

M.M.E.S.WOMEN'S ARTS AND SCIENCE COLLEGE, MELVISHARAM

LECTURE NOTES

E-COMMERCE



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UNIT-I

Electronic Commerce Framework, Traditional vs. Electronic business applications, the anatomy of E-commerce applications.

1.1 Introduction

E-commerce is a latest technology related with commerce and computer.

Commerce is the exchange or transformation or buying, selling of entities (goods or commodities) on a very large scale involving transportation from one place to another place.

E-commerce is the process of doing business online.it changes the entire business scenario due to the powerful innovation of internet, which is spreading fast through the world. The power of internet as a global access was felt with the introduction of the World Wide Web (WWW) in 1994.This global network makes global relations with the companies made easier.

E-commerce strengthens relationship with buyers make it easier to attract new customer.

1.2 Evolution of E-Commerce

Evolution of e-commerce can be attributed to a combination of regularity reform and technological innovation. Though Internet (which played an important role in evolution) appeared in the late 1960s, ecommerce of today took off with the arrival of WWW and browsers in early 1990s.A brief timeline of evolution is as follows:

THE EVOLUTION OF ECOMMERCE



In 1995
Amazon sold their very first book.



In 2015
Americans spent over \$341 billion online.

Over the course of 20 years, ecommerce evolved from a novel new concept into a major part of the world's economy. But how did that happen?

MAJOR ECOMMERCE MILESTONES



1994

Netscape launches Navigator, the first widely-used web browser, and Pizza Hut offers online ordering on their website.



1996

Over 40 million people have Internet access, and online sales surpass \$1 billion for the year.



2000

Revenue from U.S. online shopping totals over \$25 billion.



2003

Apple launches iTunes, the first major digital music store.



2006

Facebook begins selling advertisements.



2012

Online B2C sales surpass \$1 trillion.

1991

The World Wide Web is created.



1995

eBay is founded & Amazon makes its first sale.



1998

PayPal is founded, and changes the way people make payments online.



2001

70% of Internet users make an online purchase during the holiday season.



2005

The term "Cyber Monday" is coined and becomes one of the biggest online shopping days of the year.



2008

Online purchases are made on mobile phones for the first time.



1.3 Definition of E-Commerce

E-Commerce is an emerging concept that describes the process of buying and selling or exchanging of products, services and information via computer networks including the internet.

E-Commerce includes not only buying and selling goods over internet, but also various business processes within individual organizations that support the goal. Examples of e-commerce are: E-Funds Transfer, Internet Marketing, Online Transaction Processing, Inventory Management Systems, and EDI.

1.4 ADVANTAGES AND DISADVANTAGES OF ECOMMERCE

The invention of faster internet connectivity and powerful online tools has resulted in a new commerce arena – E-commerce. E-commerce offered many advantages to companies and customers but it also caused many problems.

1.4.1 Advantages of E-commerce:

- E-commerce enables fast and secure shopping.
- Buying/selling 24/7.
- It is making digitalized world.
- E-commerce also enables to choose different goods and services according to your choice.
- It is a simple way of selling and buying products and services.
- E-commerce replaced the paper work as all transactions are through internet today.
- It provides better management system, as it has a centralized database.
- E-commerce via internet covers a large number of customers worldwide.

1.4.2 Disadvantages of E-commerce:

- E-commerce has no universal standard for quality and reliability.
- E-commerce works through internet, it is possible that navigation on internet itself may be slow.
- Strong security is required in e-commerce as all transactions are through internet.
- There is high risk of buying unsatisfactory products through e-commerce.
- It uses public key infrastructure which is not safe.
- Customers also trap in banking fraud which is quite frequent.
- Hackers also try to get access of data or to destroy data in e-commerce.

1.5 Types of E-commerce model:

There are basically 4 main types of e-commerce models that can describe almost every transaction that takes place between consumers and businesses.

1. **Business to Consumer (B2C):**
When a good or service is sold to an individual consumer by a business, e.g., we buy a pair of shoes from an online retailer.
2. **Business to Business (B2B):**
When a good or service is sold by a business to another business, e.g., a software-as-a-service is sold by a business for other businesses to use.
3. **Consumer to Consumer (C2C):**
When a good or service is sold by a consumer to another consumer, e.g., we sell our old furniture on eBay to another consumer.
4. **Consumer to Business (C2B):**
When a consumer's own products or services is sold to a business or organization, e.g., an authority offers exposure to their online audience in exchange for a fee or a photographer licenses their photo for a business to use.

1.6 Applications of E-commerce

Following are some of the widely used e-commerce are as follows:

- **E-Banking** Ex:Account transfers, balance inquiries, bill payment etc.,
- **E- Advertising** Ex: Banner ads,Games,Animation
- **M-Commerce** Ex: Ticketing, Mobile banking, Advertising.
- **E-Learning** Ex: Courserea, Edx, Khanacademy, W3 school,TedED.
- **Online Shopping** Ex: EZmall, Croma Electronics
- **Entertainment** Ex: Newspapers,Books, Online games/video, sports, Politics, fashion/clothes, technology,

E-Banking

Internet Banking, also known as net-banking or online banking, is an electronic payment system that enables the customer of a bank or a financial institution to make financial or non-financial transactions online via the internet. This service gives online access to almost every banking service, traditionally available through a local branch including fund transfers, deposits, and online bill payments to the customers.

Internet banking can be accessed by any individual who has registered for online banking at the bank, having an active bank account or any financial institution. After registering for online banking facilities, a customer need not visit the bank every time he/she wants to avail a banking service. It is not just convenient but also a secure method of banking. Net banking portals are secured by unique User/Customer IDs and passwords.

Features of Internet Banking

Here are some of the best features of internet banking:

- Provides access to financial as well as non-financial banking services
- Facility to check bank balance any time
- Make bill payments and fund transfer to other accounts
- Keep a check on mortgages, loans, savings a/c linked to the bank account
- Safe and secure mode of banking
- Protected with unique ID and password
- Customers can apply for the issuance of a cheque book
- Buy general insurance
- Set-up or cancel automatic recurring payments and standing orders
- Keep a check on investments linked to the bank account

Advantages of Internet Banking

- 24×7 Availability:
- Convenience of initiating financial transactions
- Proper Track of Transactions
- Quick and Secure
- Non-financial Transactions

E- Advertising

- It is also known as online advertising it is a form of promotion that uses internet and WWW to deliver marketing messages to attracts customers. Example: Banner ads, Social network advertising ,online classified advertising etc.,
- The growth of these particulars media attracts the attention of advertisers as a more productive source to bring in consumers.
- An online advertisement also offers various forms of animation.
- The term online advertisement comprises all sorts of banner advertisement, email advertising, in gaming advertising and so on.

M-Commerce

M-commerce (mobile commerce) is the buying and selling of goods and services through wireless handheld devices such as smartphones and tablets. As a form of e-commerce, m-commerce enables users to access online shopping platforms without needing to use a desktop computer. Examples of m-commerce include in application purchasing, mobile banking, and virtual market place apps like the Amazon mobile application. This is because mobile phones have very different characteristics than desktop computers.

The products and services available through M-commerce include:

- Mobile Banking
- Mobile Ticketing and Booking
- E-bills
- Stock Market Reports and even stock market trading over mobile applications. Auctions

E-Learning

- E-learning comprises all forms of electronically supported learning and teaching.
- E-learning can also be termed as a network enabled transfer of skills and knowledge, and the delivery of education is made to a large number of recipients at the same or different times.
- E-learning applications and processes include web based learning, computer based learning.
- Content is delivered via. The internet, intranet/extranet, audio, video tape, satellite TV etc.,

Advantages Of eLearning

- You are able to link the various resources in several varying formats.
- It is a very efficient way of delivering courses online.
- Due to its convenience and flexibility, the resources are available from anywhere and at any time.
- Everyone, who are part time students or are working full time, can take advantage of web-based learning.
- Web-based learning promotes active and independent learning.
- As you have access to the net 24x7, you can train yourself anytime and from anywhere also.
- It is a very convenient and flexible option.
-

Online Shopping

- Online shopping is a form of electronic commerce which allows consumers to directly buy goods or services from a seller over the Internet using a web browser.
- Consumers find a product of interest by visiting the website of the retailer directly or by searching among alternative vendors using a shopping search engine, which displays the same product's availability and pricing at different e-retailers.
- An online shop evokes the physical analogy of buying products or services at a regular "bricks-and-mortar" retailer or shopping center; the process is called business-to-consumer

(B2C) online shopping.

- When an online store is set up to enable businesses to buy from another business, the process is called business-to-business (B2B) online shopping.
- A typical online store enables the customer to browse the firm's range of products and services, view photos or images of the products, along with information about the product specifications, features and prices.
- Online shoppers commonly use a credit card or a PayPal account in order to make payments. However, some systems enable users to create accounts and pay by alternative means, such as:
 - Billing to mobile phones and landlines[25][26]
 - Cash on delivery (C.O.D.)
 - Cheque
 - Debit card
 - Direct debit in some countries
 - Electronic money of various types
 - Gift cards
 - Postal money order
 - Wire transfer/delivery on payment
- Online stores are available usually available 24 hours a day, and many consumers have internet access both at work and at home.

1.7 E-Commerce Framework

The framework of an e-commerce architecture is shown in fig 1.2. the various building blocks are described below:

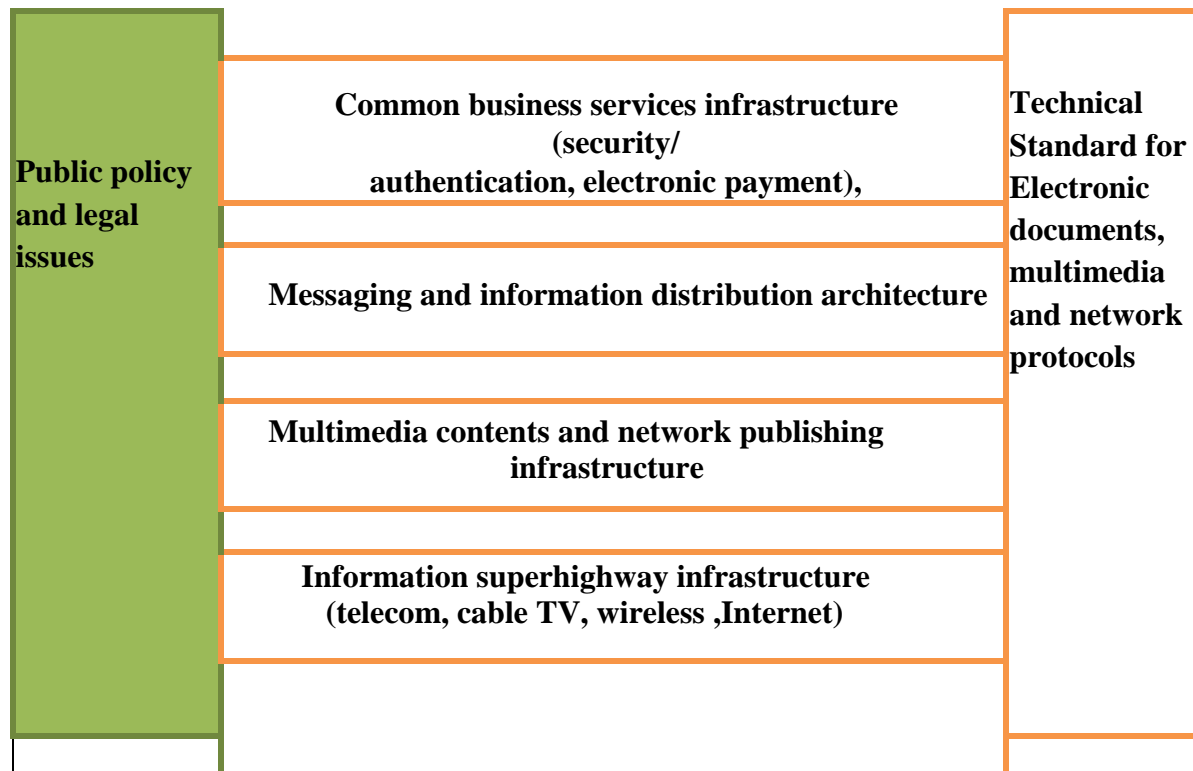


Fig 1.2:E-Framework

Common business Services

These services provide the infrastructure for buying and selling process, such services support various levels like security, authentication,e-payment,etc.,

Messaging and information distribution services

These services provide the infrastructure for sending and retrieving information, such services support a variety of software in a number of forms like email, EDI or point to point file transferring system.

Multimedia contents and network publishing infrastructure services

These services provide the infrastructure for determining the appropriate means of communication between the various points and checks for the delivery of information. Such services also support a wide range of format like audio, video, text, graphics etc.,

Information Services

Information services provide the infrastructure for providing a transporting medium along which all data should travel. They support technologies like telecom, cable, TV, wireless and internet.

The following two pillars supporting all e-commerce:

Public Key and Privacy Issues

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.

Technical Standard

Standards are crucial in the world of global e-commerce to ensure not only seamless and harmonious integration across the transportation network but access of information on any type of device the consumer choose like PCs, Portable hand held devices.

1.8 Traditional vs. E-Business Applications

Let's look at the top Comparison between Traditional vs. E-Business Applications

Basis	Traditional Business	E-Business
Formation	Difficult	Simple and Easy
Physical presence	Necessary	Not required
Cost of setting up	High cost involved	Low as no requirement of physical facilities
Dealing time	More	Less
Global reach	Less	More as cyberspace is without boundaries
Opportunity for interpersonal touch	More	Less
Transaction risk	Less	High due to distance and anonymity of the parties

1.9 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 Devices

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.

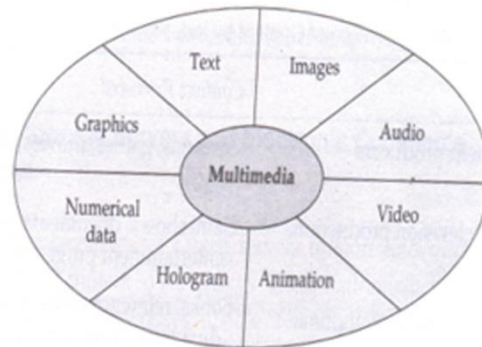


Figure 1.3 Possible components of multimedia

Fig: Possible components of MM

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

- All e-commerce applications follow the client-server model.
- 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.

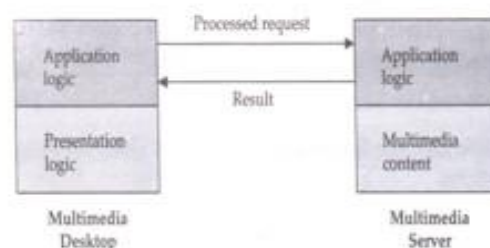


Figure 1.4 Distribution of processing in multimedia client-server world

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

1. Telecommunicating and video conferencing
 2. Geographical information systems that require storage & navigation over maps
 3. Corporate multimedia servers
 4. Postproduction studios
 5. 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)

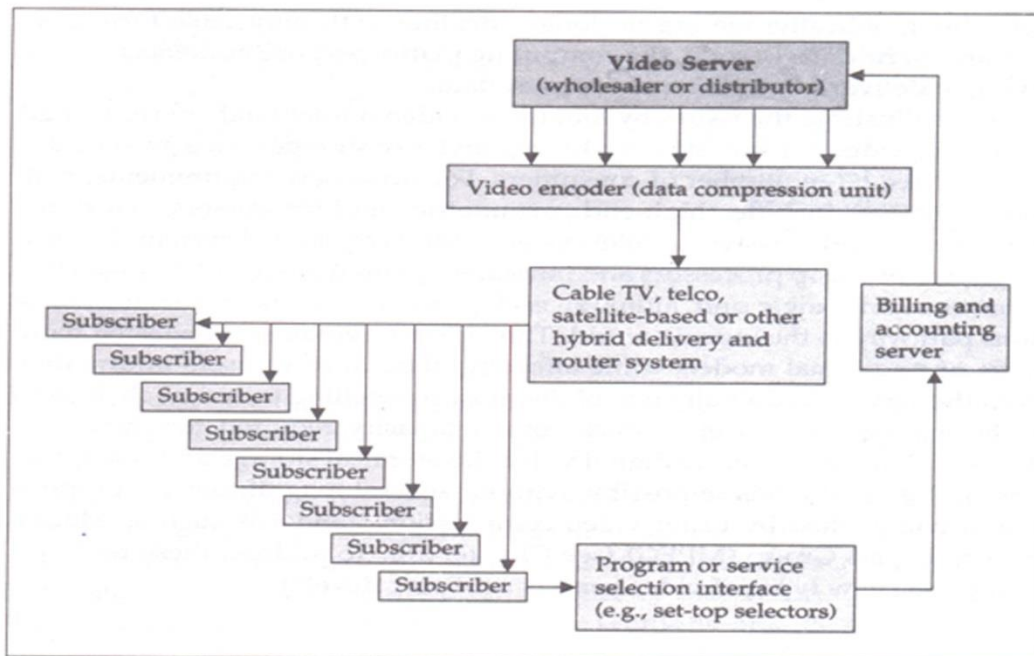


Figure 1.5 Block diagram of a generic video on-demand system

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

Information Delivery/Transport & E-Commerce Applications

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

Transport Routers

Information Transport Providers

- Telecommunication companies
- Cable television companies
- Computer-based on-line servers
- Wireless communications

Information Delivery Methods

long-distance telephone lines; local telephone lines
Cable TV coaxial, fiber optic & satellite lines
Internet; commercial on-line service providers
Cellular & radio networks; paging system

Consumer Access Devices

Information Consumers

- Computers with audio & video
Mobile computing
- Telephonic devices
- Consumer electronics
- Personal digital assistants (PDAs)

Access Devices

Personal/desktop computing capabilities
Videophone
Television + set-top box Game systems
Pen-based computing, voice-driven computing.

UNIT-II

Network infrastructure for E-Commerce - components of the I-way - Global information distribution networks - public policy issues shaping the I-way. The internet as a network infrastructure. The Business of the internet commercialization.

2.1 Network infrastructure for E-Commerce

Introduction

Electronic commerce needs a network infrastructure to transport the content- data, audio, visual, text, animation and so on. This network infrastructure is provided by what is known as the I-way or information super highway.

The information super highway may be defined as a high capacity, electronic pipeline to a consumer or business premise that is capable of simultaneously supporting a large number of e-commerce applications and providing interactive connectivity between users and services. The I-way has emerged as the basic network infrastructure for all types of e-commerce activities due to its capability to provide integrate voice, data and video services.

2.2 Components of the I-way

It consist or various components which can be broadly categorized as;

1. Network access equipment
2. Access media
3. Global information distribution networks

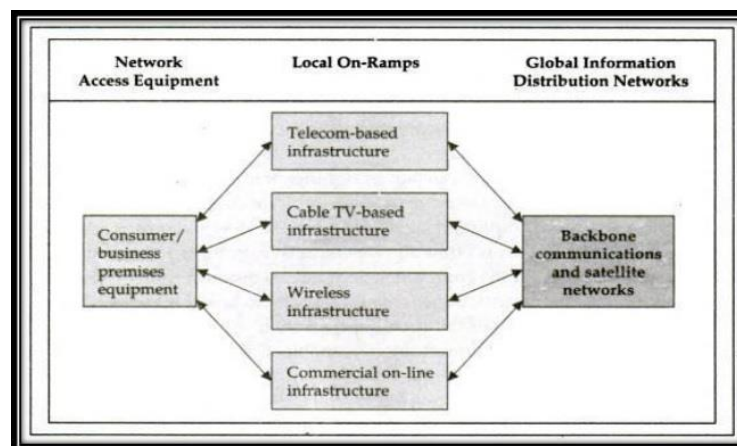
1. **Network access equipment:** - which is at the consumer end and enables the consumer to access the network. It consists of the hardware such as computers, modems, routers, switches for computer networks, set-top boxes for television networks and software platforms such as browsers and operating systems.

2. **Access road or media:** - provide the communication backbone for the transmission of data and information. The access providers may be differentiating into four categories: **telecom based, cable TV based, wireless based or computer based on-line systems.**

3. **Global information distribution networks:** providing the infrastructure for connecting across the countries and continents. They include such networks as the long distance telephone lines, the satellite networks and internet.

Consumer access equipment

The customer access equipment or customer premises equipment or the terminal equipment consists of the equipment that the customer uses to connect to the network. This may consist of the TV set-top boxes or the TV signal descramblers, the computer and the modem, pagers and cellular phones etc.



Access roads or media

The access roads is the way in which the consumer homes and work places are linked with the backbone of the network infrastructure for e-commerce. These can be categorized into four major types;

1. Telecom based
2. Cable TV based
3. Wireless based
4. Internet, intranet and extranet base

Each of these access media has its own benefits and limitations and is faced with a number of challenges in this fast growing world e-commerce.

1. Telecom based

The telecom industry provides both long distance and local telephone services for e-commerce applications. The telecom companies provide a high speed pipeline capable for carrying high volumes of interactive voice, data and video to homes and businesses connect these to the global information distribution networks, the backbone of the i-way.

The telecom networks has become the primary foundation for the I-way mainly for two reasons:

- It is capable of handling millions of simultaneous calls.
- It provides accurate usage tracking and billing.

However they have two limitations:

- Lack of digital transmission capability
- Uneven capacity distribution

2. Cable TV based

The cable TV network provides a popular media for pushing high speed data to homes. Statistics have shown that cable runs through 90 percent of the US homes today and still has a lot of unutilized capacity. The cable TV based networks may be wired or wireless.

3. Wireless based

The wireless operators are typically radio based i.e. cellular, pager and specialized mobile radio (SMR) based. The wireless based systems have revolutionized the ways of thinking about information delivery.

Technology is the most important factor. The rapid growth in technology has impacted the wireless industry in a number of ways:

- Apart from the voice calls, the cellular technology today has also facilitated short messaging services (SMS) using alphanumeric display and the multimedia services.
- Internet connectivity using the cellular networks has been made possible.
- The cellular networks using the analog technology are now upgrading to digital networks to provide greater capacity at lower costs as well as increase the quality and functionality of the cellular network. himanshu143goel@gmail.com
- Applications have been developed to facilitate mobile workers to exchange messages and data from their offices while on the road.

4. The internet

The internet forms a well known component of the global information distribution network. It targets a wide range of e-commerce applications such as video on demand, home shopping, e-mail, edi, information publishing, information retrieval, video conferencing and many more.

All the components of the I-way together provide a network infrastructure for the e-commerce activities. This requires the use of common standards and installing gateways between various networks. A final requirement is the hardware and software to move huge amounts of data effortlessly over the complex network.

2.3 Global information distribution networks

The global information distribution networks consist of the infrastructure crossing the countries and continents. They include the long distance telephone lines, satellite networks, and the internet.

1. Long distance networks

Long distance telephone connectivity is provided through cable by the inter-exchange carriers. Long distance cellular networks are using the wireless technologies to connect the consumers worldwide.

2. Satellite networks

They play a vital role in the communication industry. They have advantages over the terrestrial networks in that:

- a. They are accessible from any point of the globe.
- b. They can provide broad band digital services to many points without the cost of acquiring wire/cable installation.
- c. They can add receiving and sending sites without significant additional costs.

Communications satellite form a crucial part of the global communications infrastructures, providing a wide range of services including broadcast video and overseas telephone links.

2.4 public policy issues shaping the I-way

There are seven major issues to be discussed about I-way:

Cost, subsidies, allocations of scarce resources, regulations, universal access, privacy and social issues.

Cost: who will pay for constructing the i-way?

Subsidies: who are to be given subsidies?

Allocation of scarce resources: investment of the allocation of different scarce resources would be wasted or not?

Regulation: who will fund for the highway and who will write and enforce the rules to use the highway?

Universal access: who can access and at what cost?

Privacy: is using online activities secure?

Social and religious barriers: in cyberspace, everybody has right to write anything or publish.

2.5 The internet as a network infrastructure

Where the web was born

Tim Berners-Lee, a scientist at CERN (CERN is the European Organization for Nuclear Research), invented the World Wide Web (WWW) in 1989. The Web was originally conceived and developed to meet the demand for automatic information sharing between scientists working in different universities and institutes all over the world.

The basic idea of the WWW was to merge the technologies of personal computers, computer networking and hypertext into a powerful and easy to use global information system. Mosaic: The Original Browser By 1992, the Internet had become the most popular network linking researchers and educators at the post-secondary level throughout the world.

Researchers at the European Laboratory for Particle Physics, known by its French acronym, CERN, had developed and implemented the World Wide Web, a network-based hypertext system that let users embed Internet addresses in their documents. Users could simply click on these references to connect to the reference location itself. Soon after its release, the Web came to the attention of a programming team at the National Center for Supercomputing Applications (NCSA).

HTML: Hyper Text Markup Language is the main markup language for creating web pages and other information that can be displayed in a web browser.

HTTP: HTTP (Hypertext Transfer Protocol) is the set of rules for transferring files (text, graphic images, sound, video, and other multimedia files) on the World Wide Web. As soon as a Web user opens their Web browser, the user is indirectly making use of HTTP.

HTTP is an application protocol that runs on top of the TCP/IP suite of protocols (the foundation protocols for the Internet). (Hyper Text Transfer Protocol) The communications protocol used to connect to Web servers on the Internet or on a local network (intranet).

Its primary function is to establish a connection with the server and send HTML pages back to the user's browser. It is also used to download files from the server either to the browser or to any other requesting application that uses HTTP.

UNIT-III

Network security and firewalls - client server network security - firewalls and network security - data and message security - encrypted documents and electronic mail.

3.1 Network Security and Firewalls

Network security is typically handled by a network administrator or system administrator who implements the security policy, network software and hardware needed to protect a network and the resources accessed through the network from unauthorized access and also ensure that employees have adequate access to the network and resources to work.

A Model For Network Security

A security-related transformation on the information to be sent. Examples include the encryption of the message, which scrambles the message so that it is unreadable by the opponent, and the addition of a code based on the contents of the message, which can be used to verify the identity of the sender.

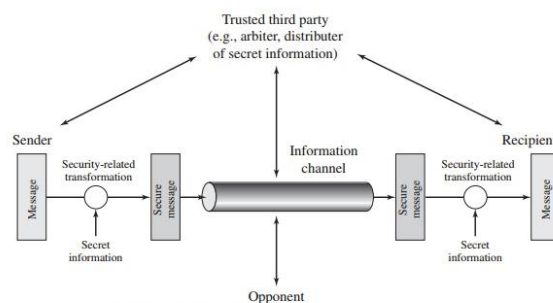


Figure 1.4 Model for Network Security

Some secret information shared by the two principals and, it is hoped, unknown to the opponent. An example is an encryption key used in conjunction with the transformation to scramble the message before transmission and unscramble it on reception.

A trusted third party may be needed to achieve secure transmission. For example, a third party may be responsible for distributing the secret information to the two principals while keeping it from any opponent. Or a third party may be needed to arbitrate disputes between the two principals concerning the authenticity of a message transmission.

This general model shows that there are four basic tasks in designing a particular security service:

- Design an algorithm for performing the security-related transformation. The algorithm should be such that an opponent cannot defeat its purpose.
- Generate the secret information to be used with the algorithm.
- Develop methods for the distribution and sharing of the secret information.
- Specify a protocol to be used by the two principals that makes use of the security algorithm and the secret information to achieve a particular security service.

A general model of these other situations is illustrated by Figure 1.5, which reflects a concern for protecting an information system from unwanted access. Most readers are familiar with the concerns caused by the existence of hackers, who attempt to penetrate systems that can be accessed over a network.

The hacker can be someone who, with no malign intent, simply gets satisfaction from breaking and entering a computer system. The intruder can be a disgruntled employee who wishes to do damage or a criminal who seeks to exploit computer assets for financial gain (e.g., obtaining credit card numbers or performing illegal money transfers).

Another type of unwanted access is the placement in a computer system of logic that exploits vulnerabilities in the system and that can affect application programs as well as utility programs, such as editors and compilers. Programs can present two kinds of threats:

- **Information access threats:** Intercept or modify data on behalf of users who should not have access to that data.
- **Service threats:** Exploit service flaws in computers to inhibit use by legitimate users.

Viruses and worms are two examples of software attacks. Such attacks can be introduced into a system by means of a disk that contains the unwanted logic concealed in otherwise useful software. They can also be inserted into a system across a network; this latter mechanism is of more concern in network security.

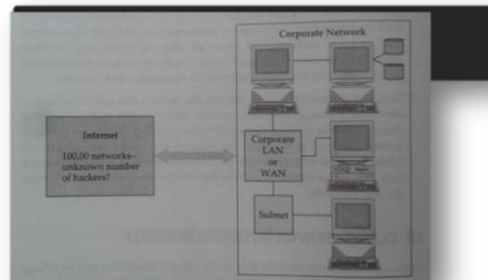
The security mechanisms needed to cope with unwanted access fall into two broad categories (see Figure 1.5).

The first category might be termed a gatekeeper function. It includes password-based login procedures that are designed to deny access to all but authorized users and screening logic that is designed to detect and reject worms, viruses, and other similar attacks.

Once either an unwanted user or unwanted software gains access, the second line of defense consists of a variety of internal controls that monitor activity and analyze stored information in an attempt to detect the presence of unwanted intruders.

3.2 Client Server Network Security

Network security on the internet is the major concern for commercial organizations, especially top management.



Types of holes in client-server network security

Client-server network security problems manifest themselves in three ways:

- Physical security holes
- Software security holes
- Inconsistent security holes

Physical security holes:

- Public workstation so that any hacker can temper the first data.
- On the network, guess passwords.

Software security holes:

- Badly written programs like “send mail” hole during 1988.
- Recently in IBM CRS-6000 workstations, a “root” shell with highest level of access was possible and could be used to delete the entire file system.

Inconsistent security holes:

- When system administrator assembles a combination of hardware and software such that seriously flawed from security point of view.

- This is common when software is more complex.

Trust Based Security:

- Trust everyone and do nothing extra for protection.

Security Through Obscurity (STO):

- Any network is secured so far as nobody outside its management group is allowed to find out anything about its operational details.

3.3 Firewalls and Network Security

Proxy Application Gateway

Proxy application program running on a firewall machine is the one which acts on behalf of all members of an organization wanting to use the internet.

Proxy application program may also be allowed to run on some user's machine who have authorization for internet use.

Hardened Firewall Host

The hardened firewall is a computer that will require inside or outside users to connect to the trusted applications in it before connecting to external world.

The major functions of hardened firewall are:

- Security processes are concentrated on one machine
- Names of system on LAN, e-mail address etc., are hidden from outsiders.
- Network service management is simplified by locating services such as ftp, e-mail, search engine etc., in the firewall.

Hardened Firewalls with Proxy Application Gateway

Any one from inside or outside an organization give their user id, password, service required to the firewall machine which acts as one's proxy i.e., does ones work on his behalf. Proxy firewall is now server to the requestor's desktop PC and also a client to some other requested service acting on requestor's behalf.

Firewall needs proxy agent for each service requested such as FTP, HTTP, TELNET etc., Firewall with a proxy function replaces the source address of transaction requestor with its own IP address.

3.4 Data and Message Security:

Data Security: Electronic data security is important at a time when people are considering banking and other financial transaction by PCs. One major threat to data security is unauthorized network monitoring also called packet sniffing.

Message Security:

Threats to message security fall into three categories.

1. Message confidentiality
2. Message and system integrity
3. Message sender authentication or identification

Message confidentiality: Is need for sensitive data such as credit card numbers, employee records, government files, etc., Environment must protect all message traffic (after delivery it shows removes from environment).

Message and system integrity: It is unauthorized combining of message either by intermixing, concatenation. Error detection code, check sum, sequence no and encryption techniques are methods of integrity.

Message sender authentication or identification: It verifies the identity of an user using certain encrypted information transferred from sender to receiver.

3.5 Encrypted Documents and Electronic Mail

Email encryption involves encrypting, or disguising, the content of email messages in order to protect potentially sensitive information from being read by anyone other than intended recipients. Even emails sent within a secure company network can be intercepted by other users, including your login credentials

There are two confidential sender authentication methods

Pretty Good Privacy (PGP)

Pretty Good Privacy (PGP) is a popular program used to encrypt and decrypt email over the Internet. It can also be used to send an encrypted digital signature that lets the receiver verify the sender's identity and know that the message was not changed en route. Available both as freeware and in a low-cost commercial version, PGP is the most widely used privacy-ensuring program by individuals and is also used by many corporations. Developed by Philip R. Zimmermann in 1991, PGP has become a de facto standard for e-mail security.

PGP can also be used to encrypt files being stored so that they are unreadable by other users or intruders.

PGP can be used basically for 4 things:

- Encrypting a message or file so that only the recipient can decrypt and read it. The sender, by digitally signing with PGP, can also guarantee to the recipient, that the message or file must have come from the sender and not an impostor.
- Clear signing a plain text message guarantees that it can only have come from the sender and not an impostor.
- Encrypting computer files so that they can't be decrypted by anyone other than the person who encrypted them.
- Really deleting files (i.e. overwriting the content so that it can't be recovered and read by anyone else) rather than just removing the file name from a directory/folder.

As we mentioned, PGP provides two services: encryption and digital signatures . Encryption allows a user to encode a file for storage locally or for transmission as an e-mail message. The local storage option is handy if you are worried about other people having access to files on your machine.

The e-mail option enables PGP to be used for private exchanges over a network. PGP encrypts the entire contents of the message in such a way that only the intended recipient can decode and read the message.

Anyone else who attempts to capture or copy the message en route will receive meaningless garble. The digital signature service allows a user to 'sign' a document before transmission in such a way that anyone can verify that the signature is genuine and belongs with a particular document.

If someone alters the message or substitutes a different message, the signature will no longer be valid. And any recipient can verify that the message has been signed by its true creator and not an imposter.

Privacy-Enhanced Mail (PEM) Privacy

Enhanced Mail (PEM) is an Internet standard that provides for secure exchange of electronic mail. PEM employs a range of cryptographic techniques to allow for confidentiality, sender authentication, and message integrity.

The message integrity aspects allow the user to ensure that a message hasn't been modified during transport from the sender. The sender authentication allows a user to verify that the PEM message that they have received is truly from the person who claims to have sent it.

The confidentiality feature allows a message to be kept secret from people to whom the message was not addressed. PEM does not require the use of a specific algorithm. On the contrary, it allows use of several algorithms for data encryption, key management, and data integrity.

The details of PEM are described in four Internet RFCs as the following:

- RFC 1421 describes message encryption and authentication procedure;
- RFC 1422 addresses certificate-based key management including the key management architecture and infrastructure using public-key certificates;
- RFC 1423 describes the encryption and message integrity algorithms, including key management;
- RFC 1424 describes three types of services to support PEM, including key certification, certificate-revocation list (CRL) storage, and CRL retrieval.

UNIT-IV

Electronic Commerce and world wide web, consumer oriented E-commerce, Electronic payment systems, Electronic data interchange (EDI),EDI applications in business ,EDI and E-commerce EDI implementation.

4.1 E- COMMERCE and WWW

The need for E-commerce stems from the demand within business and government must make better use of computing i.e. to better apply computer technology to improve business process and information exchange both within the an organization and across the organization.

E-commerce is used to devote proper exchange of business information using EDI, E-mail, Electronic bulletin boards, EFT(electronic fund transfer) and other similar technologies.

E-Commerce is used to describe a new online approach to perform traditional function such as payment and fund transfer, order entry and processing inventory management involving cargo tracking, electronic catalogue etc.

Advertising, marketing and customer support functions are also a part of E-commerce application.

No single technology can provide the full potential of E-commerce. Therefore we require an integrated architecture which is revolving in the form of WWW as E-commerce is becoming more matured. Thus we need to develop sophisticated applications on WWW.

Architectural framework of E-commerce:

A Frame Work is intended to define and create tools that integrate the information found in today's closed system and allow the development of E-commerce applications.

Architectural framework should focus on synthesizing the diverse resources already in place incorporation to facilitate the integration of data and software for better use and application.

The E-commerce applications architecture consists of 6 layers of functionality or services. They are

1. Application Services
2. Brokerage Services
3. Interface support layer
4. secure messaging & EDI
5. Middleware, structured document interchange.
6. Network infrastructure and providing communication services.

1. Application services:

It will be composed of existing and future applications based on innate architecture. The three distinct classes of E-commerce applications can be distinguished as

- (a) Consumer to Business
- (b) Business to Business
- (c) Intra organization.

(a) Consumer to Business:

We call this enterprise market place transaction. In market place transaction customer learn about product differently through Electronic publishing by them differently using Electronic cash and secure payment and have them developed differently.

(b) Business to Business:

This is called as market link transaction. Here business, govt and other organizations depend on computer to computer communication as a fast, economical dependable way to conduct business transactions. They include the use of EDI and E-mail for Purchasing goods and services, buying information and consulting services, submitting requests for proposals and receiving proposals.

(c) Intra Organizational transactions:

This is called as market driven transaction. A company becomes market driven by dispersing throughout the firm information about his customers and competitors by spreading strategic and tactical decision making so that all units can participate and by continuously monitoring their customer commitment. To maintain relationships that are critical, to deliver superior customer value management, most pay close attention to both before and after sales.

A market driven business develops a comprehensive understanding of its customer business and how customers in the immediate and downstream markets perceive value. Three major components of market driven transactions are

- (i) Customer orientation through product and service customization
- (ii) Cross functional coordination through enterprise integration, marketing and advertising.
- (iii) Customer service.

2. Information Brokerage and management:

This layer provides service integration through the notion of information brokerages. Information brokerage is used to represent an intermediary which provides service integration between customer and information providers, given some constraints such as low price, fast service, profit maximization for a client. Information brokerage addresses the issue of adding value to the information that is retrieved.

Brokerage function can support data management and traditional transaction services. Brokerage may provide tools to accomplish more sophisticated tasks such as time delay updates or feature comparative transaction.

At the heart of this layer lies the work flow scripting environment that built on software agent model that coordinate work and data flow among support services. Software agents are mobile programmers that have been called as “healthy viruses”, “digital butlers” , and “intelligent agents”. Agents are encapsulations of users instructions that perform all kinds of tasks in electronic market places spread across the network.

3. Interface support service:

The third layer interface and support services will provide interface for e-commerce applications such as interactive catalogues and will support directory services etc., functions necessary for information search and access. Interactive catalogues are customized interface to consumer applications such as home shopping. An interactive catalogue is an extension of paper based catalogues and incorporates additional features such as sophisticated graphics and video to make advertising more attractive.

Directories on the other hand operate behind the scenes and attempt to organize the huge amounts of information and transactions generated to facilitate electronic commerce. Directory services databases. make data from any server appear as a local file. Thus directories play an important role in information management functions.

4. Secure messaging and structure document interchange service:

The importance of fourth layer is secured messaging. Messaging is a software that sits between the network infrastructure and the clients or e-commerce applications.

Messaging services offer solutions for communicating non formatted data such as letters, memo, reports etc., as well as formatted data such as purchase order, shipping notices and invoice etc. messaging support both for synchronous (immediate) and asynchronous (delay) messaging. When a message is sent work continuous (software does not wait for response). This allows the transfer of messages through store and forward methods.

With messaging tools people can communicate and work together more effectively, no matter where they are located.

The main disadvantages of messaging are the new types of applications it enables , which appear to be more complex especially to traditional programmers.

5. Middleware services:

Middleware is a relatively new concept that emerged only recently. Middleware is a mediator between diverse software programs that enable them to talk with one another. It solves all the interface, translation, transformation and interpretation problems that were driving application programmers crazy.

Another reason for Middleware is the computing shift from application centric to data centric. i.e., remote data controls all of the applications in the network instead of applications controlling data. To achieve data centric computing middleware services focus on three elements.

- (1) Transparency
- (2) Translation security management
- (3) Distributed object management and services

(1) Transparency:

Transparency implies that users should be unaware that they are accessing multiple systems.

Transparency is essential for dealing with higher level issues than physical media interconnections that the underlying network infrastructure is in charge of. 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 collection of multi vendor heterogeneous systems.

(2) Transaction security management:

The two broad categories of security (management) services for transaction processing are

(a) Authentication

(b) Authorization.

Transaction integrity must be given for business that cannot afford any loss or inconsistency in data. For E-commerce , middleware provides qualities expected in a standard transaction processing (T.P) system i.e.,the so called ACID (Atomocity, consistency, isolation, Durability).

(3) Distributed Object Management:

Object orientation is proving fundamental to the proliferation of network based application for the following reasons.

It is hard to write a network based application without either extensive developer retaining or technology that adopts the difficulties of the network. objects are defined as combination of data and instructions acting on the data. objects are an evolution of more traditional programming concept of functions and procedures.

A natural instance of an object in E-commerce is a document. A document carries data and often carries instructions about the action to be performed on the data.Middleware acts as an integrator for various standard protocols such as TCP(transmission control protocol) IP (Internet protocol), OLL.

Hypertext Publishing

Web provides a functionality necessary for e-commerce. The web has become an umbrella forwide range of concepts and technology that differ markedly in purpose and scope which include hypertext publishing concept, the universalreader concept and the client server concept.

Hypertext publishing promotes the idea of seamless information world in which all online information can be accessed and retrieved. In a constant and simple way hypertext publishing is a primary application of web interest in hypermedia. On the internet (called distributed or global hypermedia).

As accelerated shortly following the success of web media and browser. This success has been aided by more powerful work station high resolution graphic display faster network communication and decreased cost for large online service.

Hypertext Vs hypermedia:

Hypertext

Hypertext is an approach information management in which data are shared in the network of document connect by links (this link represents relationship between nodes.

Hypermedia

A hypermedia system is made up of nodes (documents) and links (pointers). A node generally represents a simple concept and idea. Nodes can contain texts, graphics, audio, video images etc. nodes are connected to other nodes by links.

The movement between nodes is made by activating links which connect related concept or nodes links can be bidirectional.

Hypertext is a simple context based on the association of nodes through links. A node from which a link is originated is called the reference or the anchor link and a node at which a link ends is called referent.

The movement between the links is made possible by activating links. The promise of hypertext lies in the ability to produce large complex richly connected and crossed reference bodies of information.

Benefits of Hypermedia:

1. hypermedia documents are much more flexible than conventional documents.
2. hypermedia documents offer video sequences animation and even compute programs.
3. its power and appeal increases when it is implemented in computing environments that

include network , micro computers , work stations, high resolution displays and large online storage.

4. it provides dynamic organization.

5. hypermedia systems provides non-linear innovative way of accessing and restricting network documents.

Technology behind the web:

Information providers (publishers) run programs called servers from which the browsers can obtain information. These programs can either be web servers that understand the hypertext transfer protocol (HTTP) , “gateway” programs that convert an existing information format to hypertext, or a non-HTTP server that web browsers can access i.e FTP or Gopher servers.

Web servers are composed of two major parts.

1. the hypertext transfer protocol (HTTP) for transmitting documents between servers and clients .

2. HTML format for documents.

The link between HTML files & HTTP server is provided by Uniform Resource Locator (URL).

Uniform Resource Locator:

The documents that the browsers display are hypertext that contains pointers to other documents.

The browser allows us to deal with the pointer in a transparent way that is select the pointer we are presented with a text to which it points. This pointer is implemented by using a concept which is central to web browser known as URL.

URL's are streams used as address of objects (documents, images etc) on the web. URL marks the unique location on the internet so that a file or a service can be found. URL's follow a consistent pattern that the first part describes the type of the resources, second part gives the name of the server posting the resources and the third part gives the full name of resources.

e.g : FTP://server.address / complete file.name

URL are central to web architecture. That fact is that it is easy to address an object anywhere on the internet is essential for the system to scale & for the information space to be independent os network and server topology.

Hypertext Transfer Protocol (HTTP):

It is the simple request response protocol that is currently run over TCP and is the basis of WWW. HTTP is a protocol for transferring information efficiently between the requesting client and server. The data transferred may be plain text , hypertext images or anything else. When a user browses the web objects are retrieved in rapid succession from often widely dispersed servers.

HTTP is used for retrieving documents in an unbounded & extensible set of formats. It is an internet protocol. It is similar in its readable, text based style to the file transfer (FTP) & the network news (NNTP) protocols that have been used to transfer files and news on the internet for many years.

When objects are transferred over network, information about them is transferred in HTTP Header. The set of headers is an extension of the multi purpose internet mail extension (MIME) set. This design decision was taken to open the door to integration of hypermedia mail , news and information access.

HTTPD Servers (Hypertext transfer protocol domain)

The server that are used to publish information via WWW servers are called HTTPD servers. While choosing a web server flexibility, ease of administrator, security features, familiarity and performance are considered.

It is important to evaluate the tasks for which the web server is used. A server used for internet based marketing & technical support task will need more powerful server than the web server used internally within a firewall for distributing memos and bulletins. HTTPD servers are ideal for companies that want to provide multitude of services ranging from product information to technical support.

HTML (Hypertext markup language)

At the heart of the web is a simple page description language called HTML. It is a common basic language of interchange for hypertext that forms the fabric of the web. It is based on an international electronic document standard called Standard generalized markup language (SGML)

HTML enables document orientation for the web by embedding control codes in ASCII (American standard code for information interchange) text to designate titles, headings, graphics and the hypertext links, making links of SGML's powerful linking capabilities.

HTML was meant to be a language of communication which actually flows over the network HTML was designed to be sufficiently simply as to be produced easily by the people and automatically generated by the programs.

HTML Forms

Forms support is an important element for doing online business. Forms are necessary for gathering user information conducting surveys and also providing interactive services. Forms make web browsing an interactive process for the user and the provider.

They provide the means to collect and act upon the data entered by end users. Forms also open up a number of possibilities for online transactions such as restricting specific news articles, specifying such as request , soliciting customer feedback or ordering products. The number of features are available for building forms including text boxes, radio buttons, check boxes.

Common Gateway Interface Services (CGI)

An important aspect of web server development is application gateways. More specifically it is CGI. CGI is a specification for communicating data between web server and other application server. CGI is used whenever web server needs to send or receive data from another application.

A CGI script is a program that negotiate the movement between web server and an outside application. CGI scripts may be written virtually any high level language such as C, Perl (Practical extraction and reporting language), Java scripts etc.

Security on the web:

Security and confidentiality are essential before business conduct, financial transactions over the internet has become a big problem due to the increasing number of application oriented towards commerce. Therefore commercial application requires that the client and server be able to authenticate each other and exchange data confidentiality. This exchange has three basic properties.

1. clients are confident about servers they are communicating with server authentication.
2. client conversation with server is private using encryption.
3. client conversation cannot be tampered or inter separated with data integrity.

Categories of Internet data & Transaction:

Several categories of data must be encrypted making internet data security an interesting challenge.

Public Data:

Public data have no security distinctions and can be read by anyone. Such data should be protected from unauthorized tampering or modification because a reader may perform damaging actions on its contents.

Copyright Data:

Copyright data have content that is copyrighted but not secret. The Owner of the data is willing to provide it but wishes to ensure that the user has paid for it. The objective is to maximize the revenue and security.

Confidential Data:

Confidential data contains material that is secret but whose existence is not secret such data include bank account systems, personal files etc. such material may be referenced by public or copyright data.

Secret Data:

Secret data existence is a secret such data might include algorithms which is necessary to monitor, log all access to secret data.

Despite the variety of data, security and verification are necessary for all

Types because of the sensitivity of information being transferred and to protect the consumer from various forms of fraud and misconduct.

WWW based security schemes:

Several methods can provide security in the web framework. This includes the following.

1. SHTTP:- (Secured Hypertext Transfer Protocol)

SHTTP will enable the incorporation of various cryptographic messages, formats such as digital signature Algorithms (DSA) & RSA standards into the both their client & servers.

2. SSI :- (Security Socket Layer)

SSL uses RSA security to wrap security information around TCP/IP based protocols. The benefits of security socket layer over secured HTTP is that SSI is not restricted to HTTP. But can also be used for security for FTP & TELNET.

3. SHEN :

It is the security scheme for the web sponsored by www. It is not non-commercial or more research oriented security & is similar to SHTTP.

4.2 Consumer Oriented E-Commerce

The wide range of applications envisioned for the consumer marketplace can be broadly classified into:

- (i) Entertainment
- (ii) Financial Services and Information
- (iii) Essential Services
- (iv) Education and Training

	Consumer Life-Style Needs	Complementary Multimedia Services
1	Entertainment	Movies on demand, video cataloging, interactive Ads, Multi-user games, on-line discussions.
2	Financial Services and Financial news.	Home Banking, Financial services, Information,
3	Essential Services and remote diagnostics.	Home Shopping, Electronic Catalogs, telemedicine,
4	Education and Training conferencing, on-line databases.	Interactive education, multiuser games, video

1. Personal Finance and Home Banking Management

- (i) Basic Services
- (ii) Intermediate Services
- (iii)Advanced services

2. Home Shopping

- (i) Television-Based Shopping
- (ii)Catalog-Based Shopping

3. Home Entertainment

- (i) Size of the Home Entertainment Market
- (ii)Impact of the Home Entertainment on Traditional Industries

4. Micro transactions of Information

1. Personal Finance and Home Banking Management:

The newest technologies are direct deposit of payroll, on-line bill payment and telephone transfers. The technology for paying bills, whether by computer or telephone, is infinitely more sophisticated than anything on the market a few years ago.

In 1980s were the days of “stone age” technology because of technology choices for accessing services were limited. For home banking, greater demands on consumers and expanding need for information, its services are often categorized as basic, intermediate and advanced.

(i) Basic services

- These are related to personal finance
- The evolution of ATM machines from live tellers and now to home banking
- The ATM network has with banks and their associations being the routers and the ATM machines being the heterogeneous computers on the network.
- This interoperable network of ATMs has created an interface between customer and bank that changed the competitive dynamics of the industry. See in next figure
- Increased ATM usage and decrease in teller transactions
- The future of home banking lies with PC's

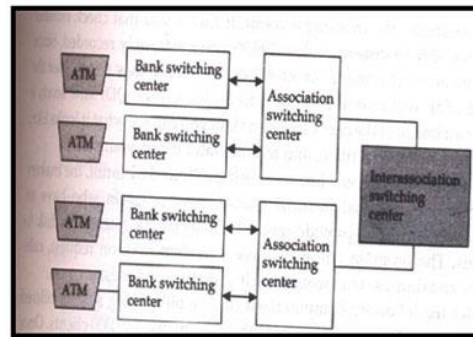
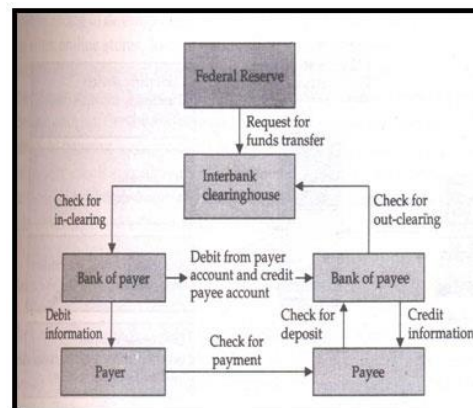


Fig: Structure of ATM Network

Intermediate Services

The problem with home banking in 1980 is, it is expensive service that requires a PC, a modem and special software. As the equipment becomes less expensive and as bank offers broader services, home banking develops into a comprehensive package that could even include as insurance entertainment.

Consider the computerized on-line bill-payment system. It never forgets to record a payment and keeps track of user account number, name, amount and the date and we used to instruct with payment instructions. See in Fig;



Check-Clearing process

(iii) Advanced Services

The goal of advanced series is to offer their on-line customers a complete portfolio of life, home, and auto insurance along with mutual funds, pension plans, home financing, and other financial products. The Figure explains the range of services that may well be offered by banks in future.

The services range from on-line shopping to real-time financial information from anywhere in the world. In short, home banking allows consumers to avoid long lines and gives flexibility

1. Home Shopping:

It is already in wide use. This enables a customer to do online shopping

(i) Television-Based Shopping:

It is launched in 1977 by the Home Shopping Network (HSN). It provides a variety of goods ranging from collectibles, clothing, small electronics, house wares, jewelry, and computers. When HSN started in Florida in 1977, it mainly sold factory overruns and discontinued items. It works as; the customer uses her remote control at shop different channels with the touch of a button. At this time, cable shopping channels are not truly interactive

(ii) Catalog-Based Shopping

- In this the customer identifies the various catalogs that fit certain parameters such as safety, price, and quality
- The on-line catalog business consists of brochures, CD-ROM catalogs, and on-line interactive catalogs
- Currently, we are using the electronic brochures

2. Home Entertainment:

- It is another application for e-commerce
- Customer can watch movie, play games, on-screen catalogs, such as TV guide.
- In Home entertainment area, customer is the control over programming

Advanced Services

Size of the home Entertainment Market:

- Entertainment services play a major role in e-commerce.
- This prediction is underscored by the changing trends in consumer behavior.
- It is shown in Table

Impact of Home entertainment on traditional industries:

- This will have devastating effects on theater business
- Economic issues might allow theaters to maintain an important role in the movie industry
- Today average cable bill is approximately \$30 a month Industry Estimates of consumer Expenditures

Micro transactions of information:

- One change in traditional business forced by the on-line information business is the creation of a new transaction category called small-fee transactions for micro services
- The customer by giving some information away for free and provide information bundles that cover the transaction overhead.
- The growth of small-money transfers could foster a boom in other complementary information services
- The complexity is also increased in micro services when an activity named, re-verification is entered.
- It means checking on the validity of the transaction after it has been approved

Desirable Characteristics of an Electronic marketplace

- Critical mass of Buyers and sellers: To get critical mass, use electronic mechanisms
- Opportunity for independent evaluations and for customer dialogue and discussion: Users not only buy and sell products, they compare notes on who has the best products and whose prices are outrageous

- Negotiation and bargaining: Buyers and sellers need to be able to haggle over conditions of mutual satisfaction, money, terms & conditions, delivery dates & evaluation criteria
- New products and services: Electronic marketplace is only support full information about new services
- Seamless interface: The trading is having pieces work together so that information can flow seamlessly
- Resource for disgruntled buyers: It provide for resolving disagreements by returning the product.

4.3 E-Payments

4.4 Electronic data interchange (EDI)

EDI is the intercompany communication of business documents in a standard format. The simple definition of EDI is a standard electronic format that replaces paper-based documents like purchase orders or invoices. By automating paper-based transactions (PDF, 669 KB), organizations can save time and eliminate errors caused by manual processing that are costly to fix.

With EDI transactions, information moves directly from a computer application in one organization to a computer application in another.¹ EDI standards define the location and order of information in a document format. This automated capability enables data to be shared rapidly instead of the hours, days, or weeks required with paper documents or other methods..

Today, industries use EDI integration to share a range of document types — from purchase orders to invoices to requests for quotations to loan applications and more. In most instances, these organizations are trading partners that exchange goods and services frequently as part of their supply chains and business-to-business (B2B) networks.

Guide to EDI

All EDI transactions get defined by EDI message standards. It is vital to have proper governance processes for data quality. When information is missing or in the wrong place, the EDI document might not be processed correctly.

Standards are the basis of EDI conversations. Several organizations define the EDI message standards, including ODETTE, TRADACOMS, GS1, Peppol and the Accredited Standards Committee X12 (ASC X12).

Benefits of EDI

EDI transactions are essential to B2B processes and continue to be the preferred means to exchange documents and transactions between businesses, small and large.

There are five key business benefits that EDI technology delivers through automation and B2B integration:

EDI technology saves time and money by automating a process previously manually executed with paper documents.

EDI solutions improve efficiency and productivity. More business documents are shared and processed in less time with greater accuracy.

EDI data transfer reduces errors (PDF, 669 KB). EDI's rigid standardization helps ensure that information and data are correctly formatted before it enters business processes or applications.

EDI integration improves traceability and reporting. Electronic documents can be integrated with a range of IT systems to support data collection, visibility and analysis.

EDI automation supports positive customer experiences. Enables efficient transaction execution and prompt, reliable product and service delivery.

For large organizations, EDI enables standards to be instituted across trading partners to achieve benefits consistently. For smaller organizations, adherence to EDI offers greater integration with larger firms that have big budgets and strong influence.

In general, EDI transmissions break down into two basic types:

Point-to-point or direct connections. Two computers or systems connect with no intermediary over the internet, generally with secure protocols.

Value-added network (VAN). A third-party network manages data transmission, generally with a mail boxing paradigm.

EDI internet transmission protocols include Secure File Transfer Protocol (SFTP), Applicability Statement 2 or AS2, an HTTPS-based protocol, Simple Object Access Protocol (SOAP) and others.

EDI data elements include items such as sender ID and receiver ID. Data segments combine two or more related elements to give them greater meaning — for example, FNAME and LNAME can combine to form CUSTOMERNAME. Envelopes structure different types of data and carry the sender and receiver address information. EDI document flow or message flow describes the movement of EDI messages to various inbound and outbound addresses and departments to execute a business process or transaction.

Meta languages like Extensible Markup Language (XML) or JavaScript Object Notation (JSON) complement rather than replace EDI. Companies must be ready to handle an ever-increasing number of document formats and transmission options. One global manufacturer routinely exchanges about 55 different document types with nearly 2,000 partners.

“As many as 20% of our B2B transactions were producing an error before we began using IBM Supply Chain Business Network. We have fewer errors now — for example, we used to have issues with transfer orders because a client would submit a wrong code, which was painful for our client service team.

It happens probably 80% less now because all of that used to be done manually.” Read what other EDI managers tell IDC about how they drive strategic value with IBM Sterling Supply Chain Business Network.

EDI Implementation

For some enterprises, EDI can be difficult to implement. One reason is the need to keep pace with shifting government regulations, standards and updates. It is also inherently complex, as it needs to accommodate the complexities of global business needs. For example, each trading partner in a B2B network can present individual requirements.

Even though two partners may agree on which EDI document to use, each can have unique formatting requirements that need to be supported. These factors, and others, have led many organizations to outsource their EDI solutions.

Whether in-house or outsourced, there are some basic conditions, capabilities and resources needed to implement EDI effectively. In addition to factors like agreement on document types, secure transmission methods, and requisite hardware and software, an effective EDI implementation should consider:

Translation or mapping software. Takes fields such as names, addresses, currency amounts, part numbers and quantities, and maps them from business application formats into standardized documents and vice versa.

Batch enveloping or de-enveloping capabilities. Supports large EDI message batches to enable senders and receivers to wrap and unwrap transactions which can then be grouped from or split to several divisions or areas of a trading partner’s business.

Message routing mechanisms. Required once a message is de-enveloped to sort messages for different groups and deliver them to the appropriate targets. Message transformation may also be required to get the message into the correct format for its destination.

Trading partner agreements (TPA).

Clarifies terms and conditions, establishes standards for business documents and defines communications and business protocols between trading partners.

The future of EDI

Consider this scenario. Today, a chargeback related to a damaged shipment is triggered using an EDI 214 document — a Transportation Carrier Shipment Status Message. The material in the shipment is unusable or unsaleable. Disputes will most likely arise based on the chargeback.

But in future supply chains, EDI will be the core document exchange capability to support innovations like the Internet of Things (IoT), block chain and artificial intelligence (AI). Future EDI will use:

IoT sensors. Incorporated into the shipment's packaging and tied to periodic EDI 214 messages to improve package condition visibility in near real time.

Block chain technology. Underpinning EDI information flows for shipments can offer a shared version of the truth to help quickly resolve and even avoid chargeback disputes.

AI agent.

Monitors all relevant events and information connected to a shipment and can identify a non-compliant event; can determine if a reshipment is required, analyze the most efficient source of replacement, initiate a new shipment and an authorized return.

UNIT-V

Intraorganizational Electronic Commerce supply chain management. Electronic Commerce catalogs, Document Management and digital libraries.

5.1 Intra-organizational 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.

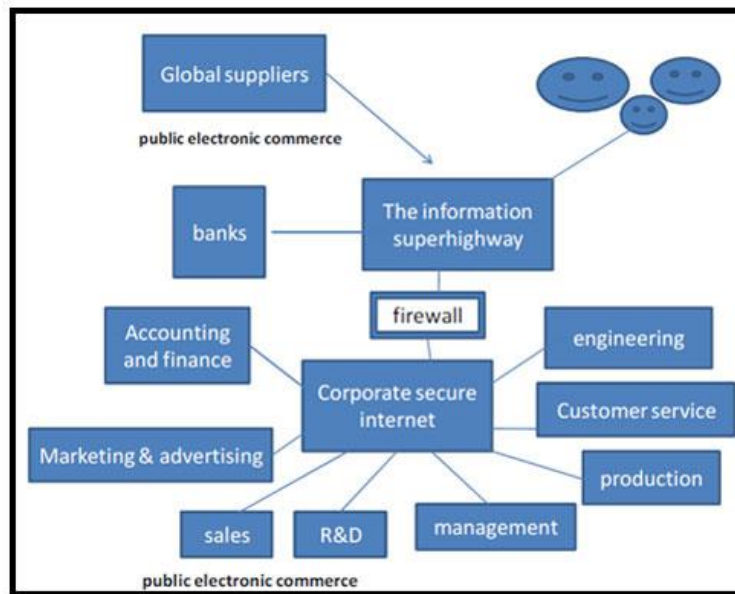
It is of two types

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 labeling 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.

Macro Forces and Internal Commerce

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 is 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.

Global Markets: Definition and Characteristics

Definition:

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:

- Economies of scale in production and distribution Power and scope
- Consistency in brand image
- Ability to leverage good ideas quickly and efficiently
- Uniformity of marketing practices
- Helps to 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.

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:

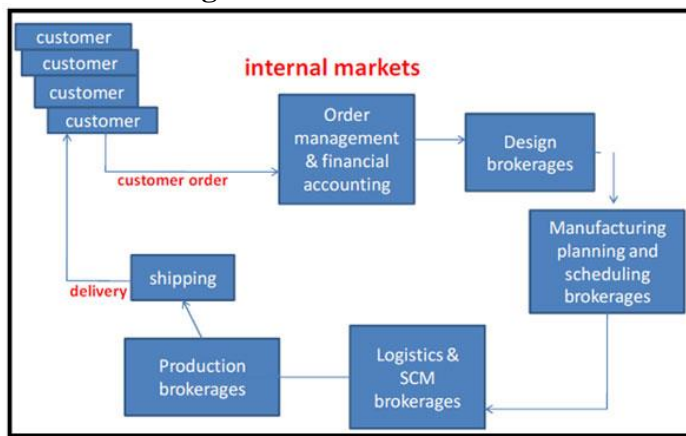
Prominent-virtual organizational structure:

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 nonbusiness 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.

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:

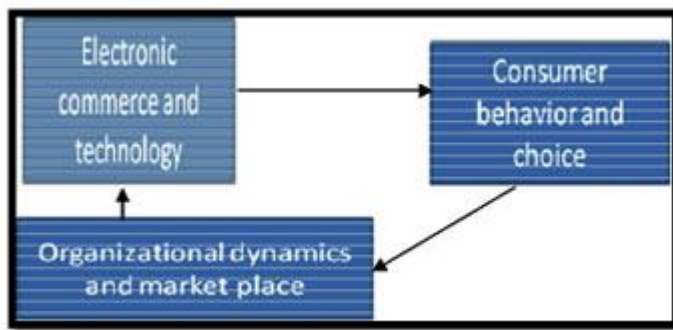
By these users or third-party providers need to learn how to develop work-flow applications within middleware environment.

Organizational memory is becoming practical:

The new tools for memory advancing towards, what can be called the “corporate digital library”.

Customization and Internal Commerce

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. "Mass Customization" is the new frontier in business competition for both manufacturing and service industries. Those systems combine the low unit costs of mass production processes with the flexibility of individual customization

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.

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.

5.2 What is Supply chain?

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 -Risk and reward 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

In the United States and Canada, phone books are used to locate addresses and phone numbers of both businesses and individuals. The two major sections of a phone book are the white pages and the yellow pages.

5.3 Electronic Commerce catalogs

Online Catalogs or Directories

A directory performs an essential support functions that guides customers in a maze of options by enabling the organization of the information space.

Directories of two types:

- Electronic White Pages
- Electronic Yellow Pages

Electronic White Pages:

The white pages in a phone book are for personal land line phone numbers and street addresses in a specific region. The white pages are organized alphabetically by name, with the surname (or last name) first, then first name followed by middle name or initial, if applicable.

Everyone with a land line telephone service is registered with the phone book printer under the name of the phone service account unless they opt out of the phone book by calling the phone book company and asking to be on the red list. This red list will stop a person's name from appearing in the phone book and online on the phone book website.

Yellow Pages:

The yellow pages generally follow the white pages in the phone book, in the back half. The yellow pages are all business listings, with the name, number and address of local businesses.

They differ from the white pages in that yellow pages are paid listings, meaning that businesses must pay for the listing in the book and can also pay extra money for larger more

attention-grabbing ads. The second major difference is that the businesses are first listed by category and then in alphabetical order by name.

For example, Tony's Pizza would be listed under the "Pizza" category and then between the two other pizza restaurants that come immediately before and after it alphabetically.

Third –Party Directories:

Basic yellow pages: they are organized by human oriented products and services

Business Directories: this takes the extended information about companies, financial health, and news clipping.

Big business directory: this directory lists companies' of 100 or more employees

Credit reference directory: this directory provides credit rating codes for millions of US companies.

5.4 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:

- Electronic document-based digital libraries.
- 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 interlinked 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:

Hypertext 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.

Corporate 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 data warehouse

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 decision-making process. User can manage and access large volumes of in one cohesive framework.
- Data warehousing has wide spread applicability.

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

Advertising and Marketing on the Internet

The new age of information-based marketing. Advertising on the internet.

Marketing research.

The New Age of Information-Based Marketing

The new age of information-based marketing differentiate interactive marketing into four areas:

- Retailers vs manufacturers Target and micromarketing
- Small business vs large business
- Regulatory and legal implications of cyberspace marketing.
- Retailers’ vs Manufacturers:

The role of Retailers and manufacturers are fast reversing in electronic commerce.

Retailer’s vs Manufacturers have the fallowing methods:

- Market research and customer prospecting.
- Market presence method
- Product or services building method

Information-based products pricing and priority method.

Target and Micromarketing:

Electronic commerce, technology has put target and micromarketing within the research of small business.

It gives information to the micro marketers not only about its own business but also consumer’s information.

Consumer target is two-way flow of communication between seller and buyer. Direct mail and telemarketing are two fast growing ways to micro market.

Technology is an essential tool in micromarketing.

There are two main types of micromarketing:

- Direct-relationship micromarketing: is aimed at stimulating sales at retail establishments through direct contacts with consumers.
- Direct-order micromarketing: is focused on selling products directly to consumers in their homes or businesses.

Small vs large: Thread avoid vs goliath syndrome

The key distinction between small and large business remains access to national and international marketing for advertising purposes.

Today, exorbitant advertising cost represents the barrier to reaching the customer effectively. Internet and other networks plays good role in advertising.

The major difference between the internet and other I-way advertising media are ownership and membership fees.

Due to the empowering effect of internet-facilitated advertising however, the balance of power between large and small companies may change in future.

Advertising on the Internet

The notion of advertising and marketing became inevitable after 1991 when the internet was opened for commercial traffic.

There are very good reasons for embracing the inevitability of growing of commercial advertising on the internet:

- Advertising conveys much needed information.
- Advertising generates significant revenue

Key components for making internet advertising effectively are:

- Advertising process Core content Supporting content
- Market and consumer research Repeat customers

On-line advertising paradigms:

Two different advertising paradigms are emerging in the on-line world, they are:

- Active or push-based advertising
- Passive or pull-based advertising

Active or push-based advertising:

Active or push-based advertising is of two types they are :

The broadcast model:

Broadcasting message provides a means for reaching a great number of people in short period of time. It mimics the traditional model, in which customer is exposed to the advertisement during TV programming.

It basically uses direct mail, spot television, cable television.

Text-based broadcast messages also used in advertising in Usenet news groups.

The junk mail model:

Disadvantage of the direct mail include relatively high cost per contact. Junk mail is the just poorly targeted direct mail. It is most intrusive of all forms of internet advertising, because it is easily implemented using electronic mail. Junk mail creates unwanted expense as well as an annoyance.

Passive or pull-based advertising

Pull-based advertising provide a feedback loop, company and customers. On-line pull-based advertising includes the following: Billboards Catalogs or yellow pages directories: endorsements

Based on the above three we have the following models:

The billboards or www model:

Billboard advertising is often used to remind the customer of the advertising messages communicated through other media.

The advantage of this model is no customer charges. In this message must be simple, direct.

Catalog and yellow pages directory model:

Traditionally, the most visible directory service of advertising is the yellow pages.

Catalog model is the least intrusive model but requires active search on the part of customer.

Yellow pages are low in cost in terms of production and placement.

Disadvantage of yellow page include lack of timeliness and little creative flexibility.

Customer endorsement model:

In endorsements people tell their experiences with products and services. These are in question and answer format.

Marketing Research

Market research is extremely important for companies in terms of how they allocate their advertising dollars in sales promotions, how they introduce new products, how they target new markets.

Broadly marketing research is divided into three faces:

- Data collection
- Data organization
- Data analysis and sense making

Data collection:

Markets mainly relied on source database for understanding consumer behavior.

Source data base mainly comprise of numeric information. Delivery of source database services follows two main patterns. Data collect and collate data, making it available by data base producers. Data collect and collate data, making it available by central hosts like CompuServe, American online. etc.,

Data organization:

Everyone is collecting data from electronic commerce, but very few are organizing it effectively for developing a marketing strategy.

The key abilities in their environment are:

Leverage its established database into customized offerings by audience and markets.

Leverage its established database in terms of horizontal growth.

Data analysis and sense making:

The ability to link database to analytic tools like econometric programs and forecasting models is called data analysis. Market research is undergoing major changes; the next generation of source database will definitely include multimedia information.