commerce
 - ii. Internal Processes of Multimedia Servers
 - iii. Video Servers & E-Commerce
3. Information Delivery/Transport & E-Commerce Applications
4. Consumer Access Device



1. Multimedia Content for E-Commerce Applications:

Multimedia content can be considered both fuel and traffic for electronic commerce applications.

The technical definition of multimedia is the use of digital data in more than one format, such as the combination of text, audio, video, images, graphics, numerical data, holograms, and animations in a computer file/document.

Multimedia is associated with Hardware components in different networks

The Accessing of multimedia content depends on the hardware capabilities of the customer

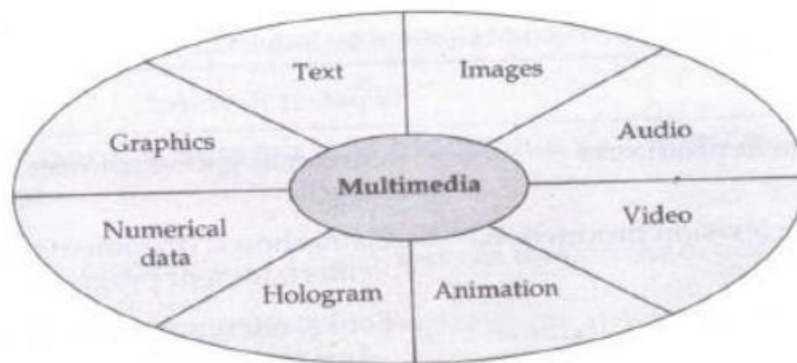


Figure 1.3 Possible components of multimedia

2. Multimedia Storage Servers & E-Commerce Applications:

E-Commerce requires robust servers to store and distribute large amounts of digital content to consumers.

These Multimedia storage servers are large information warehouses capable of handling various content, ranging from books, newspapers, advertisement catalogs, movies, games, & X-ray images.

These servers, deriving their name because they serve information upon request, must handle large-scale distribution, guarantee security, & complete reliability

i. Client-Server Architecture in Electronic Commerce:

Clients are devices plus software that request information from servers or interact known as message passing

Mainframe computing , which meant for “dump”

The client server model, allows client to interact with server through request-reply sequence governed by a paradigm known as message passing.

The server manages application tasks, storage & security & provides scalability-ability to add more clients and client devices (like Personal digital assistants to Pc's. See in fig.

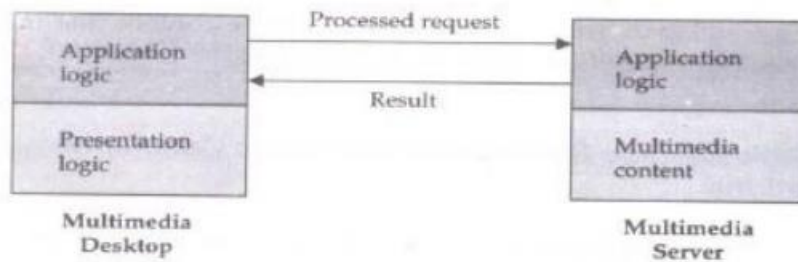


Figure 1.4 Distribution of processing in multimedia client-server world

ii. Internal Processes of Multimedia Servers:

The internal processes involved in the storage, retrieval & management of multimedia data objects are integral to e-commerce applications.

A multimedia server is a hardware & software combination that converts raw data into usable information & then dishes out.

It captures, processes, manages, & delivers text, images, audio & video.

It must do to handle thousands of simultaneous users.

Include high-end symmetric multiprocessors, clustered architecture, and massive parallel systems.

iii. Video Servers & E-Commerce:

The electronic commerce applications related to digital video will include

- Telecommunicating and video conferencing
- Geographical information systems that require storage & navigation over maps
- Corporate multimedia servers
- Postproduction studios
- Shopping kiosks.
- Consumer applications will include video-on-demand.

The figure which is of video-on demand consist video servers, is an link between the content providers (media) & transport providers (cable operators)

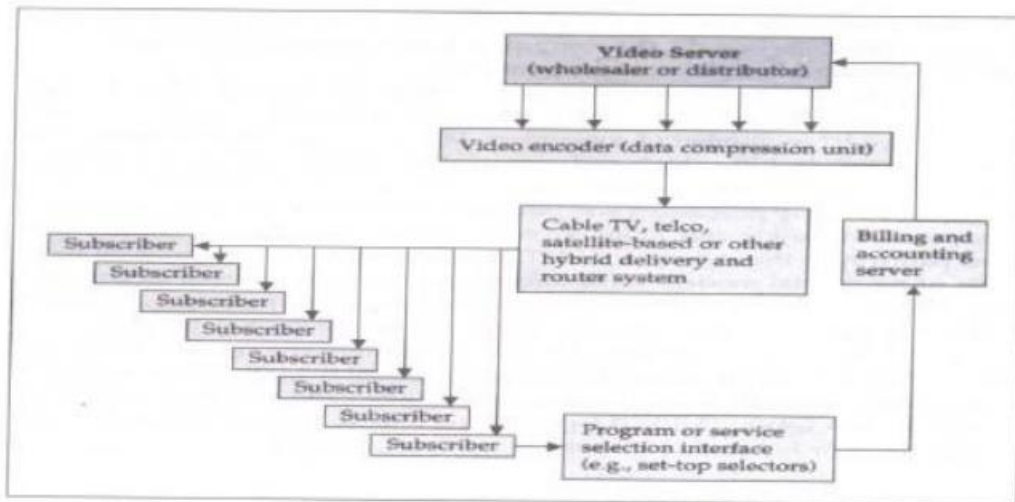


Figure 1.5 Block diagram of a generic video on-demand system

3.Information Delivery/Transport & E-Commerce Applications:

Transport providers are principally telecommunications, cable, & wireless industries.

Transport Routers

Information Transport Providers

Information Delivery Methods

Telecommunication companies

long-distance telephone lines; local telephone lines

Cable television companies

Cable TV coaxial, fiber optic & satellite lines

Computer-based on-line servers

Internet; commercial on-line service providers

Wireless communications

Cellular & radio networks; paging systems

Consumer Access Devices:

Information Consumers

Access Devices

Computers with audio & video Mobile computing Personal/desktop computing capabilities

Telephonic devices

Videophone

Consumer electronics systems

Television + set-top box Game

Personal digital assistants (PDAs)

Pen-based computing, voice-driven computing

E-Commerce Organizational Applications:

Changing business Environment :

1. The traditional business environment is changing rapidly
2. Many companies are looking outside and within to shape business strategies
3. These activities include private electronic connection to customers,suppliers,distributors,industry groups etc ..,
4. The I-superhighway will expand this trend so that it allow business to exchange information.

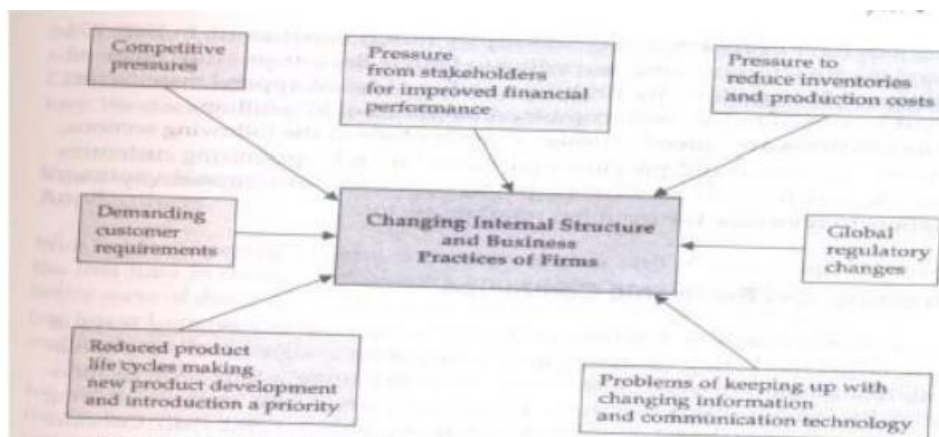


Figure 1.6 Pressures influencing business

E-Commerce and the retail Industry:

1. Conditions are changing in the “new economy” with respect to the retail industry
2. Consumers are demanding lower prices, better quality, a large selection of in-season goods.
3. Retailers are filling their order by slashing back-office costs, reducing profit margins, reducing cycle times. buying more wisely and making huge investments in technology
4. Retailers are in the immediate line of fire and were first to bear the brunt of cost cutting

Marketing and E-Commerce :

1. E-commerce is forcing companies to rethink the existing ways of doing target marketing and even event marketing.
2. Interactive marketing is in electronic markets via interactive multimedia catalogs
3. Users find moving images more appealing than still image and listening more appealing than reading text on a screen
4. Consumer information services are a new type of catalog business

Inventory Management and Organizational Applications:

1. With borders opening up and companies facing stiff global competition
2. Adaptation would include moving to computerized, “paperless” operations to reduce
3. Once targeted business process is inventory management, solutions for these processes go by different names
4. In manufacturing industry they’re known as just-in-time inventory systems, in the retail as quick response programs, and in transportation industry as consignment tracking systems

Just-in-Time (JIT) Manufacturing :

1. It is viewed as an integrated management system consisting of a number of different management practices dependent on the characteristics of specific plants
2. The first principle is elimination of all waste (time, materials, labour & equipment)
3. The following management practices are focused factory, reduced set-up times, group technology, total productive maintenance, multifunction employees, uniform workloads, IT purchasing, kanban total quality control & quality circles

Quick Response Retailing (QR) :

1. It is a version of JIT purchasing tailored for retailing
2. To reduce the risk of being out of stock, retailers are implementing QR systems
3. It provides for a flexible response to product ordering and lowers costly inventory levels
4. QR retailing focuses on market responsiveness while maintaining low levels of stocks
5. It creates a closed loop consisting of retailer, vendor, & consumer chain, & as consumers make purchases the vendor orders new deliveries from the retailer through its computer network.

Supply Chain Management:

1. QR and JIT address only part of the overall picture
2. Supply Chain Management (SCM) is also called “extending”, which means integrating the internal and external partners on the supply and process chains to get raw materials to the manufacturer and finished products to the consumer
3. It includes following functions Supplier management:

The goal is to reduce the number of suppliers and get them to partners

Inventory management:

The goal is to shorten the order-ship-bill cycle. When a majority of partners are electronically linked, information faxed or mailed

Distribution management:

The goal is to move documents (accurate data) related to shipping

Channel management:

The goal is to quickly disseminate information about changing operational conditions (technical, product, and pricing information) to trading partners

Payment management:

The goal is to link 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 flow of information among the sales, customer & production functions In sum, the supply chain management process increasingly depends on electronic markets

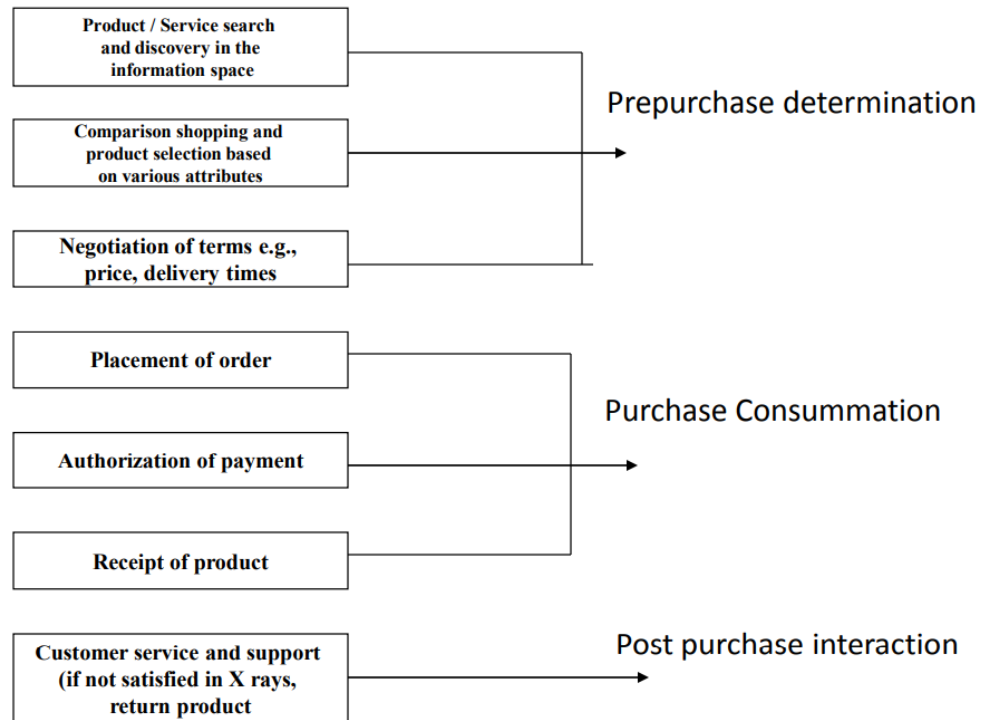
Work group Collaboration Applications:

1. A internetwork that enables easy and inexpensive connection of various organizational segments

2. It is to improve communications and information sharing and to gather and analyze competitive data in real-time
3. Videoconferencing, document sharing and multimedia e-mail, are expected to reduce travel and encourage telecommuting
4. Improves the distribution channel for documents and records to suppliers, collaborators and distributor.

UNIT-2

Mercantile Process Models



Mercantile model from the consumer's perspective

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MERCANTILE PROCESS MODEL: -

Mercantile process is an interaction model between consumer and Merchants for online commerce.

- This is necessary to buy and sell goods, a buyer, a seller, and other parties should follow some standard business processes.
- The establishment of a common merchant process (or set off processes) is must to increase the convenience for customers.
- A well established standard process using processing credit cards purchases contributed more for the E-Commerce. There are three types of mercantile models
- . • Mercantile models from the consumer's perspective
- Mercantile models from the merchant's perspective

MERCANTILE MODELS FROM THE CONSUMER'S PERSPECTIVE:-

The online consumer expects quality, convenience, value, low price a//

/nd control. To meet these expectations, the business process model from consumer's grouped seven activities into 3 phases

Seven activities are

1)Product / service search 2)Product selection 3)Negotiations of terms	1)Pre-purchase determination
4) Placement of order 5)Authorization of payment 6)Receipt for payment	2)Purchases consumption
7)Customer service and support	3)Post purchase interaction

PRE-PURCHASE DETERMINATION:-

It includes search and discovery for a set of products in the large information space capable of meeting customer requirement and product selection from the smaller set of products based on attribute (characteristics) comparison.

Consumers have to watch for a new or existing information regarding variables that are important for the purchase decision process.

- 1) Impulsive buyers:- Who purchase products quickly. Customers are of 3 types.
- 2) Patient buyers:- Who purchase products after making comparison.
- 3) Analytical buyer:- Who do substantial research before making the decision to purchase products or services.

In the context of E-Commerce, information search can be classified into 2 categories.

- 1) Organizational search
- 2) Consumer search

1. ORGANIZATIONAL SEARCH:-

- It is an activity designed to balance the cost of acquiring information with the benefits of improved final decisions.
- As time to time changes information regarding product may be relatively less valuable, so firm or organization respond to high-pauid information change by constraining search process

2. CONSUMER SEARCH:- Consumer search are categorized into 2 types.

- Utilitarian means task related and relational, implying that a product is purchased in efficient manner.
- Hedonic value means for fun sake and playfulness, does not complete the task. In facilitating better consumer satisfaction and organizational search, intermediaries called information brokers or brokerages.

Information brokerages are needed for 3 reasons.

- Comparison shopping
- Reduced search costs
- Integration

PURCHASE CONSUMATION:-

- After identifying the products to be purchased, the buyer and seller must interact to carryout mercantile transactions.
- A mercantile transaction is defined as the exchange of information between buyer and seller followed by the payment.
- Depending on the payment model mutually agreed on, they may interact by E-Cash, or transferring authorization for credit billing authorization (Visa, Master Cards)
- Mercantile process using digital cash or E-Cash.
- Mercantile process using credit cards.
- Basic mercantile process model for any transaction online business.

1) Buyer contact vender to purchase product, through WWW, Email, Telephone etc.

2) Vender states price

3) Buyer and vender may or may not engage in negotiation.

4) If satisfy, a buyer authorized payment to the vendor with an encrypted transaction for the agreed price.

5) Vendor contacts his or her billing service to verify the encrypted authorization for authentication.

6) Billing service decrypts authorization and check buyer's account balance and put hold on the amount of transfer

- 7) Billing service gives the vendor the 'green light' to deliver products and sends a standardized message giving details of transactions for merchants records.
- 8) On notification of adequate funds to cover financial transactions, vendor delivers the goods to buyers.
- 9) On receiving the goods the buyers signs and delivers receipt. Vendor tells billing service to complete the transactions.
- 10) All the end of billing cycle, buyer receive a transactions

MERCANTILE PROCESS USING DIGITAL CASH OR E-CASH:-

E-Cash is similar to paper currency and has more benefits and is easily transmitted electronically. The following are the mercantile protocols based on the use of e-cash.

1. Buyer obtains anonymous (secret) e-cash from issuing bank.
2. Buyer contacts seller to purchase product.
3. Seller states the price.
4. Buyer sends e-cash to seller.
5. Seller contacts his bank or billing Service to verify the validity of the e-cash.
6. Bank gives o.k. signal to seller.
7. Seller delivers the product to buyer.
8. Seller then tells bank to mark the e-cash as

MERCANTILE TRANSACTIONS USING CREDIT CARDS:

Two major components comprise credit card transactions in the mercantile process: Electronic Authorization and Settlement credit authorization processes at point-of-sale terminal.

The credit card number is checked against the database and the transaction is either approved or denied, within few seconds. Step-by-step a/c of a retail transaction follows:

Step 1: A customer presents a credit card for payment at a retail location.

Step 2: The point-of-sale s/w directs the transaction to the Local Network access point.

Step 3: The system verifies the source of the transactions and routes to the appropriate authorization source.

Step 4: At retail location collects all complementary transaction information into a 'batch'.

Step 5: The system gathers all completed transactions and processes the data in preparation for settlement.

Post purchase interaction: This includes customer service and support to address customer complaints, product returns and product defects.

: - Inventory Issues.

: - Database Access.

MERCANTILE MODELS FROM THE MERCHANTS PERSPECTIVE

The Order to delivery cycle from the Merchant's perspective has been managed with an standardization & cost.

To fully realize and maintain a competitive advantage in the on-line environment, a company must build a robust vision of "order-to-delivery" cycle. This leads to another cycle "Order Management Cycle" (OMC) .

OMC includes eight distinct activities.

: - Order planning & Order generation.

: - Cost estimation & Pricing.

: - Order Receipt & Entry.

: - Order selection & prioritization.

: - Order scheduling.

: - Order fulfillment & Delivery.

: - Order Billing & A/C payment management.

: - Order Service & Support.

Order Planning & Order Generation:

- The Business process begins with an actual order of placed by the customers.
- Order planning leads to the order generation order generated in sending personalized e-mail to customer (cold calls), Create WWW page.

Cost estimation & pricing:

-Pricing is the bridge between customers' needs and company capabilities.

-Pricing at the individual order level depends on an understanding the value to the customers that is generated by each orders.

- Evaluating the cost of filling each order.

Order Receipt & Entry:

After acceptable price, the customers enter the order receipt and entry phase of OMC.

These orders are taken by customer service representatives, who are in constant contact with customers.

Order Selection & Prioritization:

Customer service representatives are responsible for choosing which orders to accept and which to decline.

* Not all customer orders are created equal.

*The desirable orders are those that fit the company's capabilities and gives good profit.

*Companies can make gains by the way they handle order prioritization- i.e decide which orders to execute faster

Order scheduling:

During the order scheduling phase the prioritization orders get slotted into an actual production or operation sequence.

This task is will become difficult because of the different departments having conflicting goals.

Order fulfillment and Delivery.

During this phase the actual product or service is delivered.

*Order fulfillment involves multiple function & Locations.

*In some business, fulfillment includes third party vendors.

Order Billing and Account Payment:

After the order has been fulfilled and delivers billing is typically handled by the finance department. This department gets the bill out effectively efficiently and close collect very quickly.

Customer Service & Support:

Customer service involves installation of a product, repair maintenance.

This service gives customer satisfaction company profitable year.

UNIT-3

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.

Types of Electronic payment systems:

- 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
- New methods of payment are needed to meet the emerging demands of e-commerce. These neo-payment instruments must be secure, have a low-processing cost, and be accepted widely as global currency tender.
- 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.

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)

On-line electronic Commerce Payments:

- Token based payment systems – Electronic Cash(Ex: Digicash)
- Electronic Cheques ((Ex: Netcheque)
- Smartcards or debit cards
- Credit Card based payment systems

- » Encrypted Credit Cards
- » Third party authorization numbers

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.

Relationship based Smart Cards:

- A relationship-based smart card is an enhancement of existing card services and/or the addition of new services that a financial institution delivers to its customers via a chip based card or other devices.

– Relationship-based products offer the following:

- Access to multiple accounts, such as debit, credit, investments or stored value for e-cash, on one card or an electronic device.
- A variety of functions, such as cash access, bill payment, balance inquiry or funds transfer for selected accounts.
- Multiple access options at multiple locations using multiple device types such as ATMs, personal computer, Personal Digital Assistant (PDA).

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 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

Business issues and smart cards

- For merchants smart cards are a very convenient alternative to handling cash
- Security of smart cards and their ability to authenticate themselves will make them useful for payments related to electronic commerce services

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. If consumers want to purchase a product or service, they simply send their credit card details to the service provider involved and the credit card organization will handle this payment like any other
- 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. The low level of security inherent in the design of the Internet makes the method problematic. Authentication is also a significant problem.

Credit Card based Electronic Payment Systems:

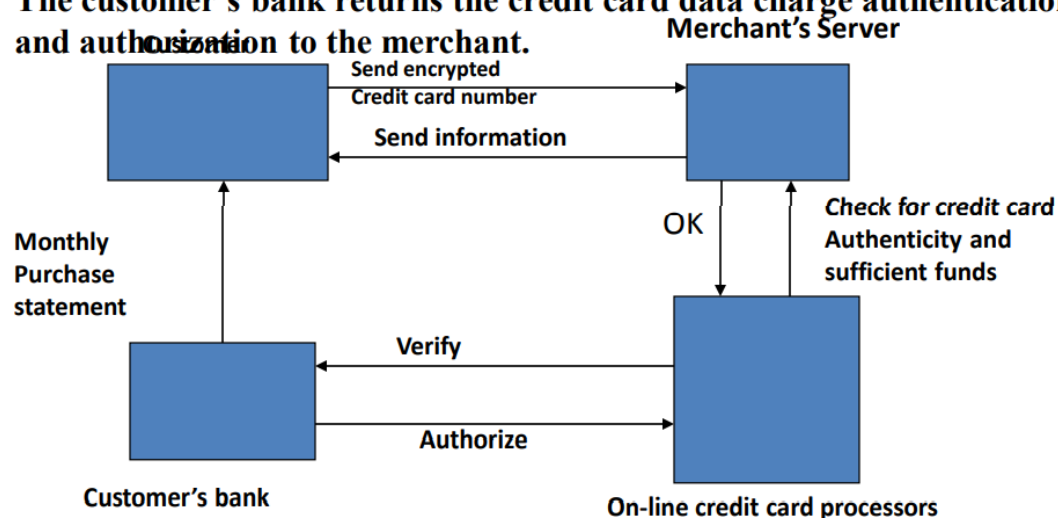
- Payments using encrypted credit card details: Though encryption of credit card makes sense the cost would prohibit low-value payments by adding costs to the transaction.
- Payments using third party verification: One solution to security and verification problems in the introduction of a third party.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

To make a credit card transaction truly secure and non-refutable, the following sequence of steps must occur before actual goods, services or funds flow:

- A customer presents his or her credit card information securely to the merchant.
- The merchant validates the customer's identity as the owner of the credit card account.
- The merchant relays the credit card charge information and signature to its bank or on-line credit card processors.

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 and authorization to the merchant.**



Processing payments using encrypted credit cards

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
- The OTTP payment server verifies the customer's account number for the vendor and checks for sufficient funds
- The OTTP payment server sends an electronic message to the buyer.

Third-party processors and credit cards:

– If the OTTP payment server gets a Yes from the customer, the merchant is informed and the customer is allowed to get the material

– The OTTP will not debit the buyer's account until it receives confirmation of purchase completion

- **Pros and Cons of Credit Card based payment:**

– Credit cards have advantages over checks in that the credit card company assumes a larger share of financial risk for both buyer and seller in a transaction.

– Record keeping with credit cards is one of the features consumers value most because of disputes and mistakes in billing

– Disadvantage to credit cards is that their transaction are not anonymous, and credit card companies do in fact compile valuable data about spending habits.

– The complexity of credit and processing takes place in the verification, a potential bottleneck

– Encryption and transaction speed must be balanced. On-line credit card users must find the process to be acceptable simple and fast.

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

- Anonymity is an issue that will have to be addressed through regulation covering consumer protection in electronic transactions.

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.

- A digital central bank guarantee on settlement removes the insolvency test from the system because banks will more readily assume credit risks from other banks. Without such guarantees the development of clearing and settlement systems and money markets may be impeded

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 as 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.
- Brokers: A "network banker" must be in place.
- Pricing: Pricing should be affordable by the consumer and it must be recognized that without subsidies it is difficult to price all services affordably.
- Standards: Without standards, the welding of different payment users into different networks and different systems is impossible.

Electronic Data Interchange

- **Electronic Data Interchange (EDI)** - interposes communication of business information in standardized electronic form

- Prior to EDI, business depended on postal and phone systems that restricted communication to those few hours of the workday that overlap between time zones

Why EDI

- Reduction in transaction costs
- Foster closer relationships between trading partners EDI & Electronic Commerce
- Electronic commerce includes EDI & much more
- EDI forges boundary less relationships by improving interchange of information between trading partners, suppliers, & customers EDI & Electronic Commerce
- Electronic commerce includes EDI & much more
- EDI forges boundary less relationships by improving interchange of information between trading partners, suppliers, & customers Benefits of EDI
- Cost & time savings, Speed, Accuracy, Security, System Integration, Just-In-Time Support
- Reduced paper-based systems, i.e. record maintenance, space, paper, postage costs
- Improved problem resolution & customer service
- Expanded customer/supplier base or suppliers with no EDI program lose business

EDI layered architecture

- Semantic (or application) layer
- Standards translation layer
- Packing (or transport) layer
- Physical network infrastructure layer

EDI semantic layer:

- Describes the business application
- Procurement example
 - Requests for quotes
 - Price quotes
 - Purchase orders
 - Acknowledgments

– Invoices

- Specific to company & software used Standards translation:
- Specifies business form structure so that information can be exchanged
- Two competing standards

– American National Standards Institute(ANSI)X12

– EDIFACT developed by UN/ECE, Working Party for the Facilitation of International Trade Procedures

EDI transport layer

- How the business form is sent, e.g. post, UPS, fax
- Increasingly, e-mail is the carrier
- Differentiating EDI from e-mail – Emphasis on automation – EDI has certain legal status

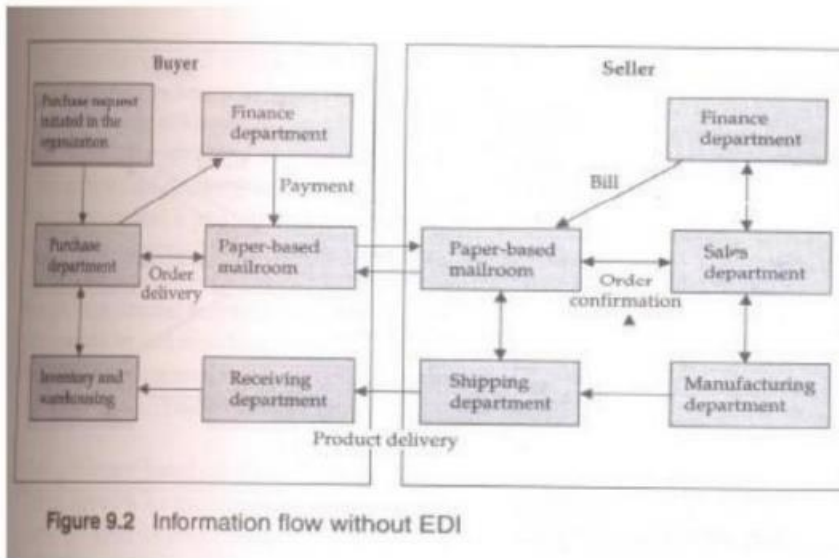
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Physical network infrastructure layer

- Dial-up lines, Internet, value-added network, etc.

EDI in Action

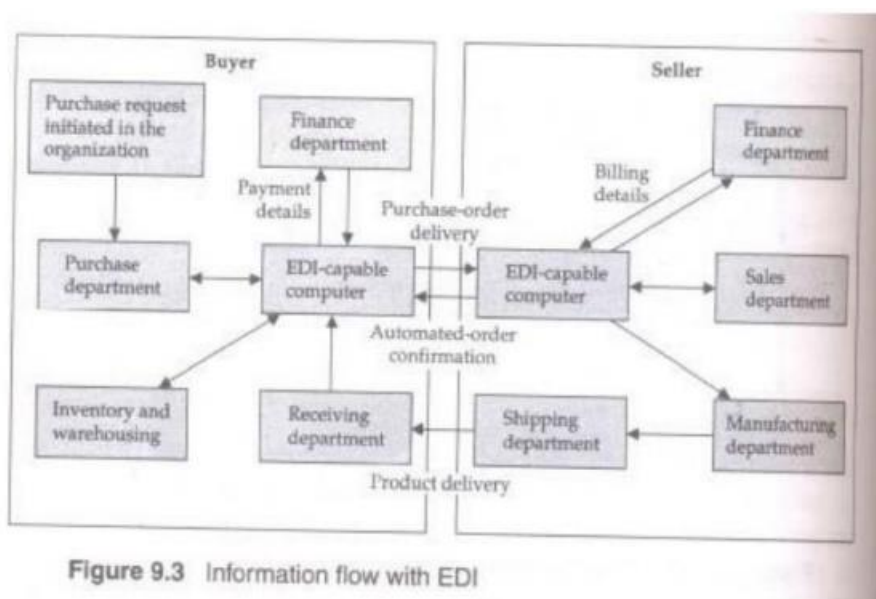
- The fig shows the information flow when paper documents are shuffled between organizations via the mailroom
- When the buyer sends a purchase order, then relevant data extracted & recorded on a hard copy.
- This hard copy is forwarded to several steps, at last manually entered into system by the data entry operators
- This process is somewhat overhead in labor costs & time delays



EDI in Action

- Information flow with EDI are as follows:

1. Buyer sends purchase order to seller computer
2. Seller sends purchase order confirmation to buyer
3. Seller sends booking request to transport company
4. Transport company sends booking confirmation to seller
5. Seller sends advance ship notice to buyer
6. Transport company sends status to seller.



Benefits of EDI

- Cost & time savings, Speed, Accuracy, Security, System Integration, Just-In-Time Support.
- Reduced paper-based systems, i.e. record maintenance, space, paper, postage costs
- Improved problem resolution & customer service
- Expanded customer/supplier base or suppliers with no EDI program

EDI: Legal, Security, & Privacy Issues

Legal Status of EDI Messages

- To understand the legal framework, let's take a look on three modes of communication types:

Instantaneous communication, delayed communication via the U.S. Postal Service (USPS), & delayed communication via non-USPS couriers;

1. Instantaneous. If the parties are face to face or use an instantaneous communication medium such as the telephone
2. Delayed (USPS). The —mailbox rule provides that an acceptance communicated via USPS mail is effectively when dispatched
3. Delayed (non-USPS). Acceptances transmitted via telegram, mailgram, & electronic messages, are communicated & operable upon receipt.

Digital Signatures & EDI

The cryptographic community is exploring various technical uses of Digital signatures might be time-stamped or digitally notarized to establish dates & time

- If digital signatures are to replace handwritten signatures, they must have the same legal status as handwritten signatures.
- It provides a means for a third party to verify that notarized object is authentic.

EDI & Electronic Commerce

- New types of EDI are traditional EDI & open EDI Traditional EDI
- It replaces the paper forms with almost strict one-to-one mappings between parts of a paper form to fields of electronic forms called transaction sets.

- It covers two basic business areas:

1. Trade data Interchange (TDI) encompasses transactions such as purchase orders, invoice & acknowledgements.

2. Electronic Funds Transfer (EFT) is the automatic transfer of funds among banks & other organizations

- It is divided into 2 camps:

old EDI & new EDI.

- Old EDI is a term created by those working on the next generation of EDI standards in order to differentiate between the present & the future.

Old EDI

- Automating the exchange of information pertinent to business activity
- It is referred as the current EDI-standardization process where it allows every company to choose its own, unique, proprietary version

New EDI

- It is refocusing of the standardization process.
- In this, the structure of the interchanges is determined by the programmer who writes a program.
- It removes long standardization process.

Open EDI

- It is a business procedure that enables e-commerce to occur between organizations where the interaction is of short duration.
- It is process of doing EDI without the upfront trading partner agreement that is currently signed by the trading partners
- The goal is to sustain ad hoc business or short-term trading relationships using simpler legal codes.
- It is a law of contract within the context of e-commerce where transactions are not repeated over long period of time.

EDI Implementation:

Planning for EDI implementation is an important factor for success.

The step required for EDI is:-

1. Identify organizational needs for EDI
2. Weigh the cost and benefits of EDI
3. Identify EDI business partners
4. Obtain top management approval
5. Form an EDI project team
6. Education & training
7. Decide on EDI standards
8. Decide on the connection options
9. Implementation planning.

1. Identify organizational needs for EDI:-

* First, study the company's existing work flow and how it can be improved using EDI.

* This study should attempt to cover the whole range of data and information flow through the entire company and not be limited to know EDI applications.

2. Weigh the cost and benefits of EDI:-

- After identifying the areas where EDI implemented, weigh the benefits of EDI against the costs of setting up the system.
- The cost of EDI implementation goes beyond start up costs of acquiring the EDI s/w and h/w components and training.
- Ongoing costs such as VAN charges, maintenance and support costs need also to be taken into account.

3. Identify EDI business partners :-

- In this phase, identify the business partners with whom to implement EDI.
- Upon identification of business partners, discuss with them about the possibility of establishing an EDI link.

4. Obtain top management Approval

EDI implementation is a strategic business issue. Obtaining top management approval of the EDI implementation ensures that the

EDI implementation is a overall company objective.

Top management will also have the authority to approve the necessary resources required for the implementation.

5. Form a EDI project team :-

- EDI implementation involves those personnel who are experts in their business areas.
- An EDI project team needs to be formed to ensure that the requirements of all parties are addressed.
- EDI project team can be headed either by an in-house expert (with IT & EDI experience) or by external consultants.
- The project team will coordinate overall project activities, plan the implementation

6. Education & Training :-

- Training & education programmed can also be used as a power tool to demonstrate senior management support of EDI.
- EDI training programmed nearer to the date of implementation could cover specific areas of user operation & how to use the system.

7. Decide on EDI standards:-

- It is necessary for organizations to adapt a common set of standards for communications.
- The set of standards to be adopted in EDI implementation needed to be agreed by you and the businesses partners.

8. Decide on the connection options:-

- Decide building a own proprietary network or selecting a third party VAN.
- Identify the appropriate VAN.

9. Implementation planning :-

- After VANS identified, and the EDI applications prioritized implementation planning comes next
- At this stage, decision will be taken to implement and which approach should be taken for full implementation.

Standardization & EDI

Standards translation

- Specifies business form structure so that information can be exchanged
- Two competing standards
 - American National Standards Institute (ANSI) X12
 - EDIFACT developed by UN/ECE, Working Party for the Facilitation of International Trade Procedures

Structure of EDI transactions

- Transaction set is equivalent to a business document, such as a purchase order
- Data Segments are logical groups of data elements that together convey information
- Data elements are individual fields, such as purchase order no.

Comparison of EDIFACT & X.12 Standards

- These are comprised of strings of data elements called segments.
- A transaction set is a set of segments ordered as specified by the standard.
- ANSI standards require each element to have a very specific name, such as order date or invoice date.
- EDIFACT segments, allow for multiuse elements, such as date.
- EDIFACT has fewer data elements & segments & only one beginning segment (header), but it has more composites.
- It is an ever-evolving platform

EDI Software Implementation

EDI Software has four layers:

1. Business application layer
 2. Internal format conversion
 3. EDI Translator and
 4. EDI Envelope for document messaging
- EDI Translator Layer

- Translators describe the relationship between the data elements in the business application and the EDI standards

- The translator ensures that the data are converted into a format that the trading partner can use.

– EDI Communication Layer

- The communication part dials the phone number for the value-added network service provider or other type of access method being used.

- On the receiving end, the trading partner's modem call the network and retrieves the information

– Implementation Cost

- Expected volume of electronic documents

- Economics of the EDI translation software

- Implementation time

- These 4 layers package the information & send it over the value-added network to the target business, which then reverses the process to obtain the original information

EDI Business Application Layer

1. It creates a document, an invoice.

2. Sends to EDI translator, reformats the invoice into an EDI standard.

3. If there are on the same type of computer, the data move faster figure in place

EDI Envelope for Message Transport

The X.400 & X.435 Envelopes

- The X.400 standard was meant to be the universal answer to e-mail interconnectivity

- It promises much & to date, delivers little.

- The work on X.400 began in 1980

- It is the open standard for mail interchange

- The standard exists in 3 versions: 1984, 1988, & 1992

EDI Software Implementation

- The X.435 inserts a special field in an X.400 envelope to identify an EDI message

- It includes data encryption; integrity; notification of message delivery & nondelivery; & nonrepudiation of delivery

- It is secure, reliable way to send EDI & accompanying files within the same message.
- Purchase orders, invoices, drawings, e-mail- all could be sent with end-to-end acknowledgment of message receipt.

Value-Added Networks (VANs)

- A VAN is a communication network that typically exchanges EDI messages among trading partners.
- It provides services, including holding messages in —electronic mailboxes||, interfacing with other VANs
- Disadvantage is EDI-enabling VANs is that they are slow & high-priced, charging by the no. of characters transmitted

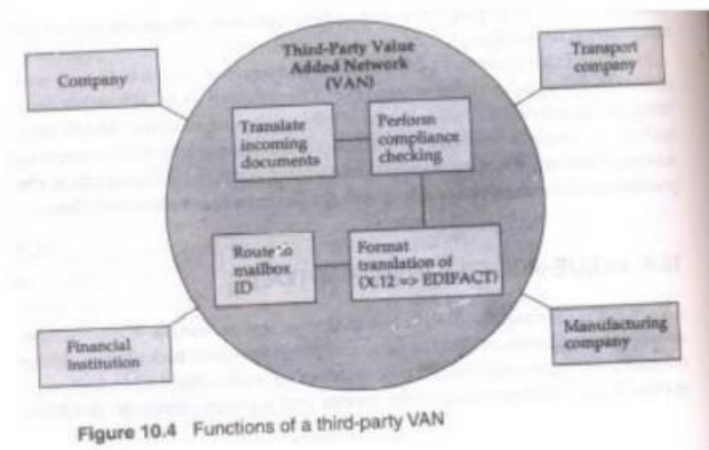


Figure 10.4 Functions of a third-party VAN

Internet-Based EDI

Several factors make internet useful for EDI:

- Flat-pricing that is not dependent on the amount of information transferred
- Cheap access with low cost of connection- often a flat monthly fee for leased line Or dial-up access
- Common mail standards & proven networking & interoperable systems
- Security--public-key encryption techniques are being incorporated in various electronic mail systems

Unit-4

INTRAORGANIZATIONAL ELECTRONIC COMMERCE

Internal commerce is the application of electronic commerce to processes or operations. Specifically, we define internal commerce as using methods and pertinent technologies for supporting internal business processes between individuals, departments, and collaborating organizations.

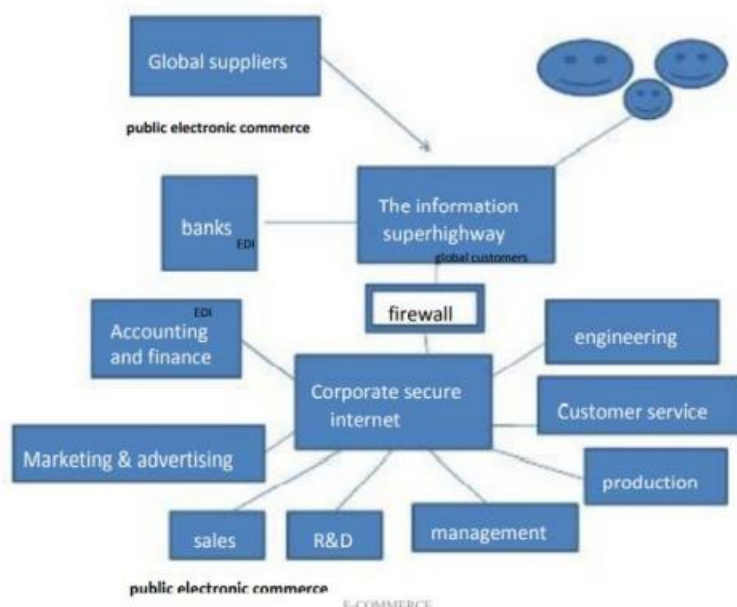
It is of two types

1. Private commerce
2. Public commerce

In a general sense, the term Information System (IS) refers to a system of people, data records and activities that process the data and information in an organization, and it includes the organization's manual and automated processes.

In a narrow sense, the term information system (or computer-based information system) refers to the specific application software that is used to store data records in a computer system and automates some of the information-processing activities of the organization.

These forces are commanding a rethinking of the importance of the networks-computers and communications and their role in the better utilization of corporate information in operational and analytical decision making.



Information architecture (IA) is the art of expressing a model or concept of information used in activities that require explicit details of complex systems.

Among these activities are library systems, content Management Systems, web development, user interactions, data base development, programming, technical writing, enterprise architecture, and critical system software design.

Most definitions have common qualities:

a structural design of shared environments, methods of organizing and labelling websites, intranets, and online communities, and ways of bringing the principles of design and architecture to the digital landscape.

What Is Cross-functional Management?

Cross-functional management (CFM) manages business processes across the traditional boundaries of the functional areas.

CFM relates to coordinating and sneering the activities of different units for realizing the super ordinate cross-functional goals and policy deployment.

It is concerned with building a better system for achieving for achieving such cross-functional goals as innovation, quality, cost, and delivery.

MACROFORCES AND INTERNAL COMMERCE

Global Markets: Definition and Characteristics Definition Macro forces and internal commerce highlights the changes taking place in organization structure and explores how technology and other economic forces are molding arrangements within firms.

The common focus in most of these modern management particles is the use of technology for improving efficiency and eliminating wasteful tasks in business operations.

Efficient operations of the macro forces and internal commerce are:

Total quality management Business process improvement or business process reengineering.

The words improvement and reengineering are often used interchangeably, creating confusion.

Although the goal of these two are same I.e. productivity gains, cost savings, quality and service improvements, cycle-time reduction.

One main reason for reengineering is to better complete in global markets.

The Oxford University Press defines global marketing as —marketing on a worldwide scale reconciling or taking commercial advantage of global operational differences, similarities and opportunities in order to meet global objectives.

Global marketing:

When a company becomes a global marketer, it views the world as one market and creates products that will only require weeks to fit into any regional marketplace. Marketing decisions are made by consulting with marketers in all the countries that will be affected. The goal is to sell the same thing the same way everywhere.

The Four elements of global marketing of marketing: Product:

A global company is one that can create a single product and only have to tweak elements for different markets.

For example coca-cola uses two formulas (one with sugar, one with corn syrup) for all markets.

Price:

Price will always vary from market to market. Price is affected by many variables: cost of product development (produced locally or imported), cost of ingredients, cost of delivery (transportation, tariffs, etc.), and much more.

Placement:

How the product is distributed is also a country-by-country decision influenced by how the competition is being offered to the target market. Using Coca-Cola as an example again, not all cultures use vending machines.

Promotion:

After product research, development and creation, promotion is generally the largest line item in a global company's marketing budget. At this stage of a company's development, integrated marketing is the goal. The global corporation seeks to reduce costs, minimize redundancies in personnel and work, maximize speed of implementation, and to speak with one voice.

Global marketing Advantages and Disadvantages Advantages:

- 1.Economies of scale in production and distribution Power and scope
- 2.Consistency in brand image

3.Ability to leverage good ideas quickly and efficiently

E COMMERCE

Uniformity of marketing practices

Helpsto establish relationships outside of the "political

arena— Disadvantages:

Differences in consumer needs, wants, and usage patterns for products

Differences in consumer response to marketing mix elements.

Differences in brand and product development and the competitive environment.

Differences in administrative procedures and

Differences in product placement.

Marketing Research:

It involves the identification, collection, analysis, and dissemination of information. Each phase of this process is important.

Finally, the findings, implications and recommendations are provided in a format that allows the information to be used for management decision making and to be acted upon directly.

It should be emphasized that marketing research is conducted to assist management in decision making and is not: a means or an end in itself.

Marketing Research Characteristics:

First, marketing research is systematic. Thus systematic planning is required at all the stages of the marketing research process.

The procedures followed at each stage are methodologically sound, well documented, and, as much as possible, planned in advance.

Marketing research uses the scientific method in that data are collected and analyzed to test prior notions or hypotheses.

Marketing research is objective. It attempts to provide accurate information that reflects a true state of affairs. It should be conducted impartially.

An organizational structure is a mostly hierarchical concept of subordination of entities that collaborate and contribute to serve one common aim.

Organizations are a number of clustered entities. The structure of an organization is usually set up in one of a variety of styles, dependent on their objectives and ambience.

Organizational structure allows the expressed allocation of responsibilities for different functions and processes to different entities.

Common success criteria for organizational structures are: -

Decentralized reporting

- Flat hierarchy

- High transient speed

- High transparency

Vertical Organization:

Hierarchically structured organization where all management activities are controlled by a centralized management staff.

Vertical organization has two problems:

First, it creates boundaries that discourage employees in different departments from interacting with one another.

Second, departmental goals are typically set in a way that could cause friction among departments.

A vertical market is a group of similar businesses and customers which engage in trade based on specific and specialized needs.

An example of this sort of market is the market for point-of-sale terminals, which are often designed specifically for similar customers and are not available for purchase to the general public

. A vertical market is a market which meets the needs of a particular industry: for example, a piece of equipment used only by semiconductor manufacturers. It is also known as a niche market.

Vertical market software is software aimed at addressing the needs of any given business within a discernible vertical market.

Horizontal organization:

A horizontal market is a market which meets a given need of a wide variety of industries, rather than a specific one.

Examples In technology, horizontal markets consist of customers that share a common need that exists in many or all industries.

For example, customers that need to purchase computer security services or software exist in such varied industries as finance, healthcare, government, etc.

Horizontal marketing participants often attempt to meet enough of the different needs of vertical markets to gain a presence in the vertical market.

An example could be software that manages services in hotels - amenities solutions.

Vertical organization Comparison with

horizontal organization:

A vertical market is a market which meets the needs of a particular industry:

for example, a piece of equipment used only by semiconductor manufacturers.

A horizontal market is a market which meets a given need of a wide variety of industries, rather than a specific one: for example, word processing software.

New forms of organizational structure:

Two new forms of organizational structures are:

Prominent-virtual organizational structure: In recent years, virtual enterprises have gained much attention as more and more firms from.

computer chip manufacturing to aircraft manufacturing.

Virtual organization is defined as being closely coupled upstream with its suppliers and downstream with its customers.

Virtual organization has been variously referred to as network organizations, organic networks, hybrid networks and value-adding partnership.

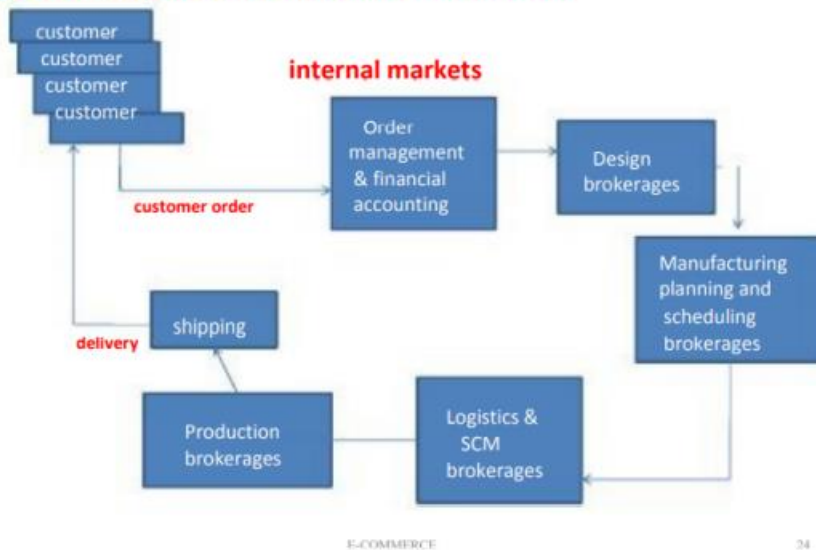
Brokerages organizational structure:

The main goal of electronic brokerages organization is to increase the efficiency of the internal marketplace.

Internal markets are beginning to appear not only in corporations but even in non business institutions like the government.

They are created inside organizations, allowing firms, suppliers, government agencies to meet the new challenges of the fast-changing environment.

Types of electronic brokerages in internal markets:



WORK FLOW AUTOMATION AND COORDINATION

In last decade, a vision of speeding up or automating routine business tasks has come to be known as —work-flow automation.

This vision has its root in the invention of the assembly line and the application of Taylor's scientific management principles.

Today, a similar trend is emerging in the automation of knowledge-based business processes called work-flow automation.

The goal of work-flow automation is to offer more timely, cost-effective, and integrated ways to make decisions.

Typically, work-flows are decomposed into steps or tasks, which are task oriented.

Work-flows can be simple or complex.

Simple work

-flows typically involve one or two steps or tasks. Another way of looking at work-flow is to determine the amount of cross-functional activity.

In other words, companies must adopt an integrated process view of all the business elements. Organizational integration is extremely complex and typically involves three steps: Improving existing processes by utilizing technology where appropriate.

Integrate across the business function offer identifying the information needs for each process.

Integrating business functions, application program interface, and database across departments and groups.

Complex work

-flows involve several other work-flows, some of which Executes simultaneously.

Work-Flow Coordination:

The key element of market-driven business is the coordination of tasks and other resources throughout the company to create value for customer.

To this end, effective 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.

Some of the simplest work-flow coordination tools are electronic forms routing applications such as lotus notes.

As the number of parties in the work flow increases, good coordination becomes crucial.

Work-flow related technologies:

Technology must be the —engine for driving the initiatives to streamline and transform business interactions.

Large organizations are realizing that they have a middle-management offer all the drawn sizing and reorganization of fast few years.

Pressures for more comprehensive work-flow systems are building rapidly. Work-flow system are limited to factory like work process.

Middleware is maturing:

By this users or third-party providers need to learn how to develop work-flow applications within middleware environment.

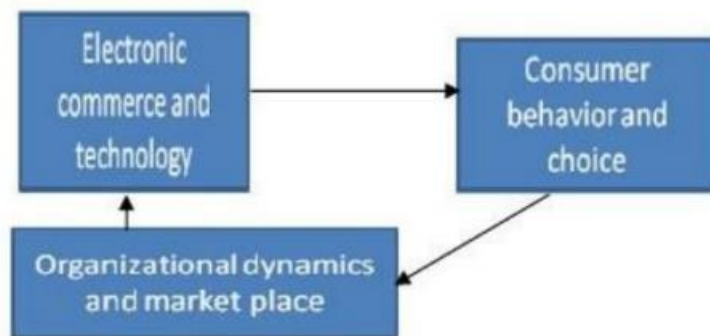
Organizational memory is becoming practical: The new tools for memory becoming advancing towards what can be called the —corporate digital library.

CUSTOMIZATION AND INTERNALCOMMERCE

Technology is transforming consumer choices, which in turn transform the dynamics of the marketplace and organizations themselves.

Technology embodies adaptability, programmability, flexibility, and other qualities so essential for customization.

Customization is explained as :



Mass customization, in marketing, manufacturing, and management, is the use of flexible computer-aided manufacturing systems to produce custom output.

Those systems combine the low unit costs of mass production processes with the flexibility of individual customization.

"Mass Customization" is the new frontier in business competition for both manufacturing and service industries.

Implementation:

Many implementations of mass customization are operational today, such as software-based product configurations which make it possible to add and/or change functionalities of a core product or to build fully custom enclosures from scratch.

Companies which have succeeded with mass-customization business models tend to supply purely electronic products.

However, these are not true "mass customizers" in the original sense, since they do not offer an alternative to mass production of material goods.

Four types of mass customization:

Collaborative customization - Firms talk to individual customers to determine the precise product offering that best serves the customer's needs.

Adaptive customization - Firms produce a standardized product, but this product is customizable in the hands of the end-user.

Transparent customization - Firms provide individual customers with unique products, without explicitly telling them that the products are customized.

Cosmetic customization - Firms produce a standardized physical product, but market it to different customers in unique ways.

Most of the written materials and thinking about customization has neglected technology. It has been about management and design of work processes.

Today technology is so pervasive that it is virtually impossible to make clear distributions among management, design of work, and technology in almost all forms of business and industry.

Technology has moved into products, the workplace, and the market with astonishing speed and thoroughness.

Mass customization, not mass production.

Today the walls that separated functions in manufacturing and service industries alike are beginning to fall like dominoes.

Customization need not be used only in the production of cars, planes, and other traditional products. It can also be used for textiles and clothing.

Technology is also enabling new forms of customized production in apparel industry.

What is Supply chain?

Consists of all parties involved, directly or indirectly in fulfilling a customer request.



SUPPLY CHAIN MANAGEMENT (SCM)

Supply chain management (SCM) is the management of a network of interconnected business involved in the ultimate provision of product and service packages required by end customers.

Supply Chain Management spans all movement and storage of raw materials, work-in-process inventory, and finished goods from point-of-origin to point-of-consumption.

Supply Chain Management can also refer to supply chain management software which is tools or modules used in executing supply chain transactions, managing supplier relationships and controlling associated business processes.

The Management Components of SCM The literature on business process re-engineering, buyer-supplier relationships, and SCM suggests various possible components that must receive managerial attention when managing supply relationships.

Lambert and Cooper (2000) identified the following components which are:

- Planning and control
- Work structure
- Organization structure
- Product flow facility structure
- Information flow facility structure
- Management methods
- Power and leadership structure
- Culture and attitude

Reverse Supply Chain Reverse logistics is the process of planning, implementing and controlling the efficient, effective inbound flow and storage of secondary goods and related information opposite to the traditional supply chain direction for the purpose of recovering

THE CORPORATE DIGITAL LIBRARY

DIMENSIONS OF THE INTERNAL ELECTRONIC COMMERCE SYSTEM

These are the following dimensions for internal electronic commerce organization:

User modeling and interaction:

User models are interposing between the user interface and information sources to filter the available information according to the needs of the task and user.

It associates with each task or each person is a user agent or set of user agents.

Tasks of user agents are:

- Maintaining of model & current state of the task
- Determining of information for each step of the task
- Appropriate combining of information with user. Addressing the issue of displaying information to the user.
- Considering of wide range of display devices.

Determining the most appropriate methods for display.

In this user agent tackle two issues:

1. Generation of documents
2. Presentation of documents. Effective utilization of information

Organization decision making cannot be supported with a single tool, a set technology tools are required for effective utilization of information.

Organization needs online –transactions for design, production, logistics and profitability.

Types of On-line transaction:

Two types of on-line transaction are :

1. On-line transaction processing (OLTP).
2. On-line analytical processing (OLAP).

OLTP involves the detailed, day-to-day procedures such as order entry & order management.

OLAP refers to the activity involved in searching the wealth of data residing throughout an enterprise for trends, opportunities.

Navigating the info sphere It involves two elated activities:

- Information search, discovery and retrieval
- Presentation of retrieved Information.

Search, Discovery and Retrieval:

This view is changing in three ways.

1. Characterization of accessible information
2. Search concepts from this information.
3. Development of information

filter Presentation or visualization:

It is used for easy understanding of information.

Organization must predefine rules for visualization.

This process will highlight the trouble spots and area of opportunities.

Presentation increases the following tasks of information :

1. Accessing ability of information.
2. Collecting of information.
3. Queue of information
4. Organizing of information.

Digital Library Layer

Many organizations manage their information through corporate library, if it provide the architecture to model, map, integrate & information in digital documents is called digital library.

It provides information structures by this organizations & workers access vast amount of data encoded in multimedia formats.

Digital libraries are of two types:

1. Electronic document-based digital libraries.
2. Data-base oriented warehouses.

Document digital library: The term document is used to denote all non data records I.e. books, reports, e-files, videos and audios.

Digital library is simply a distributed network of linked information.

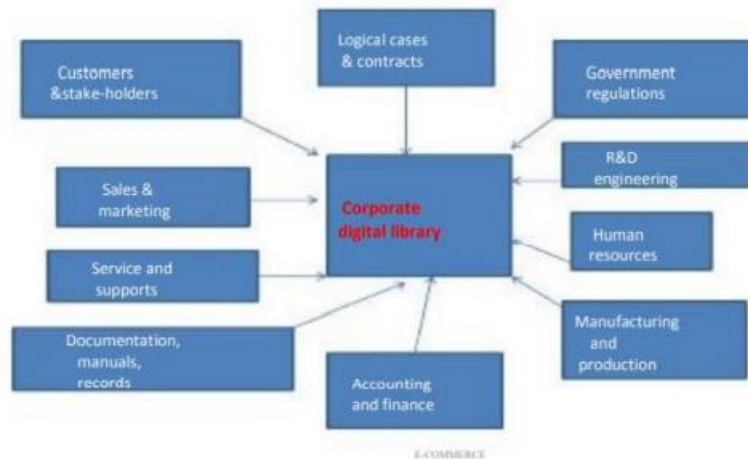
Data warehouses:

It is a central repository for combining and storing vast amount of data from diff sources.

Sources are main frame database, lint-server database, text reports....etc.

MAKING A BUSINESS CASE FOR DOCUMENT LIBRARY

This section highlights the role that documents play in today's organization and how business can better meet their customers' needs by improving document management support.



Digital Document Management Issues and Concerns

Ad hoc documents:

Letters, finance reports, manuals are called ad hoc documents, which are prepared by managers & professionals.

Process-specific documents:

invoices and purchase orders which are created, constructed and distributed by support personnel. these are form based.

Knowledge-oriented documents:

these are technical documents, catalogs of product information, and design documents.

Types of Digital Documents

Four types of digital documents are:

Structuring applications around a document interface Structuring interlinked textual & multimedia Documents.

Structuring and encoding information using document-encoding standards Scanning documents for storage and faxing.

Document Imaging Document imaging emulates microfiche and microfilm.

An imaging system passes appear document through a scanner that renders it digital and then stores the digital data as a bit-mapped image of document.

The problem with the imaging approach is that the output contains only images not text.

The following imaging standards are prominently used:

TIFF (tag image file format):

format for interchange of bit-mapped images. ITU-TSS (international telecommunication union-telecommunication standardization sector)

Group IV T.6 facsimile:

this standard is used for compression and exchange of bit-mapped files.

Structured Documents

A structured document provides clear description of document content

Structured documents apply data-base structuring capabilities to individual documents and document collections.

Standard for structured documents are:

SGML (Standard Generalization Markup Language):

It is an ISO standard for interchange & multi formatting description of text document in terms of logical structure.

ODA (Office Document Architecture):

It is an ANSI & ISO standard for interchange of compound office documents. ODA specifies both content & format.

CDA (Compound Document Architecture):

It defines set of rules for content and format .It defines services for compound documents.

RTF (Rich –Text Format):

It is developed by Microsoft for interchanging of desk top documents. Hyper Text Documents Hyper text is a way of making document-based information more mobile.

Reasons for mobility of information are:

Information in enterprises is seldom located on server but is distributed throughout the organization.

Accessing & retrieving large monolithic document is time consuming. Reuse of document for composing new documents is difficult task.

In this relationships between documents can be represented through hypermedia links i.e. hyperlinks.

Standards of Hypermedia:

HyTime:

it adds time based relationships like synchronization, it is extension of SGML.

HTML:

developed by WWW to support distributed hypermedia.

MHEG(multimedia /hypermedia encoding/exporting Group):

standard for presenting objects in multimedia Active documents Active document represents what is known as document oriented computing.

Active document provide an interactive interface between documents.

Active documents are especially powerful because they combine composition of information with the distributed nature of information. Ex: spreadsheet, word-processing..etc

Issues behind Document Infrastructure

Document infrastructure addressed these questions:

What is the proper architecture for the corporate digital library?

What are appropriate model?

What protocols required?

What are the best human interfaces?

How does one represent and manipulate the information processing activities occurred in the digital library?

Document Constituencies:

The emerging document processing & management strategies must address these constituencies.

They need system to access distributed repositories& to manipulate them in a number of ways.

Document-oriented processes

Components of Document-oriented processes are

Document creation Document media conversation(it accept multiple forms of input)

Document production and distribution Document storage and retrieval

Document-based framework flows:

The following Four activities make up the document-based framework flow:

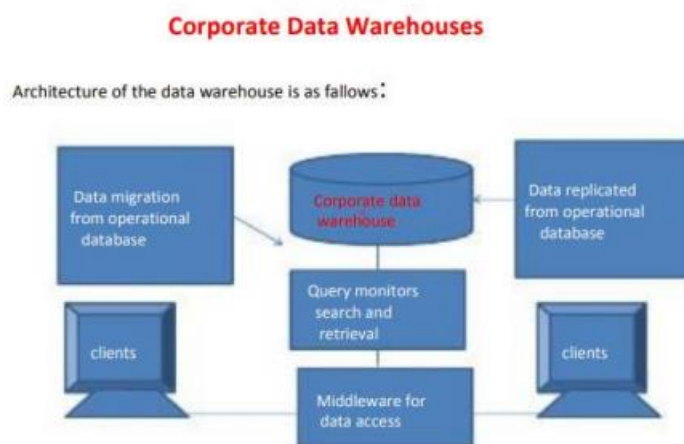
Document modeling: it defines the structure and processes the document.

Transformation: creates modules for capturing and validating.

Synthesizing: create value-added information from the combination of two or more documents.

Business modeling: defines the structure and processes of the business environment.

Data warehouse:



Data warehouse is used store information of the organization

Data warehouse is needed as enterprise wide to increase data in volume and complexity.

Characteristics of data warehouse are: An information-based approach to decision making.
Involvement in highly competitive & rapidly changing markets.

Data stored in many systems and represented differently.

Functions performed by data warehouse are:

Allow existing transactions and legacy systems to continue in operation.

Consolidates data from various transaction systems into a coherent set.

Allows analysis of virtual information about current operations of decision support.

Types of data warehouses

There are four types of data warehouses:

Physical data warehouse: It gathers corporate data along with the schemas and the processing logics.

Logical data warehouse: It contains all the Meta data and business rules.

Data library: This is sub set of the enterprise wide data warehouse.

Decision support system (DSS): These are the applications but make use of dataware house and managing data.

To manage data fallowing steps are needed:

Translation Summarizing Packaging Distributing Garbage collection

Advantages of data warehouse:

Timely and accurate information become an integral part of the decisionmaking process.

User can manage and access large volumes of in one cohesive framework.

Information Technology E-COMMERCE 70 Data warehousing has wide spread applicability.

It provides point-of-sales reports instead of end-of –day reports.

UNIT-5

The definition of m-commerce

Short for mobile commerce, m-commerce refers to any commercial transactions that take place via apps or mobile sites. Mobile commerce can be understood broadly as a subcategory of e-commerce, or as the mobile version of e-commerce. The mobile commerce vertical is growing rapidly, with the percentage and share of digital purchases that are taking place on mobile increasing each year. As making purchases on mobile gets more convenient and as more people globally gain access to smartphones and tablets, the capacity for mobile purchases to be made continues to soar.

In short, the definition of m-commerce is: the buying and selling of items via mobile devices.

History Of M-Commerce: From Then to Now

Now you know how the term mobile commerce technology came into being. But what happened after that? Well, after a few months, one of the most popular beverage companies, Coca Cola, launched two vending machines in Helsinki, Finland that operated via mobile phones. The payments took place through SMS text messages.

Here comes a little bit of time-travel. The invention of computers and the internet took technology and networking to a whole new level. Retail transactions came into being in 1994, and the present day e-commerce giants eBay and Amazon were born in 1995. Over the years, various other e-commerce sites were built and online shopping became the new trend. But again, you could only do this via a desktop with internet connection.

With the introduction of smartphones and tablets, the problem got its final solution, that is, m-commerce. With just the touch of your fingertips, you could shop anything and everything. Browse through hundreds and thousands of products, filters that help you choose the best and prices that came with discount offers that were sometimes unbelievable!

Without even realizing, many of us gave our final goodbyes to physical stores and chose m-commerce for everything because of the remarkable convenience it brought. Of course when you are out simply walking through the streets, you may switch back to the traditional ways of shopping in or visiting a store. But given the busy lifestyle of the modern day world, many find it tiring to shop offline than online.

Gone are the days where you spent hours shopping at your favorite store which also includes the time for traveling. Not to mention the energy and money it requires. You even have to set aside a separate day to do your shopping based on your schedule. Sigh, such hassle!

M-commerce has become one of the greatest solutions in history for shopping. You can easily shop via your smartphone and do the payment, all within a short time. All you need is good internet services and simply wait for your order to be delivered. Keep in mind that this is just the customer's point of view.

On the other hand, business enterprises are soaring due to the benefits of m-commerce. They can make key decisions based on the traffic generated to their websites and directly interact with the users to make the needed changes. Not only does this increase user engagement but also helps build a better seller-buyer relationship, irrespective of place, language and time. Thus, companies achieve their target goals more easily. Pretty much evident that it's a win-win situation for both.

For these reasons, the m-commerce platform is considered to be the next generation of e-commerce. Now let's look into the potential of m-commerce in India.

List of Important M-Commerce Applications

1. Banking

[iMobile](#) is an application that was developed by ICICI Bank that allows users to complete all internet banking transactions through their mobile phone. Users can transfer money from bank accounts that are ICICI and those that are not and can also request a stop to checks, pay bills, and more. This is a very useful app that allows users to use completely all their mobile banking needs in one easy to access space.

2. M-commerce for Retail

Companies are using mobile commerce for more and more retail applications as well. If you own a business and are looking to break into M-commerce, you can always create an online catalog of items that you have for sale so that customers can access it and then purchase the items. This is a great way for businesses to [use M-commerce to get the most in terms of retail](#) and mobile phones.

3. Mobile Marketing

This is another fantastic application for mobile commerce. You can send messages on phones for new products or services, you can send out promotional rewards, and you can send out correspondence to help get customers on board. M-commerce is a great way to market and to reach more people. Most people always have their smartphones on them, which means that you are going to be able to get to these potential customers and to bring them to your business.

4. Mobile Ticketing

Another great application is to purchase tickets with the help of mobile devices. Airlines have mobile ticket kiosks, movie theaters, concerts and more all offer mobile purchase of

tickets. You can also then show your electronic ticket to the event or the place where the ticket is to be redeemed, working to eliminate paper tickets altogether.

5. Reservations

Reservations are a fantastic use of M-commerce. This could mean hotel rooms, parking spots, restaurant reservations and more. Customers can now reserve their spot with their mobile phone which is easier for everyone involved. This means that both the customer and the company involved can help to reduce the amount of work and effort that is needed to book various reservations.

6. Entertainment

You can also use M-commerce in terms of mobile entertainment as well. From applications that show movies and television shows, to those that show videos like YouTube, even music applications, you can use your phone for all sorts of mobile entertainment. Mobile entertainment is one of the best uses for M-commerce and for your mobile phone in terms of using it for something other than making calls.

7. Healthcare

Mobile phones can also be used in terms of [Healthcare](#) and medicine. A mobile phone can be used for accessing health records, for paying medical bills, for accessing the medical records of patients and more. In a healthcare setting a mobile phone can be used by a doctor or a practitioner to access the health record of a patient, to send in a prescription, or to make clinical decisions. It helps doctors and other healthcare professionals to remain connected to the main database of the hospital or the medical facility and helps doctors and healthcare professionals provide patients with a better experience overall.

8. Office Communication

M-commerce applications can also help [to promote communication](#) within offices and other areas where you may be working with a team. With those professionals that are in the field such as a real estate agent or an insurance agent, it is often necessary to get back in touch with the office or to access information that might be back at the office. M-commerce is going to allow these professionals to track inventory, to talk to personnel that is in the field and back and the office, and to make sure that salesmen that are in the field, for example, get approval to make sales without having to wait as long.

Mobile Commerce Architecture



Mobile commerce, also known as m-commerce, refers to the process of conducting commercial transactions through mobile devices such as smartphones and tablets. The architecture of mobile commerce involves various components working together to enable seamless and secure mobile transactions. Here are the key elements of mobile commerce architecture:

1. **Mobile Application:** A mobile commerce architecture typically includes a mobile application that serves as the interface between the user and the commerce system. This application can be platform-specific (iOS, Android, etc.) or built as a cross-platform app.
2. **User Interface:** The user interface of the mobile commerce application should be designed to provide a user-friendly and intuitive experience. It should support easy navigation, product

browsing, search functionality, shopping cart management, and secure payment options.

3. Backend Systems: The backend systems handle the core functionality of the mobile commerce platform. This includes managing product catalogs, inventory management, order processing, customer data, and integration with payment gateways and other third-party services.

4. Database and Data Storage: A robust database system is required to store and retrieve product information, user profiles, order history, and other relevant data. It should be scalable to handle increasing volumes of transactions and provide fast response times.

5. Security and Authentication: Security is paramount in mobile commerce architecture. Measures such as encryption, secure socket layers (SSL), and tokenization are employed to protect sensitive user information, including payment details. User authentication methods like passwords, biometrics, or two-factor authentication add an extra layer of security.

6. Payment Gateway Integration: Integration with payment gateways is crucial to enable secure and seamless online payments. It involves establishing connections to process credit card transactions, mobile wallets, and other payment methods, ensuring data encryption and compliance with payment card industry (PCI) standards.

7. **Analytics and Reporting:** Mobile commerce architecture often includes analytics and reporting capabilities to track user behavior, sales metrics, and other relevant data. This information helps businesses understand customer preferences, identify trends, and make informed decisions to optimize their mobile commerce strategy.

8. **Integration with Existing Systems:** Mobile commerce architecture needs to integrate with existing systems, such as enterprise resource planning (ERP), customer relationship management (CRM), and order fulfillment systems. This integration ensures smooth data flow between different components of the business ecosystem.

9. **Cloud Infrastructure:** Many mobile commerce architectures leverage cloud computing platforms for scalability, reliability, and cost-effectiveness. Cloud infrastructure enables businesses to handle high traffic volumes, store and process data efficiently, and scale resources as needed.

10. **Push Notifications:** Mobile commerce applications often utilize push notifications to engage users, provide updates on order status, offer personalized promotions, and encourage repeat purchases.

These components work together to create a robust and efficient mobile commerce architecture that enables businesses to deliver seamless mobile shopping experiences and drive customer satisfaction.

Mobile payment

Mobile payment methods

Basis of payment: Mobile payment methods currently in use or under trial may be classified according to the basis of payment

Account-based: every consumer is associated with a specific account maintained by an Internet Payment Provider (IPP)

Token-based: the alternative to maintaining an account for each consumer is to use electronic tokens. In token-based payment methods, consumers typically need to convert actual currency to their electronic equivalent, i.e. tokens.

Timing of payment:

Mobile payment can be made at different times

Real-time (cash): Payment methods that adopt the real-time or “cash”-like payment schedule involve some form of electronic currency that is exchanged during a transaction. Examples of real-time payment methods are e-Cash and beenz.

Pre-paid (debit): Consumers pay in advance to obtain the content they desire. Smart cards that store value and electronic “wallets” (e.g. reloadable Visa cash cards, Proton-based cards) are examples of these kinds of payment methods.

Post-paid (credit): Consumers receive the content and consume it before paying; the IPP or CP authenticates the consumer and verifies that the consumer has sufficient funds to make

the purchase. Electronic cheques and credit cards are examples of credit-based payment methods.

Medium of payment:

In terms of the medium of payment, the mobile payment methods can be classified as follows

Mobile payment by bank account or credit card : Without directly access to the card during the payment, these payment systems are based on the established payment methods such as direct debit or credit card, without direct physical access to the respective card.

Put the payment card into the mobile phone, it has the card directly read by the mobile phone. Mobile payment by phone bill: this method offers settlement via phone bill for general m-payment. I-mode, the mobile service run in Japan by the leading mobile operator, NTT DoCoMo, offers this kind of settlement to content providers using its portal.

Payment transactions have identified multiple dimensions. A distinction between the different types of payments should be also described. Therefore, a classification of the payment market's dimensions is proposed in this following table adapted

By means	Cash, Paper (Cheques, Bankers draft), Card (Credit, Debit, Smart), Electronic (e/m-commerce, virtual money, e-wallet, stored value account), Tokens/money surrogates
By size	Micro-payments (generally below \$10), Macro-payments
By Place of Purchase	Real-world or F2F , Remote (Internet, Mail and telephone orders)
By Seller/Buyer Origin	B2B (rare for m-payment), B2C , P2P
By Type of Purchase	Physical goods , Digital/electronic goods , Rights (rich media)
By Clearing and Settlement Method	Bilateral , Multilateral (joint clearing house), Using intermediaries
By Type of Transaction	Pay Per View (PPV), Pay Per Unit (PPU)
By Type of Payment	Pay now (debit), Pay later (credit), Pre-pay (against stored value)
By Geography	Domestic , Cross-border , Single currency , Multiple currency
By Location of Payer's Account Details	Network-/server-based , Device (client-based) , Chip (client-based)

Advantages of M-commerce

As you all know that everything has advantages as well as disadvantages. So, let's catch a glimpse of some of the advantages of mobile commerce.

1. **It creates a new marketing channel-** M-commerce will help you in creating a new marketing channel as you can easily sell your products to end-users. Additionally, for your business m-commerce is very beneficial as you will give all information in your mobile app and users can easily get to know everything in just one click.
2. **It provides easy store access-** Mobile commerce makes it simple to find the items accessible in the market by using wireless gadgets. Also, you don't need to go to the store to buy your necessities, instead, you can purchase items online. This will save you time and reduce your efforts.
3. **It results in cost reduction and productivity-** M-commerce is cost-effective as you can cut marketing campaign expenses as you can reach your customer sooner with a mobile app. Also, it has reduced the staff workload and has become more effective and productive than before.
4. **It benefits from traditional retail sales-** Mobile commerce can encourage you with traditional retail sales. Thus, m-commerce is developing day by day and it will keep on advancing, putting up a better outstanding position in the retail exchanges.

Disadvantages of M-commerce

Now, let's glance at some disadvantages of mobile commerce.

1. **Absence of services in rural areas-** In rural areas there is still a dearth of availability of mobile phones and Internet connection. Even there are people who are totally unaware of all these facilities. So, you can think that still, mobile commerce is unknown to several people.
2. **Fraud risks and security concerns-** Still there are fraud risks in mobile commerce and there are marketers who are not even prepared to handle it. Also, the security issue is still present and there are people who had a fear of losing their personal information.
3. **Connectivity issue-** If your net connection is poor then you will face an issue and also get irritated in m-commerce. The massive obstacle for M-commerce is the internet connection issue.
4. **The habit of people-** You must have heard of the people who don't want to come out of their comfort zone or you can say that they are not ready for the change. There are people who deny getting into modern technology and some take too much time in adopting new technologies.

