



F.Y.B.COM SEM-II

COMPUTER CONCEPTS AND APPLICATION

SYLLABI

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UNIT I: INTRODUCTION OF E-COMMERCE TOOLS

E-Commerce: Defining Commerce; Main Activities of Electronic Commerce; Benefits of E-Commerce; Broad Goals of Electronic Commerce; Main Components of E- Commerce; Functions of Electronic Commerce – Communication, Process Management, Service Management, Transaction Capabilities; Process of E-Commerce; Types of E- Commerce; Role of Internet and Web in E-Commerce; Technologies Used; E-Commerce Systems; Prerequisites of E-Commerce; Scope of E-Commerce; E-Business Models.

E-Commerce Activities: Various Activities of E-Commerce; Various Modes of Operation Associated with E-Commerce; Matrix of E-Commerce Types; Elements and Resources Impacting E-Commerce and Changes; Types of E-Commerce Providers and Vendors; Man Power Associated with E-Commerce Activities; Opportunity Development for E-Commerce Stages; Development of E-Commerce Business Case; Components and Factors for the Development of the Business Case; Steps to Design and Develop an E- Commerce Website.

UNIT - II:

E-Marketing: Traditional Marketing; E-Marketing; Identifying Web Presence Goals – Achieving web presence goals, Uniqueness of the web, Meeting the needs of website visitors, Site Adhesion: Content, format and access;



Maintaining a Website; Metrics Defining Internet Units of Measurement; Online Marketing; Advantages of Online Marketing.

E-Customer Relationship Management: Customer Relationship Management (CRM) – Marketing automation, Enterprise customer management; Customer Relationship Management Areas; CRM Processes; Architectural Components of a CRM Solution – Customer's information repository, Campaign management, Event triggers, business logic and rules repository, Decision support tools, Electronic Customer Relationship Management; Need, Architecture and Applications of Electronic CRM.

Supply Chain Management: Goals of SCM; Functions of SCM; Strategies of SCM; Electronic SCM and its benefits; Components of Electronic SCM; Electronic Logistics and its Implementation.

UNIT III: E-PAYMENT SYSTEMS

E-Payment Systems: Electronic Funds Transfer; Digital Token Based E- Payment Systems; Modern Payment Systems; Steps for Electronic Payment; Payment Security; Net Banking.

UNIT IV: INTRODCUTION TO MCOMMERCE

Definition, Need and Scope, Advantages and disadvantages of M-commerce, M-Commerce and its applications. Types of M-Commerce. Products and Services of M-Commerce, Mobile payment application. Difference between E-commerce and M-Commerce.



UNIT I: INTRODUCTION OF E-COMMERCE TOOLS

After going through this lesson you would be in a positions to

- Use ideas from the various paradigms of e-commerce that is not explicitly suited to that paradigm.
- Implement important run-time e-commerce and its applications, components, types, process and its functions, goals and business models of the e-commerce that use such implementations.

E-COMMERCE

Electronic commerce is doing business online. It is about using the power of digital information to understand the needs and preferences of each customer and each partner to customize products and services for them, and then to deliver the products and services as quickly as possible. Personalized, automated services offer businesses the potential to increase revenues, lower costs, and establish and strengthen customer and partner relationships.

To achieve these benefits, many companies today engage in electronic commerce for direct marketing, selling, and customer service; online banking and billing; secure distribution of information; value chain trading; and corporate purchasing. Although the benefits of electronic commerce systems are enticing, developing, deploying, and managing these systems is not always easy. In addition to adopting new technology, many companies will need to reengineer their business processes to maximize the benefits of electronic commerce. An electronic commerce strategy should help deliver a technology platform, a portal for online services, and a professional expertise that companies can leverage to adopt new ways of doing business. Platforms are the foundation of any computer system. An ecommerce platform should be the foundation of technologies and products that enable and support electronic commerce.



With it, businesses can develop low-cost, high-value commerce systems that are easy to grow as business grows. An e-commerce platform's breadth should also be unmatched, ranging from operating systems to application servers, to an application infrastructure and development tools, and to a development system.

Defining E-Commerce

Ecommerce, also known as electronic commerce or internet commerce, refers to the buying and selling of goods or services using the internet, and the transfer of money and data to execute these transactions. Ecommerce is often used to refer to the sale of physical products online, but it can also describe any kind of commercial transaction that is facilitated through the internet. Whereas e-business refers to all aspects of operating an online business, ecommerce refers specifically to the transaction of goods and services. Here are a few examples of e-commerce:

- accepting credit cards for commercial online sales
- generating online advertising revenue
- trading stock in an online brokerage account
- driving information through a company via its intranet
- driving manufacturing and distribution through a value chain with partners on an extranet
- selling to consumers on a pay-per-download basis, through a Web site

Main Activities of Electronic Commerce

Any activity via the internet, which requires a paid transaction, is e-commerce activity. It can be products, services, and consultancy- anything that you can buy or sell. It is not mandatory to be paid online for an activity to be termed e-commerce activity. flipkart, for example is an e-commerce major even though majority of its revenue comes from accepting cash after delivering products. Types of E-commerce Activities:



- Online Shopping: A prevalent example of e-commerce is shopping via the internet. Virtual stores are created online, often boasting more variety of choices that are available at physical stores. There are also stores that exist only online and benefit from the lack of investment into physical infrastructure.
- Electronic Payments: Payment systems for utility bills, phone, cable and internet bills, as well as online shopping, are an important aspect of e-commerce. Here, security needs to be ensured regarding credit card and personal information.
- Virtual Auctions: One version of e-commerce is the online auction popularized by eBay. These websites offer customers the benefit of selling to others at the best possible price.
- Internet Banking: E-commerce has allowed many people to forego frequent visits to the bank and instead perform their regular banking activities online via secure banking service.
- Online Ticketing: Ticketing for almost all types of activities is now done online. This includes travel ticketings such as air travel, bus and trains, as well as tickets for entertainment and sports events. This allows people to avoid queues and just go on the day of the event.

Benefits of E-Commerce E-Commerce Benefits can be broadly classified in three major categories –

- Benefits to Organizations
- Benefits to Consumers
- Benefits to Society

Benefits to Organizations

- Using e-commerce, organizations can expand their market to national and international markets with minimum capital investment. An organization can easily locate more customers, best suppliers, and suitable business partners across the globe.



- E-commerce helps organizations to reduce the cost to create process, distribute, retrieve and manage the paper based information by digitizing the information.
- E-commerce improves the brand image of the company.
- E-commerce helps organization to provide better customer services.
- E-commerce helps to simplify the business processes and makes them faster and efficient.
- E-commerce reduces the paper work.
- E-commerce increases the productivity of organizations. It supports "pull" type supply management. In "pull" type supply management, a business process starts when a request comes from a customer and it uses just-in-time manufacturing way.

Benefits to Customers

- It provides 24x7 supports. Customers can enquire about a product or service and place orders anytime, anywhere from any location.
- E-commerce application provides users with more options and quicker delivery of products.
- E-commerce application provides users with more options to compare and select the cheaper and better options.
- A customer can put review comments about a product and can see what others are buying, or see the review comments of other customers before making a final purchase.
- E-commerce provides options of virtual auctions.
- It provides readily available information. A customer can see the relevant detailed information within seconds, rather than waiting for days or weeks.
- E-Commerce increases the competition among organizations and as a result, organizations provide substantial discounts to customers.

Benefits to Society

- Customers need not travel to shop a product, thus less traffic on road and low air pollution.
- E-commerce helps in reducing the cost of products, so less affluent people can also afford the products.
- E-commerce has enabled rural areas to access services and products, which are otherwise not available to them.
- E-commerce helps the government to deliver public services such as healthcare, education, social services at a reduced cost and in an improved manner.

Broad Goals of Electronic Commerce Main goals of E-Commerce are:

- Wider reach: E-Commerce provides a platform for business to operate freely and reach a wider audience.
- Not bound by limitations: E-Commerce should allow users operate without "this site" the limitations of space, time and locations. Customers should be able to interact and transact with lease hassles.
- Customer Experience: It should provide users a faster and convenient mode of shopping. Some people consider shopping as a social experience and might not like online shopping though it has its comforts. E-Commerce experience should be improved with intuitive and good interface so that users enjoy online shopping.
- New revenue collecting techniques: We already know about the traditional techniques of revenue collection, for example, payment upon receipt, advance payment, and so on. At present, electronic commerce supports more improved methods of revenue collection. For example, an information product service provider will allocate the product broadly and then charge on a usage basis - which means charging the customer only when the information is used.

- Ease of moving from Legacy systems: The legacy systems that are prevailing in electronic commerce field include mainframe-based agreement, paper cheques, and payment systems, and so on. An electronic commerce infrastructure gains success only when it allows the user to easily shift from traditional systems to innovative, electronic systems, and applications and processes.
- Transaction devices: It is necessary that e-commerce adapts the technologies and devices required for reaching and maintaining the mass market.
- Security: eCommerce sites, services, and payment accesses should be secure so that customer feels secure with transactions.

Main Components of E-Commerce

The technology and infrastructure used to develop the E-commerce application is the key to its success. The hardware and software must be selected in such a way that they can fulfill the needs of the E-commerce application. The following figure shows the components involved in E-commerce infrastructure.

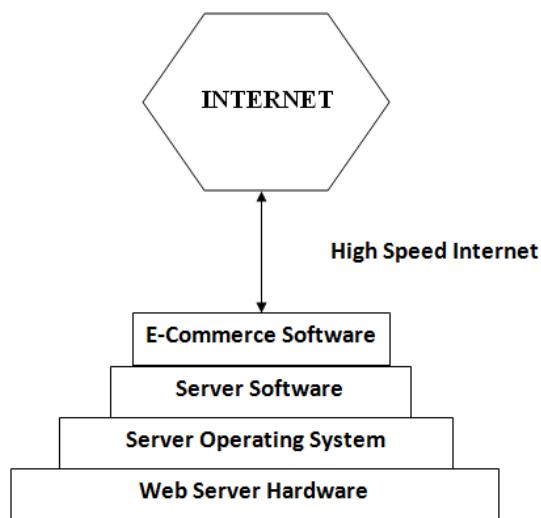


Figure 1: - Components of E-Commerce

1. Hardware: A Web server hardware platform is one of the major components of the Ecommerce



infrastructure on which the performance of the whole E-commerce application depends. While selecting Web server hardware, the software that will run on the server of the E-commerce transactions to be processed must be considered.

The amount of the storage capacity and the computing power required depend on the volume of the E-commerce transaction to be processed. If the exact requirements are not known in advance, then the hardware configuration should be highly scalable so that they can be upgraded to meet the requirements.

E - Commerce Software's

Software is the main component that implements the E-commerce services and functionality. Software for E-commerce can be categorized in the following two types

- **Web server software:** Web server software is required in addition to the Web server operating system software. It is used to implement some extra functionality such as security and identification and retrieval and sending of Web pages. Web server software creates a Web log file that identifies things such as the URL of the visitor, the length of the visit and the search engine and the key words used to find the site. Web server software includes website development tools such as HTML editor and Web page upload support.
- **E-commerce software's:** With the growth of E-commerce, many applications have emerged— for example, the electronic shopping cart that tracks the items selected for purchase and their costs. Typical

E-commerce software must support the following processes:

- □ Catalog management: It is required to deliver the customized content to the screen or the GUI used by the customer. The software used for catalog management combines the different product data formats into a standard format for viewing, aggregating and interacting catalog data into a central store.
- □ Product configuration: The Web-based product configuration software allows the user to build the product to their specifications without the intervention of the salespeople. For example, Dell Computers and CISCO systems use configuration software to sell build-to-order and network processes to their customers over the Internet.
- □ Shopping cart A model known as shopping cart is used by Ecommerce sites to track the items that are selected for purchase; the shopping cart allows customers to view all the items selected

by them. The customers can add new items and remove the previously selected items from the shopping cart.

- Transaction processing: E-commerce transaction processing is used to process the data received from the Shopping cart and to calculate the total cost of the purchase.
- Web traffic data analysis: It is required to analyze all the data captured in the Web log file. The analysis is essential to improve the Website performance.

Functions of Electronic Commerce

Marketing:-

One of the areas it impacts particularly is direct marketing. In the past this was mainly door-to-door, home parties (like the Tupperware parties) and mail orders using catalogues or leaflets. This moved to telemarketing and TV selling with the advance in television technology and finally developed into e-marketing.

Human Resource Management:-

Issues of on-line recruiting, home working and entrepreneurs work on a project by project basis replacing permanent employees.

Business law and ethics:-

The different legal and ethical issues that have arisen as a result of a global virtual market. Issues such as copyright laws, privacy of customer information etc.

Management Information System:-

Analysis, design and implementation of e-business systems within an organization; issues of integration of front-end and back-end systems.

Product Operations and Management:-

The impact of on-line processing has led to reduced cycle time. It takes seconds to deliver digitized products and services electronically; similarly the time for processing orders can be reduced by more than 90 percent from days to minutes.

Finance and Accounting:-

On-line banking ; issues of transaction costs ; accounting and auditing implications where ‘intangible’ assets and human capital must be tangibly valued in an increasing knowledge based economy.

Economy:-

The impact of E-commerce on local and global economies; understanding the concepts of a digital and knowledge based economy and how this fits into economic theory. The four functions of e-commerce are:

- 1) Communication.
- 2) Process Management.
- 3) Service Management.
- 4) Transaction capabilities process effective and cheap for suppliers and customers.

Communication: - It is related with exchange of information or documents for carrying out business transactions. e.g. E-mail.

Process Management Function: - It includes computerization and improvement of business processes. e.g. Connecting two computers in networking to share and transfer data instead of manually copying information from one computer to another.

Service Management Function: - This is related with applying technology to improve the quality of service .E.g. Federal Express website. It allows customers to follow shipment and schedule picks up 24 hours a day with a worldwide network automatically without taking the help of service representative. Customer service is improved because of sites.

Transaction Capabilities: - It allows buying and selling on the internet or allows carrying out any online service E.g. Retail website of Amazon.com and REI.

1.3.7. Process of E-Commerce



Under the e-commerce umbrella there exist a variety of activities. These include:

- **Online Shopping:** A prevalent example of e-commerce is shopping via the internet. Virtual stores are created online, often boasting more variety of choices than are available at physical stores. There are also stores that exist only online, and benefit from the lack of investment into physical infrastructure.
- **Electronic Payments:** Payment systems for utility bills, phone, cable and internet bills, as well as online shopping are an important aspect of e-commerce. Here, security needs to be ensured regarding credit card and personal information.
- **Virtual Auctions:** One version of e-commerce is the online auction popularized by eBay. These websites offer customers the benefit of selling to others at the best possible price.
- **Internet Banking:** E-commerce has allowed many people to forego frequent visits to the bank and instead perform their regular banking activities online via secure banking services.
- **Online Ticketing:** Ticketing for almost all types of activities is now done online. This includes travel ticketing such as air travel, bus and trains, as well as tickets for entertainment and sports events. This allows people to avoid queues and just go on the day of the event.

Types of E-Commerce

There are a number of different types of E-Commerce

1. B2B - Business to Business
2. B2C - Business to Consumer
3. C2B - Consumer to Business
4. B2E - Business to Employee
5. C2C - Consumer to Consumer

B2B - Business to Business E-commerce has been in use for quite a few years and is more commonly known as EDI (electronic data interchange). In the past EDI was conducted on a direct link of some form between the two businesses where as today the most popular connection is the internet. The two businesses pass information electronically to each other. B2B e-commerce currently

makes up about 94% of all e-commerce transactions. Typically in the B2B environment, E-Commerce can be used in the following processes:

- Procurement;
- order fulfillment;
- Managing trading-partner relationships.

B2C - Business to Consumer Business to Consumer e-commerce is relatively new. This is where the consumer accesses the system of the supplier. It is still a two way function but is usually done solely through the Internet. B2C can also relate to receiving information such as share prices, insurance quotes, on-line newspapers, or weather forecasts. The supplier may be an existing retail outlet such as a high street store; it has been this type of business that has been successful in using E-Commerce to deliver services to customers. These businesses may have been slow in gearing-up for E-Commerce compared to the innovative dot.com start ups, but they usually have a sound commercial structure as well as in-depth experience of running a business - something which many dotcoms lacked, causing many to fail.

C2B - Consumer to Business

Consumer to Business is a growing arena where the consumer requests a specific service from the business. *Example:* Harry is planning a holiday in Darwin. He requires a flight in the first week of December and is only willing to pay Rs. 250. Harry places a submission with in a web based C2B facility. Dodgy Brothers Airways accesses the facility and sees Harry's submission. Due to it being a slow period, the airline offers Harry a return fare for Rs. 250.

B2E - Business to Employee

Business to Employee e-commerce is growing in use. This form of E-commerce is more commonly known as an Intranet. An intranet is a web site developed to provide employees of an organisation with information. The intranet is usually access through the organisations network, it can and is often extended to an Entrant which uses the Internet but restricts uses by sign on and password. **C2C –**

Consumer to Consumer

These sites are usually some form of an auction site. The consumer lists items for sale with a commercial auction site. Other consumers access the site and place bids on the items. The site then



provides a connection between the seller and buyer to complete the transaction. The site provider usually charges a transaction cost. In reality this site should be call C2B2C.

Role of Internet and Web in E-Commerce

Internet provides a worldwide collection of networks, linked with each other to share information by using a common set of protocols. The Internet opens up the opportunity for people all over the world to get linked inexpensively and consistently. Since it is a large network of people and information around the world, the Internet is an enabler for e-commerce as because it allows businesses to showcase and sell their products and services online. It gives potential customers, prospects and business partners access to information about these business houses and their products and services which might lead to purchase.

The Internet is a worldwide, publicly accessible series of interconnected computer networks that transmit data by packet switching using the standard Internet Protocol (IP). It is a —network of networks| that consists of millions of smaller domestic, academic, business, and government networks, which together carry various information and services, such as electronic mail, online chat, file transfer, and the interlinked web pages and other resources of the World Wide Web (WWW). The Internet and the World Wide Web are not synonymous. The Internet is a collection of interconnected *computer networks*, linked by copper wires, fiber-optic cables, wireless connections, etc. In contrast, the Web is a collection of interconnected documents and other *resources*, linked by hyperlinks and URLs. World Wide Web is an example of an information protocol/service that can be used to send and receive information over the Internet. It supports:

- Multimedia Information (text, movies, pictures, sound, programs).
- Hypertext Information (information that contains links to other information resources)
- Graphic User Interface (so users can point and click to request information instead of typing in text commands).

The server software for the World Wide Web is called an HTTP server (or informally a Web server). Examples are Apache and IIS. The client software for World Wide Web is called a Web browser. The Internet and the Web made e-commerce possible because they brought about an extraordinary expansion of digital services to millions of amateur computer users. The Web makes nearly all of the elements of rich human expression including color, text, images, photos, animations, sound, and video available, creating a unique environment in which to establish a commercial marketplace. Many



of the Web's services and features support e-commerce, including.

It is interesting as you read along to compare these services to other traditional media such as television, radio, telephone or print media (newspapers , magazine's , letters etc). If you do, you will quickly realize how rich the Internet Environment is. 1. E-mail or Electronic Mail: Since its earliest days, electronic mail, or email, has been the most used application of the Internet. E-mail uses a series of protocols to enable messages containing text, images, sound, and video clips to be transferred from one Internet user to another. Because of its flexibility and speed, it is now the most popular form of business communication – more popular than the phone, fax or any postal services.

E-mail, for example, can be used as a very effective marketing tool. E-commerce sites can buy e-mail lists from various sources and collate (bring together) them with lists of their current customers to create a targeted advertising message that can be quickly and economically delivered and will produce a creditable response. Email messages include commercial, personal, spam and junk etc.

- Spam-- usually refers to advertising e-mails sent out randomly to generated e-mail addresses.
- Junk emails -- are usually sent from sites which have a record of your e-mail address either because you have signed onto(sites) them using your e-mail as your userid, or because you have ticked the appropriate box(check box) on the web-site allowing them to use your e-mail address in this way.
- Inbox- contains new incoming emails.
- Sent- A copy of messages you send are put into the Sent folder, if the Save to sent box is checked when you compose a message.
- Drafts- A place for storing messages that you haven't finished writing. If you're in the middle of writing a message and need to stop for some reason, click the Save button to put it into the Drafts folder.
- Trash- stores email that you have chosen to delete. When you delete email from a folder, it is put into the Trash folder. The messages are not truly deleted until you empty the folder.
- Attachment – a file (documents, images, sounds or video clip) inserted within an email message.

2. Search Engine

Identifies web pages that appears to match keywords, also called queries, typed by the user and provides a



list of the best matches. No one knows for sure how many web pages there really are. But obviously with so many web pages, finding web specific pages than can help you or your business, nearly instantly, is an important problem. The question is: how can you find the one or two web pages you really want and need out of the 50 billion (google) indexed web pages? or Bing 20 billion indexed WebPages.

Search engines (Google, Yahoo, bing, baidu) solve the problem of finding useful information on the web nearly instantly. There are hundreds of different search engines in the world, but the vast majority of the search results are supplied by the top fine providers. Search Engine Marketing: Initially, few understood how to make money out of search engines that changed in 2000 when GOto.com (Later overtrue.com) allowed advertisers to bid for placement on their search engine results and Google followed suit in 2003 with its Ad Words program which allowed advertisers to bid for placement of short text ads on Google search results. The spectacular increase in Internet advertising revenues has helped search engines transform themselves into major shopping tools and created an entire new industry called —search engine marketing. Search engine marketing has been the fastest – growing form of advertising in the US.

When users enter a search term at Google, MSN Search, Yahoo, or any of the other web sites serviced by these search engines, they receive two types of listing: sponsored links, for which advertises have paid to be listed (usually at the top of the search results page) and unsponsored —organic search results. In addition, advertisers can purchase small text ads on the right side of the search results page. In addition, search engines are extending their services to include maps, satellite images, computer images, email, calendars and group meeting tools. Outside of email, search engines are the most common online daily activity and produce the largest online audiences.

Search engines (Site Own Search) have also become a crucial tool on e-commerce sites, providing a method for customers to quickly locate the product category or a specific product they are looking for.

Technologies Used

E-commerce must be supported by corresponding technologies. To study e-commerce, one must masters the e-commerce supporting technologies. General speaking, e-commerce supporting technologies can be divided into three categories:

- Information display technologies which include Web, HTML, XML and Java technologies.
- Information transmission technologies which consist of EDI, TCP/IP, WAP, WLAN and Bluetooth technologies.

- Information processing technologies which comprise some common used technology such as GPS, GIS, DSS, GDSS, IDSS.

Electronic Data Interchange (EDI)

EDI is the computer-to-computer exchange of structured business information in a standard electronic format. Information stored on one computer is translated by software programs into standard EDI format for transmission to one or more trading partners. The trading partners' computers, in turn, translate the information using software programs into a form they can understand.

Bar Codes

- Bar codes are used for automatic product identification by a computer. They are a rectangular pattern of lines of varying widths and spaces. Specific characters (e.g. numbers 0-9) are assigned unique patterns, thus creating a "font" which computers can recognize based on light reflected from a laser.
- The most obvious example of bar codes is on consumer products such as packaged foods. These codes allow the products to be scanned at the check out counter. As the product is identified the price is entered in the cash register, while internal systems such as inventory and accounting are automatically updated.
- The special value of a bar code is that objects can be identified at any point where a stationary or hand held laser scanner could be employed. Thus the technology carries tremendous potential to improve any process requiring tight control of material flow. Good examples would be shipping, inventory management, and work flow in discrete parts manufacturing.

Electronic Mail

Messages composed by an individual and sent in digital form to other recipients via the Internet.

Internet

The Internet is a decentralized global network of millions of diverse computers and computer networks. These networks can all "talk" to each other because they have agreed to use a common communications protocol called TCP/IP. The Internet is a tool for communications between people and businesses. The network is growing very, very fast and as more and more people are gaining access to the Internet, it is becoming more and more useful.



World Wide Web

□ The World Wide Web is a collection of documents written and encoded with the Hypertext Markup Language (HTML). With the aid of a relatively small piece of software (called a "browser"), a user can ask for these documents and display them on the user's local computer, although the document can be on a computer on a totally different network elsewhere in the world. HTML documents (or "pages," as they are called) can contain many different kinds of information such as text, pictures, video, sound, and pointers, which take users immediately to other web pages. Because Web pages are continually available through the Internet, these pointers may call up pages from anywhere in the world. It is this ability to jump from site to site that gave rise to the term "World Wide Web." Browsing the Web (or "surfing the Net") can be a fascinating activity, especially to people new to the Internet. The World Wide Web is by far the most heavily used application on the Internet.

Product Data Exchange

- □ Product data refers to any data that is needed to describe a product. Sometimes that data is in graphical form, as in the case of pictures, drawings and CAD files. In other cases the data may be character based (numbers and letters), as in the case of specifications, bills of material, manufacturing instructions, engineering change notices and test results.
- □ Product data exchange differs from other types of business communications in two important ways. First, because graphics are involved users must contend with large computer files and with problems of compatibility between software applications. (The difficulty of exchanging CAD files from one system to another is legendary.) Second, version control very quickly gets very complicated. Product designs, even late in the development cycle, are subject to a great deal of change, and because manufacturing processes are involved, even small product changes can have major consequences for getting a product into production.

Electronic Forms

□ Electronic forms are a technology that combines the familiarity of paper forms with the power of storing information in digital form. Imagine an ordinary paper form, a piece of paper with lines, boxes, check-off lists, and places for signatures. To the user an electronic form is simply a digital analogue of such a paper form, an image, which looks like a form but which appears on a computer screen and is filled out via mouse, and keyboard. Behind the screen, however, lie numerous functions that paper and pencil cannot provide. Those extra functions come about because the data from electronic forms are



captured in digital form, thus allowing

storage in data bases, automatic information routing, and integration into other applications.

E-Commerce Systems

It is important to identify the key drivers of e-commerce to allow a comparison between different countries. It is often claimed that e-commerce is more advanced in the USA than in Europe. These key drivers can be measured by a number of criteria that can highlight the stages of advancement of e-commerce in each of the respective countries. The criteria that can determine the level of advancement of e-commerce are summarized and can be categorized as:

1. Technological factors – The degree of advancement of the telecommunications infrastructure which provides access to the new technology for business and consumers.

2. Political factors – including the role of government in creating government legislation, initiatives and funding to support the use and development of e-commerce and information technology.

3. Social factors – incorporating the level and advancement in IT education and training which will enable both potential buyers and the workforce to understand and use the new technology.

4. Economic factors – including the general wealth and commercial health of the nation and the elements that contribute to it.

Since a distinction has been made in this book between e-commerce and e-business for consistency, the key drivers of e-business are also identified. These are mainly at the level of the firm and are influenced by the macro-environment and e-commerce, which include:

- Organizational culture – attitudes to research and development (R&D); its willingness to innovate and use technology to achieve objectives.
- Commercial benefits – in terms of cost savings and improved efficiency that impact on the financial performance of the firm.
- Skilled and committed workforce – that understands, is willing and able to implement new technologies and processes.
- Requirements of customers and suppliers – in terms of product and service demand and supply.
- Competition – ensuring the organisation stays ahead of or at least keeps up with competitors



and industry leaders.

These key drivers for the implementation of e-business can be put into the context of the classic economic equation of supply and demand System Development Tools The tools chosen for developing this system are: HTML5, PHP, MYSQL, jQuery and XAMPP. They are chosen based on their popularity and ease of use.

I. HTML5: Is a reversion of the Hypertext Markup Language (HTML), the standard programming for describing the contents and appearance of web pages. HTML is the most common language used in creating web pages.A markup language is a set of markup tags and the tags describe document content.

II. PHP: is an acronym for "PHP Hypertext Preprocessor"; originally called —Personal Home Page Tools. PHP is a server-side scripting language, and is a powerful tool for making dynamic and interactive Web pages quickly. PHP is a widely-used, platform independent, open source

(Anyone may view, modify and redistribute source code and supported freely by community), free, and efficient alternative to competitors such as Microsoft's ASP. PHP scripts are executed on the server.

III. jQuery: jQuery is used to create an amazing effects and animations for interactive web applications. jQuery is a lightweight JavaScript library that emphasizes interaction between JavaScript and HTML. An advantage over just JavaScript is much easier to use and Eliminates cross-browser problems.

IV. MYSQL: MySQL is a Leading open source RDBMS, Ease of use -No frills, Fast, Robust, Security, Multiple OS support, Free (much cheaper than Oracle!), Technical support, Easy to use Shell for creating tables, querying tables, Support large database— up to 50 million rows, file size limit up to 8 Million TB etc.

Pre-requisites of E-Commerce This section gives a very brief overview of the requirements for e-commerce. However, it is important to understand that all of these are not necessarily required for all levels of e-commerce. Requirements widely vary with different kinds of e-commerce activities.

Telecommunication Infrastructure Requirements

This mostly entails bandwidth and security. The requirement for bandwidth varies widely from one e-commerce activity to another making it hard to generalize. Bandwidth usually becomes crucial for



service-based B2B e-commerce as opposed to product-based one and high-traffic B2C e-commerce as opposed to low-traffic one. Two main components of security requirements for e-commerce are type of firewall and encryption/algorithm mechanism. This also varies widely from one e-commerce activity to the other. Ranging from protection against unwanted disclosure of client information to guarantee of reliable electronic payment. Security requirements are a crucial part of e-commerce.

Hardware Requirements for E-commerce

Hardware requirements for high-traffic sites may be dependent on the following issues: number of transactions per second; number of hits per second; number of queries per second; number of queries done by RDBMS per second; number of pages served per second involving all of the above parameters. Some other factors that need to be considered when setting up a high traffic e-commerce site include clustering i.e. use of backup servers which automatically takes over operations in case of failure of primary ones. Low-traffic sites can be easily served from a single machine depending on the needs of the business. Pentium II/III based Intel server running Linux can serve hundreds of unique customers each day.

Software Requirements for E-commerce several software are available free on the Internet that can be used to build e-commerce exchanges. Some examples are Apache Web Server, Apache-Jserv Servlet Engine, Linux Operating System, mySQL database, postgresql etc. Many of these open source software may not be adequate for high-traffic sites.

Skill Requirements A systems administrator must have a good knowledge of computer hardware, must be able to maintain and upgrade hardware including hard drive, processor and motherboard. He/she must also have the skill to install and compile Apache, mySQL and Java servlet engine. A developer needs to be a high level programmer with a few years of experience in the industry and must possess a clear understanding of how an e-commerce system works. Understanding how information flows from one end of the system to another and what modifications take place in between is essential. Specific required skills include programming skills in C, PHP and Java and knowledge on SQL programming and data architecture.

Financial Infrastructure Payment procedures are the ways in which a seller can receive payment in return for the goods or services sold. Access to these services depends on the banking infrastructure in location of selling and customers' locations.

Legal and Policy Framework In general, policies that ensure legal certainty, security and consumer protection for online transactions and interactions should be enacted. These include the resolution of issues such as transactional security, electronic contract enforceability and the authentication of individuals and documentation. The development of such an enabling environment has involved a joint focus of government and private sectors on: an efficient and sound financial system (including online payments, the use of electronic currency and foreign exchange liberalization), an efficient, inexpensive and reliable telecommunication system (including to long-distance market, competitive local exchange carriers, and high speed lines), legal mechanisms for the enforcement of contract law, consumer protection and defense of intellectual property rights, an efficient tax administration, and swift, transparent, and reliable customs operations.

Scope of E-Commerce

Electronic Commerce (e-Commerce) is a term popularized by the advent of commercial services on the Internet. Internet e-Commerce is however, only one part of the overall sphere of e-Commerce. The commercial use of the Internet is perhaps typified by once-off sales to consumers. Other types of transactions use other technologies. Electronic Markets (EMs) are in use in a number of trade segments with an emphasis on search facilities and Electronic Data Interchange (EDI) is used for regular and standardized transactions between organizations. The mainstream of e-Commerce consists of these three areas; these are represented as a diagram and outlined in a little more detail below.

□ **Electronic Markets:** An electronic market is the use of information and communications technology to present a range of offerings available in a market segment so that the purchase can compare the prices (and other attributes) of the offerings and make a purchase decision. The usual example of an electronic market is an airline booking system.

□ **Electronic Data Interchange (EDI):** EDI provides a standardized system for coding trade transactions so that they can be communicated directly

from one computer system to another without the need for printed orders and invoices and the delays and errors implicit in paper handling. EDI is used by organizations that make a large number of regular transactions. One sector where EDI is extensively used is the large supermarket chains which use EDI for transactions with their suppliers.

□ **Internet Commerce:** Information and communications technologies can also be used to advertise and



make once-off sales of a wide range of goods and services. This type of e-Commerce is typified by the commercial use of the Internet. The Internet can, for example, be used for the purchase of books that are then delivered by post or the booking of tickets that can be picked up by the clients when they arrive at the event. It is to be noted that the Internet is not the only technology used for this type of service and this is not the only use of the Internet in e-Commerce.

SUMMARY

In this unit, you have learnt about the basics of e-commerce, components of e-commerce and functions of e-commerce. This knowledge would make you understand the various e-commerce aspects and types of e-commerce used to develop the business using various models. Thus, the E-Commerce unit would have brought you closer to know the basic concept of e-commerce.

UNIT-II E-MARKETING

INTRODUCTION

We learn through this lesson as web presence goals, website decides the part of e-commerce to identify the need of e-marketing; it also determines the site adhesion of an e-commerce. The web presence goals define the uniqueness of website and illustrate the need of the website visitors. All site adhesion defined a content, format, and metrics defining internet units.

OBJECTIVES

After going through this lesson you will be in a position to

- Understand the traditional marketing and e-marketing.
- Explain of web presence goals.
- Describe the access of website adhesion.
- Recognize the benefits of online marketing.

TRADITIONAL MARKETING

Traditional marketing is a rather broad category that incorporates many forms of advertising and marketing. It's the most recognizable type of marketing, encompassing the advertisements that we see and hear every day. Most traditional marketing strategies fall under one of four categories: print, broadcast, direct mail, and telephone. Marketing activities continue to evolve from traditional strategies to nontraditional methods that involve the Internet. Both traditional and nontraditional marketing have advantages and disadvantages. A small business can benefit from integrating both approaches to market its products. Traditional marketing activities typically involve advertising, publicity, sales, merchandising and distribution.

Direct Mail

Direct-mail marketing creates awareness of a product through postcards, brochures, letters and fliers sent through mail. Direct mail is called a targeted type of marketing strategy because information is sent to a specific target market. However, direct-mail marketing can be expensive as a business incurs design and



printing costs as well as postage expenses to reach its target.

Print

Print marketing includes advertising products and services through newspapers and magazines. Print marketing is both a mass-marketing and niche-marketing strategy. As a mass-marketing strategy, printed advertisements reach different classes of people, who might or might not have an interest in the product. In magazines, print marketing reaches out to the niche market that reads the magazine, such as women, fathers, teens or car lovers.

Broadcast

Television and radio are traditional avenues still widely used. Broadcast marketing reaches a large audience within a limited period of time. Television advertisements also bring authenticity and realism to a product as people can see how the product works. However, broadcast messages have a shorter lifespan compared with printed messages. Additionally, marketing through television and radio is costlier, compared with other forms of traditional marketing.

Referral

Referral marketing, also known as word of mouth, relies on customers to spread information about products or services. Referral is not a strategic or planned marketing activity, but it might help a business build a loyal client base. It also costs close to nothing for the business. However, a business shouldn't rely primarily on referral marketing; it should combine this with the other types of marketing to reach a wider target market.

Advantages of Traditional Marketing:

- We can easily reach a group of audience,
- Reuse and recycling,
- Hard copies can be easily processed,
- Greater exposure.

Disadvantages of Traditional Marketing:

- It takes more time to reach people,

- Based on our stories the product will reach more people,
- Expensive high,
- Nowadays most of the people prefer online marketing than traditional marketing

Traditional marketing strategies have a wide dispersion across media such as television or radio. In addition, the rapid increase in Internet users is causing an enormous shift in target groups. Print media have also moved further into the background in times of environmental protection and sustainability. Traditional marketing can therefore only stand alone in special cases. As a result, the budgets of advertisers are shifting.

E-MARKETING

E-marketing is referred to those strategies and techniques which utilized online ways to reach target customers. There are millions of Internet users that daily access different websites using a variety of tools like computers, laptops, tablet and smart or android phone devices, and the number of internet users are increasing very rapidly. So every business seems to be jumping on the internet marketing bandwagon. The internet is most powerful tool that can put any business on solid footing with market leaders companies. There are many free as well as economical way on internet to promote your business. Successful companies must ask themselves some tough questions about how they will promote their business online? What their company expectations are? And what will be their plan to meet those expectations? After answer all these questions a company should design an effective marketing plan. E-marketing also known as online or internet advertising which uses the internet technology to promote online message to customer. E-marketing examples are email or social media advertising, web banners and mobile advertising.

E-Marketing Strategy

The e-Marketing Strategy is normally based and built upon the principles that govern the traditional, offline Marketing the well-known 4 P's (Product Price Promotion Positioning) that form the classic Marketing mix. Add the extra 3 P's (People Processes Proof) and you got the whole extended Marketing mix. Until here, there are no much aspects to differentiate e-Marketing from the traditional Marketing performed offline: the extended Marketing mix (4 + 3 P's) is built around the concept of "transactional" and its elements perform transactional functions defined by the exchange paradigm. What gives e-Marketing its uniqueness is a series of specific functions, relational



functions, that can be synthesized in the 2P + 2C+ 3S formula: Personalization, Privacy, Customer Service, Community, Site, Security, Sales Promotion. These 7 functions of the e-Marketing stay at the base of any e-Marketing strategy and they have a moderating character, unlike the classic Marketing mix that comprises situational functions only. Moderating functions of e-Marketing have the quality of moderate operate upon all situational functions of the mix (the classic 4 P's) and upon each other.

Personalization: -

The fundamental concept of personalization as a part of the e-Marketing mix lies in the need of recognizing, identifying a certain customer in order to establish relations (establishing relations is a fundamental objective of Marketing). It is crucial to be able to identify our customers on individual level and gather all possible information about them, with the purpose of knowing our market and be able to develop customized, personalized products and services.

2. Privacy: -

Privacy is an element of the mix very much connected to the previous one personalization. When we gather and store information about our customers and potential customers (therefore, when we perform the personalization part of the e-Marketing mix) a crucial issue arises: that of the way this information will be used, and by whom. A major task to do when implementing an e-Marketing strategy is that of creating and developing a policy upon access procedures to the collected information.

3. Customer Service: -

Customer service is one of the necessary and required activities among the support functions needed in transactional situations. We will connect the apparition of the customer service processes to the inclusion of the "time" parameter in transactions. When switching from a situational perspective to a relational one, and e-Marketing is mostly based on a relational perspective, the marketer saw himself somehow forced into considering support and assistance on a non-temporal level, permanently, over time.

4. Community: -

We can all agree that e-Marketing is conditioned by the existence of this impressive network that the internet is. The merely existence of such a network implies that individuals as well as groups will eventually interact. A group of entities that interact for a common purpose is what we call a "community"



and we will soon see why it is of absolute importance to participate, to be part of a community.

5. Site: -

We have seen and agreed that e-Marketing interactions take place on a digital media the internet. But such interactions and relations also need a proper location, to be available at any moment and from any place a digital location for digital interactions. Such a location is what we call a "site", which is the most widespread name for it. It is now the time to mention that the "website" is merely a form of a "site" and should not be mistaken or seen as synonyms.

6. Security: -

The "security" function emerged as an essential function of e-Marketing once transactions began to be performed through internet channels. What we need to keep in mind as marketers are the following two issues on security: - security during transactions performed on our website, where we have to take all possible precautions that third parties will not be able to access any part of a developing transaction; - security of data collected and stored, about our customers and visitors.

WEB PRESENCE GOALS

A web presence is a location on the World Wide Web where a person, business, or some other entity is represented (see also web property and point of presence).

Examples of a web presence for a person could be a personal website, a blog, a profile page, a wiki page, or a social media point of presence (e.g. a LinkedIn profile, a Facebook account, or a Twitter account). Examples of a web presence for a business or some other entity could be a corporate website, a microsite, a page on a review site, a wiki page, or a social media point of presence (e.g., a LinkedIn company page and/or group, a Facebook business/brand/product page, or a Twitter account).

Every web presence is associated with a unique web address to distinguish one point of presence from another. A Web presence (or Web site) is a collection of Web files on a particular subject that includes a beginning file called a home page . For example, most companies, organizations, or individuals that have Web sites have a single address that they give you. This is their home page address. From the home page, you can get to all the other pages on their site. For example, the Web site for IBM has the home page address of <http://www.ibm.com>.



7.5.1. Achieving Web Presence Goals

For creating a web site that is effective, the following objectives should be considered:

- To attract visitors to the Web site.
- To make the site interesting so that the visitor stay and explore.
- To persuade the visitors to follow the site's links to obtain information.
- To create the desired image of the organisation in the visitors mind.
- To reinforce positive images that the visitor may already have about the organisation.

Why do Visitors arrive at a Web site?

- To obtain general information about the company or organisation.
- Learning about the company's products or services.
- Buying the products and services offered by the company.
- Finding out the services conditions and warranties applicable for the products they have purchased.
- Obtaining financial information helpful in making investment or credit granting decision.
- Identifying the people who manage the company or organisation.

Business should try to meet the following goals while constructing their Web Sites:

- Convey an integrated image of the organisation
- Offer easily accessible facts about the organisation.
- Allow visitors to experience the site in different ways and at different levels.
- Provide visitors with a meaningful two way interactive communication link with the organisation.
- Sustain visitor attention and encourage return visits.
- Offer easily accessible information about products and services and how to use them.

Uniqueness of the Web

A website can help broadcast information about your organization to the general public. It can help you increase awareness of your organization, pass information to your employees or volunteers, or publicize fundraising events. With these instructions, you will be able to quickly and easily create a well-organized website.



Planning

Before you can complete any of the other steps, you must have a good idea of what your website will be like. The important aspect of website planning is ongoing maintenance. You should try to keep the information up-to-date by changing the content frequently. In order to implement a website you must:

- 1) Acquire a domain name.
- 2) Secure a web server to host your site.
- 3) Secure software to build website.
- 4) Design and build the website.
- 5) Track website use.

Acquiring a Domain Name

A domain name is the —easy to remember nickname for the Internet server where you will be able to upload the contents of your website. It is also part of the website address that people will use to get to your website. The ideal situation is that your organization has its own domain name for several reasons:

1. People will be able to easily remember your domain name. They will simply type in your organization and add an extension to reach your webpage.
2. This domain name will not be trademarked by another organization. Since your organization name is owned by your organization, you will have the rights to the domain name. If your website does use trademarked phrases or words, you could easily be sued by the company that owns that phrase.

Registering Your Domain Name

After deciding on your desired domain name, the name must be registered with the ICANN organization. You can do this through a domain name registrar. You pay the registrar for the use of your domain name annually. Popular registrars include Register.com and GoDaddy.com. If you have your website hosted, then that hosting organization may be able to register your domain name, too. Use the domain extension appropriate for your organization. Common extensions are listed below. Register all three extensions so that visitors can find the website from all three and your website will get more publicity.

- .org – used for nonprofits and other types of organizations.
- .com – most common



- .net – commonly used by internet service providers, web hosts, or other businesses involved in internet infrastructure; also, often used by businesses for their intranet websites.

Securing a Web Server to Host Your Website

You must secure space on a server where the files of your website will be accessible on the Internet. This server is referred to as a web host. There are two options for hosting: you can either host your own website or you can buy space from an online web hosting service.

Secure Software to Design Your Website

The next step is to install software that allows you to write your own website code or automatically generate the code you need to create your website. You can either use HTML coding (not recommended), a web development software package, or a content management system .

Content Management Systems

A content management system (CMS) is a software package that lets you build and maintain a website quickly and easily. It stores the actual website content in a database and can automatically pull the content out and show it on the appropriate pages based on the design you set up in advance. This allows the CMS to separate the content of the website from the graphics of the website.

Meeting the needs of website visitors

The Web changes the nature of communication between firms and customers. The traditional advertiser decides the message content, and on the Web, the customer selects the message. Traditional advertising primarily centers on the firm broadcasting a message. The flow of information is predominantly from the seller to the buyer. However, the Web puts this flow in reverse thrust. Customers have considerable control over which messages they receive because it is primarily by visiting Web sites that they are exposed to marketing communications. The customer intentionally seeks the message. The Web increases the richness of communication because it enables greater interactivity between the firm and its customers and among customers. The Web, compared to other media, provides a relatively level playing field for all participants in that:



- Access opportunities are essentially equal for all players, regardless of size;
- Share of voice is essentially uniform—no player can drown out others;
- Initial set-up costs present minimal or nonexistent barriers to entry.

A small company with a well-designed home page can look every bit as professional and credible as a large, multinational company. People can't tell if you do business from a 90-story office building or a two-room rented suite. Web home pages level the playing field for small companies.

SITE ADHESION

E-commerce web design and development presents some unique challenges that you won't always face with other types of web design. For sites that exist primarily to sell products, it's very easy to look at sales and have a measuring stick to use when evaluating the success of the website. However, there are many numbers of factors that can influence the success of an e-commerce site, and identifying areas of strength and weakness is not always so simple.

Content

A customer access a website for the content of the site. Initially a customer will want to navigate quickly to gain a clear understanding of the site's progression to more detailed information. The key to this is to match a user's psychological and technological sophistication profile with that of the site's initial and subsequent impact.

Format and access

The format of an organization's site is improvement with respect to the customer's technical sophistication. Vendors need to create a balance between information provision and information delivery speed. The selection of data format is crucial, as initially the goal is to create viewer interest and engage the viewer in a prolonged interaction. Online data access depends on the bandwidth requirement. The clear rule in the initial interaction phase is to use as minimal a bandwidth as is feasible to facilitate as wide an audience a possible.

Maintaining a Website

Create a website that meets the needs of visitors with such a wide range of motivations can be challenging. Not only do website visitors arrive with different needs, but also they arrive with different



experience and expectation levels. In addition to the problems posed by the diversity of visitor characteristics, technology issues can also arise. These website visitors will be connected to the internet through a variety of communication channels that provide different bandwidth and data transmission speeds. They also will be using several different web browsers. Even those who are using the same browser can have a variety of configuration. The wide array of browsers add-in and plug-in software's adds yet another dimension to visitor variability. Considering and addressing the implications of these many visitor characteristics when building a website can help convert those visitors into customers.

One of the best ways to accommodate a broad range of visitor needs is to build flexibility into the website's interface. Many sites offer separate versions with and without frames and give visitors the option of choosing either one. Some sites offer a text-only version. Regular maintenance makes website functionality smoother. You will not be facing situations where customers may be disgruntled because they may have come across that didn't work for them just because it was a broken link.

The process of website maintenance is referred to checking your website for broken links, outdated information, vulnerable code scripts, and other relevant activities on a consistent basis. A well regulated and updated website does not only allure more visitors but also helps you in getting higher rankings in search engines. So, the success of your business is hidden in the secret of website maintenance.

Content for the website may comprise of images, written text, paid or free downloads, typographies, and videos, etc. you may use anything that is relevant and may drag the attention of new visitors and transform them into potential clients. You may consider the following ideas for content optimization: Updating products is a crucial activity, especially if your website has an ecommerce setup and performs as an online store.

- You may need to announce or add new products frequently.
- You should not forget to update the navigation plan, i.e. when you add a product or service, you must add a page for them and add it to the sitemap immediately.

If it is a blog that you own then it may have a sidebar for navigation which means any updates added by you will be updated in that area, so, it won't matter a lot as the visitors will see those changes immediately irrespective of the page on which they may land.

- If you have planned to exclude or discontinue some products, a good practice would be to announce the new products that would be replacing them on the side navigation bar.
- Changes in rates might something that may require an announcement too as this may help in

spurring rush sales too.

Metrics Defining Internet Units of Measurement

The e-commerce world has, since inception been attempting to measure parameters associated with the web and websites in order to assess two things: Advertising – How many people saw our banner as? Visitation - How many people came to our site? For advertising, the metrics measured and their interpretation depend on the position of the measure. The advertising perspective is that metrics can give the advertiser the most accurate interpretation of the customer-to-site usage ratio, but this has come under increasing scrutiny as the technology and systems associated with web interfaces and networks become well understood by the advertisers. There is a problem with using hits as a measuring tool. In software metrics theory, one problem is the separation of direct and indirect metrics or measurement. Direct measurement of an attribute is the measurement that does not depend on the measurement of any other attribute. Indirect measurement of an attribute is the measurement that involves the measurement of one or more other attributes.

Examples of Direct Metrics: -

- Top referencing sites.
- Most-used platforms.
- Advertising _captures‘
- Most-downloaded files.
- Authenticated user sessions by location.
- Authenticated user profiles by region.

Examples of Indirect Metrics: -

- Number of hits per page.
- Number of successful hits per page.
- Most-accessed segments.
- Views of banners.
- Total hits.
- Cached hits.
- Successful hits.

Many organizations use indirect metrics, as advertised by the vendors of packages and software tools, and this will significantly hinder the ability of the executives of these firms to track directly the impact of their dollars being spent on their websites. Organizations in the online customer acquisition phase have attempted to refine some of the indirect metrics to their needs, by understanding their limitations. These include the following,

- Click-through Captures.
- Time Spent.
- Time Spent Searching.
- Time Spent before click through.
- E-Mails and telephone calls.
- Registered users.

By assessing these metrics in conjunction with data from other sources such as the direct sales and marketing channels, an organization can estimate the content, format and access of the online site.

ONLINE MARKETING

Marketing is the activity, set of institutions and processes for creating, communicating, delivering, and exchanging offers that have value for customers, clients, partners, and society at large. Marketing changes the perspective of a person.

There are two approaches of marketing:

- Traditional marketing
- Online marketing

Online marketing is advertising and marketing the products or services of a business over Internet. Online marketing relies upon websites or emails to reach to the users and it is combined with e-commerce to facilitate the business transactions. In online marketing, you can promote the products and services via websites, blogs, email, social media, forums, and mobile Apps. Online marketing is also termed as Internet marketing, Web marketing, or simply, OLM.

There are three new market segments which are as follows,

- **Cyber buyers**

These are professionals who spend a good deal of time online, mainly at their places of business. These professionals often have to make complex purchasing decisions that require reams of data and difficult to locate sources of supply, all within a tight time frame. That is a perfect fit with the capabilities of online technology.

- **Cyber consumers**

These are the home computer users wired upto commercial online services and the internet.

- **Cyber surfers**

They use online technology to expand their horizons, challenge their abilities, and for fun. This segment is typically younger and possesses shorter attention spans.

Benefits of Online Marketing

Online marketing is a set of tools and methodologies used for promoting products and services through the internet. Online marketing includes a wider range of marketing elements than traditional business marketing due to the extra channels and marketing mechanisms available on the internet. Online marketing enables you to build relations with customers and prospects through regular, low-cost personalized communication, reflecting the move away from mass marketing. Online marketing has several advantages, including:

- Low costs: Large audiences are reachable at a fraction of traditional advertising budgets, allowing businesses to create appealing consumer ads.
- Flexibility and convenience: Consumers may research and purchase products and services at their leisure.
- Analytics: Efficient statistical results are facilitated without extra costs.
- Multiple options: Advertising tools include pay-per-click advertising, email marketing and local search integration (like Google Maps).

- Demographic targeting: Consumers can be demographically targeted much more effectively in an online rather than an offline process.

The main limitation of online marketing is the lack of tangibility, which means that consumers are unable to try out, or try on items they might wish to purchase. Generous return policies are the main way to circumvent such buyer apprehension.

E-CUSTOMER RELATIONSHIP MANAGEMENT

E-CRM, or Electronic Customer Relationship Management, is an integrated online sales, marketing and service strategy that are used to identify, attract and retain an organization's customers. It describes improved and increased communication between an organisation and its clients by creating and enhancing customer interaction through innovative technology. eCRM can be defined as activities to manage customer relationships by using the Internet, web browsers or other electronic touch points.

E-CUSTOMER RELATIONSHIP MANAGEMENT

Electronic customer relationship management (E-CRM) is the application of Internet-based technologies such as emails, websites, chat rooms, forums and other channels to achieve CRM objectives. It is a well-structured and coordinated process of CRM that automates the processes in marketing, sales and customer service. An effective E-CRM increases the efficiency of the processes as well as improves the interactions with customers and enables businesses to customize products and services that meet the customers' individual needs.

E-CRM, or Electronic Customer Relationship Management, is an integrated online sales, marketing and service strategy that are used to identify, attract and retain an organization's customers. It describes improved and increased communication between an organisation and its clients by creating and enhancing customer interaction through innovative technology. E-CRM software provides profiles and histories of each interaction the organisation has with its customers, making it an important tool for all small and medium businesses. As we implement eCRM process, there are three steps life cycle:

1. Data collection: About customers preference information for actively and passively ways via website, email, questionnaire.
2. Data aggregation: Filter and analysis for firm's specific needs to fulfill their customers.
3. Customer interaction: According to customer's need, company provides the proper feedback to them.

eCRM can be defined as activities to manage customer relationships by using the Internet, web browsers or other electronic touch points.

Marketing automation

Marketing automation refers to the software that allows you to automate activities and operationalize communications with the goal of managing the repetitive and time-consuming tasks.

Marketing Automation is a subset of customer relationship management (CRM) or customer experience management (CXM) that focuses on the definition, segmentation, scheduling and tracking of marketing campaigns. The use of marketing automation makes processes that would otherwise have been performed manually much more efficient and makes new processes possible. Marketing Automation can be defined as a process where technology is used to automate several repetitive tasks that are undertaken on a regular basis in a marketing campaign. A tool that allows an individual to design, execute and automate a time-bound marketing workflow can be called a Marketing Automation platform. Marketing Automation platforms allow marketers to automate and simplify client communication by managing complex omni-channel marketing strategies from a single tool. Marketing Automation assist greatly in areas like Lead Generation, Segmentation, Lead nurturing and lead scoring, Relationship marketing, Cross-sell and upsell, Retention, Marketing ROI measurement. There are three categories of marketing automation software:

Marketing intelligence

Uses tracking codes in social media, email and WebPages to track the behavior of anyone interested in a product or service to gain a measure of intent. It can record which social media group or thread they followed, which link was clicked on in an email or which search term was used to access a website. Multiple link analysis can then track buyer behavior - following links and multiple threads related to product A but not B will show an interest only in A. This allows more accurately targeted

response and the development of a nurturing program specifically targeted towards their interest and vertical market. This allows businesses to more efficiently and effectively reach target consumers who show, through their internet history behavior, that they will be interested in the company's products. Due to its interactive nature this has been described as Marketing Automation 2.0.

Marketing automation Has a focus on moving leads from the top of the marketing funnel through to becoming sales-ready leads at the bottom of the funnel. Prospects are scored, based on their activities, and receive targeted content and messaging, thus nurturing them from first interest through to sale. Commonly used in business-to-business (B2B), business-to-government (B2G), or longer sales cycle business-to-consumer (B2C) sales cycles, Marketing Automation involves multiple areas of marketing and is really the marriage of email marketing technology coupled with a structured sales process.

Advanced workflow automation

Encompasses automation of internal marketing processes. These include budgeting and planning, workflow and approvals, the marketing calendar, internal collaboration, digital asset creation and management and essentially everything that supports the operational efficiency of the internal marketing function. Typically these systems require a CRM or COM administrator to set up a complex series of rules to trigger action items for internal sales and marketing professionals to manually process (designing files, sending letters, sending email campaigns). This type of system increases marketer's ability to deliver relevant content to relevant individuals at relevant times. Limitations may apply, based on the human resource capacity of an organisation and their level of commitment to the tasks as they are assigned.

Marketing automation is powerful software that helps mechanize marketing processes. Marketing departments use automation software to reduce or even eliminate repetitive tasks including:

- Manual email campaign creation
- Coordination of SMS messaging
- Dissemination of social media posts
- Website widget content
- Online advertisements placement

- Data management and analysis

Marketing automation involves market segmentation, campaigns management, event-based marketing, and promotions. The campaign modules of Marketing Automation enable the marketing force to access customer-related data for designing, executing and evaluating targeted offers, and communications. Event-based (trigger) marketing is all about messaging and presenting offers at a particular time. For example, a customer calls the customer care number and asks about the rate of interest for credit card payment.

This event is read by CRM as the customer is comparing interest rates and can be diverted to another business for a better deal. In such cases, a customized offer is triggered to retain the customer.

Enterprise customer management

Enterprise Customer Management (ECM) at its core is an organizational wide approach to placing the customer at the center of all business decisions. By harnessing customer behavioral, transactional and social data many organizations are embracing this defined discipline to help inform optimal decision making across all facets of their enterprises.

The benefits can be everlasting allowing brands to connect and be relevant with their most valued customers across all dimensions of their value proposition. Before an organization can implement CRM, the organization should be aware of potential problems and possible to be deal with them when necessary. At the organization level, business should establish a joint operation between different sectors that are associated with the customer to be more effective.

The main challenges that an organization may encounter in implementing CRM can be divided into three main cases:

1. Initial start-up costs:

It is one of the CRM challenges that the organization may have invested a large amount of customer management tools. There may be some specific applications of these tools, they hardly can be shared in difficult sectors.

2. Integrated practical tools:

Organizations need tools to integrate applications based on customer life cycles and interactions with the customer is created. The organization need to manage the customer interaction to different languages and currencies can not bring to customer CRM through traditional technologies and this would be very difficult for them.

3. Cooperation various sectors:

CRM is an integrated approach and requires the cooperation of the business which had previously operated as autonomous. Data that are gathered in one section should be shared in all other parts. Some of the sectors to share their data with others may be Unsatisfied or reluctant To create a customer-centered culture it is necessary to extend the capabilities of knowledge and as well as the necessary tools to meet customer needs with appropriate products and services.

One of the reasons the can lead to a successful CRM, the following cases can be mentioned:

- a) Implementation of CRM as a strategy in organization effective communication with customers should be implemented as a strategy at all levels of an organization and be familiar with their place in the system would integrate all business process and activity around the customer.
- b) Maturity of software in the organization is one of the major problems in the imp maturation of software in the companies; users who want to work must have experience in working with the simple software. Also, the system that has not efficiency will lead frustration and loss of senior management support and recording structure is hidden obstacles and problems.
- c) Determine the duties of each person and group in the organization: people should know what their role is and function in the system and what action should do when CRM optimization is a group. Process and for success in it, all individuals should be familiar with group works and tasks.

Customer Relationship Management Areas

There can be multiple definitions of CRM from different perspectives: From the viewpoint of the Management, CRM can be defined as an organized approach of developing, managing, and maintaining a profitable relationship with customers. By equating the term with technology, the IT organizations define CRM as software that assists marketing, merchandising, selling, and smooth service operations of a business.

The primary goal of CRM is to increase customer loyalty and in turn improve business profitability.

It shows the ingredients that work together to form a successful CRM system.



Figure: Covered Areas of CRM

Here are some of the important ingredients of CRM:

- **Analytics** – Analytics is the process of studying, handling, and representing data in various graphical formats such as charts, tables, trends, etc., in order to observe market trends.
- **Business Reporting** – Business Reporting includes accurate reports of sales, customer care, and marketing
- **Customer Service** – Customer Service involves collecting and sending the following customer-related information to the concerned department:
 - Personal information such as name, address, age, etc.
 - Previous purchase patterns.
 - Requirements and preferences.
 - Complaints and suggestions.
- **Human Resource Management** – Human Resource Management involves employing and placing the most eligible human resource at a required place in the business.
- **Lead Management** – Lead Management involves keeping a track of the sales leads and

distribution, managing the campaigns, designing customized forms, finalizing the mailing lists, and studying the purchase patterns of the customers.

- Marketing – Marketing involves forming and implementing sales strategies by studying existing and potential customers in order to sell the product.
- Sales Force Automation – Sales Force Automation includes forecasting, recording sales, processing, and keeping a track of the potential interactions.
- Workflow Automation – Workflow Automation involves streamlining and scheduling various processes that run in parallel. It reduces costs and time, and prevents assigning the same task to multiple employees.

The most prominent objectives of using the methods of Customer Relationship Management are as follows:

- Improve Customer Satisfaction – CRM helps in customer satisfaction as the satisfied customers remain loyal to the business and spread good word-of-mouth. This can be accomplished by fostering customer engagement via social networking sites, surveys, interactive blogs, and various mobile platforms.
- Expand the Customer Base – CRM not only manages the existing customers but also creates knowledge for prospective customers who are yet to convert. It helps creating and managing a huge customer base that fosters profits continuity, even for a seasonal business.
- Enhance Business Sales – CRM methods can be used to close more deals, increase sales, improve forecast accuracy, and suggestion selling. CRM helps to create new sales opportunities and thus helps in increasing business revenue.
- Improve Workforce Productivity – A CRM system can create organized manners of working for sales and sales management staff of a business. The sales staff can view customer's contact information, follow up via email or social media, manage tasks, and track the salesperson's performance.

CRM Processes

The goal of any business is to derive maximum profitability from its customer base. The CRM value chain describes the process that a business must have in place to gain the profitability wanted from customers. Five key steps are necessary for the successful implementation of a CRM strategy, and

are commonly referred to as —the five step process for CRM.

Customer portfolio analysis

This first step involves analysis of your organization's customer base to determine what groups and kinds of customers are the most profitable. This will define your organization's target customer base.

Customer intimacy

Customer intimacy is the process of getting familiar with the individual customers within the organization's target customer base. Relationship building is predicated upon how well you know your customer and that includes everything from buying habits to when their birthday is. Every interaction with a customer is an opportunity to improve customer intimacy and learn more about your target market. This step usually includes building a customer database to store the gathered information.

Network development

Network development refers to the identification and development of strong relationships with organizations, networks and people that are critical to your success in servicing your customers. These relationships will include external partners such as suppliers and investors, as well as internal partners, your employees.

Value proposition development

This step builds on the information gathered while working on customer intimacy. Once you have identified your target customer, you can move forward and create a tailored value proposition for this customer. In creating value for your customer, your value proposition must also create value for your organization.

Customer life cycle management

The customer life cycle refers to the ideal customer journey: from potential client to product/service advocate. It also relates the continuing relationship you maintain with your customer. Managing this cycle requires structure and attention to process. Your organization must determine how it will



organize itself to effectively manage customer relationships (structure). As well, thought must be given to determining how your organization will approach customer acquisition and retention, as well as the performance measurement of your CRM strategy (process).

ARCHITECTURAL COMPONENTS OF A CRM SOLUTION

CRM stands for —Customer Relationship Management| and is a set of methodologies and tools that helps to manage customer relationship in an organized way. Customer Relationship Management is a business strategy for optimizing customer interactions. It helps in understanding your customers, their needs and requirements.

Customer's information repository

Centralizing customer data and ensuring customer information is accurate, up-to-date and easily accessible is vital in delivering consistent marketing strategies. By integrating customer, transaction, and metadata, marketers can obtain actionable customer information, allowing them to analyze customer behavior, improve their channel strategies and achieve better campaign ROI. We can collect customer data from different sources, check for consistency and correctness, eliminate duplicates and integrate seamlessly with your applications. You can also apply multi-dimensional segmentation by using your customers' information, tags and digital behaviors.

Collecting Data

- Two-way integration of customer information between next4biz and your applications.
- Integration of forms in your websites to record visitors' information.
- Bulk import of customer information from spreadsheets and other formats.
- Special data entry interfaces for in-house or outsourced users.

Maintain Consistency and Correctness

- Define rules to check for consistency and correctness during data entry, data integration, and bulk data imports.
- Our —learning engine| automatically reveals missing information, such as email domain, email address, gender, segment, classification of title and other structured information.
- Confirm the correctness of email addresses.

- Set rules to identify unique customer information (next4biz will list duplicate records based on the rules).
- Receive reports of incorrect information, such as obsolete current job information of your leads.
- Other next4biz features include:
- Suggests gender based on the customer's name
- Predicts and confirm email address based on name and company information
- Predicts job title category based on title text

Campaign management

Campaign management is the planning, execution, tracking, and analysis of a marketing initiative; sometimes centered on a new product launch or an event. Campaigns normally involve multiple pushes to potential buyers through email, social media, surveys, print materials, giveaways, etc. all focusing on a similar topic or idea. Campaign management and campaign planning play a central role in marketing, your customers should be sent the right information adapted to their needs, in the right communications style and via the right communications channel at the right time. Your customers' requirements are the focus of your campaign process. Consequently, campaign management plays a central role in Customer Relationship Management (CRM). The campaign process consists of three central phases: planning, management and analysis.

Campaign management in practice

To plan a campaign process more exactly, all of your existing customer touch points have to be considered and analyzed. This includes contacts in sales, service, eCommerce and other relevant channels. And with the help of special CRM software and analysis systems, you can gather customer intelligence centrally and use it derive specific advertising measures or steps such as direct mailings, e-mail, telemarketing and mail merge or form letter campaigns.

Special software solutions for campaign management

Individual software solutions or systems for campaign management help you to plan, manage and evaluate complex campaign processes in your company. All your customer data flows into the software, where it can be quickly evaluated. Thus making campaign planning more effective. The

analysis tools help you to manage and control current campaigns, and the reporting features help you to evaluate the campaigns. CRM solutions offer support in all your marketing activities, and the fact that all your data flows into one database where it can also be linked is a massive advantage.

Event Triggers

In most CRM systems, the term trigger designates an action that initiates subsequent actions in sales or marketing workflow. For example, when a prospective customer clicks a link inside an email, this can be a trigger for changing his status from 'cold lead' to 'warm lead'. Or when a prospective customer fills out a website form, this action can trigger a series of marketing emails. Or when a customer pays an invoice, this action can trigger a task creation for an account manager. Trigger based marketing software allows companies to significantly save on labor costs, avoid human errors and improve customer experience. The term 'event based marketing' is closely related. The Event Trigger receives events from the Event System and calls registered functions for each event. The Event Trigger can be used to specify functions you wish to be called for each Event System event. You can assign multiple functions to a single event and whenever the Event Trigger receives that event it will call those functions.

Business logic and rules repository

Business Rules Group (BRG) was one of the first to distinguish between the rules of the business and the business logic in IT Systems. Their goal was to develop an altogether new approach where business rules are not merely artifacts of IT professionals but entities that can be authored, managed, and analyzed by business professionals with little IT background. This approach catalyzed exciting ideas and developments. In today's IT space we can find many products and methodologies that must pay credit to the BRG and its groundbreaking work.

A BRMS or business rule management system is a software system used to define, deploy, execute, monitor and maintain the variety and complexity of decision logic that is used by operational systems within an organization or enterprise. This logic, also referred to as business rules, includes policies, requirements, and conditional that are used to determine the tactical actions that take place in applications and systems. Business Rules Management Systems (BRMS) have been on the market for many years, initially conceived as expert systems, then knowledge bases or rule engines, and

finally business rules management systems. The major difference between these systems and traditional development environments is that the concept of 'business rule' is separated from other concerns within a software application such as data processing, user interfacing, and control flow. This separation has two major advantages:

- Business rules have their own special syntax, often more easily readable than ordinary software code;
- A specifically-designed engine is able to process these rules based on the availability of data thus relieving developers from the complexity of writing the business rules in a specific processing order.

This approach has been, and continues to be, successful in many organizations that have to process great amounts of business rules. A Business Rule Repository is a special kind of structured data storage. A General Rulebook System manages a General Business Rule Repository — a repository used to record and manage business rules for as many purposes as possible. We consider a repository that is used to manage business rules that are technical artifacts a System Rule Repository — not a bad concept in itself. A Business Rule Management System (BRMS) typically manages such a repository.

The applications of a System Rule Repository include:

- Traceability between business rules and your systems and automated processes; the ability to perform impact analysis when business rules must change.
- Reusability of business rules throughout systems and automated processes.
- Homogeneous encoding of business rule statements to improve consistency.

A BRMS includes, at minimum: This needs to be attributed:

- A repository, allowing decision logic to be externalized from core application code
- Tools, allowing both technical developers and business experts to define and manage decision logic
- A runtime environment, allowing applications to invoke decision logic managed within the BRMS and execute it using a business rules engine



The top benefits of a BRMS include:

- Reduced or removed reliance on IT departments for changes in live systems. Although, QA and Rules testing would still be needed in any enterprise system.
- Increased control over implemented decision logic for compliance and better business management
- The ability to express decision logic with increased precision, using a business vocabulary syntax and graphical rule representations (decision tables, trees, scorecards and flows)
- Improved efficiency of processes through increased decision automation.

The purpose of a business rules repository is to support the business rule information needs of all the stakeholders in a business rules-based approach to the initial development of systems and their lifetime enhancement. Specifically, the purpose of a business rules repository is to provide:

- Support for the rule-related requirements of all business and IT stakeholders
- Query and reporting capability for impact analysis, traceability and business rule reuse including web-based publication
- Security for and the integrity of business rule and rule-related information

To derive the requirements of a business rules repository, we are going to look at the roles and responsibilities of business and IT stakeholders and their needs for rule-related information.

DECISION SUPPORT TOOLS

The terms Decision Support Tools or Decision Support Systems (DSS) refer to a wide range of computer-based tools (simulation models, and/or techniques and methods) developed to support decision analysis and participatory processes. A DSS consists of a database, different coupled hydrodynamic and socio-economic models and is provided with a dedicated interface in order to be directly and more easily accessible by non-specialists (e.g. policy and decision makers). DSS have specific simulation and prediction capabilities but are also used as a vehicle of communication, training and experimentation. Principally, DSS can facilitate dialogue and exchange of information thus providing insights to non-experts and support them in the exploration of policy options.



DST Components

- A Database Management System (DBMS): a DBMS collects, organizes, and processes data and information.
- Models: different hydrodynamic and socio-economic models are integrated in a DSS to perform optimization, forecasting/prediction, statistical functions. The type of models included defines the type of support provided and the area of application of a DSS (i.e. erosion or shoreline management, pollution, etc.).
- Users' interface: helps the users to interact with the system and to analyse its results. Important features of a DSS interface should be its user friendliness meaning its simplicity, flexibility, and capability of presenting data and model output. An effective user's interface facilitates the communication and increases the acceptability of the tool by intended users (e.g. Coastal Zone Managers as well as Policy and Decision Makers).
- Other components: Geographic Information Systems (GIS) play a significant role in Spatial Decision support systems (SDSS) in which they organize, present and compare data and information on a visualization map; Web-Based DSS which are computerized systems that deliver decision support information to managers using a Web browser, Group Decision Support System (GDSS) are common
- computer tools or networks used to enable collaboration between people to solve complex decision making;

DST Classification

- Model-driven DSS emphasizes access to and manipulation of a statistical, financial, optimization, or simulation model. Model-driven DSS use data and parameters provided by users to assist decision makers in analyzing a situation; they are not necessarily data intensive.
- Communication-driven DSS supports more than one person working on a shared task.
- Data-driven DSS or data-oriented DSS emphasizes access to and manipulation of a time series of internal company data and, sometimes, external data.
- Document-driven DSS manages, retrieves and manipulates unstructured information in a variety of electronic formats.

- Knowledge-driven DSS provides specialized problem solving expertise stored as facts, rules, procedures, or in similar structures.

FORECASTING AND PLANNING TOOLS

As the name suggests, production planning is simply a projection of future business--or production--activity. Many companies rely on certain mainstay products to drive company profits. To ensure that those products continue to serve its purpose, the company must rely on effective production planning. The process of production planning contains a number of steps, and forecasting is an essential step, because it requires that the company project its production needs into the future. Forecasting might seem purely hypothetical, but companies can utilize forecasting tools to provide as much accuracy as possible.

- Select a method of forecasting for production planning. Available methods include the moving average, exponential smoothing and regression analysis. The moving average takes into account production averages over a period of time and looks specifically at the average of each production period against how that average has changed. Exponential smoothing weighs the average of the most recent forecast against the current demand for the product. Regression analysis uses a chart to view the moving average as a single line of change over time.
- Determine a time period to study. Forecasting is most effective over the short term, rather than the long term. This is because long-term forecasting can quickly become inaccurate when customer demand changes or market trends adjust unexpectedly. The best time period will reflect previous company activity and what changes the company has seen over time--quarterly, bi-annually. Bear in mind that the best forecasts for production planning tend to reflect shorter amounts of time.
- Choose reports on previous company activity to help with projecting future production. Projecting for the future requires looking into the past, and companies can utilize previous production results to make forecasts for the future. Companies can look at specifics for customer demand over certain periods of time—for instance, if demand drops during some months and rises during others—and apply this information to the forecasting method that has been selected.
- Pick market trends to apply to the forecast. Market trends must work alongside expectations of customer demand. The market will play a role in dictating the extent to which customer demand

will increase or decrease. If trends indicate that the market for a certain product is about to expand, the company might use this to increase production, but if trends indicate a decrease in market interest, the company might reconsider production needs.

The Forecasting Tool will produce the following estimates:

- Future values of the growth process for a selected period
- The maximum value that the data set is expected to reach
- The expected life cycle of the growth process i.e. the time that it will take to be completed
- The midpoint around which the growth process evolves i.e. the point in time where the growth process is half way to completion.

True channel management

The term Channel Management is widely used in sales marketing parlance. It is defined as a process where the company develops various marketing techniques as well as sales strategies to reach the widest possible customer base. The channels are nothing but ways or outlets to market and sell products. The ultimate aim of any organization is to develop a better relationship between the customer and the product.

This channel management process contains five steps.

1. Analyze the consumer.
2. Establish the channel objectives.
3. Specify distribution tasks.
4. Evaluate and select from channel alternatives.
5. Evaluate channel member performance.

Channel management helps in developing a program for selling and servicing customers within a specific channel. The aim is to streamline communication between a business and the customer. To do this, you need to segment your channels according to the characteristics of your customers: their needs, buying patterns, success factors, etc. and then customize a program that includes goals, policies, products, sales, and marketing program. The goal of channel management is to establish direct communication with customers in each channel. If the company is able to effectively achieve

this goal, the management will have a better idea which marketing channel best suits that particular customer base. The techniques used in each channel could be different, but the overall strategy must always brand the business consistently throughout the communication. A business must determine what it wants out of each channel and also clearly define the framework for each of those channels to produce desired results. Identifying the segment of the population linked to each channel also helps to determine the best products to pitch to those channels.

ELECTRONIC CUSTOMER RELATIONSHIP MANAGEMENT

Electronic customer relationship management (E-CRM) is the application of Internet-based technologies such as emails, websites, chat rooms, forums and other channels to achieve CRM objectives. It is a well-structured and coordinated process of CRM that automates the processes in marketing, sales and customer service. An effective E-CRM increases the efficiency of the processes as well as improves the interactions with customers and enables businesses to customize products and services that meet the customers' individual needs. Electronic customer relationship management provides an avenue for interactions between a business, its customers and its employees through Web-based technologies. The process combines software, hardware, processes and management's commitments geared toward supporting enterprise-wide CRM business strategies. Electronic customer relationship management is motivated by easy Internet access through various platforms and devices such as laptops, mobile devices, desktop PCs and TV sets. It is not software, however, but rather the utilization of Web-based technologies to interact, understand and ensure customer satisfaction.

Need of E-CRM

E-CRM provides companies with a means to conduct interactive, personalized and relevant communication with customers across both electronic and traditional channels. It utilizes a complete view of the customer to make decisions about messaging, offers, and channel delivery. It thus synchronizes communication across disjointed customer-facing systems. E-CRM also focuses on understanding how the economics of customer relationships affect the business. Advocates of E-CRM recognize that a comprehensive understanding of customer activities, personalization, relevance, permission, time lines, and metrics is the means to an end for

optimizing the value of the company's most important asset: its customers.

Need to Adopt E-CRM

It is important for companies to adopt CRM as it helps them:

- Optimize the value of interactive relationships.
- The business to extend its personalized messaging to the Web and email.
- The company co-ordinate marketing initiatives across all customer channels.
- Leverage customer information for more effective e-marketing and eBusiness.

E-CRM must address customer optimization in the following three dimensions:

- Acquisition (increasing number of new customers)
- Expansion (increasing profitability by encouraging customers to purchase more products and services)
- Retention (increasing the amount of time customers stay as customers).

The need for E-CRM is dictated primarily by the new global, electronic economy, as against the old offline business mode, through which the company earlier reached out to its customers. In the new Net economy, the customer is reaching out to the company in the same way that a business house would have to find ways to service its brick and mortar storefront. In other words, the company has to find a way to face outwards and automate its marketing, sales and service functions, so that it is easy to be able to serve the customer and offer him a high degree of satisfaction. The solution is a highly integrated E-CRM solution that provides a simple view of the customer for the enterprise and conversely, a single view of the enterprise for the customer.

The need for CRM has always been there because there can be no business without customers and customers of value can only be acquired and retained through relationships. But E-CRM has added many new opportunities and challenges to this axiom. The e‘ in E-CRM creates an anytime, anywhere, through any medium of communications‘ paradigm that offers challenge. The next challenge is the increasing realization that E-CRM is a high velocity and real-time process. Hence, it succeeds only when it is part of an overall business process. Supply chain

management and other business processes must therefore be integrated seamlessly into the customer-facing process. Thus, E-CRM is part of the comprehensive relationship management strategy of an enterprise.

Architecture and Applications of Electronic CRM

The following is a set of technical e-CRM capabilities and applications that collectively and ideally comprise a full e-CRM solution. They are,

- Customer analytic software.
- Data mining software.
- Campaign management software
- Business simulation software.
- Real time decision engine.

Customer analytic software

Customer analytic software predicts, measures, and interprets customer behaviours, allowing companies to understand the effectiveness of e-CRM efforts across both inbound outbound channels. Most importantly, customer analytic should integrate with customer-communications software to enable companies to transform customer findings into ROI-producing initiatives.

Data mining software

Data mining software builds predictive models to identify customers most likely to perform a particular behavior such as purchase an upgrade or churn from the company. Modeling must be tightly integrated with campaign management software to keep pace with multiple campaigns running daily or weekly.

Campaign management software

Campaign management software leverages the data warehouse to plan and execute multiple, highly targeted campaigns overtime, using triggers that respond timed events and customer behavior. Campaign management software tests various offers against control groups, capture

promotion history for each customer and prospect, and produces output for virtually any on-line or off-line customer touch point channel.

Business simulation

Business simulation used in conjunction with campaign management software optimises offer, messaging and channel delivery prior to the execution of campaigns, and compares planned costs and ROI projections with actual results. A Real time decision engine co-ordinates and synchronizes communications across disparate customer touch point systems. It contains business intelligence to determine and communicate the most appropriate message, offer, and channel delivery in real time, and support two-way dialogue with the customer. E-CRM architecture would comprise:

- Sales force automation.
- E mail management system.
- Interactive voice response
- Knowledge management.
- Call centers, and
- Instant online querying through chat.

In this section, you have learnt about the basics of electronic CRM and its processes, architectural components of a CRM solution and electronic CRM management. This knowledge would make you understand the various CRM areas, CRM processes and marketing automation used to develop the electronic based CRM for real time customer issues. Thus, the e-customer relationship management unit would have brought you to closer to know the concept of customer relationship management.

SUPPLY CHAIN MANAGEMENT

In this lesson you will be aware the supply chain management. The SCM is the oversight of materials, information, and finances distributed from supplier to consumer. The supply chain also includes all the necessary stops between the supplier and the consumer. Supply chain management involves coordinating this flow of materials within a company and to the end consumer. We shall study the goals, functions, and strategies of SCM in this lesson.

OBJECTIVES

After going through this lesson you will be able to

- Explain the goals and functions of supply chain management.
- Recognize the components of SCM.
- Explain the SCM advantages and electronic logistics.

SUPPLY CHAIN MANAGEMENT

Supply chain management (SCM) is the oversight of materials, information, and finances distributed from supplier to consumer. The supply chain also includes all the necessary stops between the supplier and the consumer. Supply chain management involves coordinating this flow of materials within a company and to the end consumer.

Council of Supply Chain Management Professionals defines supply chain management as follows: —

Supply chain management encompasses the planning and management of all activities involved in sourcing and procurement, conversion, and all logistics management activities. Importantly, it also includes coordination and collaboration with channel partners, which can be suppliers, intermediaries, third-party service providers, and customers. In essence, supply chain management integrates supply and demand management within and across companies. Supply chain management is an integrating function with primary responsibility for linking major

business functions and business processes within and across companies into a cohesive and high-performing business model. It includes all of the logistics management activities noted above, as well as manufacturing operations, and it drives coordination of processes and activities with and across marketing, sales, product design, and finance and information technology. SCM is also called the art of management of providing the right product, at the right time, right place and at the right cost to the customer. Supply chain management can be divided into three main flows: ,

- The **Product** flow includes moving goods from supplier to consumer, as well as dealing with customer service needs. ,
- The **Information** flow includes order information and delivery status. ,
- The **Financial** flow includes payment schedules, credit terms, and additional arrangements.

Supply chain management is a set of approaches utilized to efficiently integrate suppliers, manufacturers, warehouses, and stores, so that merchandise is produced and distributed at the right quantities, to the right locations, and at the right time, in order to minimize system-wide costs while satisfying service level requirements.

Goals of SCM

Every firm strives to match supply with demand in a timely fashion with the most efficient use of resources. Here are some of the important goals of supply chain management:

- Supply chain partners work collaboratively at different levels to maximize resource productivity, construct standardized processes, remove duplicate efforts and minimize inventory levels.
- Minimization of supply chain expenses is very essential, especially when there are economic uncertainties in companies regarding their wish to conserve capital.
- Cost efficient and cheap products are necessary, but supply chain managers need to concentrate on value creation for their customers.
- Exceeding the customers' expectations on a regular basis is the best way to satisfy them.
- Increased expectations of clients for higher product variety, customized goods, off-season

availability of inventory and rapid fulfillment at a cost comparable to in-store offerings should be matched.

- To meet consumer expectations, merchants need to leverage inventory as a shared resource and utilize the distributed order management technology to complete orders from the optimal node in the supply chain.

Lastly, supply chain management aims at contributing to the financial success of an enterprise. In addition to all the points highlighted above, it aims at leading enterprises using the supply chain to improve differentiation, increase sales, and penetrate new markets. The objective is to drive competitive benefit and shareholder value.

Functions of SCM

Supply chain management is a cross-function approach including managing the movement of raw materials into an organization, certain aspects of the internal processing of materials into finished goods, and the movement of finished goods out of the organization and toward the end-consumer. As organizations strive to focus on core competencies and becoming more flexible, they reduce their ownership of raw materials sources and distribution channels. These functions are increasingly being outsourced to other entities that can perform the activities better or more cost effectively.

The effect is to increase the number of organizations involved in satisfying customer demand, while reducing management control of daily logistics operations. Less control and more supply chain partners led to the creation of supply chain management concepts. The purpose of supply chain management is to improve trust and collaboration among supply chain partners, thus improving inventory visibility and the velocity of inventory movement.

While discussing an eCommerce or online business, we commonly come across the term supply chain management. It is an integral part of an online business and if you are an online entrepreneur you need to have some idea of the whole process. In simple terms, supply chain management or commonly known as SCM deals with the management related to the flow of goods and services at various stages. It may start from the manufacturer to the retailer, and

ultimately to the customer. At each level, proper management is required in order to ensure seamless flow of the products.

The main goal of supply chain management involves management of a wide range of components and processes, such as storage of raw materials, managing the inventory, warehousing, and movement of finished from the point of manufacture to the point of consumption. In economic terms, it can be referred to as the design, planning, management, and execution of supply chain activities from the point of production to the point of sale.

Supply Chain Management Functions

On a broader level, supply chain management consists of these four major functions and key element components, such as:

Integration:

This forms the crux of the supply chain and is meant to coordinate communications to produce effective and timely results. It can include innovation of new software or advanced technological processes to improve communications.

Operations:

This involves management of the day to day operations in the eCommerce business. For example, it may deal with keeping an eye on the inventory or coming up with marketing approaches.

Purchasing: This deals with the purchasing decisions and management, such as purchasing raw materials, source materials and so on.

Distribution:

This deals with the management of logistics across wholesalers, retailers, and customers. This may mean keeping an eye on the shipment, and other details. In addition to these, there are also some subsidiary functions that an effective supply chain management process

fulfills, such as:

- Aligning distribution flows
- Integrating the functions from manufacture to delivery
- Designing complex and advanced systems
- Managing and coordinating resources

Strategies of SCM

Supply chain management is a process used by companies to ensure that their supply chain is efficient and cost-effective. A supply chain is the collection of steps that a company takes to transform raw materials into a final product. The five basic strategies of supply chain management are discussed below:

Plan:

The initial stage of the supply chain process is the planning stage. We need to develop a plan or strategy in order to address how the products and services will satisfy the demands and necessities of the customers. In this stage, the planning should mainly focus on designing a strategy that yields maximum profit.

Develop:

After planning, the next step involves developing or sourcing. In this stage, we mainly concentrate on building a strong relationship with suppliers of the raw materials required for production. This involves not only identifying dependable suppliers but also determining different planning methods for shipping, delivery, and payment of the product.

Make:

The third step in the supply chain management process is the manufacturing or making of products that were demanded by the customer. In this stage, the products are designed, produced, tested, packaged, and synchronized for delivery. Here, the task of the supply chain manager is to schedule all the activities required for manufacturing, testing, packaging and



preparation for delivery. This stage is considered as the most metric-intensive unit of the supply chain, where firms can gauge the quality levels, production output and worker productivity.

Deliver:

The fourth stage is the delivery stage. Here the products are delivered to the customer at the destined location by the supplier. This stage is basically the logistics phase, where customer orders are accepted and delivery of the goods is planned. The delivery stage is often referred as logistics, where firms collaborate for the receipt of orders from customers, establish a network of warehouses, pick carriers to deliver products to customers and set up an invoicing system to receive payments.

Return:

The last and final stage of supply chain management is referred as the return. In the stage, defective or damaged goods are returned to the supplier by the customer. Here, the companies need to deal with customer queries and respond to their complaints etc.

Electronic SCM and its benefits

The fundamental challenge for supply chain management is how to efficiently integrate and optimize supply chain operations with dispersed marketplaces and characteristic demands using the latest advances in information technology.

eBusiness using Internet technology to facilitate information exchange and communication in business networks has emerged as an innovative approach further exploring value-adding opportunities in supply chains. The e-business approach plans and executes front-end and back-end operations in a supply chain using Web-based applications.

Incorporating e-business approach in supply chain management has been proved as a competitive method for increasing values to be added and improving process visibility, agility, speed, efficiency, and customer satisfaction. —Electronic supply chain management

(e-SCM) is the collaborative use of technology to enhance business-to-business processes and improve speed, agility, real-time control, and customer satisfaction. Not about technology change alone, e-SCM is about culture change and changes in management policy, performance metrics, business processes, and organizational structures across the supply chain.

A key feature of e-business equipped supply chain management is network centric. This focuses on connectivity, co-operation, co-ordination and information transparency. Networked supply chain partners share information, knowledge and other resources in real time. The networked relationships change the traditional supply chain information flows from linear transmission to end-to-end connections, i.e. information can be transferred directly from any partner of the supply chain to another partner without distortion and delay.

The activities of E-SCM include the following:

- Supply Chain Replenishment. Supply chain replenishment encompasses the integrated production and distribution processes. Companies can use replenishment information to reduce inventories, eliminate stocking points, and increase the velocity of replenishment by synchronizing supply and demand information across the extended enterprise.
- E-Procurement. It is the use of web-based technology to support the key procurement processes, including requisitioning, sourcing, contracting, ordering, and payment. E-procurement supports the purchase of both direct and indirect materials and employs several web-based functions, such as online catalogs, contracts, purchase orders, and shipping notices.
- Supply Chain Monitoring and Control Using RFID. This is one of the most promising applications of RFID (Radio-Frequency Identification).
- Inventory Management Using Wireless Devices. Many organizations are now achieving improvements in inventory management by using of bar-coding technologies (or RFID) and wireless devices.
- Collaborative Planning. It is a business practice that combines the business knowledge and forecasts of multiple players along a supply chain to improve the planning and fulfillment of

customer demand. Collaborative planning requires buyers and sellers to develop shared demand forecasts and supply plans for how to support demand.

- Collaborative Design and Product Development. It involves the use of product design and development techniques across multiple companies to improve product launch success and reduce time to market. During product development, engineering and design drawings can be shared over a secure network among the contracting firm, testing facility, marketing firm, and downstream manufacturing and service companies.
- E-Logistics. It is the use of web-based technologies to support the material acquisition, warehousing, and transportation processes. E-logistics enables distribution to couple routing optimization with inventory-tracking information. For example, Internet-based freight auctions enable spot buying of trucking capacity.

When implementing E-SCM can have the following benefits:

- It improves efficiency
- It reduces inventory
- It reduces cost
- It helps to take competitive advantage over competitors.
- It increases ability to implement just-in-time delivery, increases on-time deliveries, which enhances customer satisfaction.
- It reduces cycle time, increases revenue, by providing improved customer service.
- It improves order fulfillment, order management, decision making, forecasting, demand planning, and warehouse/distribution activities.
- It reduces paperwork, administrative overheads, inventory build-up, and the number of hands that handle goods on their way to the end-user i.e., the customer.

Components of Electronic SCM

Electronic supply chain management (e-SCM) has six significant components. An effective e-SCM policy has a few separate parts that work in congress with each other. The first of these is

e-procurement. E-procurement is any business-to-business, business-to-consumer and business-to-government method to purchase and sell supplies, services and other goods through the internet.

Depending on how you must source your product, this can also include information networking. Business-to-business e-procurement describes the process of your business buying from another business.

For example, if you buy widgets that go into your final product from A Corporation, you are engaged in a business-to-business relationship. Using an online supply management system will allow you to order parts more effectively and would be considered an e-procurement system.

Inventory Replenishment Systems

The next of the six steps in E-SCM are replenishment systems. The idea of replenishment is more commonly understood than various types of e-procurement are. When you are ordering to replenish stock online, you are typically engaging in a replenishment process. The inventory will explain the movement from upstream (warehouses) to downstream (main store or shipping locations). A successful replenishment system will keep stock flowing through your supply chain and help maintain standard amounts of product.

Supply Chain Collaborative Planning

Collaborative planning is an easy term to understand. The basic concept is planning in collaboration with others, which is essential to successful SCM of all kinds. In e-SCM, the cooperative players in planning sessions should represent every area of your supply chain. That includes people representing the software and hardware you need, sourcing for raw materials (if applicable) and any departments that have a hand in supply.

Collaborative Product Design/Development

Collaborative design is more critical now than it has ever been in the past. Cooperation tells potential customers that your business is friendlier and more comfortable to work with. This

business strategy of collaborative product design/development (CPD) is the process of collecting applications that allows multiple organizations the ability to work together during your product's design and developmental stages.

E-Logistics Basics

E-logistics is not much different than traditional logistics, at least on the surface. Your logistics specialists will plan, implement and control the flow of product and storage that will be needed for the business. They will have a complete understanding of the trail that products must travel from their point of origin to the point of consumption (the customer).

Supply Trades and Exchanges

Supply exchanges allow users to trade and exchange supplies. Online, this means that a user can trade items with other users on an individual level. On a business level, it ensures that there will be enough stock and raw materials on hand. If there are not, it will have a suitable replacement for whatever raw materials or stocks are missing. It's another form of resource management that is open to people who may not work together.

Electronic Logistics and its implementation

It is within this context that the concept of e-logistics' emerges. The terms electronic logistics, e-logistics, internet-enabled logistics or e-business (e-commerce) logistics have been loosely used in both academia and practice. Some consider e-logistics as a supportive delivery process for fulfilling online e-commerce orders. Others believe that e-logistics implies the use of information and communication technology to support the provision and execution of a broad range of logistics activities.

E-logistic is the logistical process that governs everything related to the online marketplace. It is a relatively novel concept. It is a dynamic set of communication computing and collaborative technologies that transform key logistical processes to be customer-centric by sharing data, knowledge and information with supply chain partners. It helps in coping with newly arising logistics challenges. The key elements of e-logistics are multi channel operation, cross border

functionality, warehouse layout and inventory, planning and forecasting and performance management. Success in e-logistics depends on the focus selected for the online shop. Proper collaboration, transparent communication with customers for delivery and returns are the other key factor that determines the success of e-logistic.

Process involved in e-logistics: -

- Method of payment
- Check product availability
- Arrange shipments
- Insurance
- Replenishment
- Contact with customers
- Returns

The difference between logistics and e-logistics are as follows: -

- Logistics refers to planning, execution of transport and handling of goods. E-logistics is basically automating the logistic process.
- Logistics plans, implements and controls the efficient, effective flow and storage of goods, services, and related information from the point-of-origin to the point-of-consumption in order to meet customers. E-logistics can be defined as the application of Internet based technologies to traditional logistics processes.

The structure of traditional supply chains transforms significantly at the effect of e-logistics. One of the possible effects is *disintermediation* meaning that certain members of the chain are eliminated or disappear altogether; the end user may come in direct contact with the wholesaler or even with the manufacturer.

The second group of changes is *re-intermediation* whereby the situation of the existing actors is re-interpreted, and they start playing a centralizing role stronger or weaker than before. A relevant example is if the manufacturer, the retailer or the supplier assumes the role of the

wholesaler.

The third group of changes is *intermediation* whereby completely new types of mediators may appear called the *cyber mediators*. Cyber mediators may appear at several points of the logistics chain, and interface between certain members. Cyber mediators are all the service providers who contribute to realizing the electronic exchange of products, e.g. transport, or warehousing firms helping the physical movement of goods, e-marketplace providers participating in IT communication, Internet providers, advertising agencies.

In this section, you have learnt about the goals, functions, and strategies of supply chain management. This knowledge would make you understand the various goals, functions and components of SCM used to develop the e-commerce for real time needs. Thus, the supply chain management unit would have brought you to closer to know the concept of basics of supply chain management.



UNIT –III E-PAYMENT SYSTEMS

INTRODUCTION

We learn through this lesson as electronic payment system for e-commerce decides the part of transactions to allow the user to make the purchase on their place; it also determines the scope of the secured transaction. All the payment system consists of well defined steps. The e-payment system can be achieved through the credit card, debit card, electronic fund transfer and e-money determines the easy way of the payment mode.

OBJECTIVES

After going through this lesson you will be able to

- Explain the modern payment systems and token based e-payment system.
- Define the steps for electronic payment.
- Recognize the net banking and security issues.

WHAT IS ELECTRONIC DATA INTERCHANGE (EDI)?

Electronic Data Interchange (EDI) is the electronic interchange of business information using a standardized format; a process which allows one company to send information to another company electronically rather than with paper. Business entities conducting business electronically are called trading partners.

Many business documents can be exchanged using EDI, but the two most common are purchase orders and invoices. At a minimum, EDI replaces the mail preparation and handling associated with traditional business communication. However, the real power of EDI is that it standardizes the information communicated in business documents, which makes possible a "paperless" exchange.

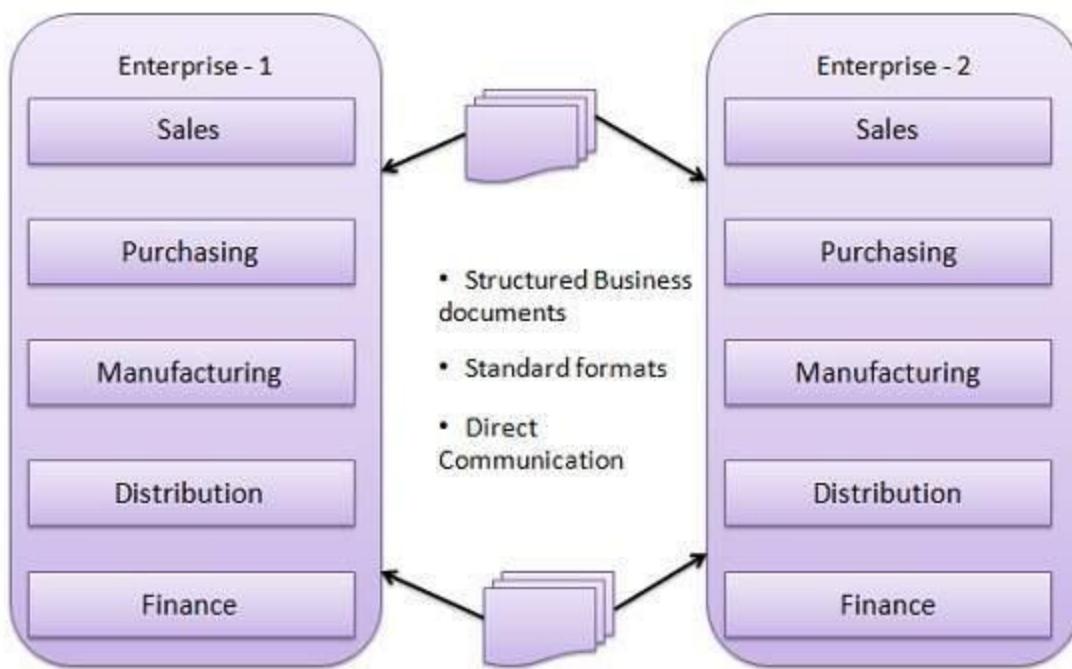
The traditional invoice illustrates what this can mean. Most companies create invoices using a

computer system, print a paper copy of the invoice and mail it to the customer. Upon receipt, the customer frequently marks up the invoice and enters it into its own computer system. The entire process is nothing more than the transfer of information from the seller's computer to the customer's computer. EDI makes it possible to minimize or even eliminate the manual steps involved in this transfer.

The process improvements that EDI offers are significant and can be dramatic. For example, consider the difference between the traditional paper purchase order and its electronic counterpart:

A Traditional Document Exchange	An EDI Document Exchange
This process normally takes between three and five days.	This process normally occurs overnight and can take less than an hour.
<ul style="list-style-type: none">Buyer makes a buying decision, creates the purchase order and prints it.Buyer mails the purchase order to the supplier.Supplier receives the purchase order and enters it into the order entry system.Buyer calls supplier to determine if purchase order has been received, or supplier mails buyer an acknowledgment of the order.	<ul style="list-style-type: none">Buyer makes a buying decision, creates the purchase order but does not print it.EDI software creates an electronic version of the purchase order and transmits it automatically to the supplier.Supplier's order entry system receives the purchase order and updates the system immediately on receipt.Supplier's order entry system creates an acknowledgment and transmits it back to confirm receipt.

EDI stands for Electronic Data Interchange. EDI is an electronic way of transferring business documents in an organization internally, between its various departments or externally with suppliers, customers, or any subsidiaries. In EDI, paper documents are replaced with electronic documents such as word documents, spreadsheets, etc.



EDI DOCUMENTS

Following are the few important documents used in EDI –

- Invoices
- Purchase orders
- Shipping Requests
- Acknowledgement

- Business Correspondence letters
- Financial information letters

Steps in an EDI System

Following are the steps in an EDI System.

- A program generates a file that contains the processed document.
- The document is converted into an agreed standard format.
- The file containing the document is sent electronically on the network.
- The trading partner receives the file.
- An acknowledgement document is generated and sent to the originating organization.

Advantages of an EDI System

Following are the advantages of having an EDI system.

- **Reduction in data entry errors.** – Chances of errors are much less while using a computer for data entry.
- **Shorter processing life cycle** – Orders can be processed as soon as they are entered into the system. It reduces the processing time of the transfer documents.
- **Electronic form of data** – It is quite easy to transfer or share the data, as it is present in electronic format.
- **Reduction in paperwork** – As a lot of paper documents are replaced with electronic documents, there is a huge reduction in paperwork.
- **Cost Effective** – As time is saved and orders are processed very effectively, EDI proves to be highly cost effective.

- **Standard Means of communication** – EDI enforces standards on the content of data and its format which leads to clearer communication.

DATA PROCESSING AND EDI

One of the technological fields required to implement EDI is data processing. Data processing allows the EDI operation to take information that is resident in a user application and transform that data into a format that is recognizable to all other user applications that have an interest in using the data. In the EDI environment, data processing will handle both outgoing and incoming data, as depicted in figure.

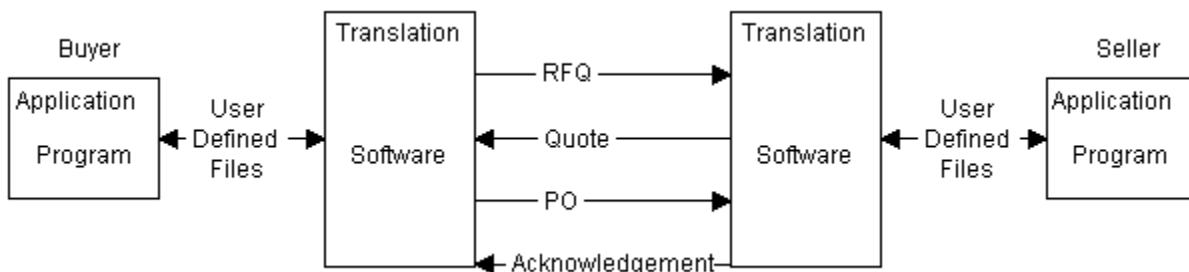


Figure: Data Processing and EDI

The user-defined files in figure 1 are the flat files that are produced by a business application. These files may or may not be formatted by the user. These are the business files that need to be translated into the X12 format.

The translation software in figure 1 is the software that maps the elements of a user-defined file into the ANSI X12 or EDIFACT standard format. This software is available through commercial retailers on various platforms from PCs to mainframes.

The mapping of the user-defined data elements into the translation software requires some skill in mapping. The mapping itself requires knowledge of both the translation software and the EDI standards being used so new mapping and processing rules can be set up for the translator. If a new trading partner places no new requirements on the translator, the new trading partner is simply set up under existing mapping rules. However, when the trading partner requires that

additional or different data fields be sent, a new mapping scheme needs to be identified and associated with that trading partner (Sokol, 1995).

APPLICATIONS OF EDI

The business process examined here to which to apply EDI concepts is the procurement process. This business process was chosen for two reasons. First, within industry itself, new EDI technology is developing fastest in this area. Second, the President has issued an initiative to streamline government procurement through the use of EC. Since the initiative was announced in October 1993, the thrust within the government has been to implement the initiative using EDI technologies.

5.2 A typical small purchasing application

The business application depicted in figure is a simple purchasing application.

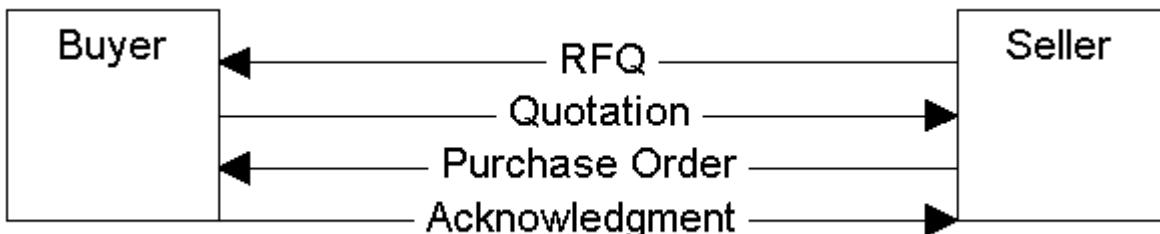


Figure: Business Application and EDI

As shown in figure , the procurement process normally begins with the buyer being made aware of a need within the organization to make a purchase. As soon as a need is established and precisely described, the buyer begins the process of selecting the supplier that will be used. Routine items may be purchased using suppliers that have already been contracted with. New items or high-value items may require investigation by the buyer in selecting an appropriate supplier.

The buyer will select a preliminary group of suppliers and then employ the methods of competitive bidding, negotiation, or a combination of the two to secure the final supplier. When competitive bidding is used, the buyer issues an RFQ to the suppliers that the buyer might be willing to do business with. Typically, the RFQ will contain the same basic information that will be included on the purchase order.

When a supplier receives an RFQ that the supplier has an interest in bidding on, the supplier issues a quotation to the buyer. The quotation will contain pricing information so the buyer can do a price comparison between the suppliers. For instance, an RFQ might be issued for 200 gallons of white, latex-based paint. The supplier who is issuing a quotation may quote a price of \$xxx.xx.

Once a supplier has been selected, the purchasing department issues a serially numbered purchase order. The purchase order itself becomes a legally binding contract. For this reason the buyer will carefully prepare the purchase order and ensure that the wording is precise and specific. Any drawings, diagrams, or related documentation that is necessary to precisely describe the item being purchased will be incorporated or referenced in the purchase order. Additionally any conditions or sampling plans will be stated precisely.

Normally a list of terms and conditions designed to give legal protection to the buyer on various matters prescribed by law are incorporated in, or attached to, all purchase orders as boilerplate to those orders. These boilerplate terms and conditions cover a wide range of concerns including, contract acceptance, delivery performance and contract termination, shipment rejections, assignment and contracting or the order, patent rights and infringements, warranties, compliance with regulations, and invoicing and payment procedures.

Change orders are required when a company makes a change in the contract after a purchase order has been issued. The buyer will issue the change order and, when accepted by the supplier, the change order either supplements or replaces the original purchase order.

The original copy of the purchase order constitutes a legal offer to buy. The purchase contract then comes into existence when the contract is performed or when formal acknowledgment of

acceptance of the offer is made.

Normal business methods suggest that the supplier may not bother to acknowledge the offer if the items are immediately shipped to the buyer. When the items are not immediately shipped, then the supplier should send the acknowledgment back to the buyer.

The supplier may acknowledge the buyer's order accepting the buyer's terms and conditions, or may acknowledge and incorporate the supplier's own terms and conditions in the acknowledgment. If the seller's terms are different than the buyer's, the law allows them to be incorporated into the contract as long as they do not alter the buyer's intent or unless the buyer files a written objection to the inclusion of new terms and conditions. In general, terms and conditions that are in conflict between buyer and seller are excluded from the contract, leaving the settlement to negotiation or suit. For this reason it is imperative that the buyer beware of the terms and conditions in the order acceptance.

EDI is well established as effective technology got reducing costs and increasing efficiency. EDI technologies are approximately the same age as Internet technologies. In the past, the technologies have been mutually exclusive, but this is rapidly changing. As the two technological communities begin to merge and as the business community sees the advantages of this merger, EDI and the Internet will eventually become ubiquitous.

EDI users are already seeing dramatic cost savings by moving their traffic from the traditional VAN services to the Internet. As EDI working groups within the Internet Engineering Task Force create interoperability standards for the use of EDI over the Internet and as security issues are addressed, EDI over the Internet will be part of normal business. The EDI working group already has a charter for an interoperability standard for process-to-process EDI. Once that standard is in place, real-time EDI over the Internet will replace normal time-delayed, batch-style interactions.

E-PAYMENT SYSTEMS

E-commerce sites use electronic payment, where electronic payment refers to paperless monetary transactions. Electronic payment has revolutionized the business processing by reducing the

paperwork, transaction costs, and labor cost. Being user friendly and less time-consuming than manual processing, it helps business organization to expand its market reach/expansion. Listed below are some of the modes of electronic payments – EPSs enable a customer to pay for the goods and services online by using integrated hardware and software systems. The main objectives of EPS are to increase efficiency, improve security, and enhance customer convenience and ease of use. Although these systems are in their immaturity, some significant development has been made. There are several methods and tools that can be used to enable EPS implementation.

- Credit Card
- Debit Card
- Smart Card
- E-Money
- Electronic Fund Transfer (EFT)

Credit Card

Payment using credit card is one of most common mode of electronic payment. Credit card is small plastic card with a unique number attached with an account. It has also a magnetic strip embedded in it which is used to read credit card via card readers. When a customer purchases a product via credit card, credit card issuer bank pays on behalf of the customer and customer has a certain time period after which he/she can pay the credit card bill. It is usually credit card monthly payment cycle.

Debit Card

Debit card, like credit card, is a small plastic card with a unique number mapped with the bank account number. It is required to have a bank account before getting a debit card from the bank. The major difference between a debit card and a credit card is that in case of payment through debit card, the amount gets deducted from the card's bank account immediately and there should be sufficient balance in the bank account for the transaction to get completed; whereas in case of a credit card transaction, there is no such compulsion. Debit cards free the customer to carry cash

and cheques. Even merchants accept a debit card readily. Having a restriction on the amount that can be withdrawn in a day using a debit card helps the customer to keep a check on his/her spending.

Smart Card

Smart card is again similar to a credit card or a debit card in appearance, but it has a small microprocessor chip embedded in it. It has the capacity to store a customer's work-related and/or personal information. Smart cards are also used to store money and the amount gets deducted after every transaction. Smart cards can only be accessed using a PIN that every customer is assigned with. Smart cards are secure, as they store information in encrypted format and are less expensive/provide faster processing. Mondex and Visa Cash cards are examples of smart cards.

E-Money

E-Money transactions refer to situation where payment is done over the network and the amount gets transferred from one financial body money transactions are faster, convenient, and save a lot of time. Online payments done via credit cards, debit cards, or smart cards are examples of e-money transactions. Another popular example is e-cash. In case of e-cash, both customer and merchant have to sign up with the bank or company issuing e-cash.

Electronic Fund Transfer

It is a very popular electronic payment method to transfer money from one bank account to another bank account. Accounts can be in the same bank or different banks. Fund transfer can be done using ATM (Automated Teller Machine) or using a computer. Nowadays, internet-based EFT is getting popular. In this case, a customer uses the website provided by the bank, logs in to the bank's website and registers another bank account. He/she then places a request to transfer certain amount to that account. Customer's bank transfers the amount to other account if it is in the same bank, otherwise the transfer request is forwarded to an ACH (Automated Clearing House) to transfer the amount to other account and the amount is deducted from the customer's account. Once the amount is transferred to other account, the customer is notified of the fund transfer by the bank.



ELECTRONIC FUNDS TRANSFER

Electronic funds transfer is one of the oldest electronic payment systems. EFT is the groundwork of the cash-less and check-less culture where paper bills, checks, envelopes, stamps are eliminated. EFT is used for transferring money from one bank account directly to another without any paper money changing hands. The most popular application of EFT is that instead of getting a paycheck and putting it into a bank account, the money is deposited to an account electronically. EFT is considered to be a safe, reliable, and convenient way to conduct business.

Why is electronic transfer preferred?

Electronic funds transfer is a much more preferred money transfer option as it allows customers to make money transfers at the comfort of their homes using integrated banking tools such as internet and mobile banking. Besides being convenient, electronic transfer modes are considered to be safe, secure and make transferring money much simpler. Electronic transfers are processed immediately with the transferred amount being deducted from one account and credited to the other in real time, thus saving time and effort involved in physically transferring a sum of money. Opting for electronic transferring system also reduces the possibilities of any mistakes as a transaction is only authorized with complete details which include the correct account number of the beneficiary and the target bank's specific IFSC code.

How do you transfer funds?

Transferring funds via electronic gateway is much simpler than the conventional methods. You can choose to:-

- Transfer funds into your own linked accounts of the same bank network.
- Transfer funds into different account of the same bank.
- Transfer funds into different bank's accounts using NEFT.
- Transfer funds into other bank accounts using RTGS
- Transfer funds into various accounts using IMPS.

Types of electronic funds transfer?

- NEFT or National Electronics Funds Transfer
- RTGS or Real Time Gross Settlement
- IMPS or Immediate Payment Service.

NEFT

The National Electronic Funds Transfer is a nation-wide money Nowadays, internet-based EFT is getting popular. In this case, a customer uses the website provided by the bank, logs in to the bank's website and registers another bank account. He/she then places a request to transfer certain amount to that account.

Customer's bank transfers the amount to other account if it is in the same bank, otherwise the transfer request is forwarded to an ACH (Automated Clearing House) to transfer the amount to other account and the amount is deducted from the customer's account.

Once the amount is transferred to other account, the customer is notified of the fund transfer by the bank. 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 of any other bank network. Not just individuals but also firms and corporate organizations may use the NEFT system to transfer funds to and fro.

RTGS

Real Time Gross Settlement as the name suggests is a real time funds transfer system which facilitates you to transfer funds from one bank to another in real time or on a gross basis. The transaction isn't put on a waiting list and cleared out instantly.

RTGS payment gateway, maintained by the Reserve Bank of India makes transactions between banks electronically. The transferred amount is instantly deducted from the account of one banks and credited to the other bank's account.

IMPS

Majority of the funds transferred using electronic channels are processed via NEFT or RTGS. But as the funds could only be cleared in batches using these transfer gateways, the National Payments Corporation of India introduced a pilot mobile payment project also known as the Immediate Payment Service (IMPS).

Available to Indian Nowadays, internet-based EFT is getting popular. In this case, a customer uses the website provided by the bank, logs in to the bank's website and registers another bank account. He/she then places a request to transfer certain amount to that account. Customer's bank transfers the amount to other account if it is in the same bank, otherwise the transfer request is forwarded to an ACH (Automated Clearing House) to transfer the amount to other account and the amount is deducted from the customer's account.

Once the amount is transferred to other account, the customer is notified of the fund transfer by the bank.

Public, IMPS offers instant electronic transfer service using mobile phones. IMPS interbank transfer service is available 24X7 and allows you to use your mobile phones to access your account and to authorize transfer of funds between accounts and banks. The IMPS service also features a secure transfer gateway and an immediate confirmation on fulfilled orders.

DIGITAL TOKEN BASED ELECTRONIC PAYMENTS

The digital token based payment system is a new form of electronic payment system which is based on electronic tokens rather than e-cheque or e-cash. The electronic tokens are generated by the bank or some financial institutions. Hence we can say that the electronic tokens are equivalent to the cash which are to be made by the bank. Categories of Electronic Tokens:-

1. Cash or Real Time:-

In this mode of electronic tokens transactions takes place via the exchange of electronic currency (e-cash).

2. Debit or Prepaid:-

In this electronic payment system the prepaid facilities are provided. It means that for transactions of information user pay in advance. This technology are used in smart card, electronic purses etc.

3. Credit or Postpaid:-

These types of electronic token based on the identity of customers which issue a card, their authentication and verification by a third party. In this system the server authenticates the customers and then verifies their identity through the bank. After all these processing the transaction take place.

The Digital Token based system has following issues for which they are established:-

1. Nature of transaction for which instrument is designed:-

In this category, the design issues of token take place. It may be designed to handle micro payments. It may be designed for conventional products. Some tokens are designed specifically and other generally. The design issue involves involvement of parties, purchase interaction and average amount.

2. Means of Settlement:-

The Digital Tokens are used when their format must be in cash, credit, electronic bill payments etc. Most transaction settlement methods use credit cards while other used proxies for values.

3. Approach to Security, Anonymity and Authentication:-

Since the electronic token are vary from system to system when the business transaction take place. So it is necessary to secure it by intruders and hackers. For this purpose various security features are provided with electronic tokens such as the method of encryption. The encryption method use the digital signatures of the customers for verification and authentication.

4. Risk Factors:-

The electronic tokens may be worthless and if the Nowadays, internet-based EFT is getting popular. In this case, a customer uses the website provided by the bank, logs in to the bank's website and registers another bank account. He/she then places a request to transfer certain amount to that account.

Customer's bank transfers the amount to other account if it is in the same bank, otherwise the transfer request is forwarded to an ACH (Automated Clearing House) to transfer the amount to other account and the amount is deducted from the customer's account Once the amount is transferred to other account, the customer is notified of the fund transfer by the bank. customer have currency on token than nobody will accept it, If the transaction has long time between delivery of products and payments to merchants then merchant exposes to the risk. so it is important to analysis risk factor in electronic payment system.

MODERN PAYMENT SYSTEMS

A payment system is a set of processes and technologies that transfer monetary value from one entity or person to another. Payments are typically made in exchange for the provision of goods, services or to satisfy a legal obligation. They can be made in a variety of currencies using several methods such as cash, checks, electronic payments and cards. The essence of a payment system is that it uses cash-substitutes, such as checks or electronic messages, to create the debits and credits that transfer value.

A modern payment system directly integrates to your point of sale and delivers a robust payment experience for both merchant and customer. It connects merchants to a total payment ecosystem, from merchant services to remote terminal solutions, to hardware procurement.

The benefits of today's modern payment system.

1. Complete Payment Flexibility
2. Revolutionary Pricing
3. Get Paid Faster

4. Secure Payment and POS Integration

5. Remote Terminal Management

6. Lower Operational Costs

7. Access to Premium Payment Services

Businesses and consumers alike are interested in faster, safer, and more convenient payment methods, as cash is becoming obsolete and credit cards are being phased out. Mobile and social payment options could be the future of millennial-driven purchasing, creating the sort of instant gratification that millennials expect.

Mobile in-store payments and apps

The development and usage of mobile POS options will increase exponentially as the demand and usage of mobile devices grows. Currently, options such as SMS and NFC payment methods are possible, but they are not prevalent or convenient enough to satisfy the growing demand of millennials for an easier, faster, and safer way to pay via mobile.

Opening up smartphones as a POS method of payment will create innumerable opportunities for the entire payments industry; In-store payment apps are also on the rise, with PayPal Beacon and Apple's iBeacon paving the way. Many consumers are turning towards these methods as a safer option, quicker than waiting in line, and easier to access, as each transaction has its own unique code. They allow users to simply pay for items found in the physical store via apps on their mobile phones.

Digital currencies

Digital currencies will surface and solidify their place in the economic ecosystem of financing. The popularity of digital currencies stems from the instantaneous and border-less nature of the transactions. Essentially, this payment method can be used anywhere, and it isn't being regulated by government influences and rules, yet.

Social media payment options

Social media networks will expand their reach to include payment solutions such as transferring money from one user to the next (peer-to-peer) or paying directly within the network. Social payments are being split into two categories: on-site purchases and peer-to-peer money transfer services. The most advanced ideas of a mobile-based payment system are known as mobile wallets. With a mobile wallet, consumers can load multiple cards into one device and choose the preferred payment method for each transaction, all without carrying an actual wallet of cards.

STEPS FOR ELECTRONIC PAYMENT

An electronic payment is any kind of non-cash payment that doesn't involve a paper check. Methods of electronic payments include credit cards, debit cards and the ACH (Automated Clearing House) network. The ACH system comprises direct deposit, direct debit and electronic checks (e-checks). Online payments are made instantly, so it's convenient and saves lots of time.

It is important, especially today when every aspect of our lives happens at a fast pace.

1. Customer action –

The process begins when a customer visits the merchant's site and adds to the cart items (products or services) they want to buy. They, then need to fill out the payment form with certain information (e.g. card number, expiration date, CVV code, address). Depending on the payment method, the customer is either redirected to external service or bank's website or continues the payment on the website or in an app.

2. Payment authentication by the operator –

The payment gateway (with other parties involved) checks whether the payment information is valid. If everything's OK, the process continues and the payment gateway reports back the successful transaction. After that, the customer receives a payment confirmation — the notification is usually displayed in real-time.

3. Payment to the seller's account –

An online payment provider receives a payment from a customer's bank and transfers it to the merchant's account.

The steps involved in online payment processing have significantly reduced the waiting period and hassle when purchasing commercial products and services. With new technologies and payment processes, people can easily purchase products and one-time services, set up recurring payment, and streamline payments that allow sellers to accept new orders 24/7.

The operation of the model is often referred to as the payment process and it involves four basic steps:

- Payment instructions are the information contained in a wire transfer or check. These instructions are from the payer and tell the paying bank to transfer value to the beneficiary through the network and receiving bank.
- Payment generation is when the instructions are entered into the system—e.g. printed on a check or transmitted via ACH or wire.
- Clearing is the process where the banks use the payment information to transfer money between themselves on behalf of the payer and the beneficiary (payee).
- Settlement is the final step in the basic process and occurs when the beneficiary's (payee's) bank account is credited and the payer's bank account is debited. Final settlement occurs when the banks irrevocably pass value among themselves, a distinction that has important treasury implications.

The actual payment process will depend on the type of payment instrument that the payer and payee choose to use—or have chosen for them by their financial institutions. The benefits of streamlined online payment processing steps that drive business success include global reach, electronic records, advanced fraud protection and secure transactions, simple integration into various website platforms and bank processing systems, and user-friendly features.

These convenient features will make it easier for consumers to purchase your products and services and to keep up with a large demand. Most of the professional payment processing service providers can configure their payment services to suit your business needs. Mobile



payments comprise one of the newest forms of online payment processing. Instead of using credit cards, a buyer has to simply send a payment request via a text message or a software application that's linked to a credit card or bank account. And while there is a concern of eCommerce fraud, added security measures such as a security pin helps diminish the chance of this occurring.

PAYMENT SECURITY

Security is an essential part of any transaction that takes place over the internet. Customers will lose his/her faith in e-business if its security is compromised. Following are the essential requirements for safe e-payments/transactions –

- Confidentiality – Information should not be accessible to an unauthorized person. It should not be intercepted during the transmission.
- Integrity – Information should not be altered during its transmission over the network.
- Availability – Information should be available wherever and whenever required within a time limit specified.
- Authenticity – There should be a mechanism to authenticate a user before giving him/her an access to the required information.
- Non-Repudiability – It is the protection against the denial of order or denial of payment. Once a sender sends a message, the sender should not be able to deny sending the message. Similarly, the recipient of message should not be able to deny the receipt.
- Encryption – Information should be encrypted and decrypted only by an authorized user.
- Auditability – Data should be recorded in such a way that it can be audited for integrity requirements.

The electronic payment system-the ability to pay electronically for goods and services purchased online-are an integral part of e-commerce and an essential infrastructure for e-commerce models. One of the major reasons for the widespread of e-commerce transactions is perhaps the rapid development and growth of various electronic payment systems. In the developed countries, credit cards have been used even before the advent of Internet.



The present part of the study revealed many electronic payment systems and broadly this electronic payment system can be grouped or classified in to four categories:

- (1) Online Credit Card Payment System.
- (2) Online Electronic Cash System.
- (3) Electronic Cheque System and
- (4) Smart Cards based Electronic Payment System. These payment systems have numbers of requirements: e.g. security, acceptability, convenience, cost, anonymity, control, and traceability.

MEASURES TO ENSURE SECURITY

Major security measures are following –

- **Encryption** – It is a very effective and practical way to safeguard the data being transmitted over the network. Sender of the information encrypts the data using a secret code and only the specified receiver can decrypt the data using the same or a different secret code.
- **Digital Signature** – Digital signature ensures the authenticity of the information. A digital signature is an e-signature authenticated through encryption and password.
- **Security Certificates** – Security certificate is a unique digital id used to verify the identity of an individual website or user.

Secure Socket Layer (SSL)

It is the most commonly used protocol and is widely used across the industry. It meets following security requirements –

- Authentication
- Encryption
- Integrity
- Non-reputability

"https://" is to be used for HTTP urls with SSL, where as "http://" is to be used for HTTP urls without SSL.

Secure Hypertext Transfer Protocol (SHTTP)

SHTTP extends the HTTP internet protocol with public key encryption, authentication, and digital signature over the internet. Secure HTTP supports multiple security mechanism, providing security to the end-users. SHTTP works by negotiating encryption scheme types used between the client and the server.

Secure Electronic Transaction

It is a secure protocol developed by MasterCard and Visa in collaboration. Theoretically, it is the best security protocol. It has the following components –

- **Card Holder's Digital Wallet Software** – Digital Wallet allows the card holder to make secure purchases online via point and click interface.
- **Merchant Software** – This software helps merchants to communicate with potential customers and financial institutions in a secure manner.
- **Payment Gateway Server Software** – Payment gateway provides automatic and standard payment process. It supports the process for merchant's certificate request.
- **Certificate Authority Software** – This software is used by financial institutions to issue digital certificates to card holders and merchants, and to enable them to register their account agreements for secure electronic commerce.

NET BANKING

With the rapid development of technology, internet plays a significant role in changing the banking scenario. It provides an online platform for various banking transactions through which it offers various services like online payment, online fund transfer, online stock trading and online shopping etc. The use of internet as a delivery channel for banking services is increasing



widely in banking sector. Internet banking facilities enable financial institution and customers to access their accounts, transactions and getting information financial products & services. Internet banking (e-banking) facilitates customers to avail various small and large value banking products and services through electronic channels.

Internet banking comprises banking activities or services which can be avail by the customers at any point of time and from any places with their convenience, it is also called PC banking, online banking, cyber banking, virtual banking, etc. Internet banking delivers banking services through the open-access computer network i.e. Internet, directly to customers home that can be used with different electronic devices such as personal computer, mobile phone with a browser or desktop software, digital television.

So, we can say that Internet banking is about using banking facilities via the internet with the help various electronic devices. Using Internet banking is beneficial for both i.e. Costumers as well as banks. The benefits of adopting internet banking are mentioned below: Benefits for costumers

- Less waiting time:
- Ease and Convenience:
- 24/7 Availability:
- Self service channel:
- Save time and money:

Benefits for banks

- Increased Profitability:
- Cost effective mechanism:
- Reach where there is no branch:
- Improve Customer relationship:-
- Eco-friendly image:

The security of information may be one of the biggest concerns to the internet users. For Internet Banking users who most likely connect to the internet via dial-up modem, is faced with a smaller risk of someone breaking into their computers. Only organizations such as banks with dedicated internet connections face the risk of someone from the internet gaining unauthorized access to their computer or network. However, the electronic banking system users still face the security risks with unauthorized access into their banking accounts. In order to provide effective and secure banking transactions, the following major controls must be ensured.

- Authenticity controls: To verify identity to individuals like password, pin etc.
- Accuracy control: To ensure the correctness of the data, following across the network
- Completeness control: To make sure that no data is missing
- Redundancy controls: To see that data is traveled and processed only once and there is no repetitive sending of data
- Privacy control: To protect the data from inadvertent or unauthorized access.
- Audit trail controls: To ensure keeping chronological role of events that are occurred in the system,
- Existence controls: To make sure that ongoing availability of all the system resources with the same throughout.
- Efficiency: To ensure that the system uses minimum resources, to achieve the desired goal.
- Firewall controls: To prevent unauthorized users accessing the private network, which are connected to Internet?
- Encryption controls: To enable only those who possess secret key to decrypt the cyber text.

In this unit, you have learnt about the basics of e-payment systems, electronic fund transfer, modern payment system and steps for electronic payment. This knowledge would make you understand the various payment option through e-commerce website based transaction and net banking and payment security options used to do the online transaction. Thus, the E-Payment Systems unit would have brought you to closer to know the concept of electronic fund transfer.



DIGITAL SIGNATURES AND CERTIFICATES

Encryption – Process of converting electronic data into another form, called cipher text, which cannot be easily understood by anyone except the authorized parties. This assures data security.

Decryption– Process of translating code to data.

- Message is encrypted at the sender's side using various encryption algorithms and decrypted at the receiver's end with the help of the decryption algorithms.
- When some message is to be kept secure like username, password, etc., encryption and decryption techniques are used to assure data security.

Types of Encryption

- **Symmetric Encryption**– Data is encrypted using a key and the decryption is also done using the same key.
- **Asymmetric Encryption**-Asymmetric Cryptography is also known as public key cryptography. It uses public and private keys to encrypt and decrypt data. One key in the pair which can be shared with everyone is called the public key. The other key in the pair which is kept secret and is only known by the owner is called the private key. Either of the keys can be used to encrypt a message; the opposite key from the one used to encrypt the message is used for decryption.

Public key– Key which is known to everyone. Ex-public key of A is 7, this information is known to everyone.

Private key– Key which is only known to the person who's private key it is.

Authentication-Authentication is any process by which a system verifies the identity of a user who wishes to access it.

Non-repudiation– Non-repudiation means to ensure that a transferred message has been sent and received by the parties claiming to have sent and received the message. Non-repudiation is a

way to guarantee that the sender of a message cannot later deny having sent the message and that the recipient cannot deny having received the message.

Integrity – to ensure that the message was not altered during the transmission.

Message digest -The representation of text in the form of a single string of digits, created using a formula called a one way hash function. Encrypting a message digest with a private key creates a digital signature which is an electronic means of authentication.

DIGITAL SIGNATURE

As more and more information is available on the web, securing that data becomes increasingly important to protect users. The Internet is the global network of non-executive directors and has a lot of security risks. Cybercrime carried out on the Web can include identity theft, fraud, espionage, and intelligence gathering. Web-based vulnerabilities now outnumber traditional computer security concerns. So, the information system based on the Internet is facing a wide range of security threats.

A digital signature is a mathematical technique used to validate the authenticity and integrity of a message, software or digital document.

ZHU Junxuan and colleagues see that the existing Web systems have the following defects in the security aspects:-

1. The system lacks an effective authentication mechanism.
2. The Web server cannot determine whether the web information has been tampered with.
3. The transmission of information is not encrypted, which is easy to cause disclosure of sensitive information.
4. The lack of user-level classification is easily lead to excesses access control failure

DEFINITIONS

One simple word definition: a “digital signature” is extra data appended to a message which identifies and authenticates the identity of the sender and the message data using public-key

encryption.

Digital Signature is a method to encrypt a message (such as documents, contracts, notifications) which will be transferred, adopting data-exchanging protocol and data-encrypting algorithm.

A digital signature is a mathematical technique used to validate the authenticity and integrity of a message, software or digital document. It's the digital equivalent of a handwritten signature or stamped seal, but it offers far more inherent security. A digital signature is intended to solve the problem of tampering and impersonation in digital communications.

Digital signatures can provide evidence of origin, identity and status of electronic documents, transactions or digital messages. Signers can also use them to acknowledge informed consent.

In many countries, including the United States, digital signatures are considered legally binding in the same way as traditional handwritten document signatures.

How do digital signatures work?

Digital signatures are based on public key cryptography, also known as asymmetric cryptography. Using a public key algorithm, such as RSA (Rivest-Shamir-Adleman), two keys are generated, creating a mathematically linked pair of keys, one private and one public.

Digital signatures work through public key cryptography's two mutually authenticating cryptographic keys. The individual who creates the digital signature uses a private key to encrypt signature-related data, while the only way to decrypt that data is with the signer's public key.

If the recipient can't open the document with the signer's public key, that's a sign there's a problem with the document or the signature. This is how digital signatures are authenticated.

Digital signature technology requires all parties trust that the individual creating the signature has kept the private key secret. If someone else has access to the private signing key, that party could create fraudulent digital signatures in the name of the private key holder.

The functions of digital signature:



1. Assuring data integrity. Once the message changes a little, the abstract will change a lot for hash function's peculiarity, so that avoids the message being distorted.
2. Anti-deniability. Using public key cryptography algorithm, the sender can't deny that he has sent the message for he has the private key.
3. Avoiding receivers forging message that is claimed to be from the sender.

Importance of Digital Signature

Out of all cryptographic primitives, the digital signature using public key cryptography is considered as very important and useful tool to achieve information security.

Apart from ability to provide non-repudiation of message, the digital signature also provides message authentication and data integrity. Let us briefly see how this is achieved by the digital signature –

- **Message authentication** – When the verifier validates the digital signature using public key of a sender, he is assured that signature has been created only by sender who possess the corresponding secret private key and no one else.
- **Data Integrity** – In case an attacker has access to the data and modifies it, the digital signature verification at receiver end fails. The hash of modified data and the output provided by the verification algorithm will not match. Hence, receiver can safely deny the message assuming that data integrity has been breached.
- **Non-repudiation** – Since it is assumed that only the signer has the knowledge of the signature key, he can only create unique signature on a given data. Thus the receiver can present data and the digital signature to a third party as evidence if any dispute arises in the future.

By adding public-key encryption to digital signature scheme, we can create a cryptosystem that can provide the four essential elements of security namely – Privacy, Authentication, Integrity, and Non-repudiation.

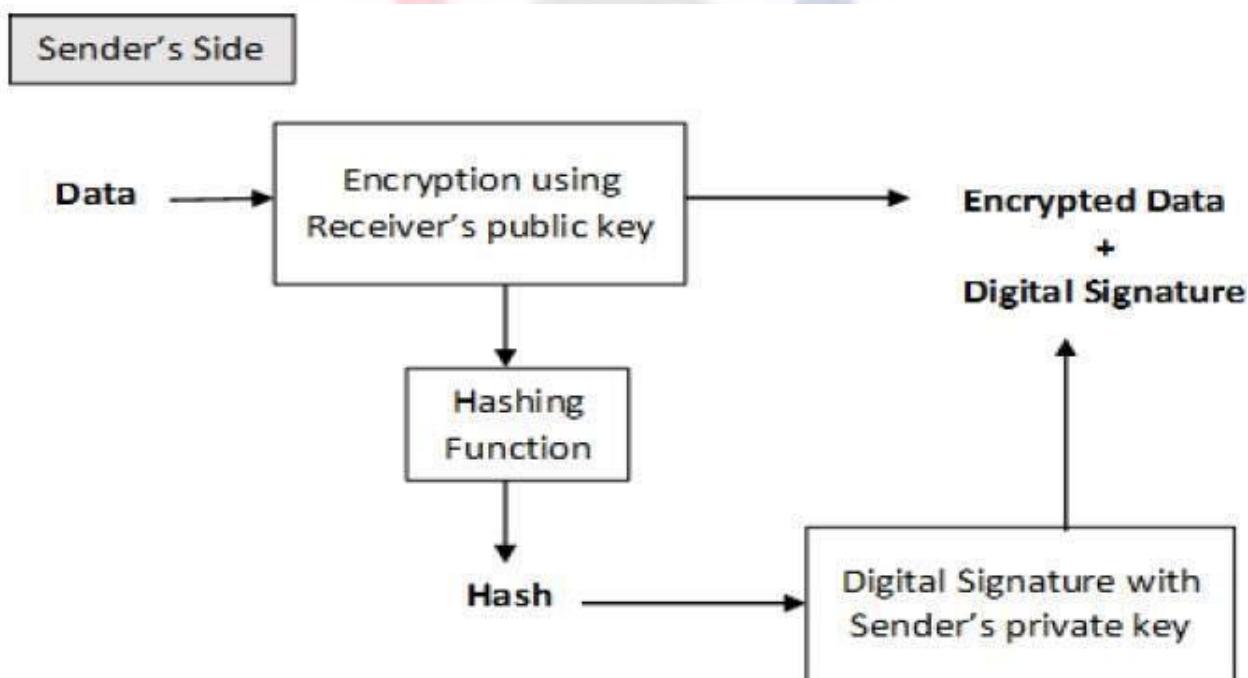
Encryption with Digital Signature

In many digital communications, it is desirable to exchange an encrypted messages than plaintext to achieve confidentiality. In public key encryption scheme, a public (encryption) key of sender is available in open domain, and hence anyone can spoof his identity and send any encrypted message to the receiver.

This makes it essential for users employing PKC for encryption to seek digital signatures along with encrypted data to be assured of message authentication and non-repudiation.

This can be achieved by combining digital signatures with encryption scheme. Let us briefly discuss how to achieve this requirement. There are **two possibilities, sign-then-encrypt and encrypt-then-sign**.

However, the crypto system based on sign-then-encrypt can be exploited by receiver to spoof identity of sender and send that data to third party. Hence, this method is not preferred. The process of encrypt-then-sign is more reliable and widely adopted. This is depicted in the following illustration –



The receiver after receiving the encrypted data and signature on it, first verifies the signature using sender's public key. After ensuring the validity of the signature, he then retrieves the data through decryption using his private key.

USES FOR DIGITAL SIGNATURES

Industries use digital signature technology to streamline processes and improve document integrity. Industries that use digital signatures include the following:

- **Government.** The U.S. Government Publishing Office (GPO) publishes electronic versions of budgets, public and private laws, and congressional bills with digital signatures. Digital signatures are used by governments worldwide for a variety of reasons, including processing tax returns, verifying business-to-government (B2G) transactions, ratifying laws and managing contracts.

Most government entities must adhere to strict laws, regulations and standards when using digital signatures. Many governments and corporations also use smart cards to ID their citizens and employees. These are physical cards endowed with a digital signature that can be used to give the cardholder access to an institution's systems or physical buildings.

- **Healthcare.** Digital signatures are used in the healthcare industry to improve the efficiency of treatment and administrative processes, to strengthen data security, for e-prescribing and hospital admissions.

The use of digital signatures in healthcare must comply with the Health Insurance Portability and Accountability Act (HIPAA) of 1996.

- **Manufacturing.** Manufacturing companies use digital signatures to speed up processes, including product design, quality assurance (QA), manufacturing enhancements, marketing and sales.

The use of digital signatures in manufacturing is governed by the International

Organization for Standardization (ISO) and the National Institute of Standards and Technology (NIST) Digital Manufacturing Certificate (DMC).

- **Financial services.** The U.S. financial sector uses digital signatures for contracts, paperless banking, loan processing, insurance documentation, mortgages and more.

This heavily regulated sector uses digital signatures with careful attention to the regulations and guidance put forth by the Electronic Signatures in Global and National Commerce Act (E-Sign Act), state Uniform Electronic Transactions Act (UETA) regulations, the Consumer Financial Protection Bureau (CFPB) and the Federal Financial Institutions Examination Council (FFIEC).

- **Cryptocurrencies.**

Digital signatures are also used in bitcoin and other cryptocurrencies to authenticate the blockchain. They are also used to manage transaction data associated with cryptocurrency and as a way for users to show ownership of currency or their participation in a transaction.

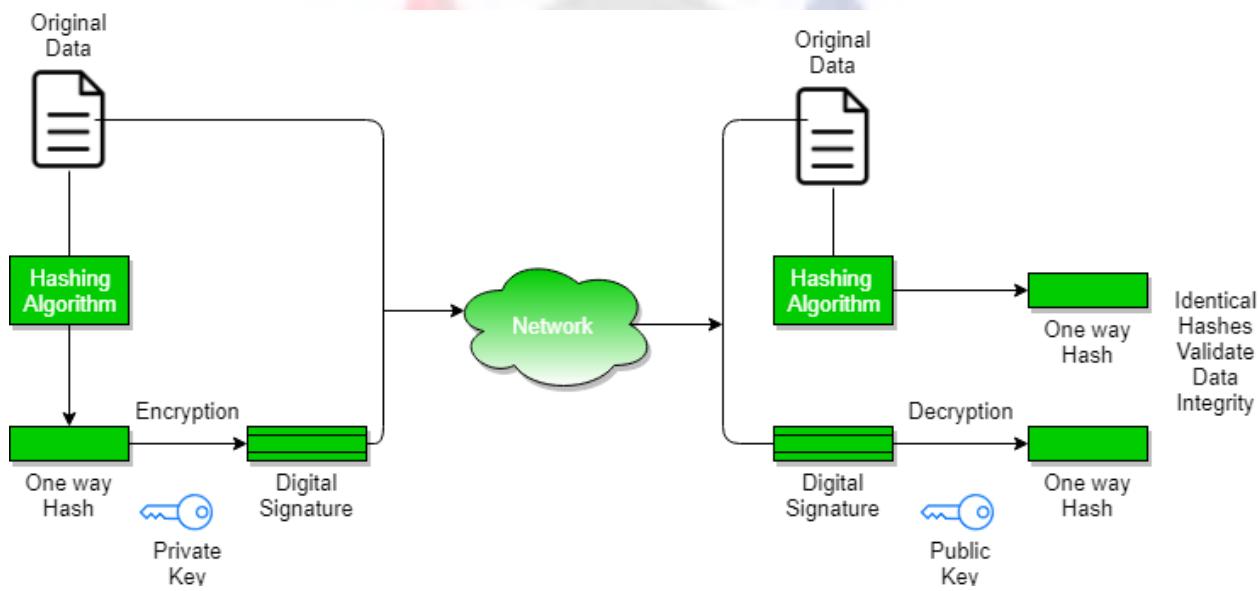
DIGITAL CERTIFICATE

Digital certificate is issued by a trusted third party which proves sender's identity to the receiver and receiver's identity to the sender.

Digital certificates are electronic credentials that bind the identity of the certificate owner to a pair of electronic encryption keys, (one public and one private), that can be used to encrypt and sign information digitally.

The main purpose of the digital certificate is to ensure that the public key contained in the certificate belongs to the entity to which the certificate was issued, in other words, to verify that a person sending a message is who he or she claims to be, and to then provide the message receiver with the means to encode a reply back to the sender.

A digital certificate is a certificate issued by a Certificate Authority (CA) to verify the identity of the certificate holder. The CA issues an encrypted digital certificate containing the applicant's public key and a variety of other identification information. Digital certificate is used to attach public key with a particular individual or an entity.



**Digital certificate contains:-**

1. Name of certificate holder.
2. Serial number which is used to uniquely identify a certificate, the individual or the entity identified by the certificate
3. Expiration dates.
4. Copy of certificate holder's public key.(used for decrypting messages and digital signatures)
5. Digital Signature of the certificate issuing authority.

Digital certificate is also sent with the digital signature and the message.

Encryption techniques using public and private keys require a public-key infrastructure (PKI) to support the distribution and identification of public keys. Messages can be encrypted with either the public or the private key and then decrypted with the other key.

Without certificates, one could send data encrypted with the private key and the public key would be used to decrypt the data, but there would be no assurance that the data was originated by anyone in particular. All the receiver would know is that a valid key pair was used.

In essence, a Certificate Authority or CA then is a commonly trusted third party that is relied upon to verify the matching of public keys to identity, e-mail name, or other such information.

DIGITAL CERTIFICATE VS DIGITAL SIGNATURE

Digital signature is used to verify authenticity, integrity, non-repudiation ,i.e. it is assuring that the message is sent by the known user and not modified, while digital certificate is used to verify the identity of the user, maybe sender or receiver. Thus, digital signature and certificate are different kind of things but both are used for security. Most websites use digital certificate to enhance trust of their users.

Feature	Digital Signature	Digital Certificate
Basics / Definition	Digital signature is like a fingerprint or an attachment to a digital document that ensures its authenticity and integrity.	Digital certificate is a file that ensures holder's identity and provides security.
Process / Steps	Hashed value of original message is encrypted with sender's secret key to generate the digital signature.	It is generated by CA (Certifying Authority) that involves four steps: Key Generation, Registration, Verification, Creation.
Security Services	Authenticity of Sender, integrity of the document and non-repudiation .	It provides security and authenticity of certificate holder.
Standard	It follows Digital Signature Standard (DSS).	It follows X.509 Standard Format

UNIT –IV INTRODUCTION TO M-COMMERCE

INTRODUCTION

Buying and selling products and services through mobile devices are the new trend. A housewife can purchase her kitchen appliances from the comfort of her living room, a busy person can order lunch from office, one can use mobile platforms to sell goods and services – all with a few clicks.

Mobile Commerce (m-commerce) can be widely defined as “any transaction, involving the transfer of ownership or rights to use goods and services, which is initiated and/or completed by using mobile access to computer-mediated networks with the help of an electronic device”.

Business-to-consumer (B2C) mobile commerce (m-commerce) refers to consumers sharing information and purchasing products and services from sellers with their mobile devices.

With the continuous development of telecommunication technology, mobile services ranges from email receiving and sending, shopping for goods and services, playing online interactive games, trading stocks and shares, reserve tickets, conduct banking and monetary transactions and even link to social networking sites to connect with friends. Mobile commerce constitutes payment for such goods, services and information.

EVOLUTION OF MOBILE COMMERCE

Finland is the ‘birthplace’ of Mobile Commerce. In 1997, the first SMS-activated Coca Cola vending machines was installed in Helsinki. Same year, mobile-based finance and banking service were also launched. Finland is also the place where the first sales of digital content, ring tones were downloaded to mobile phones, were made. In 1999, Philippines and Japan commenced a national commercial platform for mobile commerce, known as SMART and i-Mode respectively. Subsequently, mobile commerce associated services begun to sprout rapidly in other markets, from mobile parking in Norway, to sales of train tickets via mobile phones in Austria to the purchase of airline tickets in Japan.

From 2002, public transportation commuters in Helsinki are able to purchase tram and undergrounds train tickets via mobile phones. The cost of the tickets is the same as those bought from a machine but without the queue. In Colorado, it is one of the first few places whereby one can order movie tickets and pay via mobile phone. A dedicated counter is arranged for the pick-up. Mobile vouchers or coupons are visible in many countries from Finland, Spain, Germany, and United States to Japan. The promotional items offered on discounts ranges from laptops to McDonalds. Ring tone and wallpaper downloading have been one of the first widely used mobile commerce services. Some mobile services providers offer mobile news services, such as headlines, sports, weather, sports to mobile subscriber, sometimes free when sponsored by mobile advertiser or at a monthly subscription cost to the user.

Small-scaled mobile commerce does exist in most markets, from SMS voting in reality shows like ‘American Idol’ to participate in promotion lucky draws to downloading mobile ringtones. External environmental factors do play a part in promoting the mobile commerce growth. Worldwide expansion of digitalization and automation of sales procedures in the e-business and e-commerce on the Internet allow easier transference to the mobile commerce environment.

WHAT IS M-COMMERCE?

Mobile commerce or simply M-Commerce means engaging users in a buy or sell process via a mobile device. For instance, when someone buys an Android app or an iPhone app, that person is engaged in m-commerce. There are a number of content assets that can be bought and sold via a mobile device such as games, applications, ringtones, subscriptions etc.



The simplest way to describe mobile commerce would be the buying and selling of products – or the conduct of commercial transactions and activities – through telecommunication and other mobile devices that run or operate on wireless network technologies.

It is safe to say that m-commerce is an upgraded version of e-commerce. In fact, m-commerce has been defined as the conduct of e-commerce activities using mobile or cellular devices. If business transactions involve the use of wireless telecommunication networks, then it is highly likely to fall under m-commerce.

While terminologies such as internet banking, electronic money transfers and online shopping were very exciting and phenomenal in the past decade, what excites consumers now is mobile banking, money transfer via mobile and mobile bookings among many others.

M-COMMERCE VS. E-COMMERCE

Between e-commerce and m-commerce, the latter is the newer concept, seeing as **mobile technology** had not exploded until about two decades after the internet was able to be used to conduct commercial transactions using electronic systems.

While e-commerce mainly makes use of computers, and requires internet connectivity, m-commerce uses mobile devices such as smartphones, PDAs, tablets and it relies mainly on an internet connection provided by wireless telecommunication networks.

One of the major advantages of m-commerce over e-commerce is **portability and flexibility**. While internet connectivity is required in e-commerce, that is not the case in mobile commerce since these devices come with their own connection to the internet using telecommunication networks. Since the mobile devices are also smaller and more portable, users can literally conduct commercial activities anywhere, even in places with no electricity. This means, that usage of m-commerce is also broader, thanks to this portability feature.

The rise of m-commerce has certainly boosted e-commerce as a whole, since users are given **more options on the platform and tools**, and a majority of the limitations that they have encountered in e-commerce do not exist in m-commerce.

M-COMMERCE VS. M-BUSINESS

There is a growing confusion regarding the concepts of m-commerce and m-business (or mobile business), with many people believing that they are one and the same. The given definition of m-business is that it is the “ability to interact and transact with anyone, anytime, anywhere, using wireless communications”. That definition is already very broad to be applied to m-commerce, which is limited to the “buying and selling of products and services over the internet through the use of mobile or cellular devices”.

Therefore, it can be said that m-commerce is simply one of the many aspects of m-business.

HOW DOES M-COMMERCE WORK?

Let's look at some of the points that you need to remember as a business, while engaging in m-commerce –

Decide Where to Sell

Before you sell your products or services via m-commerce, you need to decide what type of outlets or stores suit your business best. Let us suppose you have created ringtones – you can sell them either at specific third-party outlets or to independent aggregators who charge you a commission for the service.

You can also sell your ringtones on mobile stores or app stores such as Android marketplace or App store (Apple). These stores are frequently visited by many buyers and hence ideal for making sales easily and efficiently. Finally, you can also sell via your own mobile store by creating a mobile website specifically for sales or as by setting-up an m-commerce page on your main website.

Set up Mobile Billing

Once you have decided where to sell, the next step is to set up your merchant account. For instance, you can use third-party services such as PayPal. This is ideal for small businesses or also large companies. A third-party application makes it really easy for you as well as your

customers to make the payments, but then they do charge commission on the transaction.

You can also set-up your own billing and payment gateway, but make sure that you make it really easy for users. Mobile users do not use keyboards or a mouse so make sure that the design of your m-commerce site is intuitive, with easy navigation tools and the right display sizes. Basically, make your m-commerce site optimized for Smartphone users.

BENEFITS OF M-COMMERCE

The major benefit of engaging in m-commerce is the sheer size of potential sales. The probability of your potential customers owning a Smartphone is very high, so you can safely assume that you will get much more positive response from mobile devices than your website. M-commerce is recommended for every business irrespective of its type, scale, and size.

DEVELOPMENT OF MOBILE COMMERCE



The extensive availability of Internet-accessible mobile phones is slowly creating a community of mobile commerce users. It is expected that this community might exceed the PC community. (Ahonen, 2002) With technology such as WAP or 3G, it is believed that electronic commerce information and/or interactive content will be adapted to the mobile commerce environment.

While the majority of mobile commerce opportunities and purchases are business-to-consumer (B2C), the possibility of business-to-business (B2B) still stands. It is predicted that business

users and their requirements will be fulfilled by the 3G services. A report by Accenture in 2001 “Future of Wireless”, has suggested that most business activities are easily accommodated for mobile commerce.

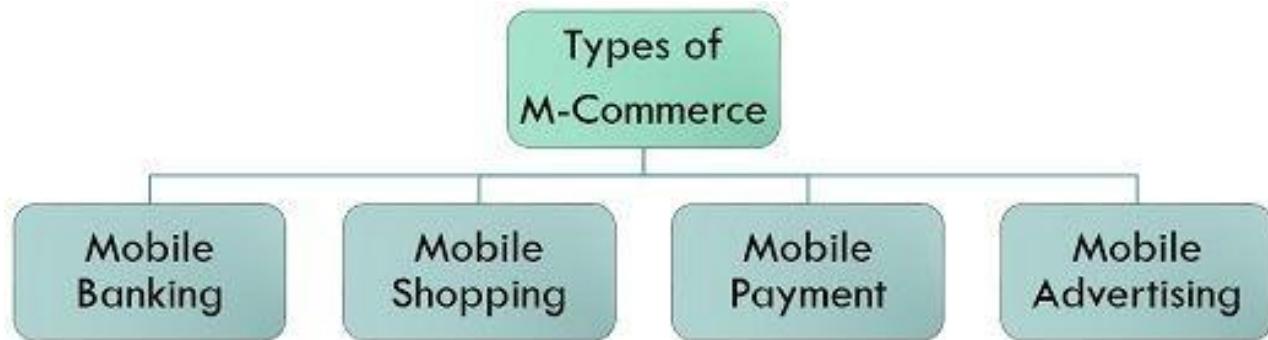
With the rapid spread of mobile commerce, mobile phone manufacturers such as Nokia, Sony Ericsson, Samsung, Motorola and LG had began to develop WAP-enabled smart phones to exploit on the market potential. Interestingly, it was the introduction of Apple’s iPhone mobile commerce based systems like FanGo that the platform started to move into actual applications instead of SMS systems.

The key advantage of mobile commerce services is the mobility of conveniences. Mobile commerce allows users the ability to execute transactions regardless of the location and time. With such uniqueness, mobile commerce has experienced relatively greater success in markets like Japan in regards to individual adoption rate. In comparison, this novelty technology has yet to achieve widespread popularity in other markets like the USA, Australia and Singapore.

Mobile commerce actualise the possibility of accessing information at anywhere and anytime. It provides users the chance to access the Internet regardless of location (subject to the network coverage of mobile internet operators), the ability to identify a single mobile device’s location (Global Positioning System) and to retrieve and/or update information whenever needed.

TYPES OF M-COMMERCE

Though India is becoming digitalized gradually, there is a vast scope of M-Commerce in the near future and various ways to improve paths for increasing their business over the internet. These are the majorly used types of M-commerce:



1. Mobile banking:

Mobile banking is an electronic medium of managing and making bank transactions via-a mobile device which is very popular now a day such as “Net Banking” by which customer has a bank account in a respective bank can handle their bank account as well as can view his/ her banking details for which banks use their apps for mobile banking.

For example, State bank of India has a YONO app for their net banking functions.

2. Mobile shopping:

Mobile shopping is nothing but what we called online shopping in general terms, i.e., purchase made through various applications online such as, purchase of the book from amazon or purchase of a bottle from Flipkart is termed as mobile shopping.

3. Mobile payment:

Online transaction payment such as buying railway tickets, movie tickets, bill payments through mobile phones by way of various gateways and applications such as Phone Pay, Google Pay, is known as Mobile payment.

4. Mobile advertising:

Mobile advertising is a way of advertising through SMS, mobile web posters, push-up notifications.



Companies use this service to promote their products and services by giving their ads in between the contents generally searched by the users so that if there is any user who has a plan of purchasing their category of product will review their product and their sale will rise.

FEATURES OF MOBILE COMMERCE

In order to fully understand what sets mobile commerce apart from e-commerce and m-business, it is a good idea to take a look at its unique features, which can be clearly seen in its advantages. Very simply put M-commerce entails the e-commerce transactions done with a mobile phone. So M-commerce is the use of mobile phones to conduct any type of business transaction. It takes the help of the e-commerce background and WAP technology.

The use of wireless technology (WAP) to conduct sales of goods, provide services, and make payments and other financial transactions, the exchange of information etc. is the basis of mobile commerce.

Ubiquity:

The most distinct advantage of mobile commerce is its ubiquity. With internet-enabled mobile devices, users can obtain any information required. Also, the emerging mobile commerce applications allow users to engage in activities such as instant messaging, linking to social networking websites, conducting financial transactions or looking up for weather news.

Dissemination:

The wireless infrastructure that supports instantaneous delivery of data to mobile devices allows an efficient distribution of information to a population.

Personalization:

With the massive amount of information available on the Internet, it is important that the content users receive is relevant. Mobile commerce companies can create applications that allow customizable information and services applicable to users.

Localization:

Another significant feature will be the ability to identify user's physical location with prompted the creation of location-based applications. The Sekai Camera created by Tonchidot is one example of how far such applications can go.

Mobility

Mobile commerce involves the use of portable mobile or cellular devices, such as mobile phones, smartphones and tablets.

Portability results in closer proximity between businesses and their consumers, meaning it is now possible for businesses to reach their target audience faster. The parties are not restricted by physical or geographical locations when doing commerce, be it purchasing a product, completing a bank transaction, or even bidding on an auction. In addition, the technology and devices that power mobile commerce are also available and readily accessible. As such, the probability of the businesses making a sale is also higher.

Electricity requirement

In e-commerce, a constant connection to an electric outlet is mandatory to power the devices. Thanks to the increased usage and flexibility of mobile devices which come with their own batteries, shopping via mobile devices is possible even without electricity.

Comfort, convenience and spontaneity

Many people prefer making their purchases over their desktop or laptop computers, in the comfort of their own homes or offices, instead of making that trip to the physical store or location of the goods or services that they want to buy.

However, there are even more people who find it more convenient to do their shopping on their mobile phones, and they can do this while sipping some latte at a coffee shop or even in a bus or train as they travel. There is no need to rush home or to the office to access the computer in order to buy something. All users have to do is whip out their tablets or phones and do their shopping



from there.

APPLICATIONS OF MOBILE COMMERCE

Mobile commerce has entered into all spheres of our daily lives like- finance, retail, telecommunication, healthcare, information technology, sales and services. Need for M-commerce has increased multi-fold in recent times because of the ease of functioning and accessibility they offer.

M-COMMERCE FOR FINANCE

The customer (using the mobile) can pay from their bank account using mobile commerce facilities. Mobile users can transfer funds between account or receive any information related to finance from financial institutions or banks. WAP based mobile devices allow the user to access the internet or the website of the financial institutions.

For example, a user of the credit card gets reminded from the institution stating the amount of outstanding balance, minimum amount due and the due date. Likewise, when the customer pays through cheque or when the payment is made by him, the institution sends an acknowledgement through SMS stating the amount that has been received by the institution.

For example, ICICI Bank has launched iMobile. iMobile allows the customers to carry out all internet banking transactions through mobile phones. Customers can transfer funds to ICICI and non ICICI Bank accounts with the help of their mobile. It allows customers to request for a cheque book or stop payment of a cheque through mobile device. Customers can also pay their utility bills through this facility. It allows them to know their transaction details and payment due dates through mobile phones.

The M-Commerce is very much prevalent in stock broking services. The user can access the stock market quotes. The share brokers send details about the market trends to client and offer some tips for trading. After receiving the information, the client responds or gives instructions to the stock broker. Such transaction takes place either in his/her form of SMS or call.



M-COMMERCE FOR RETAIL AND AFTER SALE SERVICES

Companies can also make online catalog of products so that the mobile users can access the catalog from their mobile devices. Customers are able to shop, place orders or hire services and pay for dues through mobile phones.

M-COMMERCE AND MOBILE MARKETING

It is easy for business organizations to send text messages to promote a new product or carryout any form of promotional campaign. For example, Reliance Fresh sends the customer an SMS stating the reward points earned by them when they purchase goods from Reliance. Even if some changes are brought in providing reward points, they are informed to the customer in order to encourage sales.

M-COMMERCE AND MOBILE TICKETING

Airline tickets can be purchased through mobile phone. It also enables users of mobile phone to make changes in their tickets. For example, With “flybuy SMS” launched by Kingfisher Airlines and paymate, customers can get the details of Kingfisher airlines flights by sending SMS. The customer can book the ticket after receiving a reply. Besides the above, movie tickets can also be booked through mobile phones.

M-COMMERCE AND MOBILE ENTERTAINMENT

Mobile terminal acts as a portable music player. Downloading ringtones has become successful m-commerce application. Mobile phone manufacturers and wireless providers are making good money by selling different kinds of customized ringtones.

M-COMMERCE FOR HOTEL RESERVATIONS

Using mobile devices, customer can reserve for restaurants and hotels according to their needs.

M-COMMERCE IN HEALTHCARE AND MEDICINE

Wireless services are used in healthcare and medicine for billing, lab ordering, referrals,

prescriptions and clinical decisions. For example, in United States, healthcare professionals are able to obtain patient information from any location by getting connected wirelessly to the hospital's information system. They are able to access the pharmaceutical information of patients and provide better patient care.

M-COMMERCE FOR INTRA-OFFICE COMMUNICATION

Sales personnel, who are always on the move, may need to access to the company information system to check price of products. But mobile allows the traveling sales personnel to track inventory and maintain communication with seniors at ease. Traveling salesmen do not have to wait for long to get approval from the seniors. Any information could be transferred easily and quickly with the help of mobile devices. It removes barriers in intra-office communication.

M-COMMERCE FOR INFORMATION

Mobiles enable customers to get information like sport news or political news of their choice. For example, today through SMS, students are able to check their university results or public examination results.

M-COMMERCE FOR GAMING

Customers can play multi player games through mobiles. Mobile games are very popular with colourful displays and it generates good revenue.

Other than the straightforward m-commerce transactions of buying and selling of goods and services, they have so many applications. Let us take a look at a few examples,

- **Mobile Banking:** Using a mobile website or application to perform all your banking functions. It is one step ahead of online banking and has become commonplace these days. For example, in Nigeria, the majority of banking transactions happen on mobile phones.
- **Mobile Ticketing and Booking:** Making bookings and receiving your tickets on the mobile. The digital ticket or boarding pass is sent directly to your phone after you make



the payment from it. Even in India now IRTC and other services provide m-ticketing services.

- **E-bills:** This includes mobile vouchers, mobile coupons to be redeemed and even loyalty points or cards system.
- **Auctions:** Online auctions having now been developed to be made available via mobile phones as well.
- **Stock Market Reports** and even stock market trading over mobile applications.

ADVANTAGES OF M-COMMERCE

M-commerce is about exploiting new opportunities made available to us thanks to e-commerce. So it involves the advent of new technologies, services, business models and marketing strategies. It differentiates itself in many ways from e-commerce. This is because mobile phones have very different characteristics than desktop computers. And it opens so many windows of opportunities for businesses to exploit.

1. Increases the amount of customer retention by being easily accessible to them
2. Wider variety of commodities and services
3. More options for selecting the product
4. Convenient for the consumer to compare the pricing, product reviews, and making purchases without the use of a computer.
5. Multiple options for payments like the credit card and debit card payments,
6. Better user experience

DISADVANTAGES OF M-COMMERCE

Disadvantages of M-Commerce are-

1. The technology required to set up M-commerce at the moment is very expensive. The initial cost to **begin a business** is very high.
2. In developing countries, the network signal is not very good and the providers are not capable of providing good speed. Due to this, it is not suitable for data transfer.
3. There is a risk of security- Although it is quite safe these days, there is always a chance of data leaking and intrusions.
4. A poorly designed app can lead to lesser number of purchases because of customer dissatisfaction.
5. Mobile payment is still not available across many locations in the world.

There are many different benefits of having mobile commerce for the business, and there are many reasons why people all over the world are trying to adopt this amazing technique for their businesses. There is seamless communication between the marketers and the customers with the help of mobile commerce, and there is also an improvement in the sales process too. So, why wouldn't you want to be a part of the trend? It would definitely be a good idea to be a part of the mobile commerce world.