BALAJI INSTITUTE OF I.T AND MANAGEMENT KADAPA

E-BUSINESS
(21E00207b)

ICET CODE: BIMK

1st & 2nd Internal Exam Syllabus

ALSO DOWLOAD AT http://www.bimkadapa.in/materials.html

Name of the Faculty: R.TEJASRI

Units covered : **1 to 5 Units**

E-Mail Id : tejasrirevanuru414@gmail.com

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY ANANTAPUR
(Established by Govt. of A.P., ACT No.30 of 2008)
ANANTHAPURAMU – 515 002 (A.P) INDIA

MASTER OF BUSINESS ADMINISTRATION
MBA; MBA (General Management); MBA (Business Management)
COMMON COURSE STRUCTURE & SYLLABI

Course Code	General Elective – I	L	T	P	C
21E00207b	E-BUSINESS	2	0	0	2
	Semester	II			

Course Objectives:

- To imparts the concepts and various application issues of e-business and various online strategies for e-business.
- To explain various electronic payment systems.

Course Outcomes (CO): Student will be able to

- Understand electronic business and related concepts in detail.
- Identify security threat in e-business and steps, methods to overcome security issues.
- Know various electronic payment system and business models in the present technology business world.
- Know the e-business infrastructure requirements for e-business.

UNIT - I	Lecture Hrs: 6

Introduction to e-business : Electronic business, Electronic commerce, difference between e-business & e-commerce, electronic commerce models, types of electronic commerce,value chains in electronic commerce,E-commerce in India, internet,web based tools for electronic commerce.Electronic data, Interchange, components of electronic data interchange, electronic data interchange process.

UNIT - II	Lecture Hrs: 6

Security threats to e- business: Security overview, Electronic commerce threats, Encryption, Cryptography, public key and private key Cryptography digital signatures, digital certificates, security protocols over public networks : HTTP, SSL,Firewall as security control, public key infrastructure (PKI) For Security.

UNIT - III	Lecture Hrs: 6

Electronic payment system : Concept of money, electronic payment systems, types of electronic payment systems,smart cards and electronic payment systems, infrastructure issues in EPS, Electronic fund transfer.

UNIT - IV	Lecture Hrs: 4

E-business applications and strategies : Business models & revenue models over internet, emerging trends in e- businesse- governance, digital commerce, mobile commerce, strategies for business over web, internet based business models.

UNIT - V	Lecture Hrs: 6

E –business infrastructure and e- marketing : Hard works system software infrastructure, ISP's, managing e-business applications infrastructure, what is e- marketing, e-marketing planning, tactics, strategies.

Textbooks:

1. Dave chaffey :e-business & e-commerce management- Pearson.
2. E- commerce- e-business :Dr.C.S.Rayudu, Himalaya.

Reference Books:

1. Whitley, David (2000) ,e-commerce strategy,Technologies and applications.TMH.
2. Schneider Gary P.and Perry, James T(1ST edition 2000) Electronic commerce, Thomson Learning.
3. Bajaj, Kamlesh K and Nag, Debjani (1st edition 1999) ,e- commerce, The cutting edge of business,TMH Publishing company

Online Learning Resources:

https://onlinecourses.nptel.ac.in/noc19_mg54/preview
https://www.classcentral.com/course/swayam-e-business-14018

UNIT-1

INTRODUCTION TO E-BUSINESS

1. E-BUSINESS

1.1 Introduction:

Commerce means the activity of buying and selling especially on a large scale.

- Commerce, the exchange of valuable goods or services, has been conducted for thousands of years.
- Traditionally, commerce involved bringing **Trader's, buyers and sellers** together in a physical market place to exchange information, products, services and payments.
- Today, many business transactions occur across a **telecommunications network (internet)** where buyers, sellers and others involved in the business transactions rarely see or know each other and may be anywhere in the world.

E-COMMERCE: E-Commerce is the process of buying and selling of products and services over internet or online services.

1.2 E-BUSINESS

E-Business is a broad concept, it includes buying and selling of products, finance, product development, HRM, Delivery of information, the providing of customer services before and after a sale, the collaboration with business partners and the effort to enhance productivity within organizations.

OR

E-business is the broader spectrum of business activities that can be conducted over internet.

- ICT (Information &Communication Technology): In E-Business ICT is used to enhance one's business. A business processes using technology to improve the way in business processes work.

Electronic Business

One of the first companies to use the term e-business was IBM in Oct 1997, which launched an e-business marketing campaign directed at selling services to companies that needed to connect their current electronic systems to the web.

The initial development of e-business transactions began more than thirty years ago when banks began transferring money to each other by using **Electronic Funds Transfer (EFT),** and when large companies began sharing transaction information with their suppliers and customers via **Electronic Data Interchange (EDI).** Using EDI, companies electronically exchange information that used to be traditionally submitted on paper forms, such as invoices, purchase orders, quotes and bills. This exchange occurs both with suppliers and customers. These transactions generally occur over private telecommunications networks called **valued-added networks** or **VANs**. Because of the expense of setting up and maintaining these private networks and the costs associated with creating a standard interface between companies, implementing EDI has usually been beyond the financial reach of small and medium sized companies. Today, companies of all sizes use a less expensive network alternative to VANs for the exchange of information, products, services and payments- the Internet. Global access to the internet and the web has changed the way people and businesses around the world communicate.

Almost a billion people worldwide use the internet to shop for products and services, listen to music, view artwork, conduct research, get stock quotes, keep up-to- date with current events, chat with each other, upload and download electronic files, send e-mail, and much more.

1.3 E-Business and the Global Economy:

The widespread electronic linking of individuals and businesses around the world has created an economic environment in which time and space are no longer limiting factors; the business value of information is more important than before and information itself is more accessible; traditional business intermediaries are being replaced by new business intermediaries; and buyers are growing more powerful. In the past some large companies were able to conduct their business transactions electronically using EDI and private networks, but the high costs associated with EDI prevented most businesses

from using the technology. The internet has leveled the playing field by making it easier and cheaper for companies of all sizes to transact business and exchange information electronically.

As many of the business limitations of space and time disappear with the emergence of the internet, businesses that once had geographically limited customer and competitor bases are finding that the whole world is now both customer and competitor. In addition, one millions of companies that previously engaged in business transactions only during traditional hours now conduct those transactions online 24 hours a day, 7 days a week.

> According to a study by J.D. POWER and Associates, 64% of new vehicle buyers use online automotive information when making a purchase

E-business → The practice of servicing businesses or employees over the internet.

E-Commerce The practice of running a business over the internet.

1.4 E-Business Advantages and Disadvantages:

Like buyers, sellers also benefit tremendously from the global e-business based economy. Sellers can increase sales and operations from local to worldwide markets, improve internal efficiency and productivity, enhance customer service, and increase communication with both suppliers and customers.

E-business advantages to buyers and sellers:

FOR SELLERS	FOR BUYERS
Increased sales opportunities	Wider product availability
Decreased costs	Customized and personalized information and buying options
24 hours a day, 7 days a week sales	24 hours a day 7 days a week shopping.
Access to narrow market segments	Easy comparison shopping
Access to global markets	Access to global markets
Increased speed and accuracy of information delivery	Quick delivery of digital products and information.
Data collection and customer preferences tracking.	Access to rich media describing products and services.

E-business disadvantages **to buyers and sellers:**

FOR SELLERS	FOR BUYERS
Growing competition from other e-businesses	Difficulty differentiating among so many online sellers.
Rapidly changing technologies	Unpredictable transaction security and privacy
Greater telecommunications capacity or bandwidth demands	Dealing with unfamiliar, possibly untrust -worthy, sellers.
Difficulty of integrating existing business systems with e-business transactions	Inability to touch and feel products before buying them
Problems inherent in maintaining e-business systems	Unfamiliar buying processes and concerns about vendor reliability
Global market issues: diverse languages, unknown political environments and currency conversions	Issues with state sales tax charges and logistical difficulties of product returns.

2. ELECTRONIC COMMERCE (E-COMMERCE):

2.1 Definition: E-Commerce is the process of buying and selling of products and services over internet or online services.

- E-commerce draws on technologies such as mobile commerce (m- commerce), Electronic Fund Transfer, Supply Chain Management, Internet marketing, online transaction processing, Electronic Data Interchange (EDI) and automated Data collection systems.
- Modern e-commerce typically uses the World Wide Web (WWW), e- mail etc.,
- Typically e-commerce transactions include the
  - ✓ Purchase of online books (Amazon)
  - ✓ Music purchases (music download)

2.2 Business Applications:

Some Common Applications Related to E-Commerce Are:

1. Conversational commerce (e-commerce via chat).
2. Digital wallet.
3. Electronic tickets.
4. Group buying.
5. Instant messaging.
6. Online banking.
7. Online shopping.
8. Order tracking.
9. Social networking.
10. Artificial intelligence.

2.3 Government Regulation of E-Commerce

In India the information technology act 2000 governs the basic applicability of e-commerce.

2.4 The Process of E-Commerce

2.5 Advantages of E-Commerce:

- Fast buying/selling procedures, as well as easy to find products.
- Buying/selling 24/7.

- No need of physical company setups.
- Easy to start and manage a business.
- Low operational costs and better quality of services.
- Customers can easily select products from different providers without moving around physical.

2.6 Disadvantages of E-Commerce:

- Unable to examine products personally
- Not everyone is connected to internet
- There is a possibility of credit card theft
- Mechanical failures can cause unpredictable effects on the total process.

3. DIFFERENCE BETWEEN E-BUSINESS AND E-COMMERCE

E-COMMERCE	E-BUSINESS
The process of buying and selling of goods and services with electronic devices over the internet	E-business is the boarder spectrum of business activities that can be conducted over internet.
It is more appropriate in B2C context	It is used in the context of B2B
E-commerce is narrower concept and restricted to buying and selling.	It is a broader concept that involves market surveying supply chain and using data mining.
Network used – internet	Network used – internet, intranet & extranet.
They carry out commercial transactions	They carry out business transactions.
It is limited to monetary transactions	It includes monetary as well as allied activities
e-commerce usually requires the use of just a website	E-business involves the use of CRM's ERP's that connect different business processes.
Example: buying of pen drive from amazon.com is considered e-commerce	Example: Using of internet by Dell, Amazon for maintaining business processes like online customer support, e-mail marketing, and supply chain management.

4. ELECTRONIC COMMERCE MODELS

- A company business model is the way in which the company conducts business in order to generate revenue.
- Widespread access to the internet and the web is driving companies to adapt old business models and create new ones.
- E-business models are broadly categorized as,
  - Business to Consumer (B2C).
  - Business to Business (B2B).
  - Business to Government (B2G).
  - Consumer to Consumer (C2C).
  - Consumer to Business (C2B).

Business Models and Examples

MODEL	DESCRIPTION	EXAMPLES
B2C	Business to consumer: business sells products or services directly to Consumers	Amazon.com Tattered cover book store eDiets.com
B2B	Business to business: Business sells products or services to other business or brings multiple buyers and sellers together in a central market place.	Airparts.com Jayde.com Rack space managed hosting
B2G	Business to government: Business sells to local, state, and federal agencies or creates a marketplace to bring government agency buyers and sellers together.	B2G market Scanplanet.com Supply core
C2G	Consumer to consumer: consumers sell or trade	eBay swapvillage.com

	directly with other consumers	
C2B	Consumer to business: consumers submit bills for products or service that competing business accept or decline.	Priceline.com

Explanation:

1. **Business to consumer (B2C):** consumers are increasingly going online to stop for and purchase products, arrange financing, prepare shipment and delivery of digital products such as software and get service after the sale.

A. **E-Retail:** B2C, e-business includes retail sales, often called **E-retail** of goods and services as well as online purchases of items such as online tickets, entertainment venue tickets, hotel rooms and shares of stock.

B. **Subscription model**: Some B2C e-businesses provide high-value content for a subscription fee. Example of e-businesses following a **subscription model** such as this include the wall street journal online (for financial news and articles), **consumer reports** (for product reviews and evaluations) and **eDiets**.com for nutritional counseling

C. **Virtual malls**: The B2C e-business category also includes virtual malls, which are e-business web sites that host a number of online merchants.

Example: MSN shopping and Yahoo! Shopping

D. **Pure-play e-retailers**: merchants that offer traditional or web specific products or services only over the internet, are sometimes called "virtual merchants" and they provide another variation on the B2C model

Example: amazon.com, a company that sells books, electronics, toys, music and more is one of the most successful original pure-play e-retailers.

2. BUSINESS TO BUSINESS (B2B):

- B2B e-businesses offer internet and web products such as website hosting and web page design, networking hardware and software, or e-business consulting services.

- Internet and web products
- Online trading community
- Forward and reveres auctions

- Another B2B model is an **online trading community** that acts as a central source of information for a vertical market.
- A "vertical market" is a specific industry in which similar products or services are developed and sold using similar methods.
- Examples of vertical markets include insurance, real estate, banking, heavy manufacturing and transportation.

- The information available at **online trading community** websites includes buyer's guide's, suppliers and product directories, industry news and articles, schedules for industry trade shows and events, and classified ads.
- Another subcategory within the B2B models is **a B2B auction**, where products and services are exchanged through **online bidding**.
- B2B auctions include both online forward auctions, where many buyers bid on products or services offered by a single seller, and online reverse auctions, in which a single buyer offers to purchase products andservices from multiple competing sellers.
- One B2B auction site that offers both forward and reverse auction services for the retail, construction, travel and manufacturing industries is **hedgehog.**

3. BUSINESS TO GOVERNMENT (B2G):

- The e-businesses create a marketplace for sellers wanting do business with government agencies.
- B2G e-businesses provide information on government contracting and bring suppliers and government agencies together.
- E-businesses such as Bid main and B2G markets follow the B2G E- business model.

4. CONSUMER TO CONSUMER (C2C):

In the consumer-to-consumers or **C2C** e-business model, consumers sell products, personal services and expertise directly to other consumers

through a number of methods: by placing online classified ads, by participating in forward & reverse auctions, or by making trades. **Examples**, of e-business that involve consumers selling directly to consumers are American boat listing, an online boat listing service; eBay, which offers both fixed price items and auctions:;Traderonline.com, which hosts classified ads; and AllExpoerts.com, an expert information exchange.

5. CONSUMER TO BUSINESS (C2B):

- C2B, e-business model uses reverse auctions to enable consumers to name their own price for a specific good or service; once the bid is offered and accepted, it is often binding.
- An e-business following the C2B model, collects an individual consumer's bid for a product or service, such as an air-line ticket, rental car, or hotel room, and then offers the bid to multiple competing sellers who either accept or decline the consumers bid.
- The most well-known e-business following the C2B e-business model is priceline.com

5. TYPES OF ELECTRONIC COMMERCE

The term e-commerce however, can mean different things to different people, depending on how it is defined. For our purpose, however, e-commerce consists of the following three types.

1. Online promotion
2. Online ordering
3. Electronic shopping

Explanation:

1. ONLINE PROMOTION

Here the site can take the user through the purchasing decisions by allowing them to choose a colour and size of the product and then find out how much the total purchase with cost.

However, the actual purchase to be made offline. For instance, car company sites. In this case the website automatically informs the nearest

dealer of the enquiry including the purchasing decision date recovered from the web site interaction.

2. ONLINE ORDERING:

The client registers on the site and is given a secure user name and password. A website can now be used to initiate product delivery which is unique to that user.

The most common use of this special information delivery is in giving price information over the internet. Depending upon the address of the registered website user, a different price currency appears on site.

3. ELECTRONIC SHOPPING:

For some categories of retail products, Internet shopping is now very easy. It allows customers to browse a website, choose the product they would like to and enter a credit card to order the product information of minute. Customers choose the delivery service they would like and the deal is done.

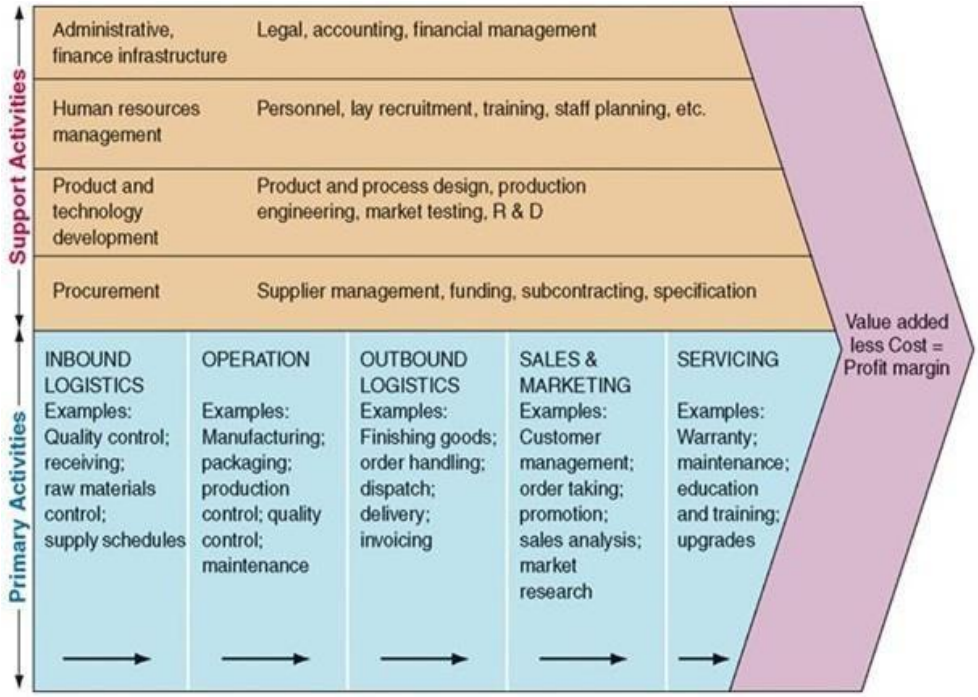
The latest shopping cart technology means the store can be opened for business 24 hours a day 365 days a year. Naturally, payment security is of paramount importance for both the vendor and the customer. It is possible to arrange secure payment systems that allow the use of credit cards across the net. The system also provides to integrate the internet sales date with traditional accounts stock and management systems, so that internet sales data and distribution are handled seamlessly.

6. VALUE CHAINS IN ELECTRONIC COMMERCE

E-BUSINESS VALUE CHAINS: Value chains are used to represent the value activities of any transaction starting with a product or service and ending with a customer.

A value chain for a product is the chain of actions that are performed by the business to add value in creating and delivering the product.

For Example, when you buy a product in a store or from the web, the value chain includes the business selecting products to be sold, purchasing the components or tools necessary to build them from a wholesaler or manufacturer, arranging the display, marketing and advertising the product and delivery the product to the client.



The Porters value chain identifies **nine strategically relevant activities** that create value and reduce cost in a specific business.

- These nine value-creating activities consist of **five primary activities** and **four support activities.**
- The primary activities represent the sequences of, bringing **materials into the business** (inbound logistics), **converting them into final products** (operations), **and shipping out final products** (outbound logistics), **marketing** and **service.**
- The support activities **include procurement technology development Human Resource Management and firm infrastructure**.

- This model is very helpful for identifying specific activities in business where competitive strategies can be applied and where information systems are most likely to have a strategic impact.
- Successful implement of e-commerce in an organization should be based on a thorough understanding of the areas in the value chain where e- commerce can add value most.
- Among a host of critical areas/factors in the value chain that major organizations have taken into consideration for establishing a sound e- commerce strategy include

1. Role of intermediaries
2. Value pricing and
3. Brand

1. ROLE OF INTERMEDIARIES:

- Intermediaries may be more important now than even before because most of the rapidly growing internet businesses are essentially middle men.
- For example, companies such as Amazon, CD-Now, egghed.com, Cisco and e- trade can all be thought of as middlemen-resellers products providers by some other source.
- Intermediaries will continue to be important because they provide consumers with selection specialized distribution and expertise.

2. VALUE PRICING:

- In addition to employing e-commerce technology to enhance distribution channels, this technology is also used to redefine pricing strategies.
- Most companies pursuing a premium pricing strategy for example, can use the internet to better understand their customers.
- Value pricing involved several approaches.
- One approach to pricing involves businesses offering heavily discounted prices in attempt to attract customers to their websites.
- An attractive alternative approach is to utilize the internet to track customers buying habits and adjust prices accordingly, thereby uncovering new market segments.

3. BRAND DIFFERENTIATION/LOYALTY:

- Pricing is just one of several ways for a company to differentiate itself from the competition.

- Another way in which a company can differentiate itself is by promoting brand loyalty.
- Brand loyalty encourages repeat customers and help to create long term profitability.
- A major benefit of customer loyalty is that loyal customers often refer new customers to a supplier.

7. E-COMMERCE IN INDIA

1. HIGHER COMMMERCE POTENTIALS

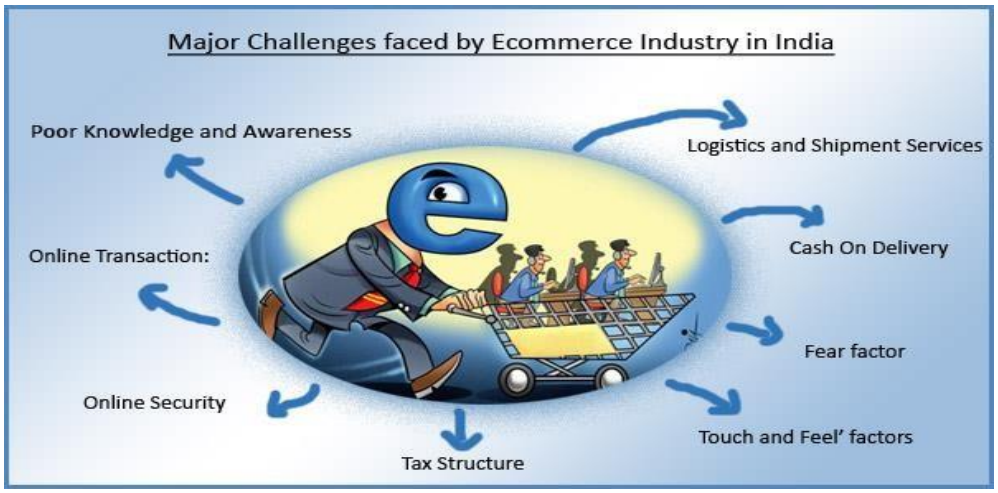
- Computer hardware
- Computer components
- Computer software
- Auto parts
- Apparel with brand authority

2. MEDIUM E-COMERCE POTENTIAL

- Sports goods
- Toys
- Specialty stores
- High ticket furniture (high cost item i.e., house, car, land etc.,)
- Jewelry
- White goods (large electrical goods-refrigerators, washing machines etc.,)
- Auctions (A public sale in which goods or property are sold to the highest bidder (person/organization making a formal offer)

3. LIMITED E-COMMERCE POTENTIAL

- Department stores
- Low ticket furniture
- Discount apparels
- Perishable goods (It is any product in which quality deteriorates due to environmental conditions through time, example: meat, sea food, fish, fruits, vegetables, flowers, chemicals etc.,)
- Perfumes
- Low ticket immediate needs.



8. INTERNET:

8.1 Internet -A Brief History

- The internet has its origin in military operations for defense purposes whereby virtue of its operations, the military personnel are scattered geographically in different distant places.
- To facilitate reliable, accurate and timely communication network, the internet was designed for military use so that it is protected from disruption in case of destruction from a nuclear attack.

8.2 Internet -A Brief Indian History

- Strangely in India, the internet is the product of educational and research understandings i.e., ERNET (Education Research Network)
- Internet in India was establishes in the late 1980's
- The Videsh Sanchar Nigam Limited (VSNL), a Government of India enterprise, is India's international telecom carrier, has also contributed its might giving to the expansion of internet technology in India.
- This backbone network in India is known as VSNL's Gateway Internet Access network (GIAS)
- The present position of internet in India, the greatly published information super highway is accessible to anyone with time interest and curiosity.
- The last fifteen years have witnessed an explosion of the internet activity.

- The use of the internet is moving away from pure educational research to a network connecting millions of computers, many of which belong to companies using the Net for commercial purpose

8.3 Concept and Meaning:

- Internet is a conglomeration of a number of smaller networks and other inter connected machines distributed over the entire globe.
- Internet is a window to the global superhighway and to the cyber space.
- So it is a global system of connected independent groups of computers.
- It is the world's greatest democracy in terms of getting the information you as a net user require which is available at your discretion.
- Internet is a network of networks and a mother of all networks.
- It is a global network created by connecting these smaller networks with telephone lines.
- The internet helps to get in touch with anybody around the world at the cost of a telephone call, proving to be economically viable.
- Internet is the world's biggest software library, having opened doors to the vast amount of information available on the space information platform just by the click of a mouse.
- The internet is a two-way communication method. (sender and the receiver)
- The main objective of the internet is to facilitate the participating users to have mutual exchanging of data- between the computers.

8.4 SOME OF THE E-COMMERCE WEBSITES

www.amazon.com

www.askmebazar.com

www.bookselleronline.com

www.ebay.in

8.5 Who owns and manages the internet

- The world is getting networked in a big way. Today there are millions of internet users the world over to whom it has become a means of cross border transfer of information, it facilitates direct contact between the individuals, groups and institutions from different countries.
- Voluminous information available on the internet becomes available instantaneously, which can be accessible to millions of individuals.
- It may be mentioned that the net is not owned by any single individual or organization.
- The management and control of the internet is completely decentralized and it is entirely managed by individual and organizational volunteers.

- Every user pays for his part.
- Each network meets the expenditure for the installation and operating costs as well as those connecting up with the other networks.
- The internet is a cooperative environment and as a social as well as technical in essence catering to all segments of the society.
- It is the responsibility of the users to ensure the trust and loyalty of the community.

8.6 Information available on the internet:

1. Agriculture
2. Business and finance
3. Computer-literature
4. Education
5. Environment
6. Games
7. Geography
8. Health
9. History
10. Language
11. Libraries
12. News
13. Physics
14. Space
15. Technology
16. Travel
17. Weather

8.7 What to do on the internet?

1. Online news services
2. Shopping
3. Banking
4. Advertisements
5. Photography
6. Libraries
7. Medical health
8. Educational research
9. Listen to music
10. Daily news
11. Cultural information
12. Cyber payments
13. Histories
14. Medical health
15. Teaching
16. Payments

8.8 Applications

- E-mail
- Real time chatting
- telnet
- Archie
- Mosaic

8.9 Advantages of Internet

1. **FOR OPERATIONS**
   - It is cost effective
   - Saves time
   - Flexibility
   - Automation of operations
2. **FOR PLEASURE**

   The internet can be used at home,
   - To exchange electronic mail instantly with college friends and family members.

- To find educational tools
- To participate in group discussions on topics
- To entertainment purpose
- For shopping
- To read about interesting sports and leisure events and choice topics

3. **FOR BUSINESS**

- Communication on various projects
- Distribute software
- Market and sell product online.

9. WEB BASED TOOLS FOR E-COMMERCE

Learning Objectives: In this topic you will learn about

- Computers that support web servers
- Hardware requirements of typical web server software packages.
- Fundamental duties of a web server
- Specific web server software, including Apache, Microsoft internet information server, and Netscape enterprise server
- Advanced web server tools

Types of Web Sites

- Development sites
- Intranets
- B2B and B2C commerce sites
- Content delivery sites

Web Server Considerations

- The company must decide whether to run servers in-house or through third party web and e-commerce provides
- Scalability of e-commerce
- Contact web Host Guild (WHG) for help.

- Bandwidth of the web site.
- Consider a local third-party ISP.

Web platform choices

- A fast server is better than a slower one.
- Internal and external traffic to occur on the server
- Scalability of the server hardware.
- Hardware decisions go hand in hand with operating system and application server software choices.

Building a Scalable E-Commerce System

- Three layers in e-commerce systems

1. Web server layer
2. Middle-tier layer
3. Backend layer

- An application server is a middle-tier software and hardware combination that lies between the internet and a corporate backend server.

Web Server Performance

- Benchmarking is testing used to compare the performance of hardware and software
- Hardware and operating systems are key areas for benchmarking
- The speed of its connection can affect a web server's performance.
- Throughput and response time can measure a server's web page delivery capability.

Web Server Benchmarking Software

Web server benchmarking software types are listed below,

- Net bench
- Server bench
- SPEC SFS97
- SPEC web99

- WCAT
- Web bench
- Web stone

Web Server Cache

- A web server cache is a high-speed memory area set aside to store web pages.
- The cache can save time by filling client web page requests from high- speed memory whenever possible.

Web Server Software Features

- Web servers are located on the internet or intranets usually behind firewalls.
- The duties and features of web servers differ depending on whether they are publicly accessible.

Web server software program feature depends on the software package being used

Essential Capabilities of Web Server Program

- Security
- FTP
- Searching
- Data analysis

Web Site Management

- FrontPage has some site management capabilities.
- Home sites is a site management tool that validates graphics computes page download times for modem connection, validates links, and validates HTML codes.

Web Application Construction

- Application construction uses web editors and extensions to produce web pages.
- Some web development systems provide simple tools to create web pages.
- Some tools can be used to create dynamic features without the need to know CGI or use API coding.

Web Site Development

- Site development tools comprise features such as,

1. An HTML/visual web page editor
2. Software development kits
3. Web page upload support

- The best known of these tools are the HTML editors and visual webpage editors.
- Examples include FrontPage, Dreamweaver, cold fusion, page mill, Hot Metal Pro, and Netscape composer.

Electronic Commerce

- An electronic commerce server deals with buying and selling of goods and services.
- A web server should support electronic commerce software.
- The best electronic commerce software will generate sales reports on demand allowing store managers to see updated sales information.

Web Server Software

- Two distinct web servers in the market: intranet servers and public web servers.
- Three of the most popular web server programs are,

1. Apache HTTP server
2. Microsoft internet information server
3. Netscape enterprise server

1. APACHE HTTP SERVER

- Apache HTTP server is free and performs very efficiently.
- Apache runs on many operating systems and the hardware that supports them.
- Apache has a built-in search engine and HTML authoring tools and supports FTP.
- Apache can be managed either from server console or a web server.

2. MICROSOFT INTERNET INFORMAITON SERVER (MIIS)

- IIS comes bundled with Microsoft's Windows NT server and 2000 server operating systems.
- IIS includes an integrated search engine.
- IIS supports FTP, permits administration from a remote browser.
- IIS combines HTML pages, Active X components, and script to produce dynamic pages.

3. NETSCAPE ENTERPRISE SERVER (NES)

- Netscape will migrate NES to planet to create the 64-bit server.
- The Netscape server runs on operating systems such as AIX, digital UNIX, HP-UX, Irix, Solaris, and windows NT.
- NES has a verity search engine in it.
- NES has Netscape directory server to provide basic security for discretionary access control.

Determining Web Server Information

- You can determine the type of hardware and software most web sites are running by visiting net craft.
- Net craft software examines the designated web site and returns both web server hardware and software information.

Other Web Server Tools

There are other tools that are part of web servers.

1. Portals
2. Search engines
3. Intelligent agents

Web Portals

- A web portal is a cyber-door on the web.
- A portal serve as a customizable home base from which users do their searching navigating, and other activity.
- The portal loads automatically when it launches the web browser.

Customer Portals

- Examples of successful portals include about.com, amazon.com, excite, Netscape net center, and Yahoo!
- Most portals include: e-mail, links to search engines, links to membership services; news, sports, and business headlines and articles; personalized space, links to chat rooms, links to virtual shopping malls, and web directories.

Business Portals

- Most business portals can be accessed only by member enterprises.
- Business portals specialize in business commodities and materials such as steel, gasoline, or chemicals.
- Example of business portals are work.com, e-STEEL, foodUSA, TurboStaff.com, etc.

Search Engines

- A search engine is special kind of web page software that finds other web pages that match a word or phrase you entered.
- A web directory is a listing of hyperlinks to web pages that is organized into hierarchical categories.
- Search engines contain three major parts: spider, index and utility.

Intelligent Agents

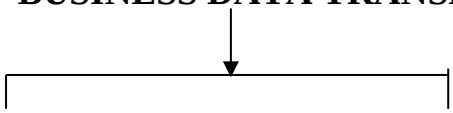
- An intelligent agent is a program that performs functions such as information gathering, information filtering or mediation running in the background on behalf of a person or entirety.
- Examples of agent systems include auctionBot, Bargain Finder, Firefly, and Kasbah.

10. ELECTRONIC DATA, INTERCHANGE, COMPONENTS OF ELECTRONIC DATA INTERCHANGE, ELECTRONIC DATA INTERCHANGE PROCESS

10.1 Introduction

- Getting and sending orders, bills collections, payables, receivables, orders, invoices, freight bills, shipment instructions, trading reports, enquires, payment instructions, status reports and other information vital to various business operations are the routine business transactions.
- There are only two popular conventional systems which have been prevailing for a long period to perform these activities.
- They are postal services by postal authorities and telephone telegrams by the department of telecommunications.
- These two communications services are available for business transactions are traditional methods known for their cost, ineffectiveness and slack levels of performance.
- In order to solve the above problems, a new development has emerged in this area called **Electronic Business Data Communication**.

10.2 TYPES OF BUSINESS DATA TRANSFER SYSTEMS



Traditionally, the transfer of business data by the trading partner has been by paper document. There are two systems for business data interchange between trading partners. They are paper based system and electronic based system.

1. Paper-Based System

Traditionally data transfer from one business house to another has been carried out through paper documents. The documents have to be manually forwarded by postal services and entered into the destination computer. Hence it is called paper-based systems.

In the early days, transaction data has been interchanged through processor file transfer which is associated with problems like unwieldy, erroneous, error prone and inefficient transactions etc.

Disadvantages of Paper-Based System

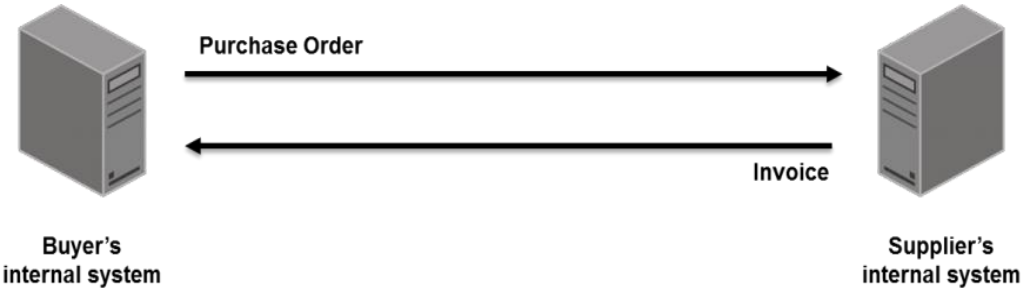
1. TIME DELAYS
   - Transportation delay (mail system)
   - Manual processing delay (type re-type, re-enter the information)
   - Ordering delay (delay in transporting, payment delay, billing delays, poor customer services)
2. Labor cost
3. Errors
4. Inventory
5. Paper bond process
6. Time consuming process
7. Untimely analysis
8. Losing customers

10.3 ELECTRONIC DATA INTERCHANGE (EDI)

In order to solve problems associated with the paper based business data in interchange system the alternate mechanism came in the form of electronic data interchange (EDI). The term in non-technical usage simply means electronic interchange of data between computer systems of the various participants.

Definition: EDI is defined as the transfer of structured data of processing from computer to computer using agreed formats and protocol.

EDI is the interchange of standard formatted data between computer application systems of trading partners with minimal manual intervention.

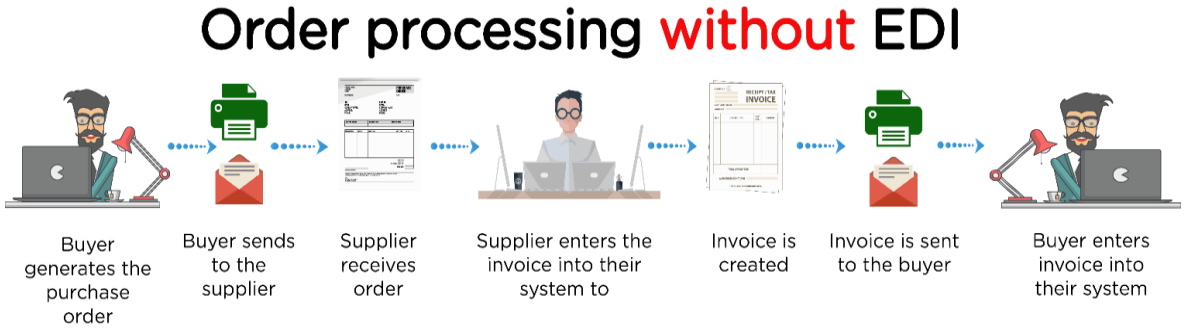


- Electronic Data Interchange (EDI) is the computer-to-computer exchange of business documents in a standard electronic format between business partners.
- Companies use EDI systems to exchange business information automatically by computer as paperless transactions.

- EDI (Electronic Data Interchange) is a process for transferring information between systems using standardized electronic formats to enable computers to process the information while minimizing or completely eliminating the need for human intervention.

- Many business documents can be exchanges using EDI like:- purchase order, Invoices, advance ship notice, customer documents, inventory documents, payment documents, etc.

- EDI is used for B2B transactions that occur on a regular basis to a pre- determined format.



Order processing without EDI:

In a traditional B2B transaction, for example the purchaser: -

1) generates the purchase order,

2) Prints it, and

3) Mails or faxes the printed purchase order to the vendor.

- The vendor then:-

1) Prepares the invoice,

2) Prints it, and

3) Mails or faxes the invoice to the purchaser. Upon receipt of the

invoice, the purchaser then has to input the invoice into his system to process and finalize the procurement.

Order processing With EDI:

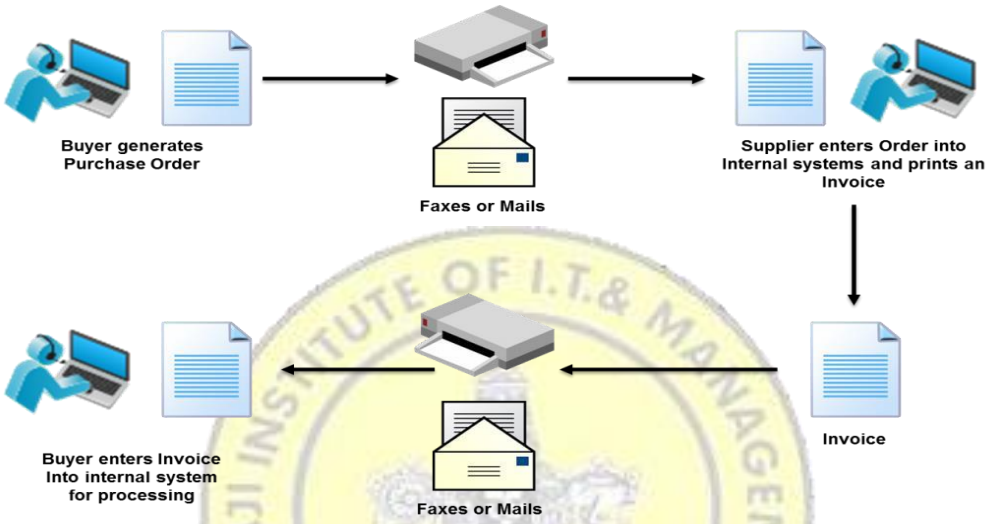
- Paper documents are eliminated and human intervention is minimized. In the same transaction, the purchaser simply inputs the procurement details into his computer system, which sends it straight to the vendor's own systems. The invoice is automatically created in the vendor's computer system and sends it straight back to the purchaser's system for processing.

A Traditional Document Exchange Order	An EDI Document Exchange of a Purchase order
• This process normally takes between three and five days.	This process normally occurs overnight and can take less than an hour.
• Buyer makes a buying decision, creates the purchase order and prints it	Buyer makes a buying decision, creates the purchase order but does not print it.
• Buyer mails the purchase order to the supplier.	EDI software creates an electronic version of the purchase order and transmits it automatically to the supplier.
• Supplier receives the purchase order and enters it into the order entry system.	Supplier's order entry system receives the purchase order and updates the system immediately on receipt.
• Buyer calls supplier to determine if purchase order has been received, or supplier mails buyer an acknowledgment of the order.	Supplier's order entry system creates an acknowledgment an transmits it back to confirm receipt.

1. Computer-to-computer: EDI replaces postal mail, fax and email. While email is also an electronic approach, the documents exchanged via email must still be handled by people rather than computers.

Having people involved slows down the processing of the documents and also introduces errors. Instead, EDI documents can flow straight through to the appropriate application on the receiver's computer (e.g., the Order Management System) and processing can begin immediately.

A typical manual process looks like this, with lots of paper and people involvement:



The EDI process looks like this — no paper, no people involved:

2. Business partners

The exchange of EDI documents is typically between two different companies, referred to as business partners or trading partners.

For example, Company A may buy goods from Company B. Company A sends orders to Company B. Company A and Company B are business partners.

3. Business documents

These are any of the documents that are typically exchanged between businesses. The most common documents exchanged via EDI are purchase orders, invoices and advance ship notices. But there are many others documents such as bill of lading, customs documents, inventory documents, shipping status documents and payment documents.

4. Standard format

- Because EDI documents must be processed by computers rather than humans, a standard format must be used so that the computer will be able to read and understand the documents.
- A standard format describes what each piece of information is and in what format (e.g., integer, decimal, mmddyy).
- Without a standard format, each company would send documents using its company-specific format and, much as an English-speaking person probably doesn't understand Japanese, the receiver's computer system doesn't understand the company-specific format of the sender's format.
- There are several EDI standards in use today, including ANSI, EDIFACT, TRADACOMS and ebXML. And, for each standard there are many different versions, e.g., ANSI 5010 or EDIFACT version D12, Release A. When two businesses decide to exchange EDI documents, they must agree on the specific EDI standard and version.
- Businesses typically use an EDI translator – either as in-house software or via an EDI service provider – to translate the EDI format so the data can be used by their internal applications and thus enable straight through processing of documents.

UNIT-2
SECURITY THREATS TO E-BUSINESS

1. SECURITY OVER VIEW

1.1 Introduction: E-Commerce is still a young industry that is growing fast and has not experienced security as a high priority area.

- The Industry in turn is a sophisticated way of doing business.
- The internet where e-commerce is operated, is very much an environment where networks and computers participate by playing by rules.
- But some unethical hackers are breaking the rules to cause privacy & Security problems.
- The industry requires an instantaneous solution to these problems caused by hackers.

1.2 Security Concepts:

- Internet business requires privacy and security
- Today, there seems to be boom on e-commerce requiring a secured defense.
- The rise in e-commerce has led to the need of privacy, security and a strong crypto (secret)
- Public crypto is important for online application
- An authentication through a digital signature is an essential feature pertaining to online security
- E-Commerce is establishing itself in India including a presence in the international business scenario and trade globally – this call for strategies assuring online security.

❖ To protect without interruption in

- National Security,
- Public Safety,
- Personal Privacy,
- To support online commerce

- At the heart of the problem, in every business, there is the fear of loss of privacy, lack of security for monitoring electronic transactions from snooping (action of trying to find out something, especially information about someone's private affairs), spying (the activity of trying to obtain secret information from organizations) and capturing virtually any data transmission online and through cellular phones.

- **Security becomes challenge to:** ***Designers, Researchers, System Managers, Govt., Software Developers, users.***
- A businessman needs data available online to be securely stored yet readily accessible by him, his customers and business partners.
- ***Privacy, Identity, Non-refutability*** are the three essential requirements for successful e-commerce.
- Thus, in the current scenario of e-commerce, online security and privacy has become a much talked about issue. Since internet is easy to access and cheap to use, the confidence in security of messages and data online is of serious concern.

1.3 Security:

- The term security with reference to the message or information put on transmission through the net is protection from danger of data being phone to accidental or intentional.
- Destruction, disclosure, modification or alternation in the original message before it reaches the receiver.
- If involves measures taken to prevent spying and attacks, which proves detrimental to the original message.
- In recent years, the use of the Net is rapidly growing, for reasons of efficiency, more and more corporate and financial institutions have started networking with both LAN and WAN to improve their efficiency.
- Sound and Vital decisions are taken based on the information available to the decision maker through these networks.
- So, it is more important that an appropriate level of secrecy, security and privacy is maintained with reference to this information.
- **Security means –** providing assurance of privacy, identity and non- refutability for e-commerce data information exchange as well as managing the security itself.
- To build up an effective digital commerce the growing problems of security, privacy, retaining the identity of customers and non-refutability (prove to be true) must be solved in order to build up an effective digital commerce.

1.4 Survey finding on security:

- 56 percent of the surveyed respondents said that information security was high priority.
- Only 19 percent has complete security policy
- 49 percent admitted that they do not know whether inadequate online security caused monetary lose.
- The biggest threat remains internal.
- The authorized respondents were believed to be responsible 58 percent of the time
- Unauthorized employees -24 percent.

- Former employees - 13 percent.
- Hackers or terrorists expressed 13 percent.
- Competitors accounted for 3 per cent.

In a survey of 1600 IT executive from 50 nations, 13 percent reported some security breach or corporate espionage.

2. ELECTRONIC COMMERCE THREATS

- The world today is coming closer from communicating to one person sitting at the other end of the world to finalizing business deals; everything has become fast and quick.
- The **reason** for this is the massive internet boom which has made life easier for the average person by providing a plethora (a large or excessive amount) of options.
- What's more it has also made your shopping experience a more interesting and enjoyable one.
- You can now get practically everything from online shopping.

E-Commerce Security: E-Commerce Security is protection of the various e- commerce assets from unauthorized access, its use or modification.

E-Commerce Threat: In simple words, you can say that using the internet for unfair means with an intention of stealing, fraud and security breach.

Types of e-commerce threats:

- There are various types of e-commerce threats. Some are accidental, some are purposeful, and some of them are due to human error.
- The most common security threats are phishing attacks, money thefts, data misuse, hacking, credit card frauds and unprotected services.

1. **Inaccurate Management**
2. **Price Manipulation**
3. **snowshoe Spam**
4. **Malicious Code threats**
    a. **Viruses**
    b. **Worms**
    c. **Trojan horses**
5. **Hacktivism**
6. **Wi-Fi Eavesdropping**
7. **Other threats**

Explanation:

1. **Inaccurate Management/Poor Management**: When security is not up to the mark it poses a very dangerous threat to the networks and systems. Also security threats occur when there are no proper budgets are allocated for purchase of anti-virus software licenses.
2. **Price Manipulation:** Modern e-commerce systems often face price manipulation

problems. It allows an intruder to slide or install a lower price into the URL and get away with all the data.

3. **Snowshoe spam:**

- Almost each one of us deals with spam mails in our mail box.
- A spam is something which is sent by one person, but unfortunately a new development is taking place in the cyber world. It is called as **snowshoe spam.**
- Unlike a regular spam it is not sent from one computer but is sent from many users.
- In such a case it becomes difficult for the anti-spam software to protect the spam messages.

4. **Malicious code threats**: These code threats typically involve viruses, Worms, Trojon horses.

   a. **Viruses:** Viruses are normally external threats and can corrupt the files on the website if they find their way in the internal network. They can be very dangerous as they destroy the computer systems completely and can damage the normal working of the computer.

   b. **WORMS:**

- These are serious than viruses.
- If places itself directly through the internet
- If can infect millions of computers in a matter of just few hours.

   c. **Trojan Horse:** It is a programming code which can perform destructive functions. They normally attack you computer when you download something.

- So always check the source of the downloaded file.

5. **Hacktivism: (Hacking Activism)**

- At first it may seem like you should hardly be aware of this cyber threat
- It is typically using social medical platforms to bring to light social issues.
- It can also include flooding an email address with so much traffic that it temporarily shuts down.

6. **Wi-Fi Eave dropping:**

- It is also one of the easiest ways in e-commerce to steal personal data.
- It is like a "Virtual listening" of information which is shared over a wi-fi network which is not encrypted.
- It can happen on public as well as on personal computers.

7. **Other threats**: Some of the other threats which include are

   a) Data Packet sniffing (sniffers)

   b) IP spoofing

   c) Port scanning

a) Data Packet sniffing: An intruder can use a sniffer to attack a data packet flow and scan individual data packs.

b) IP spoofing: with IP spoofing it is very difficult to attack to track the attackers. The

purpose here is to change the source address and give it such a look that it should look as though it originated from another computer.

c) Port scanning: Port scanning refers to the surveillance of computer ports, most often by hackers for malicious purposes. Hackers conduct port- scanning techniques in order to locate holes within specific computer ports. For an intruder, these weaknesses represent opportunities to gain access for an attack. There are 65,535 ports in each IP address, and hackers may scan each and every one to find any that are not secure.

SECURITY FEATURES

Ways to combat e-commerce threats: Developing a through implementation plan is the first step to minimize a cyber-threat.

ENCRYPTION

It is the process of converting a normal text into an encoded text which cannot be read by anyone except by the one who sends or receives the message.

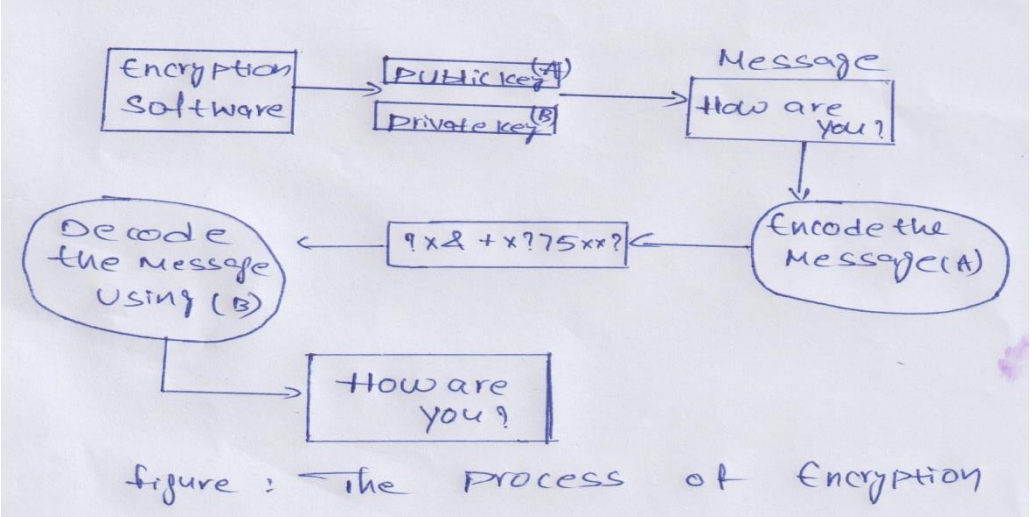


figure : The process of Encryption

3.1 Origin: The encryption concept, as we are taking today in the context of e-commerce on the internet was initially used for defense purpose for LANS

- With the advancement in sophisticated technology, it rapidly developed into a delicate science called **cryptography.**
- Nearly more than 2000 years ago, Julius Caesar used a simple cipher system for the purpose of concealing military information.
- This type of encryption can be broken and can easily be defected by trying all possible displacement till the message becomes plain and meaningful.
- For instance, consider replacing the letters of alphabets in the original text by letters that are a predetermined number of places away.
- Thus, the plain and cipher letters may look as follows.

Plain Text- ABCDEFGHIJKLMNOPQRSTUVWXYZ
Cypher Text- FGHIJKLMNOPQSTUVWXYZABCDE

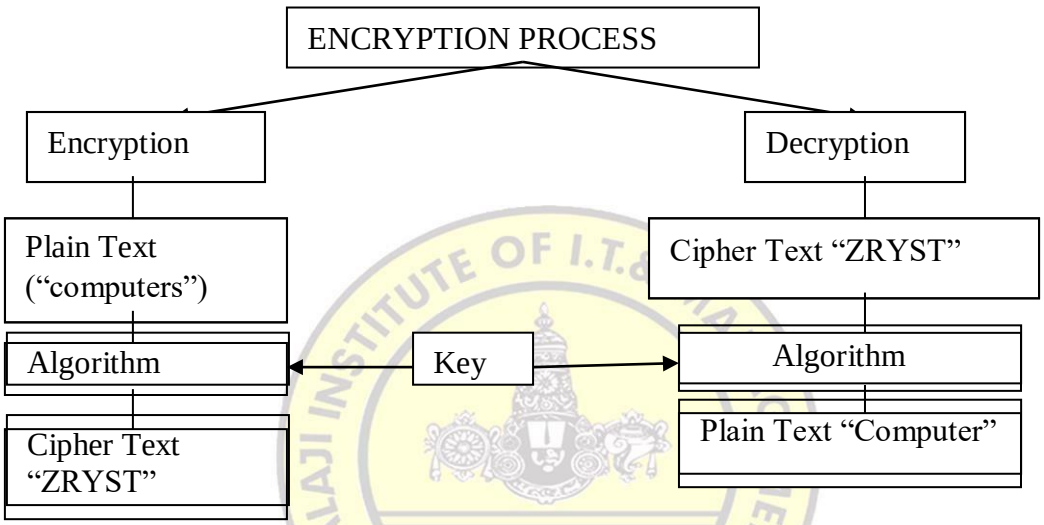
In addition to this, there are a number of other systems developed from time to time.

For instance,

- Messages may be written backwards
- Secret messages may be written horizontally or vertically
- Adopting special symbols for the normal letters of the alphabet.
- Dots may be used for vowels
- Greek, Roman, Italics and alphabets of other countries may be used.

3.2 Meaning: A simple way to protect from electronic snoopers is through encryption.

- It is a process which involves scrambling the date or message in a complex manner.
- It is a process of mathematical representation wherein an algorithm is used to transform plain text into coded equivalents for transaction or storage.
- The encryption process may appear as follows:



- The process of transformation of the plain text into cryptogram is called **encryption, enciphering or encoding**
- Only authorized persons who know the key will be able to get the original information.
- The process of reconverting the cryptogram back into the original information is called **decryption, deciphering or decoding**
- In this age of communication, transmission of data does not take place only through the passage of text alone, but it includes text, audio, video, graphics, animation etc.,

4. CRYPTOGRAPHY

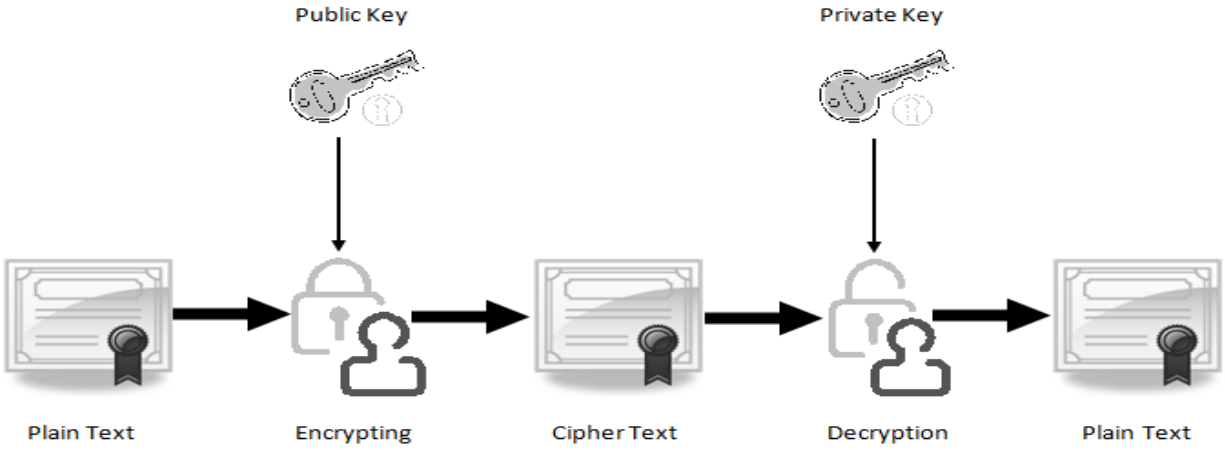
CRYPTOGRAM: It means writing a message which appears to be meaningless to those who have no means or the key to extract the original text from the cipher text.

- A Message written in code is called cryptogram.

Cryptanalyst:

- A person who examines all the messages in the cryptosystem under study
- Studies all possible relationships existing with other cryptosystems.
- Gathering all relevant information and their past present activities.

Cryptography: It is the science and art of transforming messages to make them secure and immune to attack.



- The word cryptography is derived from the Greek word **"Kryptos"** which means **hidden**.
- It is an art and methodology involved in creating cryptograms.
- Cryptography can be used to combat the problems of computer privacy and security
- It involves a process of converting plain text or original message into the cipher text.
- Cryptography may be explained as a method of scrambling confidential information sending information, and then unscrambling it so that it can be read in its original form by the recipient party.

Eg: Paul wants to sent an important message to his friend that contains secret information.

- With the help of cryptography, if somebody in the middle can't understand the message what paul send so he encrypt his plain text.

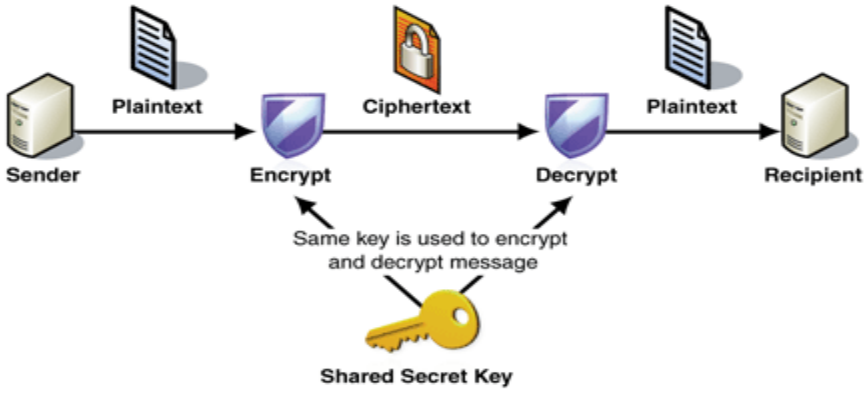
5. PUBLIC KEY AND PRIVATE KEY CRYPTOGRAPHY

- Private Key and public key are a part of encryption that encodes the information.
- Both keys work in two encryption systems called **symmetric and asymmetric.**
- Categories of Cryptography:

I. **Symmetric Key Cryptography**
II. **Asymmetric Key Cryptography**

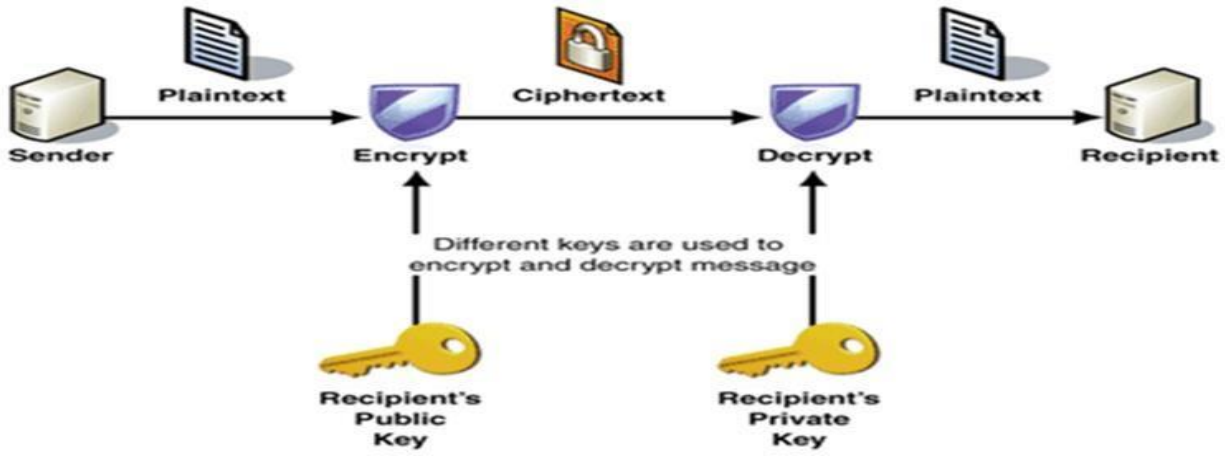
Explanation:

1. **Symmetric Key Cryptography (Private-key encryption or secret key encryption)**
   Sender and Receiver uses the same key and an encryption/decryption algorithm to encrypt/decrypt data i.e., the key is shared.



2. **Asymmetric Key Cryptography**
   Sender and Receiver uses the different keys for encryption and decryption namely Public key and Private Key respectively
   utilities a pair of keys like public and private key for better security where a message sender encrypts the message with the public key and receiver decrypts it with his/her private key.

- Public and private key pair helps to encrypt information that ensures data is protected dating transmission.



Public Key:

- Public key uses asymmetric algorithms that convert messages into an unreadable format.
- A person who has a public key can encrypt the message intended for a specific receiver.
- The receiver with the private key can only decode the message, which is encrypted by the pubic key. The key is available via the public accessible directory.

Private Key: The private key is a secret key that is used to decrypt the message and the party knows it that exchange message.

- In the traditional method, a secret key is shared within communicators to enable encryption and decryption the message, but if the key is lost, the system becomes void.
- To avoid this weakness, PKI (Public key infrastructure) come into force where a public key is used along with the private key.
- PK1 enables internet users to exchange information in a secure way with the use of a public & Private Key.

Symmetric V/S Asymmetric

CHARACTERISTICS	SYMMETRIC KEY CRYPTOGRAPHY	ASYMMETRIC KEY CRYPTOGRAPY
Key used for encryption/decryption	Same key is used for encryption and decryption	One key used for encryption and another different key is used for decryption.
Speed of encryption/decryption	Very fast	Slower
Size of resulting encrypted text	Usually same as or less than the original clear text size	More than the original clear text size
Key agreement/exchange	A big problem	No problem at all
Number of keys required as compared to the number of	Equals about the square of the number of participants so scalability	Same as the number of participants so scales up quite well.
Usage	Mainly for encryption and decryption (confidentiality) cannot be used for digital signatures (integrity and non-repudiation checks)	Can be for encryption and decryption (confidentiality) as well as for digital signatures (integrity and non reputation checks)

Applications:

1. Defence services
2. Secure data manipulation
3. E-Commerce
4. Business Transactions
5. Internet payment Systems
6. User identification Systems
7. Access Control
8. Data Security

Conclusion: By using encryption techniques a fair unit of Confidentiality, authentication, integrity, access control and availability of data is maintained.

6. DIGITAL SIGNATURES

- Signature denotes a person's name written by himself. Where the law or the procedure requires a signature of a person, it is to be written.
- It is a method used to identify a person and to indicate that person's approval of the information mentioned in the document.

Verification of Digital Signature: To verify digital signature means to determine accurately whether:

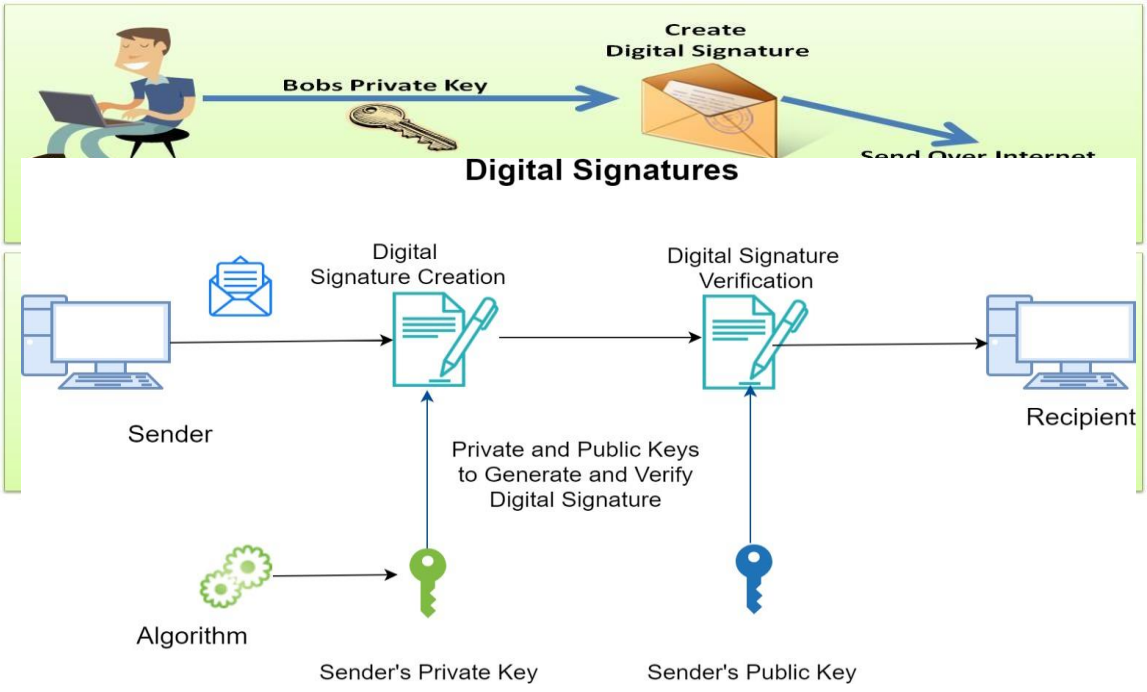
- ❖ The digital signature is created using the private key in relation to the public key.
- ❖ The record is not altered since the creation of a digital signature. A signature

can be considered as a secure electronic signature when it is:

- Unique to the person using it.
- Capable of identifying such a person.
- Created in a manner under the sole control of the person using it and is linked to the electronic record to which it relates. It means there is a change in the record, and then the electronic signature will become invalid.

Message Digest: A Message digest is a fixed length digital with signature of a variable length data stream. It is highly secure version of the venerable check sum unique value. The authentication through a digital signature is possible by putting the message through a computation which produces a unique value called a message digest. This unique value of the message digest is encrypted with a private key and then appended to the message.

- When the message is received at the destination, the receiving person at the end performs the same computation on the message to obtain the digest. So, the process of decrypting the digital signature using the public key makes it possible to compare the two and ascertain the origin of the message and that it has not been altered.


Create
Digital Signature
Bobs Private Key
Digital Signatures
Digital
Signature Creation
Digital Signature
Verification
Sender
Recipient
Private and Public Keys
to Generate and Verify
Digital Signature
Algorithm
Sender's Private Key
Sender's Public Key

7. DIGITAL CERTIFICATES

Definition: A **Digital Certificate** is simply a computer file which helps in establishing your identity. It officially approves the relation between the holder of the certificate (the user) and a particular public key. Thus, a digital certificate should include the user name and the user's public key. This will prove that the certain public key owned by a particular user.

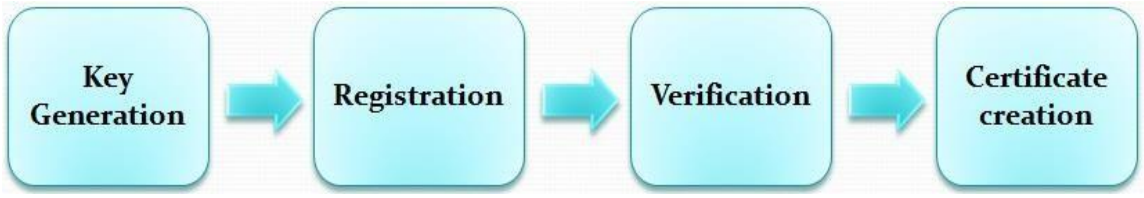
A digital certificate is an electronic certificate. The basic requirement for successful e-commerce is to ensure integrity of online transactions to the customers. It means that the security solutions must assure the following:

- To verify authenticity of the information on the website.
- To secure the submission of confidential customer information and
- To prevent from denying any transaction by either of the party.

Digital certificate plays a major role in securing online customer's financial transactions. X.509 is the popular digital certificate. The purpose of a digital certificate is to serve as an electronic substitute for a sealed envelope or signature when sending messages across the net. Its features include:

- The digital ID decides in browsers only or e-mail software
- Permits to sign digitally and encrypt e-mail and
- Client certificate ensures integrity of shopper's information.
- The certificate is used for two purposes encryption and verifying
- A private key is used to decrypt sensitive financial information of the shopper, which is usually sent by e-mail.
- The credit card is secured by it. Thus, client certificate is used for the encrypting purpose.
- Similarly, the client certificate is also used for enabling the shoppers to verify the authenticity of a supplier.
- The certificate authorities may be subsidiaries of banks and credit-card companies or independent one.
- There are a many companies that sell digital certificates, for example, American Express certificate Authority, Digital Signature trust co., VeriSign inc., Global sign NV etc.,

Digital Certificate Creation Steps:



1. **Key generation** – It starts with the creation of the subject's public and private keys using some software. This software works as a part of web browser and web server. The subject must not share the private key. The subject then sends the public key along with the other information like evidence about himself/herself to the RA (**Registration Authority**). Although, either if the user has no knowledge about technicalities included in the creation of the key or if there are particular demands that the key must be centrally created then these keys can be created by RA also on the subject's (user's) behalf.
2. **Registration**: Suppose the user has created the key pair, the user now sends the public key and the related registration information (e.g. subject name, as it is needed to show in the digital certificate) and all the evidence of himself and herself to the RA.
   For this, the software offers a **wizard** in which the user inserts the data and submits it when all the data is validated. Then the data moves over the network/internet to the RA. The format for the certificate requests has been standardized and is called **certificate signing request** (CSR). This is one of the **public key cryptography standards** (PKCS).
3. **Verification**: When the registration process is completed, the RA has to check the user's credentials such as the provided information is correct and acceptable or not.
   The second check is to ensure the user who is requesting for the certificate does indeed possess the private key correlating to the public key that is sent as the part of the certificate request to the RA. This inspection is called as checking the **Proof Of Possession** (POP) of the private key.
4. **Certificate creation**: Suppose that all steps until now have been successfully executed, the RA accepts all the details of the user to the CA. The CA does its own verification (if required) and creates a digital certificate for the user.
   There are programs for creating certificates in the **X.509** standard format.
   The CA delivers the certificate to the user and also keeps a copy of the certificate for its own record. The CA's copy of the certificate is maintained in a **certificate directory**.

DIGITAL SIGNATURE Vs DIGITAL CERTIFICATE

BASIS FOR COMPARISON	DIGITAL SIGNATURE	DIGITAL CERTIFICATE
Basic	It verifies the authenticity and source of a particular document.	It creates an identity of a website and also increases its trustworthiness.
Process	The document is encrypted at the sending end and decrypted at the receiving end using asymmetric keys.	A certificate is issued by a trusted agency known as CA which follow particular steps to do so that are - key generation, registration, verification and creation.
Security	It provides authentication, non-repudiation and integrity.	It provides authentication and security.

Conclusion: Digital Signature and Digital Certificate both are used for ensuring the authenticity of the digital document although these are absolutely different things. A document is digitally signed to protect it from tampering while Digital Certificate increases the trustworthiness of the website**.**

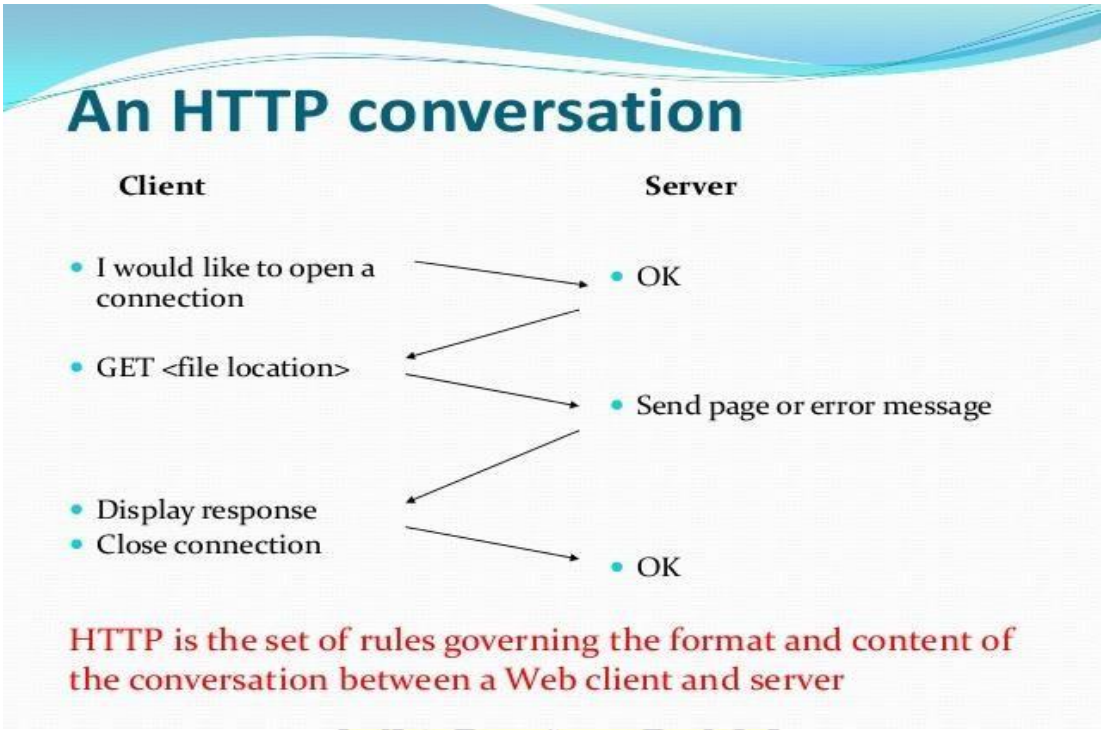
8. SECURITY PROTOCOLS OVER PUBLIC NETWORKS

- Network security protocols are a type network protocol that ensures the security and integrity of data in transit over a network connection.
- Network security protocols define the processes and methodology to secure network data from any illegitimate attempt to review or extract the contents of data.
- Network security protocols are primarily designed to prevent any un- authorized user, application, service, or device from accessing network data.
- This applies to virtually all data types regardless of the network medium used.
- Network security protocols generally implement cryptography and encryption techniques to secure the data so that it can only be decrypted with a special algorithm, logical key, mathematical formula and / or a combination of all of them.
- Some of the popular network security protocols include
    - HTTP
    - SSL
    - Firewall as security control
    - Public key infrastructure (PKI) for securing

8.1 HTTP (Hyper Text Transfer Protocol)

Introduction:

- HTTP was coined by **Ted Nelson** in 1991
- HTTP is the set of rules for transferring files (text, graphic images, sound, video and other multimedia files) on the World Wide Web (www).
- 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.
- For example, the URL for computer hope is https://www.computerhope.com
- Today's browsers no longer require HTTP in front of the URL since it is the default method of communication.
- However, it is kept in browsers because of the need to separate protocols such as FTP (File Transfer Protocol).
- It is used to access data on the WWW (world wide Web)
- It is a protocol which governs the Communication between the client and server.



Features of HTTP:

- Connectionless
- Media Independent
- Stateless

1. HTTP is connectionless

- After a request is made, the client disconnects from the server and waits for a response.
- The server must re-establish the connection after it processes the request.

2. HTTP is media independent:

Any type of data can be sent by HTTP as long as both the client and server know how to handle the data content.

3. HTTP is Stateless:

This is a direct result of HTTP being connectionless.

- The server and client are aware of each other only during a request
- Afterwards, each forgets the other
- For this reason, neither the client now the browser can retain information between different requests across the web pages.

Working:

1. A browser contacts a server to establish a TCP(Transmission Control Protocol) connection with it
2. The HTTP software on the client sends a request to the server. The HTTP software on the server interprets this request and sends the response to the client.
3. **HTTP Commands**:
    a. **GET:** Request by a client to obtain a webpage from the server.
    b. **PUT:** Request by a client to store a webpage on the server.
    c. **POST:** Request by a client to update contents of a webpage on the server.
    d. **DELETE:** Request by a client to remove a web page from the server.

- **HTTP** was coined by Ted Nelson in 1991.

8.2 SSL (Secure Socket Layer)

Secure sockets layer (SSL) is a networking protocol designed for securing connections between web clients and web servers over an insecure network, such as the internet. After being formally introduced in 1995, SSL made it possible for a web server to securely enable online transactions between consumers and businesses. Due to numerous protocol and implementation flaws and vulnerabilities SSL was deprecated for use on the internet by the internet engineering task force in 2015 and has been replaced by the transport layer security TLS protocol.

- The most commonly used security technique is the SSL.
- In order to exchange information over the internet in a secured manner, Netscape designed Netscape navigator and server products.

The SSL was developed by the Netscape considering the following three important points:

- The **ability to secure** (encrypt, authenticate and provide data integrity) TCP/IP connection using TCP/IP application level protection. Such protocols include HTTP, Cipher, FTP, Telnet, S-HTTP and others.
- **Simplicity** with reference to the fact that it can be easily used and verified.
- **Suitability**

- The SSL will be the most popular way of encrypting information to be transmitted along with the Net

- SSL uses TCP (Transport control protocol) for communication.
- In SSL, the word socket refers to the mechanism of transferring data between a client and server over a network.

WHAT IS SSL used for?

The internet has spawned new global business opportunities for enterprises conducting online commerce. However that growth has also attracted fraudsters and cyber criminals who are ready to exploit any opportunity to steal consumer bank account numbers and card details. Any moderately skilled hacker can easily intercept and read the traffic unless the connection between a client (e.g. internet browser) and a web server is encrypted.

HOW DOES SSL WORK?

The following graphic explains how SSL certificate works on a website. The process of how an SSL handshake takes place is explained below.

- An end user asks their browser to make a secure connection to a website (e.g. https://www.example.com)
- The browser obtains the IP address of the site from a DNS server requests a secure connection to the website.
- To initiate this secure connection, the browser requests that the server identifies itself by sending a copy of its SSL certificate to the browser.
- The browser checks the certificate to ensure
  - That it is signed by a trusted CA
  - That it is valid that it has not expired or been revoked
  - That it confirms to required security standards on key lengths and other items.
  - That the domain listed on the certificate matches the domain that was requested by the user.
- When the browser confirms that the website can be trusted it creates symmetric session key which it encrypts with the public key in websites certificate. The session key is then seen to the web server.
- The web server uses its private key to decrypt the symmetric session key.
- The server sends back an acknowledgement that is encrypted with the session key.
- From now on all data transmitted between the server and the browser is encrypted and secure.

Why do I need SSL certificate?

The internet has spawned new global business opportunities for enterprises conducting online commerce. However, that growth has also attracted fraudsters and cyber criminals who are ready to exploit any opportunity to steal consumer bank account numbers and card details. Any moderately skilled hacker can easily intercept and read the traffic unless the connection between a client (eg.internet browser) and a web server is encrypted.

Objectives of SSL:

1. Data Integrity
2. Data Privacy
3. Client-Server authentication

1. **Data Integrity:** Data is protected from tampering
2. **Data Privacy:** Data Privacy is ensured through a series of protocols, including the SSL Record protocol, SSL Handshake Protocol, SSL Change cipher spec protocol & SSL Alert protocol.
3. **Client – Server Authentication:** The SSL Protocol uses standard cryptographic techniques to authenticate the client & server.
   SSL is the predecessor of transport layer security (TLS), which is a cryptographic protocol for secure internet data transmission.

8.3 FIREWALL AS SECURITY CONTROL

Fire Wall

- A firewall is a system designed to prevent unauthorized access to or from a private network.
- Firewall can be implemented either hardware, or software or both that acts as gatekeeper and protects IS.
- Firewalls prevent unauthorized internet users from accessing private networks connected to the internet.
- Acts like watchman, will not allow any unauthorized user to access the server of an organization.
- Firewalls are an electronic device that blocks all traffic, and then selectively allows only a few well selected items.
- A fence around the network is simply a firewall.
- The function of a firewall is to restrict access to the designated points by growing non registered users.

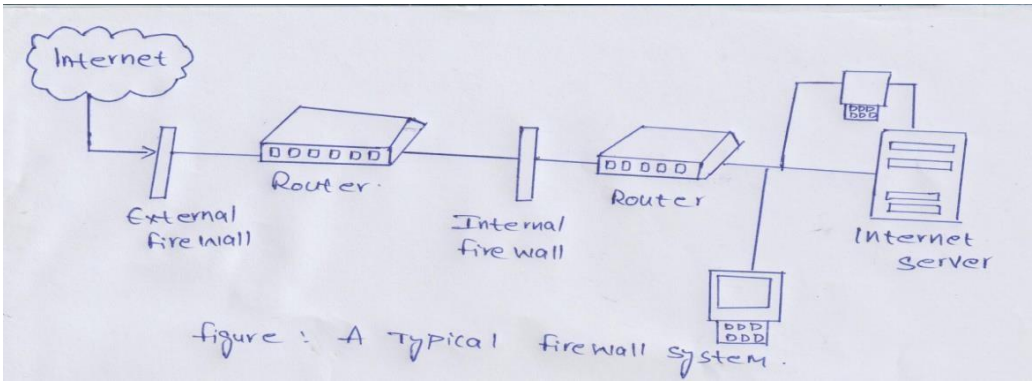
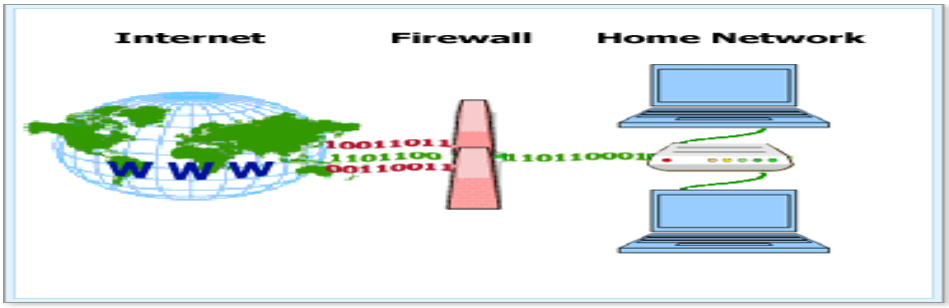


figure : A Typical firewall system.

Firewalls



- Firewalls are an electronic device that blocks all traffic, then selectively allows only a few well selected items.
- A fence around the network is simply a firewall. There may be some well selected gates. The function of a firewall is to restrict access to the designated points by growing non registered users.
- Sometimes, security holes are left open accidentally. In these cases, firewalls need to be administered carefully. It is a preventive measure
- . It gives rules that allow specific types of traffic to go through the firewalls.
- These are like doors in a house which restricts the entry of intruders.
- Any private network connected to an external link like the internet needs a firewall which will allow friendly access and repel unfriendly ones.
- A new firewall product tailored for personal computer users has just been released. 'Norton Internet Security' provides protection from hackers for networks and comes bundled with the 'Norton Antivirus'.
- A variant and expensive alternative known as **"hybrid firewalls"** are available in the market.

- The sender and the recipient of the message will need to have the key for scrambling and unscrambling of the message.
- The levels which have gone into making encryption are very much a fortress to the eavesdropper.

Drawbacks: It has no capability of detecting anyone trying to break in. for instance, digging a hole underneath it.

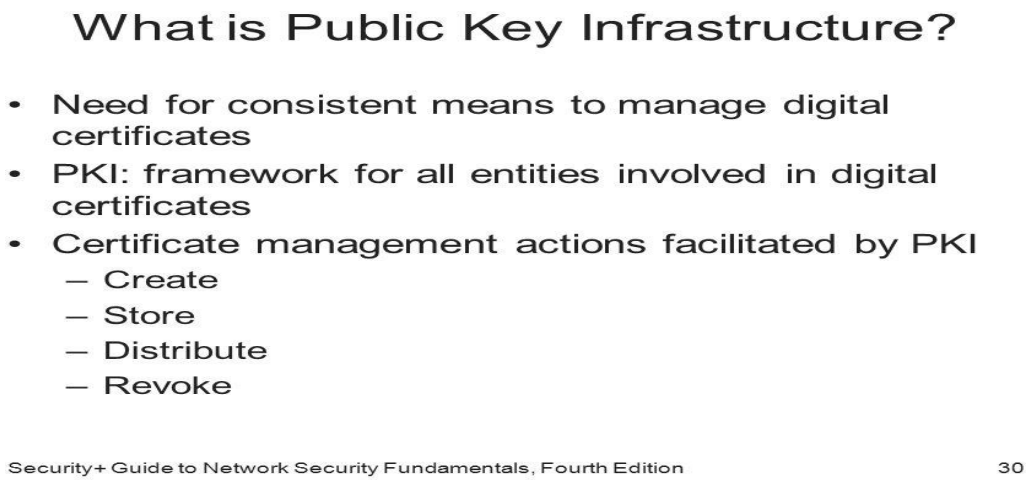
- It does not know if the person coming through the gate is allowed in.
- It is not a dynamic defence mechanism of security.
- Firewalls are incapable to recognize any attack against the network.
- It restricts access only to the web server. When the web server itself is hacked, it cannot protect the server.
- Firewalls can only watch on the boundary of a network and not beyond it. Most of the problems related to insecurity arise from inside the network.
- Firewalls of the network see nothing going on inside.
- It watches only the traffic which passes between the internal link and the Net.
- Firewalls cannot sense the network traffic and cannot process the events of the internet.
- There is no protection from firewalls at several sensitive areas and net connection points.

8.4: PUBLIC KEY INFRASTRUCTURE (PKI) FOR SECURITY

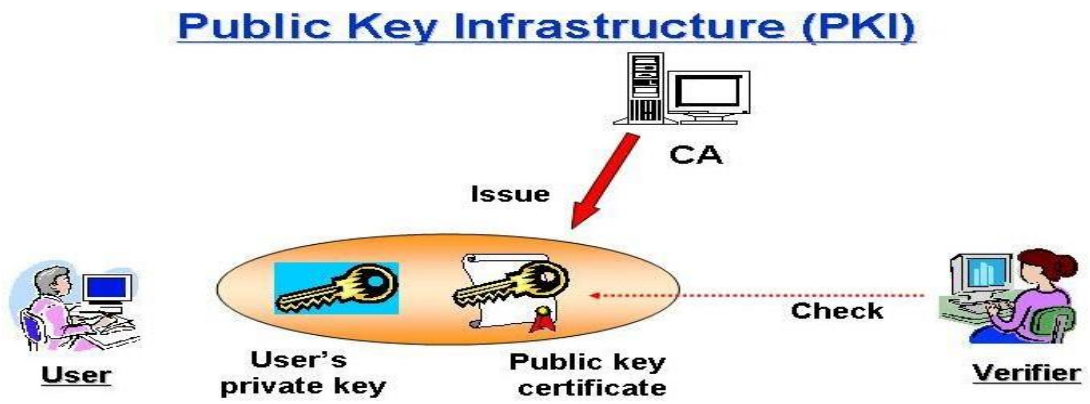
It will change the face of online security; as such understanding of PKI is necessary. It addresses the role of strong authentication in securing the electronic business environment and building a foundation necessary to establish trusted secure electronic communication over the Net. E-security is essential for e-business and e-commerce.

The application of IT world-wide has become more and more complex, placing increasing demand on resources. Encryption and authentication technologies are installed and are in use on a global basis.

- PKI is the principal tool to establish a trusted path for electronic transactions.
- It **protects against** a variety of possible assaults like **un-authorized disclosure** of sensitive information, **spoofing /data alternation etc.**



- The classic protection technique involves the use of public key and private key cryptography.
- A key pair is generated for each business. **(Public Key ,Private Key)**
- The private key is installed on the server of a particulars business and no one can access it.
- The matching public key of business is freely distributed as its server ID.
- Customers will use the server 1D to encrypt communications sent to that particular site and the owner of that site only holds that **matching private key.**
- **Private Key:** In this kind of security, the encryption and decryption keys are similar. To make it difficult to encode the key, and even using a powerful computer, it should be of a very high order. Implementation of these keys is possible by Application of Specific Integrated Circuits (ASIC) chips, wherein field programmable gate arrays are added on the chords.
- **Public Key:** By Nature, public key has essentially two keys. One key is used for encipherment and the other for decipherment. The key used for encipherment should be confidential the code cannot be cracked by the decipherer unless he knows the key used by the enciphered. In such a case, in this system, the encipherment key may even be published like a telephone directory. The fact is that even with the algorithm for description, it is impossible to find the deciphering key.
- Therefore, only the user who has his own secret decipherment key will be able to decipher the cryptogram addressed to him.



Working of Keys: In electronic transactions, the asymmetric cryptosystem is followed. The system is capable of generating a secure key pair. The pair consists of two keys: public key and private key.

- **A Private Key** is used for creating a digital signature and public key is used to verify this signature.
- Public key cryptosystems are designed around the possession of both the private and public keys.
- They are built by each entity, wishing in secure electronic transactions and communication.

Consider these points below:

- A public key is known to every one
- A private "is" only to the owner /creditor
- Algorithm is used to generate these keys either of the key is used to encrypt a message
- The other corresponding key in the key pair will be able to decrypt it.

Public key cryptosystems are used to provide both the services of confidentiality and authentication.

- For instance, X is sending a confidential message to Y
- X encrypts the message using Y's widely known public key.
- Y receives message from X as encrypted, Y decrypts using X's private key.
- A Private key should be carefully protected
- The public keys are made known to whoever wants it.

- When a public key cryptosystem is in operation, the secret private key is not shared with anyone.
- A public key is not kept secret, as no purpose is served.
- The public key as a matter of fact should be made available to anyone who wants to engage in secure electronic transactions and communication with the owner of the corresponding private key.

UNIT-3
ELECTRONIC PAYMENT SYSTEM

1. CONCEPT OF MONEY

1.1 Introduction:

- The payment mechanism which constitutes the core of e-commerce process has become an important business strategy.
- It is simply because the payment mechanism has the potential to change the very essence of commercial transactions, business and industry models throughout the world.
- Payment processing systems plays a critical role in e-business and any company considering launching its business must have chalked out pans well in advance.

Originally, the trade began in form of a barter system wherein people exchanged goods that they possessed with the goods belonging to other people.

- Things soon became complicated with the availability of goods, belonging to both parties in the later system, not coinciding.
- As a result, a medium of exchange, in the form of tokens, evolved.

Money: Money can be anything that people accept as a standard for payment.

- Coins
- Currency
- Checks
- Credit/debit

1.2 Meaning of Money:

- **Serves as a medium of exchange** --for buying and selling
- **Serves as a common measure of value** – Value of a good or service can be expressed in terms of money.
- **Serves as a store of value** – money saved in present can be used future.

General Acceptability by the people backed by the govt.

1.3 Functions of money:

In a static sense – (Stationary)

1) It acts as a medium of exchange
2) As a unit of account – **Express value of goods (eg mobile – 400 to 49000; rice bag-40/-)**
3) Fiat money – **Paper currency- backing of Indian govt – legal tender**
4) As store of value – Surplus income (in banks etc.) use in future

In Dynamic sense – New functions recently

1) Direct economic trends – Savings--investments (a. output b. employment) (Economic development country)
2) As encouragement to division of labor
3) Smoothens transformation of savings(Household) into investment(producers)

2. ELECTRONIC PAYMENT SYSTEMS

Types of Payment systems

1. **Offline Payment Options**
2. **Online Payment Options**
3. **Payment Process Software**

1.Offline Payment Options	2.Online Payment Options
• **A Phone** • **Drop a cheque into the Postal head box** • **Earn and use discounts** • **Bills** • **Drafts** • **Cheques** • **Money order** • **Cash On Delivery(COD)**	• **Doing business online is an innovative strategy and the payback or payment through the e-shop is one of the most critical and challenging issues for any such business.** • **How to make payments for online buying is a frequently asked question.** • **E-cash, e-wallets, smart cards and credit / debit cards**

*** Electronic payment via a web is catching up gradually. Even today, many customers prefer using the traditional payment methods such as cash on delivery.**

3. Payment process software: The payment process Software is used to facilitate payback for purchase. This software is usually sold as a service rather than as a product. It means there is no need on our part to install it on the web server and run it yourself. It is just sufficient to pass the credit card data to the software company's server and they take it from there. Most companies allow buying the software and leasing it for a monthly fee.

There are hundreds of companies making payment processing software. The best known and popular payment processing packages are Authorize Net, Cyber cash, IC verify and PC Authorize.

2.1 Electronic Payment System: (EPS) / Online Payment System:

EPS is a way of making transactions or paying for goods and services through an electronic medium, without the use of cheques or cash.

- The EPS has grown increasingly over the last decades due to the growing spread of internet – based baking & shopping.
- As the world advances more with technology development, we can see the rise of electronic payment system and payment processing devices.
- As these increases, improve, and provide ever more secure online payment transactions the percentage of cheque & cash transactions will decrease.

2.2 Requirement for E-payments:

1. Acceptability
2. Convertibility
3. Efficiency
4. Integration
5. Scalability
6. Usability

2.3 What is EPS: It is a system which helps the customer or user "to make online payment for their shopping"

- To transfer money over the internet.

Examples of EPS:

- Online Reservation (IRCTC, Air, Bus)
- Online bill payment (mobile bill, Electricity, gas, credit cards… etc.,)
- Online order placing (Buying & selling)
- Online ticket booking (movie)
- Net Banking

2.3 EPS Storage methods:

1. **Online**
2. **Offline**

1. Online: Trusted third party holds customer's money like online bank, holds customers cash accounts.

2. Offline: Customer holds cash on smart card or software wallet.

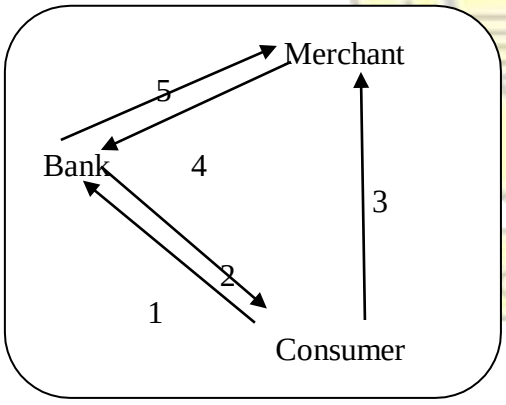
3. TYPES OF ELECTRONIC PAYMENT SYSTEM (EPS)

1. **E-Cash**
2. **E-Wallet**
3. **Credit Cards**
4. **Debit Cards**
5. **Net Banking**
6. **Mobile Payment**
7. **Amazon Pay**

1. E-Cash: A system that allows a person to pay for goods or services by transmitting a number from one computer to another.

* This is issued by a bank and represents a specified sum of real money.

E-Cash Processing:



1) Consumer buys e-cash from bank
2) Bank sends e-cash bits to consumer (after charging that amount plus fee)
3) Consumer sends e-cash to merchant
4) Merchant checks with bank that e-cash is valid valid.
(check for forgery or fraud)
5) Bank verifies that e-cash is valid
6) Parties complete transactions

2. E-Wallet: (faster payments)

* The E-wallet is another payment scheme that operates like a **carrier of e-cash** and other information.

* The aim is give shoppers a single, simple and secure way of carrying currency electronically.

* Trust is the basis of the e-wallet as a form of electronic payment. Eg: Paytm, IRCTC, Amazon, SBI to Maintain E-wallet

By using e-wallet we can access/book the ticket overcome all kinds of the complications.

* It is a prepaid account that allows the customer to store multiple credit cards, debit card and bank account numbers in a secure environment.

* It is very simple and secure

Procedure for using an e-wallet

1. Decide on an online site where you would like to shop (Paytm, Amazon, … etc.,)
2. Maintain an e-wallet on website (Paytm etc.,)
3. Fill out personal information such as your credit card number, name, address and phone number and where merchandise should be shipped.
4. When you are ready to buy, it automatically deducts amount from e- wallet, if you have.

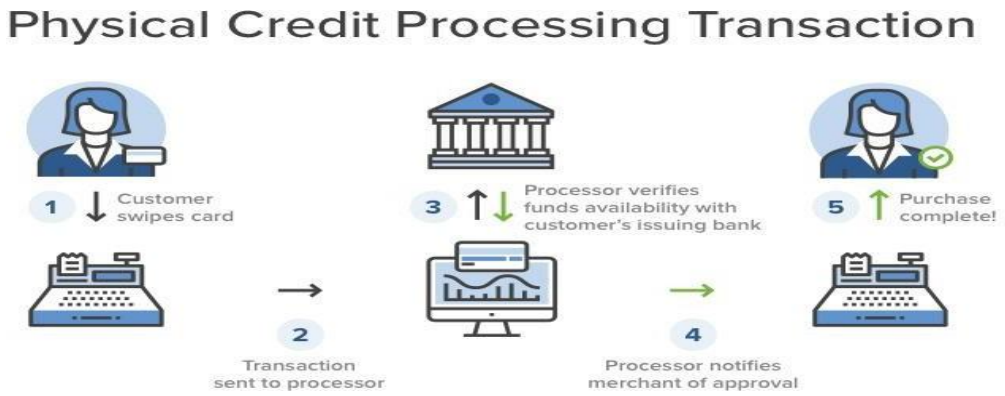
3. Credit Cards:

Example: VISA, Master card, American Express, Discover network

* It is a plastic card having a magnetic number and code on it.

* It has some fixed amount to spend

* Customer has to repay the spend amount after sometime.



Risk in using credit cards:

- Operational Risk
- Credit Risk
- Legal Risk

Credit Card: It is simple to use, the customer has to just enter their credit card number and date of expiry in the appropriate area on the seller's webpage.

Security: To improve the security system, increased security measures, such as the use of a Card Verification Number (CVN) have been introduced to on-line credit card payments.

4. Debit card:

***** Debit card is one of the largest e-commerce payments medium in India.

* Customers who want to spend online within their financial limits prefer to pay with their debit cards.

* With the debit card, the customer can only pay for purchased goods with the money that is already there in his/her bank account.

5. Net Banking:

* It is a simple way of paying for online purchases directly from the customer's bank.

* It uses a similar method to the debit card of paying money that is already there in the customer's bank.

* Net banking does not require the user to have a card for payment purposes but the user needs to register with his/her bank for the net banking facility.

* While completing the purchase the customer just needs to put in their net banking ID and pin.

6. Mobile Payment:

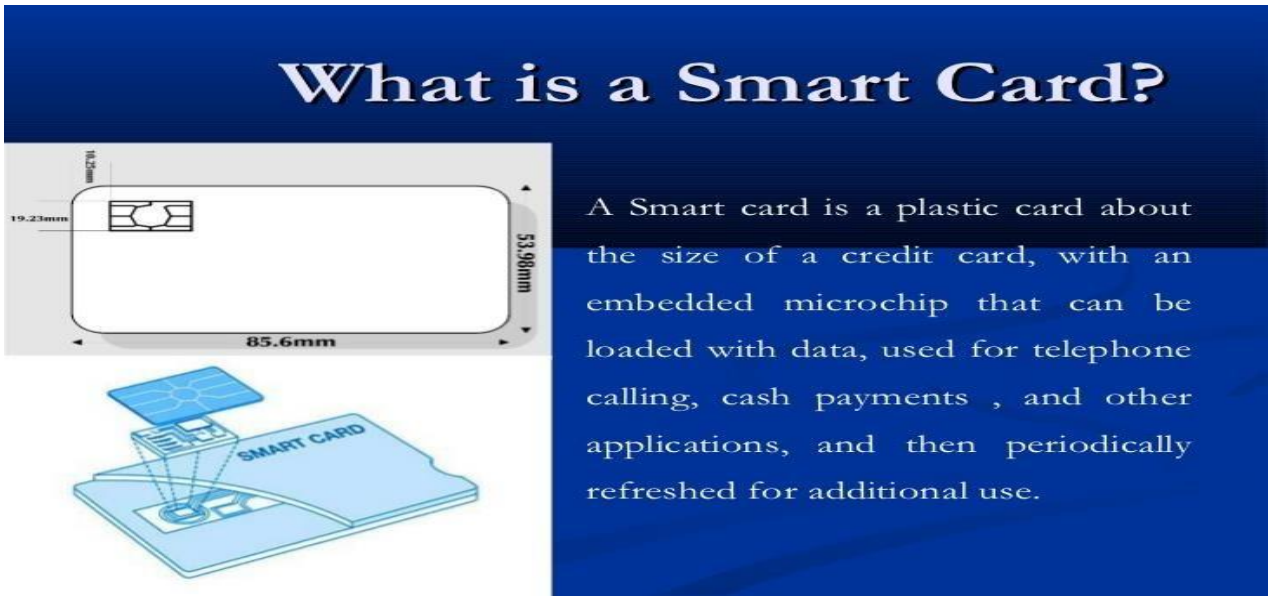
* Instead of using a credit card or cash, all the customer has to do is send a payment request to his/her service provider via text message; the customer's mobile account or credit card is charged for the purchase.

* To set up the mobile payment system, the customer just has to download software from his/ her service provider's website and then link the credit card or mobile billing information to the software.

7. Amazon pay:

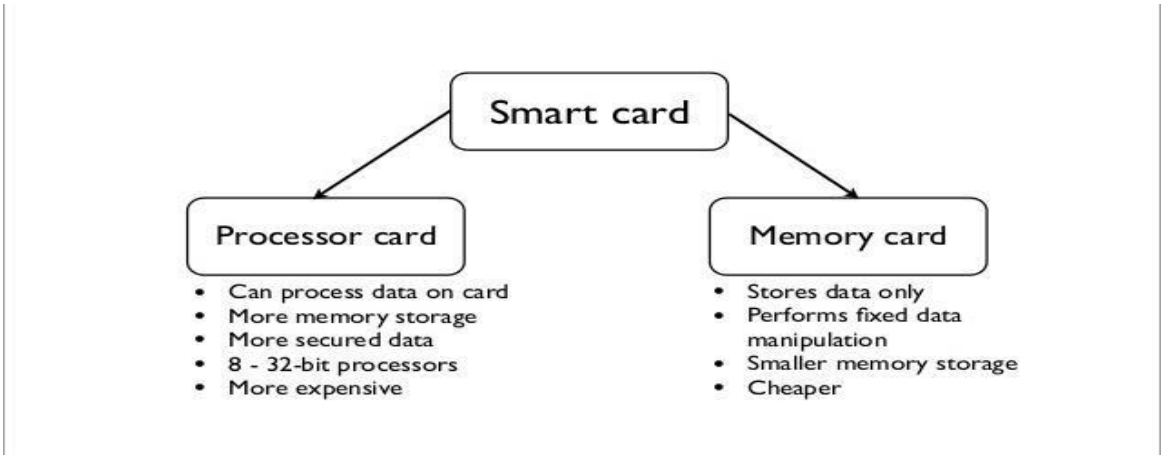
* Another convenient, secure and quick way to pay for online purchases is through Amazon pay.
* Use your information which is already stored in your Amazon account credentials to log in and pay at leading merchant websites and apps.
* Your payment information is safely stored with Amazon and accessible on thousands of websites and apps where you love to shop.
* If you are planning to sell your products online, Amazon would be happy to help you in setting up payment

4. SMART CARDS (ELECTRONIC CREDIT CARD)



- It is a plastic card embedded with Microprocessor that has customer's personal information and can be loaded with money to make online transactions and instant payment of bills.
- **Simply, a Smart Card is** pocket-sized card with embedded integrated circuits which can process data.
- The smart card is a plastic card, equal to the size of a credit card, with an embedded microprocessor and memory, used for storing information related to banking, medical data etc.,

- It is most convenient device to draw cash from ATM (Automatic Teller Machine).
- Smart Card permits users to access a variety of services.
- A smart card will help to buy stationary, books, groceries, operate bank accounts, make long distance phone calls, payments and get access to the internet.
- A Smart card is a multi-functional Micro – Processor and memory on a Computer chip that is embedded in a card.
- Smart card is literally a **computer in a card.**



- In advanced countries like France and the US, Smart cards are produced and are in wide use.
- They have a simple processor and a small memory.
- Days will come when smart cards will soon be replacing credit cards.
- Smart card is a mini computer.
- There is always an interaction between the smart card and other external devices which read the card and enter the data on to it.
- So**, in future, the users could operate their cards at home and turn their PCs into the automatic teller machine (ATM) to make electronic payments or to draw money from their bank accounts.**

➢ **Smart cards can be used to**

1. Blood flow/Heartbeat detection
2. Contactless finger print
3. DNA scanner

FEATURES

1. The amount of sales or purchase is stored in the card's memory.
2. A deduction is given from the card holder's credit balance.
3. When a transaction takes place, say a purchase, the information as to the amount of purchase, the name and address of the store and the data is stored in the memory. It requires a device known as the **card reading machine.**
4. The machine is also connected to a home computer, a television set or a printer which

displays a full record of all purchases made with the card.

HISTORY

- A smart card as used today was filed by **Jorgen Delhloff** in **1976.**
- In 1977, Michel Ugon from Honeywell Bull invented the first microprocessor Smart Card with two chips, (microprocessor and memory.)
- In 1983, the first Mass use of the cards, as a telephone card for payment in French payphones.

USES OF SMART CARD

1. BANKING & RETAIL (ATM cards, credit cards and debit cards)

- ✓ Smart card used as fuel cards and phone payment cards.
- ✓ Smart cards are used as "electronic wallets" when the chip is loaded with money to pay for small purchases such as groceries, laundry services, cafeteria food and taxi rides.

2) HEALTHCARE

- ✓ In hospitals data rapidly increasing, smart cards assist with maintaining the efficiency of patient care and privacy safeguards.
- ✓ Smart card stores patient's medical history, instantly access the information and update it if needed and reduce health care fraud.
- ✓ Smart card helps in insurance processing.
- ✓ In addition, smart cards enable compliance with government initiatives, such as organ donation programs.

3) ID VERIFICATION & ACCESS CONTROL

- ✓ Smart cards can be used to verify person's identity in places like business offices, universities, software companies, Army etc.,
- ✓ For companies with higher security needs, a smart card can be a tamper- proof device to store information, such as a user's picture or fingerprints.
- ✓ All U.S. government facilities and many corporations have incorporated contactless readers as an access point to their facilities, and some had included a biometric component.

4) MOBILE COMMUNICATIONS

- ✓ Smart cards are used as Subscriber Identity Molecules (SIM) cards in mobile phones.
- ✓ Each SIM card has a unique identifier that manages the rights and privileges of each subscriber and makes easy for identification.

5) COMPUTER & NETWORK SECURITY

- ✓ Microsoft Windows, new versions of Linux and Sun Microsystems have begun using smart cards as a replacement for user names and passwords.
- ✓ Understanding that Public Key Infrastructure (PKI)-enhanced security is needed, a smart card badge is becoming the new standard.
- ✓ Using smart cards, users can be authenticated and authorized to have access to specific information based on preset privileges.

HOW SMART CARD WORKS

A Smart card is connected to the host computer or controller via a card reader which gets information from the smart card and accordingly passes the information to the host computer or controller.

4.7 DIFFERENCE BETWEEN CREDIT CARD, DEBIT CARD AND SMART CARD

CREDIT CARD	DEBIT CARD	SMART CARD
A Credit card is basically an electronic card with magnetic data strip or a chip, issued to customers by banks and other credit agencies.	Debit cards are magnetic strip and chip enabled cards, issued to customers by their respective banks	A smart card contains a special embedded microprocessor, which is a computer processor or a microchip
Credit cards are lines of credit when you use a credit card, the issuer puts money toward the transaction. This is a loan you are expected to pay back in full unless you won't to be charged interest.	Any time you use a debit card to buy something, money is deducted from your account with a debit card you can really only spend the money you have available to you.	Smart cards applications benefit consumers where their life and business habits intersect with payment processing technologies
Credit cards in the U.S are not very secure and of themselves many still dated card technology. However consumers are not held liable for this poor security	A PIN makes them secure so long as no one steals the card number and PIN as long as you don't lose the card itself. If the card is stolen, debit cards are very insecure	Smart cards offer more security and confidentially than any other financial or transaction storage card the market. They are a safe place to store sensitive or personal information
Credit Card not required to be connected to a checking account.	Checking or saving accounts	Smart cards links directly to the Internet
Credit cards are mostly used in online payments, to sell things or the web	Debit cards can be used with a PIN almost everywhere retail stores, gasoline, restaurants and pay phones	Smart cards widely used in telecommunications industry
For the merchant credit	Debit cards are more	The retail industry widely

card transactions result in immediate credit to the merchants bank account	readily accepted by merchants than are checks. Especially in countries where check cashing and check processing are not	uses applications of the smart card more specially to identify and reward customers.

5. ELECTRONIC PAYMENT SYSTEM: Refer 2nd topic in unit-4

6. INFRASTRUCTURE ISSUES IN EPS (ELECTRONIC PAYMENT SYSTEM)

Electronic payments communication infrastructure includes computer network, Such as the internet and mobile network (mobile data) used for mobile phone.

Infrastructure is necessary for the successful implementation of electronic payments.

- For electronic payments to be successful there is a need to have reliable and cost effective infrastructure that can be accessed to the majority of the population.
- In addition, banking activities and operations need to be automated. A network that links banks and other financial institutions for clearing and payment confirmation is a pre-requisite for electronic payment systems. Mobile network and Internet are readily available in the developed world and users usually do not have problems with communication infrastructure.
- In developing countries, many of the rural areas are unbanked and lack of access to infrastructure that drives electronic payments.
- Some of the debit cards technologies like Automated Teller Machines (ATMs) are still seen by many as unreliable in some areas through fraudulent deductions.
- Telecommunication and electricity are not available throughout the country, which negatively affect the development of e-payments. The development of Information and Communication Technology (ICT) is a major challenge for e-payments development.

6.1 CHALLENGES OF EPS (ELECTRONIC PAYMENT SYSTEM) ARE AS FOLLOWS

- Security
- Infrastructure
- Regulatory
- Legal Issues
- Socio – cultural challenges
- Multi-Currency and Payment Methods
- Card data security
- Fraud and Chargeback

7. ELECTRONIC FUND TRANSFER (EFT)

EFT are electronic transfer of money from one bank account to another, either within a single financial institution or across multiple institutions, via computer based systems, without the direct intervention of bank staff.

EFT is safe, secure, efficient, and less expensive than paper cheques payments & collections. EFT offers several services to consumers as a means of payment.

For example, when we use debit card to make a purchase at a store or online, the transaction is processed using an EFT system. It is just a paper free Banking system. EFT uses computer systems.

7.1 VARIOUS MODES OF EFT IN INDIA

1. **NEFT** – National Electronic Funds Transfer
2. **RTGS** – Real Time Gross Settlement
3. **IMPS** – Immediate Payment Service

1. NEFT – NATIONAL ELECTRONIC FUNDS TRANSFER

- The national electronic funds transfer is a nationwide money transfer system which allows customers with the facility to electronically transfer funds from their respective bank accounts to any other account of the same bank or other bank network.
- Before transferring funds via NEFT you have to register the receiver. For this you must possess information such as name of the recipient, recipient's bank name, a valid account number belonging to the receiver and his respective bank's IFSC code.
- Any sum of money can be transferred using the NEFT system with a maximum capital of Rs. 10, 00, 000.

2. RTGS – REAL TIME GROSS SETTLEMENT

- It is a real time funds transfer system which facilities to transfer money from one bank to another in real time or on a gross basis. The transaction isn't put us on a waiting list. The transfer of money is cleared out instantly.
- RTGS payment gateway, maintained by the Reserve Bank of India which makes transactions between different banks electronically.
- The transferred amount is instantly deducted from the account of one banks and credited to the other bank's account.
- The minimum value that can be transferred using RTGS is Rs. 2lakhs. However, there is no upper cap on the amount that can be transferred.
- The customer needs to add the receiver and his bank account details prior to transacting money via RTGS.
- The details required while transferring funds would be the beneficiary's name; his/her account number, receiver's bank address and the IFSC (Indian Financial System Code) of the respective bank.

3. IMPS - IMMEDIATE PAYMENT SERVICE

- The National Payment Corporation of India (NPCI) introduced a pilot mobile payment project also known as the immediate payment service (IMPS)
- IMPS offers instant electronic transfer service using mobile phones.
- The IMPS service also features a secure transfer gateway and an immediate confirmation on fulfilled orders.
- IMPS are offered on all the cellular devices via mobile banking or through SMS facility.
- To be able to transfer money via IMPS route you must first register for the immediate payment services with your bank.
- Thus IMPS enables customers to use mobile instruments as an instant money transfer gateway, facilitating user convenience and saves time and effort involved in other modes of transfer.

7.3 EFT ACT

- The electronic fund transfer act was passed by the U.S. CONGRESS in 1978.

7.4 ADVANTAGES OF EFT

1. Increase efficiency and productivity.
2. Manage cash flow easily
3. Improve safety and control
4. Saves money
5. Less paper works
6. Cheaper
7. Faster
8. Saves time and power
9. Safe & Secure
10. Eliminate the risks associated with lost, stolen or misdirected cheques 11.EFT provides our office with the capacity to,
    - Automate our payments
    - Electronically update our accounts information
    - Streamline our cash flow
    - Reduce administrative cost
    - Eliminate overdue accounts
    - Manage delayed disbursement
    - Get set up and add customers

EFT SAVES OUR TIME AND MONEY

In short we can say that EFT is FAST, SIMPLE, SAFE, and SECURE

7.5 DISADVANTAGES

1. Unreliability of technology-once the bank network is down all transactions cannot be carried out.
2. Loss of human interaction
3. Fraud
4. Hackers may hack your accounts and may steal money.
5. One of the major disadvantages of EFT is RISK OF SECURITY ISSUE.
6. If you entered the target number incorrectly there is no way to reverse the transaction since the bank would process the transaction under the belief that the information you provided is accurate.
7. Once an amount is transferred, there is no chance to reverse a transaction.

7.6 Different names of EFT

- In India -EFT
- In US -Electronic Checks or e-checks
- In UK -Bank transfer and Bank payment
- Europe -Giro transfer

7.7 TYPES OF EFT

1. **ATM** (Automated Teller Machine) transfers
2. **Direct deposit:** Payment or withdrawals of money (funds) initiated by the payer through deposit machines.
3. **Direct Debit:** Payments for which a business debits the consumer's bank accounts for payment for goods and services.
4. Transfer initiated by **Telephone.**
5. Transfers resulting from **credit or debit card** transactions, whether or not initiated through a payment terminal.
6. **Wire transfer** via an international banking network such as **SWIFT**
7. **Electronic bill payment** in **online banking**, which may be delivered by EFT.
8. **Instant Payment**

Common uses of EFT

- Using a credit / debit card (from your account to seller account)
- Online bill payment
- Direct debit (to car, house, companies)
- Direct deposit

7.8 TOOLS OF EFT

- ATM
- Credit & Debit Cards
- Internet
- Mobile Banking

Do one thing at a Time, and while doing it put your whole Soul into it to the exclusion of all else. — Swami Vivekananda

UNIT-4
E-BUSINESS APPLICATIONS AND STRATEGIES

1. INTRODUCTION OF E-BUSINESS APPLICATIONS

- **Electronic business** (or) e Business (or) an Internet business, is defined as the application of Information and Communication Technologies (ICT) to business activities.
- **Commerce** refers to the exchange of products and services in a large quantity.
- Electronic commerce is the subset of E-Business, that focuses on the **use** of ICT to enable the external activities and relationships of the business with individuals, groups and other businesses.

1.1 WEB (INTERNET) FOR BUSINESS APPLICATIONS

Web is used for the following

- Attracting new customers through E-marketing & E-advertising
- Improve service efficiency through E-service & E-support functions.
- Enlarge the scope and reach through web by putting products and services on web.
- Used for conducting business through E-commerce

1.2 BENEFITS OF E-BUSINESS

- ✓ Increase Sales
- ✓ Reduce Marketing Cost
- ✓ Low Cost
- ✓ Accessible
- ✓ Communication
- ✓ Case of formation & low investment / work from home
- ✓ Convenience
- ✓ Speed
- ✓ Global reach/Access
- ✓ Paperless Society

1.3 LIMITATIONS OF E-BUSINESS

- ✓ Low personal touch
- ✓ Incompatibility between order taking / giving and order fulfillment speed.
- ✓ Need for technology capability & competence of parties to e-business
- ✓ Increased risk due to Anonymity and non-traceability of parties if COD (Cash On Delivery) by customer not available at particular address there may be loss to company not able to trace to customer, so to overcome they has to call to customer.

1.4 WHY E-BUSINESS

- ✓ Lack of time at public or consumer
- ✓ Flexibility in timings for payment
- ✓ Easy delivery at door steps
- ✓ Planning for payment
- ✓ Safe transactions

1.5 APPLICATIONS OF E-BUSINESS

1. Internal business systems

- ✓ Customer Relationship Management
- ✓ Enterprise Resource Planning
- ✓ Document Management systems
- ✓ Human Resources Management

2. Enterprise communication and collaboration

- ✓ E-mail
- ✓ Voice mail
- ✓ Web conferencing
- ✓ Business process Management

3. Electronic commerce

- ✓ Internet shop
- ✓ Supply Chain Management
- ✓ Online marketing
- ✓ Offline marketing

- The impact of e-business has already begun to appear in all areas of business ranging from customer service to new product design.

1.6 NEW TYPES OF E-BUSINESS INTERACTION WITH CUSTOMERS

1. E-procurement
2. E-bidding
3. E-communication
4. E-delivery
5. E-trading
6. E-books
7. Online super market
8. news papers

9. E-trading
10. E-advertising
11. E-taxation
12. E-ticking
13. E-banking
14. E-post

1.7 BUSINESS MODELS AND REVENUE MODELS OVER INTERNET

1.7.1 BUSINESS MODELS OVER INTERNET

The internet has given rise to new kinds of business models. They are as follows

1. **Social Media Model**
2. **Affiliate Model**
3. **Subscription Model**
4. **Merchant Model**
5. **Advertising Model**

1. SOCIAL MEDIA MODEL:

- ✓ For example, Face book, with over 800 million users, is the most successful social media model. Some other examples are LinkedIn, Twitter, Google plus, and Many more.
- ✓ But how do these companies generate revenue?
- ✓ This social media business model works by offering a **free online service** (in this case the service is social networking) and then selling targeted ads to the users.

- ✓ The users do not pay anything to use the service as face book's homepage, "it's free and it always will be"
- ✓ The reason advertising is effective on social networks is because companies can buy ads on a pay-per-click basis.

2. AFFILIATE MODEL

The affiliate business model is another successful Internet business model in use today.

Here's how it works:

- ✓ A business sets up an "affiliate program" where it offers financial incentives to affiliates (persons) for each visitor or customer brought about by the affiliate's own marketing efforts.
- ✓ Typically, the affiliate is given a unique "affiliate link" which is tracked by the business.
- ✓ Every time a sale is made as a result of this process the affiliate receives a percentage of the sale.
- ✓ This Internet business model is well-suited for trusted sites which have large followings.

3. SUBSCRIPTION MODEL

- ✓ In Subscription model, the users have to pay a fee to use that particular service monthly or yearly, like subscription of dish in houses.
- ✓ With over 24 million subscribers, Netflix is one the most successful companies that use the subscription business model.
- ✓ Another way companies profit from a subscription business model is by combining free content with "premium" (i.e., member-only) content.
- ✓ In this premium business model, companies like LinkedIn use this strategy to encourage usership and charge the best users.
- ✓ Most of LinkedIn's 150 million users are basic (free) members.

4. MERCHANT MODEL

- ✓ The merchant business model is one of the most profitable Internet business models. Example: The Amazon
- ✓ The merchant model is a business model that goes back thousands of years.
- ✓ But the Internet has provided a tremendous opportunity for merchants to grow at an almost unbelievable rate.
- ✓ In the merchant model a merchant simply sells the products directly to buyers.
- ✓ It could be clothes, CDs, or cars but the concept is the same.
- ✓ Internet business models that depend on the merchant model may face some challenges like sales tax problems which is burden to the customers.
- ✓ The sales tax is added to services because the government needs the money and merely reduce the growth of strong merchants like Amazon.

5. ADVERTISING MODEL

- ✓ Again we have another old business model that has been applied to the Internet.
- ✓ The advertising business model is an extension of the traditional media broadcast model.
- ✓ Now a day the internet websites like Google, yahoo act as advertising model that has large users.
- ✓ The more people watching the media company (or using their service), the more money they can charge for advertisements.
- ✓ This Internet business model relies on heavy traffic to the website.
- ✓ A company using this model must provide a valuable service that millions of people use on a regular basis (i.e. Google search, Gmail) in order to command high prices from ad space.

1.7.2 REVENUE MODEL OVER INTERNET

- The model which is used for generating revenues (profits) is called revenue model.
- This model identifies the revenue source to pursue, what value to offer, how to price the value, and who pays for the value.
- It is a key component of a company's business model.
- It primarily identifies what product or service will be created in order to generate revenues and the ways in which the product or service will be sold.
- By having a clear revenue model, a business can focus on a target audience, fund development plans for a product or service, establish marketing plans, begin a line of credit and raise capital.

CONTENTS

1. **Production model**
    a. **Manufacturing model**
    b. **Construction model**
2. **Rental or leasing model**
3. **Advertising model**
4. **Sponsored ranking model**
5. **Commission model**
6. **E-commerce model**
7. **Fee-for-service model**
8. **Licensing model**
    a. **Software licensing model**
    b. **Shareware model**
9. **Subscription model**

EXPLANATION

1. PRODUCTION MODEL

- ✓ In the production model, the business produces the product or services and sells it to the customers.
- ✓ Example: The Company that produces paper, sells it to either the direct public or to other businesses, who pay for the paper, thus generating revenue for the paper company.

a. MANUFACTURING MODEL

- Manufacturing is the production of merchandise using labour, materials, and equipment, resulting in finished goods.
- Revenue is generated by selling the finished goods.
- They may be sold to other manufacturers for the production of more complex products (such as aircraft, household appliances or automobiles), or sold to wholesalers, who in turn sell them to retailers, who then sell them to end users and consumers.

b. CONSTRUCTION MODEL

- Construction is the process of constructing a building or infrastructure.
- Construction differs from manufacturing, manufacturing typically involves mass production of similar items without a designated purchaser, while construction typically takes place on location for a known client, but may be done speculatively for sale on the real estate market.

2. RENTAL OR LEASING MODEL

- ✓ Renting is an agreement where a payment is made for the temporary use of a good, service or property owned by another.
- ✓ Leasing model means, making an agreement for fixed charges (for monthly or yearly) irrespective of business profits.
- ✓ Things that can be rented or leased include land, buildings, vehicles, tools, equipment, furniture, etc.

3. ADVERTISING MODEL

- ✓ The advertising model is often used by Media businesses platforms where content is provided to the customer as an advertisement.
- ✓ Examples are newspapers and magazines which generate revenue through the various advertisements encountered in their issues.
- ✓ Internet businesses provide services will also have advertising spaces on their platforms.
- ✓ Examples include Google .
- ✓ Mobile applications also use advertising model to generate revenues.
- ✓ By incorporating some advertisement space, many popular apps such as Twitter and Instagram have strengthened their mobile revenue potential after previously having no

real revenue stream.

4. SPONSORED RANKING MODEL

- ✓ The sponsored ranking model is a variant of the Advertising_model.
- ✓ The sponsored ranking model is mainly used by search engine platforms like Google and specialized products- and IT-services- platforms where users are offered free search functionality in return for sponsored results in front of other search results.

5. COMMISSION MODEL (REMUNERATION)

- ✓ The commission model is similar to the markup_model, it is used as when a business charges a fee for a transaction that it mediates between two parties.
- ✓ Brokerage companies or auction companies often use it as they provide a service as intermediaries and generate revenue through commissions on the sales of either stock or products.

6. E-COMMERCE MODEL

This revenue model is the implementation of revenue models online.

NOTE: Refer Unit-1 E-Commerce models

7. FEE-FOR-SERVICE MODEL

- ✓ In the fee-for-service model, unlike in the subscription model, the business only charges customers for the amount of service or product they use.

8. LICENSING MODEL

- ✓ In licensing model, the business that owns a particular content retains copyright by selling licenses to third parties.
- ✓ Software publishers sell licenses to use their programs rather than direct selling.
- ✓ Media companies also obtain their revenues in this manner, as do patent holders of particular technologies.

a. SOFTWARE LICENSING MODEL

- Rather than selling software, software publishers generally sell the right to use their software through a limited license time to the purchaser.

b. SHAREWARE MODEL

- In the shareware model, users are encouraged to make and share copies of a software product and distribute among themselves by paying limited amount.
- Payment may be left entirely up to the goodwill of the customer.

9. SUBSCRIPTION MODEL

- ✓ In the subscription model, the business provides a product or service to a customer who in return pays a pre-determined fee at contracted periods of time to the business.

- ✓ The customer will be required to pay the fee until the contract with the business is terminated or expires, even if he is not using the product or service but is still adhering to the contract.
- ✓ Possible examples are flat-rate cellular services, magazines and newspapers.

1.7.3 REVENUE STREAMS:

A revenue stream is an amount of money coming into a business from a particular source. A revenue model describes how a business generates revenue streams from its products & services. Advertising is one of the component of the revenue model however, when the business is advertising its own product, this would result as a cost for the business which is the exact opposite of revenue. On the other hand advertising can lead to an increasing sales, thus revenue over a period of time.

1.7.4 REVENUE MODEL V/S BUSINESS MODEL

- People often confuse "revenue model" and "business model" as being synonymous, or as being two completely different kind of models.
- A revenue model is part of a business model.
- A business model shows the framework for an entire business and allows investors and bankers as well as the entrepreneurs themselves to have a quick way of evaluating that business.
- Business models can be viewed in many different ways, but they are generally composed of the following six elements:

1. Acquire high value customers
2. Offer significant value to customers
3. Deliver products or services with high margins
4. Provide for customer satisfaction
5. Maintain market position
6. Fund the business

- The revenue model is a key component of the business model as it is an essential factor for delivering products or services with high margins and funding the business.
- Less than 50% of the investment required to set up a business will be used in revenue-producing areas.
- It cannot resultantly be viewed as being identical to the business model as it does not influence all the six elements but more should be viewed as an inner component of it.
- Having a well-structured business model is necessary for the success of any business adding value to a product or service for customers.
- This will consequently include having a clear and tailored revenue model which will ensure its financial health.
- It provides the owners of the business with a necessary understanding of cash flows as well as how it will generate revenue and maximize profitability.
- In addition to the business model, financial targets have to be forecasted when creating

an initial business plan whereby expected revenues and profits will have to be presented and thus calculated through the use of revenue models applied by the business.

2. EMERGING TRENDS IN E-BUSINESS

E-commerce helped to expand industries and telecommunications by enabling small-scale businesses to flourish and spread internationally. This new form of interaction has brought along many new trends, a few of which are given below:

1. DEALS

- Online deals and coupons were always a trend.
- Depending on certain seasons, anniversaries or holidays, businesses offer their customers with irresistible deals and coupon codes.
- Upon making your purchase, these deals will significantly lower the cost of what you desire.

2. INNOVATIONS

- From being a site that offers only information about hotels, or just offers bookings, these have been consistently transformed and recreated.
- Jovago.com offers its customers with not only the best deals on hotels and destinations, but also detailed reviews and pictures about them.

3. ONLINE SALES

- Massive department sales have been transferred online, with exclusive online sales occurring that encourage online shopping.

- Brands enjoy sample sales, distributing samples to their valued customers!

4. GLOBAL CONSUMPTION

- Through e-commerce, purchase of foreign goods has become easily accessible.
- This has resulted in more vendors featuring their products online that facilitates further consumption and sales.

5. VIRTUAL ADVERTISING

- Since shopping has become readily available online, so has the advertisement of such goods.
- Visual and video imagery is very popular, featured on television, Internet and spread further through sponsorships.

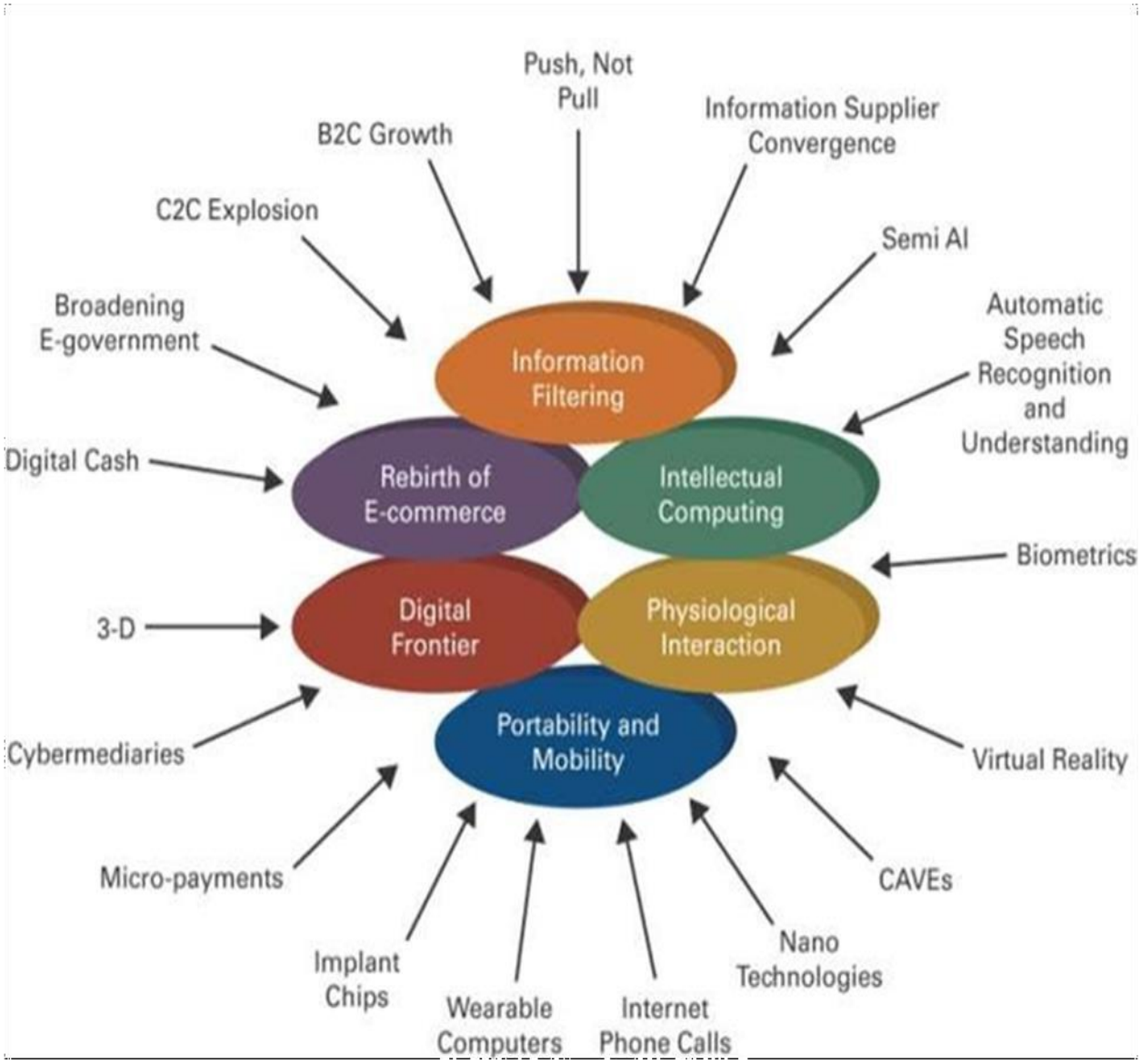
2.1 IMPORTANT TRENDS

1. Travel was the first to go online

2. Brands are moving to creating their own online stores –Nokiashop, Puma, Reebok, Samsung, VIP, Fast rack, etc

3. Fashion is No.1 Category – Top 3 categories all belong to fashion with 130 online stores [big & small] selling some fashion products. Apart from this 91 stores deal exclusively in fashion

4. Rise of exclusive online labels – Zovi, Shersingh


Push, Not Pull
B2C Growth
Information Supplier Convergence
C2C Explosion
Semi AI
Broadening E-government
Automatic Speech Recognition and Understanding
Information Filtering
Digital Cash
Rebirth of E-commerce
Intellectual Computing
Biometrics
3-D
Digital Frontier
Physiological Interaction
Cybermediaries
Portability and Mobility
Virtual Reality
Micro-payments
CAVEs
Implant Chips
Wearable Computers
Internet Phone Calls
Nano Technologies

2.2 E-COMMERCE IS BOOMING IN INDIA:

The Great India E-commerce Bazar

343	**Stores Included in this Study** The stores we were able to dig out and were actually selling some stuff
59	**Stores classified as Multi-Category** Stores selling more than one category like Books, Media, Electronics etc.
195	**Stores classified as Single Category** Stores selling single category like only Fashion, only Electronics, only Books etc.
89	**Stores classified as Niche** Stores selling a sub set of category. Ex. Travel Books, Novelty Items etc.
26	**Brands that have their own online stores** Example: Nokia, Puma, Samsung, Rebook. Bata etc.
23	**Online stores of offline retail chains** Example: TheMobileStore, CromaRetail, Next, Landmark, Crossword etc.
130	**Stores selling Clothes and Apparels** This is the most popular product category
91	**Stores in Fashion Category** Example: Myntra, Zovi, Jabong etc.
36	**Stores selling Lingerie (and Innerwear)** Why should boys have all the fun shopping online!
6	**Stores with 'Kart' in their name** Who says everyone follows Flipkart
23	**Stores with 'Shop' in their name** Yeah, it's all in the name
7	**Stores selling Grocery Online** Guess these stores need to add the feature of real time bargain
14	**Stores selling only Books** Seems like selling books is not easy after all

3. E-GOVERNANCE

It is the transformation of government to provide Efficient, Convenient & transparent services to the citizens & business through Information & Communication Technologies (I.C.T.)

- The **vision** of National E-Governance plan is to make all government services accessible to all people, through common service delivery outlets, and ensure efficiency, transparency & reliability of such services at affordable cost to realize the basic purpose of e-governance is to simplify the processes for all i.e. government, citizens, businesses etc. at national, state and local levels.

3.1 BENEFITS OF E-GOVERNANCE

1. Reduced corruption
2. High transparency
3. Increased convenience
4. Growth in G.D.P.
5. Reduction in over all cost
6. Direct Participation of constituents
7. Expanded reach of government

The process is extremely complicated which revises the proper arrangement of hardware, software, networking & indeed re-engineering of all the process to facilitate better delivery of services.

3.2 TYPES OF INTERACTION IN E-GOVERNANCE

1. G2G (Government to Government)
2. G2C (Government to Citizen)
3. G2B (Government to Business)
4. G2E (Government to Employees)

EXPLANATION:

1. G2G (Government to Government):

- ✓ When the exchange of information & Services is within the periphery of the government, is termed as G2G interaction.
- ✓ This can be both horizontal (i.e. among various government entities) and vertical (i.e., Between national, state & local government entities)

2. G2C (Government to Citizen):

- The interact b/w the government & general public is G2Cinteracton
- It enables citizens to get access to wide variety of public services.
- The citizens have the freedom to share their views and grievances on government policies anytime, anywhere.

3. G2B (Government to Business):

- The interaction between government and Business.
- It aims at eliminating red- tapism (Behavior, practices, or attitudes)
- Saving time cost & establishes transparency in the business environment, while interacting with government.

4. G2E (Government to Employees):

- The interaction between government and employees.
- ICT (Information & Communication Technology) helps in making the interact b/w Govt., & Employees fast & efficient along with raising their level of satisfaction

E-Governance can only be possible if the government ready for it. It is not a one-day task and so, the government has to make plans and implement then before switching to it.

3.3 SOME OF THE MEASURES INCLUDE

1. Investment in Tele communication infrastructure
2. Budget resources
3. Ensure security
4. Monitor assessment
5. Internet connectivity speed
6. Promote awareness among public regarding the important of e-business.
7. Support from all government department.

4. DIGITAL COMMERCE: (D-COMMERCE)

Digital commerce (**D-commerce**) is a type of **e-commerce** used by an organization that delivers and sells products online. **D-commerce** is used by companies that sell news, subscriptions, documents or any form of electronic content, and the digital commerce company collects payments, handles customer refunds and billing and manages other accounting functions for online publisher clients.

- **E-commerce** involves commercial transactions done over internet. **Ecommerce** is use of electronic transmission medium that caters for buying and selling of products and services.
- **E-business** is conduct of business processes on the internet.
- **E-business** is superset of **Ecommerce.**

4.1 DEFINITION OF DIGITAL COMMERCE

Gartner, a leading technology research firm, defines digital commerce as:

"The buying and selling of goods and services using the Internet, mobile networks and commerce infrastructure."

- It includes research and marketing activities, that support these transactions, including the people, processes and technologies to execute at all touch points throughout the customer buying journey."
- Digital commerce goes well beyond a simple online transaction.
- It also includes research, development, marketing, servicing, selling and buying products (the entire customer experience) for all devices and platforms including desktops, mobile/tablets, social networks, etc.

HOW E-COMMERCE IS DIFFERENT FROM D-COMMERCE

- D-Commerce is a type of e-commerce used by an organization that delivers and saves products online.
- D-Commerce is used by company that sell news, subscriptions, document or any form of electronic content, D-Commerce company collect payment, handle customer refund & building & manages other accounting functions for online publisher clients.
- Many times D-Commerce is also known as E-commerce. E-Commerce involves commercial transaction done over internet.
- E-business is the conduct of business process on the internet.

NOTE: Write about E-commerce Refer from Unit-1

5. MOBILE COMMERCE

INTRODUCTION:

As the number of mobile device users increases rapidly and exceeds that of Personal Computers (PC) users by a large margin, conducting business and services over these mobile devices, also known as mobile commerce.

It is becoming very attractive and is expected to drive the future development of electronic commerce. Our world today is so much different from our previous generations. With the invention of the internet, everything is fast and happens online.

Long gone are those days when people shop around 3-4 stores with the total distance of a few kilometers deciding which product to buy. These days, all considerations are done online before we made it to the physical store and most of the products are just a few clicks away from us. The terms E-Commerce or web store have been on the market for a while, but M-Commerce and mobile shopping app etc,.are quite new comers. M-Commerce enables users to access the internet without need to find a place to plug in.

5.1 DEFINITION OF MOBILE COMMERCE:

Mobile Commerce is defined as "**Buying and Selling of goods and services with the use of internet/cellular data via hand held wireless devices such as phones, tablets etc."**

5.2 HISTORY:

The phrase mobile commerce was originally coined in 1997 by "KEVIN DUFFEY" at the launch of the global mobile commerce forum, which mean "to delivery of electronic commerce capabilities directly into the consumer's hand, anywhere, via wireless technology. PDA'S and cellular phones have become so popular that many businesses are beginning to use mobile commerce as a more efficient way to communicate with their customers.

The process of buying & selling of goods & services over internet through handheld wireless devices i.e., mobiles, tablets, is called M-Commerce.

M-Commerce aims to serve all information and material needs of the people in a convenient & essay.

5.3 DIFFERENCES BETWEEN E-COMMERCE AND M-COMMERCE:

	E-COMMERCE	M-COMMERCE
DEFINITON	E-COMMERCE refers to the activities of buying and selling products and services with the use of electronic systems such as the internet.	M-Commerce refers to the process of buying and selling products & services with the use of internet/cellular data via wireless handheld devices.
HISTORY	1970'S	1990'S
DEVICES USED	Computers,laptops	Wireless handheld devices such as cellphone, ipads, and tablets.
CONNECTIVITY	Smaller	Large owing to the bigger number of mobile users.
MOBILITY	Less	Less limited because of lighter weight & smaller size leading to easier to carry.
REACH	Only at the places where the electricity and the internet are available	Broader due to its portability
USAGE	Difficult because of a more complicated user interface and more functions.	Simple because all function has been simplified.
COST	Less costly as created on the web store plat form and there is a usage of internet.	Costlier as mobile app is required and there is a usage of cellular data or internet.

5.4 PRODUCT AND SERVICES AVAILABLE OVER M-COMMERCE

1. Mobile money transfer
2. Mobile ticketing
3. Mobile vouchers, coupons and loyalty cards
4. Content purchase & delivery
5. Location based services
6. Information services
7. Mobile banking
8. Mobile purchase
9. Mobile browsing
10. Auctions
11. Mobile marketing and advertising
12. In – application mobile phone payments.

1. Mobile Money Transfer:

M-PESA, Airtel money, mobile ATM, (in foreign countries) monthly phone bills.

2.Mobile Ticketing:

Tickets can be sent to mobile phones using a variety of technologies. Example: IRCTC.

- ✓ Mobile Vouchers, Coupons and Loyalty Cards:
- ✓ Mobile ticketing technology can also be used for the distribution of vouchers, coupons & loyalty cards.
- ✓ These are virtual tokens that are sent to the mobile phone.
- ✓ The customers represent virtual tokens at POS (POINT OF SALE) receives discounts.

3. Content Purchase and Delivery:

- ✓ Sale of ring tones, wallpapers, games for mobile phones.
- ✓ The convergence of mobile phones, portable audio player, and video players into a single device is increasing the purchase and delivery of full- length music tracks and video.
- ✓ The download speeds available with 4G networks make it possible to buy a movie on a mobile device in a couple of seconds.

4. Location Based Services:

- ✓ Local discount offers
- ✓ Local weather
- ✓ Tracking & monitoring of people

5. Information Services:

News, Stock quotes, Sports scores, financial records, Traffic reporting, Emergency alerts, etc.

6. Mobile Banking:

WWW make transactions, such as purchasing stocks remitting money.

7. Mobile Purchase:

Catalog merchants (customers select the products from printed catalogs in the store and fill out an order)

8. Mobile Browsing:

WWW (World Wide Web) browser on a mobile device customer can shop online without having to be at their Personal Computer(PC).

9. Auctions:

Over the past three years, mobile reverse auction solutions have grown in popularity. One -time purchase, however reverse auctions offer a high return for the mobile vendor as they require the consumer to make multiple transactions over a long period of time.

10. Mobile Marketing and Advertising:

The consumer gets a marketing message or discount coupon and within a few seconds, make a decision to buy and go on to complete the sale.

Example: mom buy baby products online. No need to search websites.

11. In-Application Mobile Phone Payments:

Payments can be made directly inside of an application running on a popular smart phone operating system such as google as Google android.

Payment Methods:

Credit & debit cards, contactless payments, micro payments, store-value cards etc.

6. STRATEGIES FOR BUSINESS OVER WEB

6.1 E-BUSINESS STRATEGY: A plan of action designed to achieve a long-term or overall aim.

- Strategy provide Direction
- It acts like a guideline
- It set allocations of Resources

6.2 HOW TO DEVELOP E-BUSINESS STRATEGY:

1. Clearly define the problem/establish a hypothesis
2. Analyze and map your existing processes
3. Identify potential e-business solutions to improve your processes.
4. Calculate costs and benefits of each solution
5. Choose appropriate Solutions and develop an implementation plan.

6.3 RESOURCES FOR IMPLEMENTATION OF E-BUSINESS

1) Well-designed model

2) Adequate computer Hardware (Computer, network & required no. of connections for employees.
3) Technically qualified & responsive workforce (person who have knowledge of network how to response to problem arises when we are doing e-business)

- If yours is a profit company, your goal is to make money.
- The ultra-competitive nature of today economy, however is forcing business to refocus money making strategies to the digital sphere in order to attract more customers & continually grow their businesses.
- The advantages of moving your business to the web is endless.
- Fortunately, there are several resources there that can help you to start and guide you in the right direction.

6.4 DIFFERENT STRATEGIES FOR BUSINESS OVER WEB

1. **Create and grow an E-Commerce website**
2. **Use content marketing to solve problems for your target market.**
3. **Develop systems for digital marketing**
4. **Create useful videos**
5. **Build a social media presence**

1. CREATE AND GROW AN E-COMMERCE WEBSITE

- Most businesses have a website for marketing purposes; many have yet to make a move to create an e-commerce site that allows them to sell their products online.
- There is a tremendous amount of growth opportunity with e-commerce.
- The opportunity to reach many consumers is possible through e-commerce website.
- Fortunately, with today's technology, starting and growing an e-commerce website is as easy as ever.
- Easy to create websites make the process of developing a website s simple.
- They have guides and resources that allow even novice internet users to easily create a professional looking website that can generate profits for their business.

2. USE CONTENT MARKETING (digital marketing)

- One of the most popular ways for businesses to earn customers online is by utilizing content marketing to solve problems for their target market.
- If you are unfamiliar with content marketing, it can be described simply as a digital marketing strategy that involves creating and sharing online content.

- If you view yourself as an authority in your industry and understand the problems that your target customers face, this can be a huge opportunity to develop your brand & earn customers.
- Content Marketing can be done in different ways.
- Some companies have created blogs while others have focused on creating informational products such as e-books, white papers, how to add tutorial videos and intensive guides.

3. DEVELOP SYSTEMS FOR DIGITAL MARKETING

- From email and content marketing to social media, there are several different types of digital marketing strategies for businesses.
- Developing a system for your digital marketing strategies allows you to continually improve your strategies and creates consistency in handling marketing.
- This is essential to earn trust in customers as they are able to see that you are consistently able to provide them with quality content.

4. CREATE USEFUL VIDEOS

- Creating videos has also become a popular strategy for online marketers.
- According to video Brewery, 90% of online shoppers find that video is helpful in making their purchasing decisions.
- While this is a fairly new concept for many business owners, it is an tremendous opportunity to get ahead of the competition, especially if you are competing locally.
- Videos can be created for several purposes.
- While some businesses will use tutorial and how –to-videos in their content marketing strategy
- Showing your product in use allows customers the chance to picture themselves using that product, therefore increasing their willingness to buy.
- Even if you have no idea how to create online videos, there is an abundance of information online that can help you with the process.
- Online services like flixpress also make it easy for you to create several different types of video even if you are unsure of how to get started.

5. BUILD A SOCIAL MEDIA PRESENCE

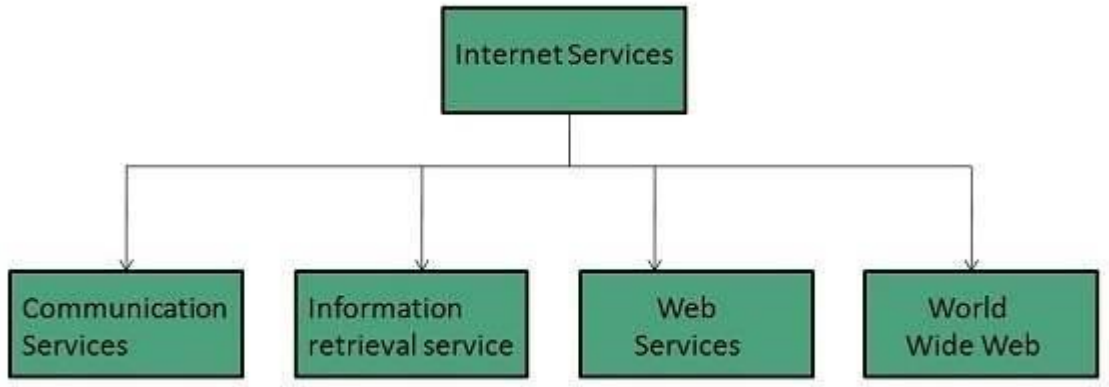
- The impact of a social media presence on earning customers online has been debated since platforms like facebook, whatsapp, Twitter become household names on the web.
- Creating a social media presence can be a difficult task, and it requires consistency & a plan to experience success.
- Entrepreneur provides a lot of good information about choosing the right platform for your business and once again, there is plenty of information online about how to continually increase your social media following.

7. INTERNET BASED BUSINESS MODELS

1. Services
2. Physical Products
3. Information products
4. Affiliate Income
5. Software Products
6. Membership

1. SERVICES:

INTERNET SERVICES allows us to access huge amount of information such as text, graphics, sound and software over the internet. Following diagram shows the four different categories of Internet Services.



1. COMMUNICATION SERVICES

There are various Communication Services available that offer exchange of information with individuals or groups. The following table gives a brief introduction to these services:

S.N.	Service Description
1	**Electronic Mail** Used to send electronic message over the internet.
2	**Telnet** Used to log on to a remote computer that is attached to internet.
3	**Newsgroup** Offers a forum for people to discuss topics of common interests.
4	**Internet Relay Chat (IRC)** Allows the people from all over the world to communicate in real time.
5	**Mailing Lists** Used to organize group of internet users to share common information through e-mail.
6	**Internet Telephony (VoIP)** Allows the internet users to talk across internet to any PC equipped to receive the call.
7	**Instant Messaging** Offers real time chat between individuals and group of people. Eg. Yahoo messenger, MSN messenger.

2. INFORMATION RETRIEVAL SERVICES

There exist several Information retrieval services offering easy access to information present on the internet. The following table gives a brief introduction to these services:

S.N.	Service Description
1	**File Transfer Protocol (FTP)** Enable the users to transfer files.
2	**Archie** It is updated database of public FTP sites and their content. It helps to search a file by its name.
3	**Gopher** Used to search, retrieve, and display documents on remote sites.
4	**Very Easy Rodent Oriented Netwide Index to Computer Achieved (VERONICA)** VERONICA is gopher based resource. It allows access to the information resource stored on gopher's servers.

3. WEB SERVICES

Web services allow exchange of information between applications on the web. Using web services, applications can easily interact with each other.

The web services are offered using concept of **Utility Computing.**

4. World Wide Web (WWW)

WWW is also known as W3. It offers a way to access documents spread over the several servers over the internet. These documents may contain texts, graphics, audio, video, hyperlinks. The hyperlinks allow the users to navigate between the documents.

Video Conferencing

Video conferencing or Video teleconferencing is a method of communicating by two-way video and audio transmission with help of telecommunication technologies.

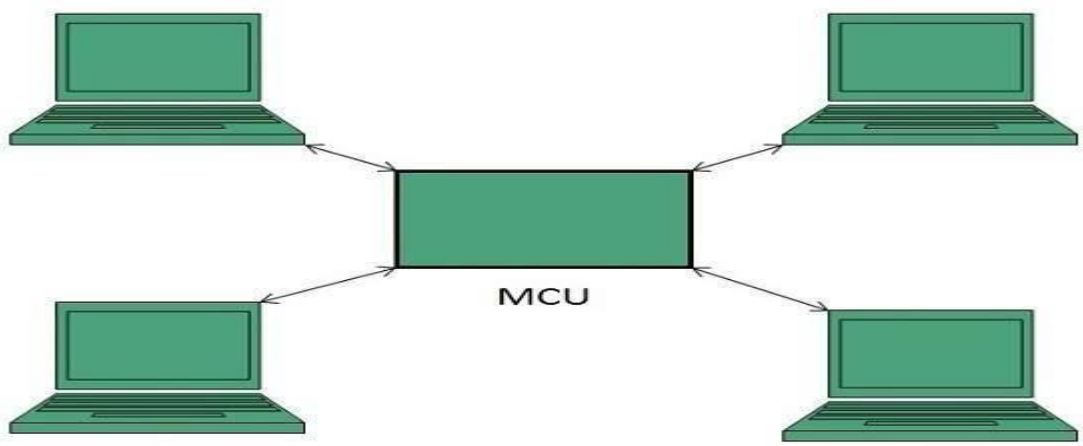
Modes of Video Conferencing

POINT-TO-POINT

This mode of conferencing connects two locations only.

MULTI-POINT

ti-



- ✓ Services refer to solving the problems of web customer.
- ✓ Fastest way to get started online
- ✓ Represents time for money exchange
- ✓ You don't need a big list to get clients

2. PHYSICAL PRODUCTS:

- ✓ You can tap into a network of buyers through sites like eBay.
- ✓ You can create your own products or have someone else drop-ship for you.

3.INFORMATION PRODUCTS

- ✓ Excellent way to leverage your time & help many people by creating your product once.
- ✓ Very low cost to create & deliver high return on time investment.
- ✓ Anyone can turn their expertise, into an information product

4. AFFLIATE INCOME:

- ✓ You get a percentage of a sale for connecting the buyer & the seller.
- ✓ Can be as little as a few cents or as much as thousands of dollars.
- ✓ It helps to build your community, but it can be great way to get started too.

5. SOFTWARE PRODUCTS:

- ✓ Whether you program it yourself or hire someone to develop software, it can be sold many times.
- ✓ Software can be iPhone/iPad apps, desktop applications, software as a service.

6. MEMBERSHIP:

- ✓ Recurring payments for access to new materials, software coaching etc.
- ✓ Can also be a yearly membership for access to deals or members only privileges.

Believe in yourself and the world will be at your feet.
— Swami Vivekananda

UNIT-5
E-BUSINESS INFRASTRUCTURE AND E-MARKETING

1. HARDWARE AND SOFTWARE SYSTEM INFRASTRUCTURE

Infrastructure refers to the combination of hardware and software applications used to deliver services to workers, partners and customer within the e-business.

1.1 INFRASTRUCTURE FOR E-BUSINESS:

E-business infrastructure: The architecture of hardware, software, content and data used to deliver e-business services to employees, customers and partners.

- Finally, infrastructure can also be considered to indude the methods for publishing data and documents accessed through e-business applications.
- It is also important that the e-business infrastructure and the process of reviewing new technology investments should be flexible enough to support changes required by the business.

1.2 DIFFERENT COMPONENTS OF E-BUSINESS ARCHITECTURE

Figure-3.1 summarizes the different components of e-business architecture which are related to each other. The different components can be conceived as different layers with defined interfaces between each layer. The different layers can best be understood in relation to a typical task performed by a user of an e-business system. For example, an employee who needs to book a holiday will access a specific human resources application or program that has been created to enable the holi

1.3 day to be booked (Level I in Figure 3.1).

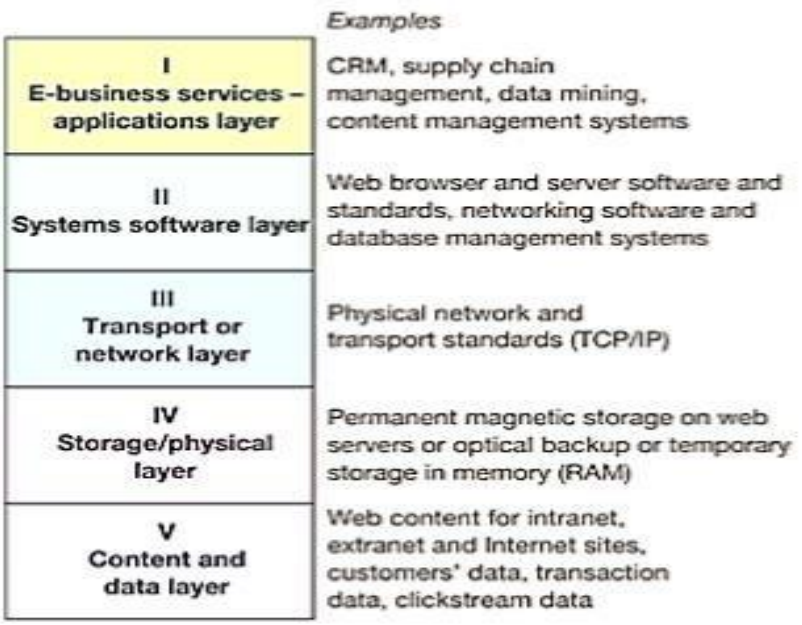


Figure 3.1 A five-layer model of e-business infrastructure

- This application will enable a holiday request to be entered and will forward the application to their manager and human resources department for approval.
- To access the application, the employee will use a web browser such as Microsoft Internet Explorer, Mozilla Firefox or Google Chrome using an operating system such as Microsoft Windows XP or Apple OS X (Level II in Figure 3.1).
- This systems software will then request transfer of the information about the holiday request across a network or transport layer (Level III in Figure 3.1).
- The information will then be stored in computer memory (RAM) or in long- term magnetic storage on a web server (Level IV in Figure 3.1).
- The information itself which makes up the web pages or content viewed by the employee and the data about their holiday request are shown as a separate layer (Level V in Figure 3.1), although it could be argued that this is the first or second level in e-business architecture.

1.3.1 ALTERNATE FIVE-LEVEL INFRASTRUCTURE MODEL

Kampas (2000) describes an alternative five-level infrastructure model referred as 'the information system function chain':

1. **Storage/physical:** Memory and disk hardware components (equivalent to Level IV in Figure 3.1).
2. **Processing:** Computation and logic provided by the processor (processing occurs at Levels I and II in Figure 3.1).
3. **Infrastructure:** This refers to the human and external interfaces and also the network, referred to as `extra structure. (This is Level III in Figure 3.1, although the human or external interfaces are not shown there.)
4. **Application/content:** This is the data processed by the application into information. (This is Level V in Figure 3.1.)
5. **Intelligence:** Additional computer-based logic that transforms information to knowledge.

1.4 ELEMENTS OF E-BUSINESS INFRASTRUCTURE

Infrastructure capability has key elements, such as:

1. **Portability**: Can this component be run on a different hardware?
2. **Interoperability**: Does this component work with other hardware and/or software?
3. **Scalability**: Can this component handle increasing work load such as more users or run time?
4. **Maintainability**: How often does this component require service? How often does it break? Once broken, how easy is it to fix?
5. **Security:** What are the assets we are trying to protect? Who are we trying to protect them from? How can they be compromised? What is the maximum possible loss? How can we mitigate this risk? Etc.

Consequently, infrastructure decisions try to “optimize” capability by balancing the trade-offs associated with these elements.

- ❖ The infrastructure of business should consist of the following:
  - ✓ Have web enabled applications for order entry, inventory, financials etc.
  - ✓ Ease of use; operate on different browsers and versions, security settings etc.
  - ✓ Scale from the smallest to largest customer.
  - ✓ Provide and Integrate workflow with the applications.

This affected the entire infrastructure, from hardware to software. We were in the business of providing competent technology to our clients. We would be wasting precious money, time and energy building a capability in applications development. We could not possibly get all processes automated in a reasonable amount of time; we had to buy off-the shelf applications and components.

1.5 HARDWARE

- We need to balance the capability, price, availability of hardware devices within the cost of operations. We decided to buy and co-locate our hardware at a hosting company.
- This gave us the benefit of getting the hardware of our choice and 24x7 monitoring of devices at a variable cost.

1.6 SOFTWARE

- We had to balance a database (software) that could scale from the smallest to the largest at a reasonable price.
- The other factors which influenced our decision were: Component interoperability, compatibility with Internet Explorer (70% market share), ease of development, availability of talent, future support and growth etc.
- Microsoft Visual Studio toolset met all these needs.

1.7 SUMMARY

A good infrastructure is critical to the success of an e-Business. Infrastructure must be viewed as part of the overall picture, not a standalone component. It must be tightly coupled with all other components such as strategy, processes and organization. However, infrastructure decisions are sometimes taken in isolation.

That results in technology for technology's sake. Business requirements should drive infrastructure selection. A complete and thorough analysis that weighs in key factors such as portability, scalability, existing skills, future direction and cost should result in an effective infrastructure that is the best one for that situation.

2. ISP (Internet Service Provider)/IAP (Internet Access Provider)

An Internet service provider (ISP) is a company that provides Internet access to customers. Data may be transmitted using several technologies, including dial-up, DSL, cable modem, wireless or dedicated high-speed interconnects. Typically, ISPs also provide their customers with the ability to communicate with one another by providing Internet email accounts, telephone and television service. The services and service combinations may be unique to each ISP.

2.1 OVERVIEW

Internet service providers (ISPs), first began in late 1980s and early 1990s. ISP connect customers to customers of other service providers through networks. Often, internet service providers are companies that provide telecommunication services including data communication access and telephone connection. The majority of telephone companies now function as internet access providers. IPSs may be commercial, non-profit, privately owned or community owned.

2.2 TYPES OF ISPs

1. **ACCESS ISPs**: Employ a variety of technologies to facilities internet connection to customers. These technologies may include broadband or dialup. The broadband connection comprises of cable fiber optic service (FiOS), DSL (Digital subscriber line) and satellite. A number of access providers also provide emails.
2. **MAILBOX ISPs**: Offer email (mailbox) hosting services and email servers to send, receive and store email. Many mailbox ISPs are also access providers.
3. **HOSTING ISPs**: Offer File Transfer Protocol (FTP), web hosting services, virtual machines clouds and physical servers.
4. **TRANSIT ISPs**: Provide large amounts of bandwidth needed to connect hosting ISPs.
5. **VIRTUAL ISPs (VISP)**: Purchase services from other ISPs to allow customers to internet access.
6. **FREE ISPs (FREE NETS)**: Provide free service and often display advertisements while users are connected.

EXAMPLES OF ISPs

- MTN
- Airtel
- UTL
- Infocom
- Smile
- Roke telecom etc

2.3 FACTORS TO CONSIDER WHILE CHOOSING ISP

- Bandwidth (speed)
- Cost (setup and service fee)
- Availability (reach)
- Reliability (down time)
- Convenience (mobility) etc.,

2.4 SERVICES OF ISPs

- Internet access
- Domain name registration
- Domain hosting
- Dial-up access
- Leased line access

2.5 TYPES OF LINK TO ISP

1. WIRELESS

Radio frequency bands are used in place of telephone or cable networks. One of the greatest advantages of wireless internet connections is it can be accessed from any location within networks coverage. Wireless connections are made possible through the use of a **modem** which picks up internet signals and sends them to other devices.

2. MOBILE PHONES

Many cell phone and smart phone providers offer voice plans with internet access. Mobile internet connections provide good speeds and allow you to access the internet.

3. HOTSPOTS

Hotspots are sites that offer internet access over a wireless local area network (WLAN) by way of a router that then connects to an internet service provider. Hotspots utilize WI-FI technology which allows electronic devices to connect to the internet or exchange data wirelessly through radio waves

4. BROADBAND

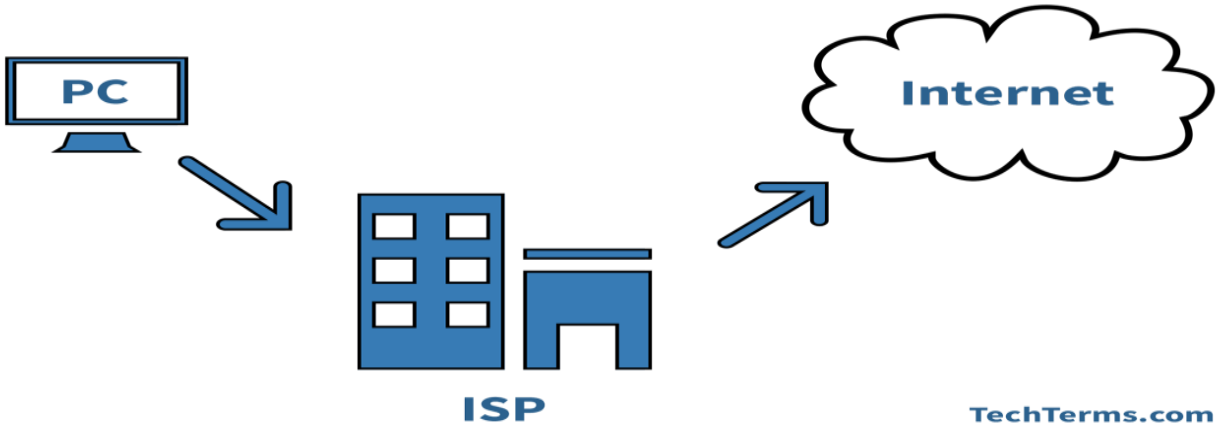
This high-speed internet connection is provided through either cable or telephone companies. Broadband internet uses multiple data channels to send large quantities of information. The term broadband is shorthand for broad bandwidth. Broadband internet connections such as DSL (digital subscriber line) and cable are considered high-bandwidth connections.

5. SATELLITE

In certain areas where broadband connection is not yet offered, a satellite internet option may be available. Similar to wireless access, satellite connection utilizes a modem.

2.6 EQUIPMENT FOR CONNECTING TO ISP

- Mobile phone
- Modem
- Satellite receiver
- Telephone line (land line)
- Fiber optics link



3. MANAGING E-BUSINESS APPLICATIONS INFRASTRUCTURE

E-BUSINESS INFRASTRUCTURE: The architecture of hardware, software, content and data used to deliver e-business services to employees, customers and partners.

3.1 INTRODUCTION

Defining an adequate e-business infrastructure is important to all companies. E-business infrastructure refers to the combination of hardware such as servers and client PCs in an organization, the network used to link hardware and the software applications used to deliver services to workers within the e-business and also to its partners and customers. Infrastructure also includes the **architecture of the networks, hardware and software** and where it is located. Finally, infrastructure can also be considered to include the **data and documents** accessed through e- business applications.

It is also important that the e-business infrastructure and other new technology investments should be **flexible** enough to support changes required by the business to compete effectively. For example, for the media there are many new technologies being developed which were described from 2005 onwards as web 2.0 and IPTV (television delivered over the broadband internet).

3.2 MANAGING E-BUSINESS APPLICATIONS INFRASTRUCTURE:

Management of e-business applications infrastructure concerns delivering the right applications to all users of e-business services.

- The issue involved, concern of IS (Information System) manager to deliver access to integrated applications and data that are available across the whole company.
- Traditionally businesses have developed applications silos (a part of a company that does not communicate with, understand, or work well with other parts) of information as depicted in figure 3.10 a. This shows that these silos may develop at three different levels.

1. There may be different technology architectures used in different functional areas.
2. There will also be different applications and separate databases in different areas and
3. Processes or activities followed in the different functional areas may also be different.

- These application silos are a result of decentralization or poorly controlled investment in information systems with different departmental managers selecting different systems from different vendors.
- This will effect more cost more to purchase applications from separate vendors, and also it will be costlier to support and upgrade.
- Problems can also occur at tactical and strategic levels.

- For example, if a company is trying to analyze the financial contribution of customers, perhaps to calculate lifetime values, some information about customer purchases may be stored in a marketing information system, while the payments data will be stored in a separate system within the finance department.
- It may prove difficult or impossible to reconcile these different data sets.
- To avoid the problems of a fragmented (individual) application infrastructure, companies attempted throughout the 1990s to achieve the **more integrated** position shown **in figure 3.10(b).**
- To achieve this, many companies turned to enterprise resource planning (ERP) vendors such as SAP, Baan, PeopleSoft and oracle.

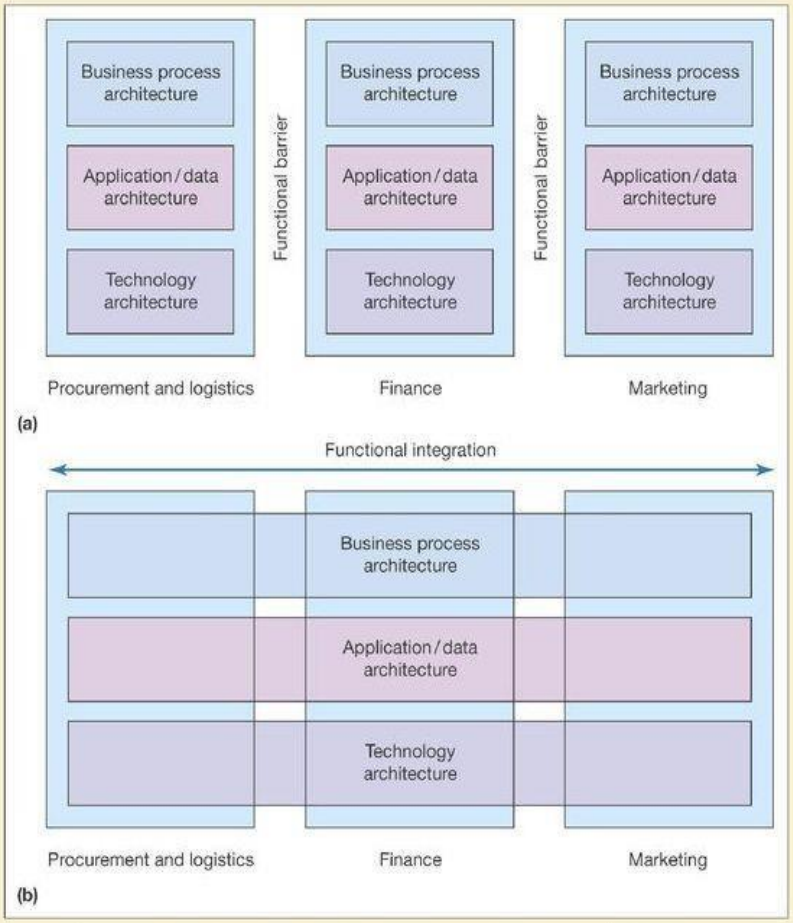


Figure 3.10 (a) Fragmented applications infrastructure, (b) integrated applications infrastructure

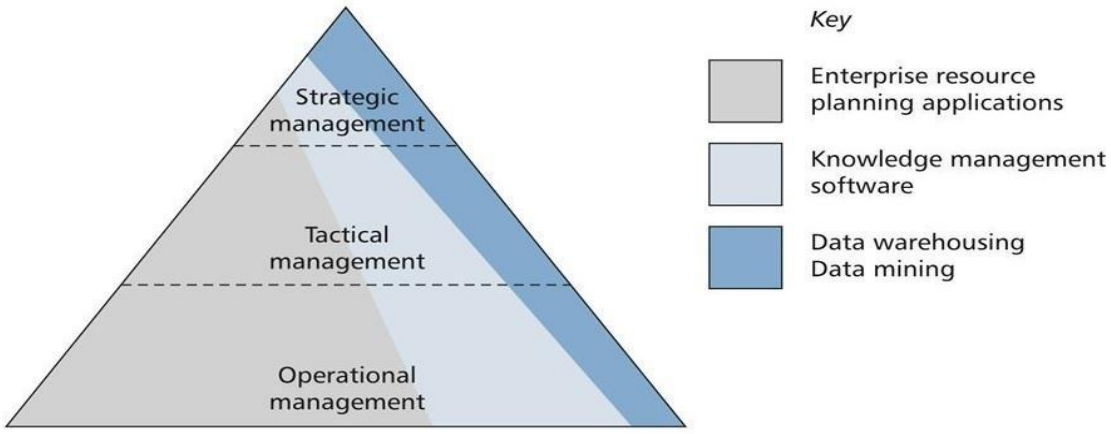
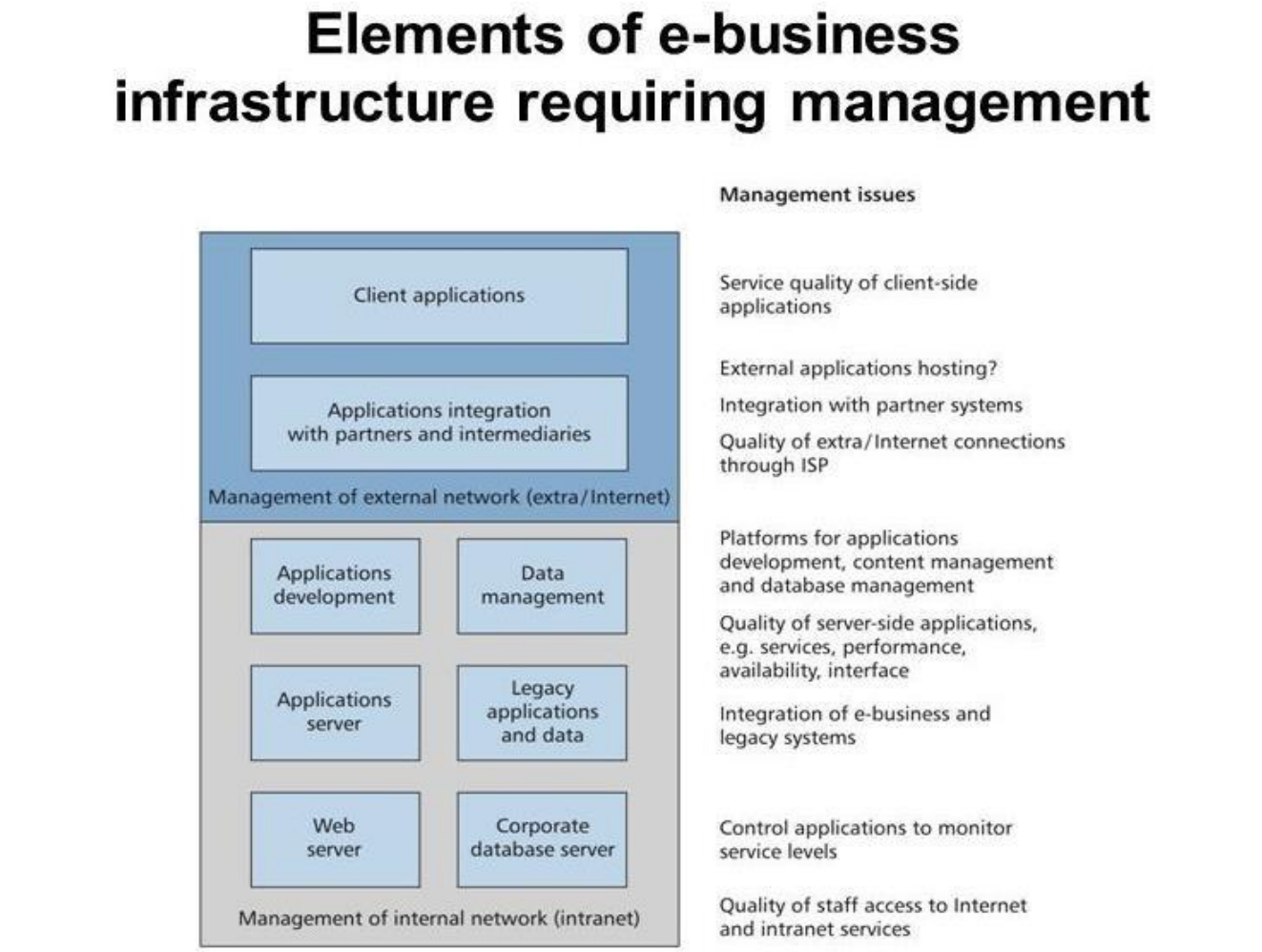


Figure 3.16 Differing use of applications at levels of management within companies

- The approach of integrating different applications through ERP is entirely consistent with the principal of e-business, since e-business applications must facilitate the integration of the whole supply chain and value chain.
- It is noteworthy that many of the ERP vendors such as SAP have repositioned themselves as suppliers of e-business solutions.
- The difficulty for managing e-business infrastructures is that there is not, and probably never can be, a single solution of components from a single supplier.



3.17 Elements of e-business infrastructure that require management

- To gain competitive edge, companies need to turn to solutions from innovators. for example, support new channels such as WAP or provide knowledge management solutions or sales management solutions.

- If this is not available from their favored current supplier, do they wait until these components become available or do they attempt to integrate new software into the application?
- Thus managers are faced with a precarious balancing act between standardization or core product and integrating innovative systems where applicable.
- ERP systems were originally focused on achieving integration at the operational level of an organization. Solutions for other applications such as business intelligence in the form of data warehousing and data mining tended to focus on tactical decision making based on accessing the operational data from within ERP systems.
- Knowledge management software also tends to cut across different levels of management.

4. What is Electronic-Marketing?

E-marketing (Electronic marketing) also called internet marketing, web marketing, online marketing, Digital marketing.

DEFINITION:

- **E-marketing is a process of marketing a product or service using the internet.**

- E-marketing not only includes marketing on the internet but also includes marketing done via e-mail & wireless media, social media, websites etc.,
- It includes a range of technologies to help connect business to their customers.


Magazines
Newspaper
Flyers & Brochures
Traditional Marketing
Radio
Billboards
TV Ads

Traditional	Digital
Includes… • ***Print media*** *(newspaper and magazine ads, newsletters, brochures and other printed material)* • ***Broadcast media*** *(such as TV and radio ads)* • ***Direct mail*** *(including fliers, post cards, catalogs)* • ***Telemarketing***	Includes marketing efforts anchored on electronic devices such as-- • ***Websites*** • ***Social networking sites*** • ***Content marketing*** • ***Banner ads*** • ***Google ads*** • ***Video marketing***
• Proven techniques with high success rate • Long-standing initiatives that the public already understands • Metrics for measuring success	• Cost-efficient methods of marketing • Unprecedented audience reach • Allows direct response from intended audience

4.1 MERITS OF E-MARKETING:

1. Cost effective & faster
2. Global boundary independent
3. Increased customer out reach
4. Brand awareness
5. Increased ROI (Return On Investment)

1. Cost effective & faster:

- E-marketing utilizes the most inexpensive channels of promotional companies such as social media (facebook, Instagram, YouTube etc.,) Even though creating website & e-mail marketing, again both of which are absolutely inexpensive as compared to the traditional marketing.
- Also these channels help reach out to the end customer at a much faster rate than traditional marketing.

2. Global boundary independent:

Since the internet is available globally and these days even easily & freely accessible, the scope of e-marketing has also widened along with it. So, E- marketing carried out without any limitations on the geophysical boundary.

3. Increased customer outreach:

With the help of digital medium, it has become very easier to reach out to a wider target audience in a very shorter span of time.

4. Brand awareness:

E-marketing also helps your business to be recognized to worldwide with the help of its easier promotional strategies & creating brand awareness is comparatively much easier than traditional marketing concepts.

5. Increased ROI (Return On Investment)

- E-marketing helps in harnessing best strategies in order to generate the maximum ROI from your business
- It is possible because of its low investments & wider outreach to the target audience.

However big or small the business is, e-marketing can help it grow and make more profits with a rather less investment as compared to the traditional concepts of marketing. Online marketing is basically related with e-commerce websites like Amazon, flip kart etc., We can also include e-advertising in e-marketing.

4.2 WEB PRESENCE GOALS:

1. Attracting visitors to websites
2. Make site interesting enough so, visitor stay and explore
3. Convincing visitors to follow site link
4. Creating an impression with desired image
5. Building a trusting relationship with visitors
6. Reinforcing positive images that the visitor might already have
7. Encouraging visitors to return to site
8. Uniqueness of web features
9. Meeting with needs of web-visitors.

4.3 WHAT IS ONLINE MARKETING?

- Online marketing is the marketing of products or services over the internet & it ties together creative and technical aspects of the internet, including design, development, advertising and sale.
- Online marketing is used by companies selling goods & services directly to consumers as well as those who operate on a business to business model.

4.3.1TYPES OF ONLINE MARKETING:

1. E-MAIL MARKETING:

- E-mail marketing is promoting products through the use of e-mail.
- There are two main ingredients to an effective email marketing campaign.
- They are to build a large list of people you can email and to write great emails.
- The emails should be packed with free value and they should move people to buy what you are trying to sell.

2. BLOGGING:

A blog is a discussion or informational website published on the World Wide Web consisting of discrete, often informal diary-style text entries.

- Yet another but important and crucial marketing trend that has brought a huge aberration in our society.
- Blogger was launched in 1999 by three friends. Blogging as a passionate marketing tool has really blossomed in the last some years.
- Businesses, companies and even superstar now use blogging systems for huge promotion.

3. PPC (PAY PER CLICK) MARKETING:

- You have to pay for PPC ads.
- You target certain words and then when those words are searched for on a search engine such as Google your ad will appear.
- But you do have to pay every time your ad is clicked on.
- You need to make sure you do your homework and find out how to effectively use PPC.
- Otherwise you can easily lose a lot of money in a short amount of time.

4. SOCIAL MEDIA MARKETING:

- Social media marketing is very popular right now and it's only getting more popular.
- You can tap into that popularity by using social media to sell your products.
- Just make sure you don't SPAM people In fact, you shouldn't use any social media to directly sell anything.
- Just use social media to direct people to other sites where you can then hit them with a sales pitch.

5. DIGITAL MARKETING:

- With regards to the internet, this is the promoting of brands using all forms of online digital advertising channels to reach consumers.
- This includes video channels, internet, radio, mobile phones, display or banner ads, digital outdoors and any other form of digital media.

6. VIRAL MARKETING: (WORD OF MOUTH)

- Marketing techniques that use social network to produce an increase in brand awareness or achieve other marketing objectives (such as product sales) through self-replicating viral processes.
- It can be word-of-mouth delivered or enhanced by the network effects of the internet. Viral promotions may take the form of video clips, interactive flash games, e-books, images, or even text messages.

AIDA MODEL: (Awareness Interest Desire Action)

1. **Awareness:** Initial point where your brand and/or business is recognized and acknowledged.
2. **Interest:** Generating thoughts and discussion about your brand.
3. **Desire:** Communicate your messages through the use of social media and email marketing.
4. **Action**: The stage where -the conversion is complete, and back to the **"interest"** stage to retain them. Your website is responsible for this stage.

5. E-MARKETING PLANNING:

Seven step E-marketing plan:

Outline:

A seven step E- marketing plan

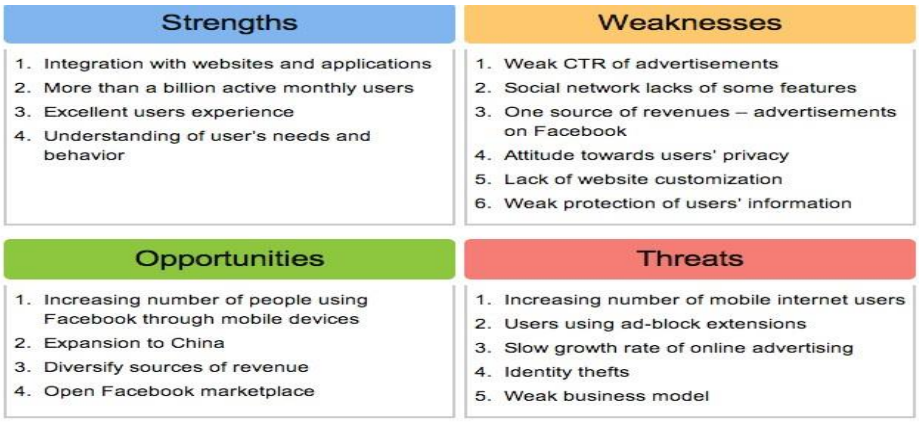
1. **Situation analysis**
2. **E-marketing strategic planning**
3. **Objectives**
4. **E-marketing strategy**
5. **Implementation plan**
6. **Budget**
7. **Evaluation plan**

STEP-1: SITUATION ANALYSIS:-It involves the analysis of current situations through different techniques.

As marketing environment is ever changing, Environment analysis is very important that reveals

- **STRENGTH**
- **WEAKNESS**
- **OPPORTUNITY**
- **THREATS**

FACEBOOK SWOT



STEP-2 E-MARKETING STRATEGIC PLANNING:

Strategic planning: Determining the fit between company's objectives, resources and skills with changing marketing opportunities.

SEGMENTATION & TARGETING:

- For segmentation & Targeting Marketers conduct market opportunity analysis (MOA).
- MOA include:

1. Demand Analysis: - For Identifying segments
2. Supply Analysis: - For forecasting segments profitability.
3. Find competitive advantage and then target the segment.

Exhibit 3 - 1 Formulating E-Marketing Strategy in Two Tiers

FACEBOOK TARGET MARKET: -

1. **AGE**: - A study done by ping dam showed that 65% of users on face book are 35 or older. The average age is just over 40 with the largest group aged 45 to 54 only 14% of face book users are under the age of 24.
2. **GENDER AND EDUCATION**: - 60% of face book users are female and 40% are male. Also, 57% have completed some sort of college education; 24% completed either a bachelors or graduate degree. A new research survey found that 63% of male were activity on face book; 70% of female internet users actively use face book.
3. **LOCATION**: - Face book has a social presence in 137 countries-and it beats out all other social networks in 127 of those countries. Us has the most presence on face book. Taiwan has a larger % of the population on face book (56%).
4. **DIFFERENTATION & POSITIONING STRATEGY**: -

How it will differentiate its products/ service in a way that provide benefit to both company and customers.

Based on the differentiation strategy company position itself that what will be the desired image for the brand.

e.g. F.B desired image was to retain its position in the market and achieve Competitive advantage over the competitors.

STEP-3 OBJECTIVES

Objective e-marketing are formulated which includes

- Task (what is to be accomplished),
- Measurable quantity (how much),
- Time frame (by when).

Most e-marketing plans aim to accomplish multiple objectives such as:

- Increase market share,
- Increase sales revenue,
- Reduce costs,
- Improve databases,
- Achieve customer relationship management goals,
- Improve supply chain management.

STEP-4 E-MARKETING STRATEGY

Based on the objectives Marketers craft strategies regarding the 4ps:

- Offer (product)
- Value (price)
- Distribution (place)
- Communication (promotion)

STEP -5 IMPLEMENTATION PLAN

How to accomplish the objectives through effective tactics Before check the right marketing organization is in place?

e.g. F.B before offering advertisement services checked

- ✓ Staff
- ✓ Department structure
- ✓ Application Service providers and
- ✓ Other outside firms

Right combination will help the marketers to implement & meet the objectives.

STEP-6 BUDGET

Identify the forecasted returns from investment and match w i t h the forecasting cost. Following costs need to be forecast:

- ✓ Technology cost
- ✓ Site design cost
- ✓ Salaries
- ✓ Other site development expenses
- ✓ Miscellaneous

STEP-7 EVALUATION PLAN

Once the plan is implemented it is then evaluated Evaluation techniques:

- ROI
- Web analytical tools

E.g. Face book page

6. TACTICS

(An action or strategy carefully planned to achieve a specific goal)

Marketing tactics to implement strategies and objectives are traditionally based around the **elements of the marketing mix**. One approach is to use customer- driven tactics that affect both the design & services provided by an e-commerce site. A further approach to structure e-marketing tactics is that of Customer Relationship Management (CRM).

- The marketing-mix-the 4p's of **Product, Price, Place and Promotion** originally proposed by Jerome McCarthy (1960) price is used as an essential part of implementing marketing strategy by many practitioners.
- The 4p's have been extended to the 7ps by including three further elements that better reflect service delivery **people, process, and physical evidence.**

- E-commerce provides new opportunities for the marketer to vary the marketing mix, so it is worthwhile outlining these.
- However, it should be noted that many marketers now consider it as only one tool for developing tactics and other approaches such as branding or CRM perspective can be used to develop tactics, particularly for marketing communications.

MARKETING MIX: - According to NEIL H. BORDEN the marketing mix is the **set of marketing tools** the firm uses **to pursue its marketing objectives** in the target market.

The 7ps of Marketing: -

The 7ps are a set of recognized marketing tactics, which you can use in any combination to satisfy customers in your target market. The 7ps are controllable, but subject to your internal and external marketing environments. Combining these different marketing tactics to meet your customers' needs and wants is known as using a tactical marketing mix.

Figure 5.1 The elements of the marketing mix

1. Product

Product refers to what you are selling, including all of the features, advantages and benefits that your customers can enjoy from buying your goods or services. When marketing your product, you need to think about the key features and benefits of customers want or need, including (but not limited to) styling, quality, repairs, and accessories. You can use research and development to inform the development of new products in your business.

2. Price

This refers to your pricing strategy for your products and services and how it will affect your customers. You should identify how much your customers are prepared to pay, how much mark-up you need to cater for overheads, your profit margins and payment methods, and other costs.

To attract customers and retain your competitive advantage, you may also wish to consider the possibility of discounts and seasonal pricing.

3. Promotion

These are the promotional activities you use to make your customers aware of your products and services, including advertising, sales tactics, promotions and direct marketing. Generally, these are referred to as marketing tactics.

4. Place

Place is where your products and services are seen, made, sold or distributed. Access for customers to your products is key and it is important to ensure that customers can find you.
You can set yourself apart from your competition through the design of your retail space and by using effective visual merchandising techniques. If you are not a retail business, place is still an important part of your marketing. Your customers may need a quick delivery turnaround, or want to buy locally manufactured products.
If you are starting a new business, finding the right business location will be a key marketing tactic.

5. People

People refer to the staff and salespeople who work for your business, including yourself.
When you provide excellent customer service, you create a positive experience for your customers, and in doing so market your brand to them. In turn, existing customers may spread the word about your excellent service and you can win referrals. Give your business a competitive advantage by recruiting the right people, training your staff to develop their skills, and retaining good staff.

6. Process

Process refers to the processes involved in delivering your products and services to the customer. It is also about being 'easy to do business with'.
Having good process in place ensures that you:

- repeatedly deliver the same standard of service to your customers
- Save time and money by increasing efficiency.

7. Physical evidence

Physical evidence refers to everything your customers see when interacting with your business. This includes:

- The physical environment where you provide the product or service
- The layout or interior design
- Your packaging
- Your branding.

Physical evidence can also refer to your staff and how they dress and act.
Consider how your store's layout, fixtures and signage can build your brand and increase your sales.

7. MARKETING STRATEGY

STRATEGY: - A Strategy is a plan of action to achieve long term goals or aim of an organization.

1. **Market Scope strategy**
2. **Market Entry Strategy**
3. **Product Strategy**
4. **Promotion Strategy**
5. **Distribution Strategy**
6. **Pricing Strategy**

1. MARKET SCOPE STRATEGY

a. **Single market strategy**: Concentration of efforts in a single segment

b. **Multi market strategy**: Serving several distinct markets

c. **Total market strategy**: Serving the entire spectrum of the market by selling differentiated products to different segments in the market.

2. MARKET ENTRY STRATEGY

This strategy decides how a company enters in a particular market full with consumers.

a. **First in strategy**: Entering the market before all others

b. **Early entry strategy**: Entering the market in quick succession after the leader

c. **Laggard entry strategy**: Entering the market toward the tail end of growth phase or during maturity phase.

3. PRODUCT STRATEGY

Product is main part in any organization.

a. **Product positioning strategy**: - positioning the product in the mind of a customer stand out of the crowd.

b. **Product re-positioning strategy**: - After positioning the product, you have to review whether it is working or not & fake the corrective steps to newly or re-positioning the product in the mind of the customer.

c. **Product scope strategy**: - If deals with the marketing mix of the company.

d. **Product design strategy**: - If deals with the degree of strategy dilation of c product.

e. **New product strategy**: - In this strategy company brings the new version of its previous products.

4. **PROMOTION STRATEGY** :-

- Promotion strategy tells how you will communicate your marketing message to prospective customers.
- In your marketing plan, provide a complete outline of your promotion strategy, including a detailed description of your target customer, your market area, your marketing message, the creative approach you will use to convey your message & advance your brand image, the media channels you will employ to reach prospective customers and the budget you have allocated to get the job done.

5. **DISTRIBUTION STRATEGY:** -

- This strategy includes the results of your assessment in the company description portion of your business plan.
- In your marketing plan-and briefly in the marketing strategy section of your business plan-described how distribution supports your marketing goals & objectives.

Distributor Strategy Checklist

a. Will you introduce new distribution or delivery systems-such as home delivery, subscription deliver, free deliver to volume customers, free shipping or guaranteed returns with online purchases, and son –to increase sales, serve customers, or gain advantage over competitors.

b. Can your sales by adding new distribution channels, such as online sales, distributor relationship, or new retail outlets.

c. Would your business benefit from business partnerships that allow you to achieve off-premise sales outlets in other retail setting.

d. Other distribution strategy considerations.

6. PRICING STRATEGY

One of the decisions most crucial to business success. Pricing strategy refers to method companies use to price their products or services. Almost all companies, large or small, base the price of their products and services on production, labor and advertising expenses and then add on a certain percentage so they can make a profit. There are several different pricing strategies, such as penetration pricing, price skimming, discount pricing, product life cycle pricing and even competitive pricing.

A GOOD LEADER TAKES A LITTLE MORE THAN HIS SHARE OF THE BLAME, A LITTLE THAN HIS SHARE OF HIS CREDIT