

UNIT I

Introduction: Meaning, Nature, Concepts, Advantages, Disadvantages and reasons for Transacting Online, Types of E-Commerce, e-commerce Business Models (Introduction , Key Elements of a Business Model And Categorizing Major E-Commerce Business Models), Forces Behind e-commerce.

Technology used in E-commerce: The dynamics of World Wide Web and Internet (Meaning, Evolution And Features); Designing, Building and Launching e-commerce website (A systematic approach involving decisions regarding selection of hardware, software, outsourcing Vs. in-house development of a website)

Introduction

E-Commerce is the conduct of business on the Internet, not only buying and selling but also servicing customers and collaborating with business partners. One of the first to use the term was IBM, when, in October, 1997, it launched a thematic campaign built around the term. Today, major corporations are rethinking their businesses in terms of the Internet and its new culture and capabilities.

Exploiting the convenience, availability, and worldwide reach of the Internet, nowadays many companies are using the Web to buy parts and supplies from other companies, to collaborate on sales promotions, and to do joint research.

E-Commerce-Definition:

The buying and selling of products & services by businesses and customers through an electronic medium, without using any paper documents. E-commerce is widely considered the buying & selling of products over the internet, but any transaction that is completed solely through electronic measures can be considered e-commerce.

(or)

E-commerce (electronic commerce) is the buying and selling of goods and services, or the transmitting of funds or data, over an electronic network, primarily the internet. These business transactions occur either as business-to-business (B2B), business-to-consumer (B2C), consumer-to-consumer or consumer-to-business. The terms e-commerce and e-business are often used interchangeably. The term e-tail is also sometimes used in reference to the transactional processes that make up online retail shopping.

(or)

E-Commerce stands for Electronic Commerce. "E-Commerce" is the buying and selling of goods and services on the Internet, especially the World Wide Web. In practice, this term and newer term eBusiness are often used interchangeably.

Meaning of E-Commerce

Electronic commerce or E-Commerce refers to a wide range of online business activities for products and services. It also pertains to "any form of business transaction in which the parties interact electronically rather than by physical exchanges or direct physical contact."

E-Commerce is the electronic exchange of business information between two or more organisations. There are E-Commerce conducted between businesses and those that carried out between a business and its consumers. Business-to-business E-Commerce take place in electronic data interchange over private networks. Companies that regularly do business together will setup an automated and fast info exchange such as stock deliver and receive confirmation.

E-Commerce, however, is more than just electronics and commerce added together. It represents an entirely new way of doing business over a medium that changes the very rules of doing that business. It is, therefore, far more about strategy and business management than it is about technology.

In order to understand E-Commerce and its implications for developing countries, it is important, therefore, to see it from the perspective of the transactional aspects of E-Commerce, i.e. those that represent the business between the different players, as well as the framework aspects, i.e. those basic requirements that are needed in developing countries for it to develop.

MEANING OF E-COMMERCE

E-commerce or electronic commerce is an emerging concept that describes the process of buying and selling or exchanging of products, services and information via computer network including the Internet. It includes all inter-company and intra-company functions (such as marketing, finance, manufacturing, selling, and negotiation) that enable commerce and use electronic mail, Electronic Data Interchange (EDI), file transfer, fax, video conferencing, workflow, or interactions, workflow, or interaction with a remote computer.

The concept of e-commerce is spanned across various dimensions. Hence different schools of thought gave different definitions with different perspectives. Some defined it from business perspective and some defined with service perspective.

E-commerce can be defined from various perspectives as:

Communications perspective: From a communication perspective, e-commerce is delivery of goods, services, information or payments over computer networks, telephone lines or any other electronic means.

Business perspective: From a business perspective, e-commerce is the application of technology toward the automation of business transaction.

Service perspective: From a service perspective, e-commerce is a tool that addresses the desire of firms, consumers and management to cut service costs while improving the quality of goods and increasing speed of service delivery.

Commercial (trading) perspective: From a commercial perspective, e-commerce provides the capability of buying and selling products, services and information on the Internet and via other online services.

Learning perspective: From a learning perspective, e-commerce is the framework of inter-and intra-organizational collaboration.

Community perspective: From a community perspective, e-commerce provides a gathering place for community members to learn, transact and collaborate.

NATURE OF E-COMMERCE

E-commerce is a modern business methodology, which helps the companies and the consumers to have better business facilities through less cost while improving the quality of goods and services and increasing the speed of transactions.

E-commerce covers online selling and transactions, web retailing and wholesaling, electronic banking, interactivemarketing etc. It involves multimedia advertising, product information, customer support on the World Wide Web via internet, payment mechanism through bank etc.

E-commerce brings revolution to the concept of market segmentation. We can think that the importance of this concept, in its traditional sense, diminishes, as customization is the buzz word in present world. It is the evolution of niche marketing. The need for individualization has been identified within the context of recent change in the theory of value chain management.

E-commerce is a very valuable weapon. Its most important characteristic is interactivity which keeps the customer involved in the company's processes. Interactivity is the mean to individualization.

Furthermore, it is cheap as long as you use internet or reform already installed EDI (Electronic Data interchange). At this point, let us discuss certain drivers of E-Commerce, which are as follows:

- 1. Digital convergence** - The digital revolution has made it possible for almost all digital devices to communicate with one another. The Internet's massive growth during the past 10 years, which is completely a creation of market forces, will continue.
- 2. Ubiquity** - Today's E-Commerce is available to anyone, anywhere, in the world, 24 hours a day, 7 days a week. E-Commerce ties together the industrial sector, merchants, the service sector, and the content provider using text, multimedia, video, and other technologies.
- 3. Changes in organizations** - More and more today's business empower front-line workers to do the kind of work once performed by junior management. A trend also is developing toward partnering owners and managers across departments to develop a chain of relationships that adds value to the enterprise.
- 4. Information Density** - Global competitions and the proliferation of products and services worldwide have added unusual pressure to keep a close watch on operating costs and maximize profit margins. E-Commerce addresses their concerns quickly, efficiently and at a low cost.
- 5. Personalization/ Customization** - Today's customers are collectively demanding higher quality and better performance, including a customized way of producing, delivering, and paying for goods and services. Mass customization puts pressure on firms to handle customized request on a mass-market scale.

History of E-commerce

- With the progress of internet technology and a highly developed global internet community, a strong foundation of prosperous electronic commerce continues to be built.
- During the 1990's the internet was opened for commercial use; it was also the period that users started to participate in World Wide Web (WWW), and the phenomenon of rapid personal computer (PCs) usage growth.

- Due to the rapid expansion of the WWW network; electronic commerce software; and the peer business competitions, large number of dot-coms and internet starts-ups appeared.
- Integrated with the commercialization of the internet, Web invention, and PC networks these three important factors made electronic commerce possible and successful.

Features of E-Commerce:

1. **Ubiquity (Everywhere):** E-Commerce is widespread, that is, it is available everywhere always. It sets freemarket from being restricted to a physical space and makes it possible to shop from computer. The result is called a market space. For consumers, ubiquity cuts transaction costs for exploring products in a market. Consumers can acquire any information whenever and wherever they want, regardless of their location.
2. **Global Reach:** E-Commerce technologies enable a business to easily reach across geographic boundaries around the earth far more conveniently and effectively as compared to traditional commerce. Globally, companies are acquiring greater profits and business results by expanding their business with e-commerce solutions. As a result, the potential market size for e-commerce merchants is approximately equal to size of online population.
3. **Universal Standards:** Universal Standards are standards shared by all the nations around world. These are technical standards of Internet for conducting e-commerce. It gives all the ability to connect at the same level and it provides network externalities that will benefit everyone. Universal technical standards lower entry costs and minimal search costs.
4. **Interactivity:** E-Commerce technologies permit two way communications between customer and sellers which makes it interactive. It proves as significant feature of e-commerce technology over the commercial traditional technologies of the 20th century.
5. **Information Density:** Information density means total amount and quality of information available over Internet to all market buyers and sellers. Internet vastly increases information density. Information density offers better quality information to consumer and merchants. E-commerce technologies increase accuracy and timeliness of information. For example, flipkart.com store has variety of products with prices.
6. **Richness:** Richness refers to the complexity and content of message. Richness means all commercial activity and experience, conducted through a variety of messages. For example, text, pictures, videos, sound, links, SMS, etc..

Personalization: E-commerce technology offers personalization. Personalization means designing marketing messages according to particular individuals by customizing it as per customer personal details like name, interests and past purchases record. Products or services can be modified or altered according to the user's choice or past buying record

Advantages of E-Commerce:

1. **24X7 Operation:** Round the clock operation is an expensive proposition in the 'brick-and-mortar' world, while it is natural in the 'click-and-conquer' world.
2. **Global reach:** The net being inherently global, reaching global customers is relatively easy on the net compared to the world of bricks.
3. **Cost of acquiring, serving and retaining customers:** It is relatively cheaper to acquire new customers over the net, thanks to 24x7 operations and its global reach. Through innovative tools

of push technology, it is also possible to retain customers' loyalty with minimal investments.

4. Disintermediation: Using the Internet, one can directly approach the customers and suppliers, cutting down on the number of levels and in the process, cutting down the costs.

5. Improved customer service to year clients: It results in higher satisfaction and more sales.

6. Power to provide the best of both the worlds': It benefits the traditional business side-by-side with the Internet tools.

7. A technology based customer interface: Customers. conduct transactions either face to face or over the phone with store clerks, account managers or other individual. The customer interface in the electronic environment is a 'screen to-face' interaction. This includes PC based monitors, ATMs, PDAs or other electronic devices..

8. The customer controls the interaction: The customer controls the search process, the time spent on various sites, the degree of price/product comparison, the people with whom he or she comes in contact, and the decision to buy. In a face to face interchange, the control can rest with either the buyer/seller or the community member.

9. Network economics: A key characteristics of network's economic is positive feedback, that is, as the installed base grows, more and more users are likely to adopt the technology because of the installed base. Many commercial wares in the digital economy revolve around setting a standard because of rising switching costs.

Disadvantages of E-Commerce:

The disadvantages/limitations of e-commerce can be divided into two categories

1. Technical Limitations.
2. Non-Technical Limitations.

1. Technical Limitations:

i) **Lack of Security:** Consumer needs to be confident and trust over e-commerce payment providers. Any fraud, hacking or forgery can break the trust of consumer.

ii) **Low Bandwidth:** In many countries, network might cause an issue of low bandwidth.

iii) **Difficulty in Integrating E-Commerce:** It is difficult to integrate e-commerce software or website with the some existing applications and databases. Vendors need special web servers to deal with integration problem in addition to network servers. iv) **Not All Customers have Access to Internet:** Internet access is not universally available so much of the effort made does not actually reach the consumer. Many potential customers that are living in remote villages have not Internet access facility.

2. Non-Technical Limitations:

i) **Initial Cost:** The initial cost to develop e-commerce web site in-house is very high. This may need high cost or hiring qualified staff to maintain and updating e-commerce web site.

ii) **Security and Privacy:** The major issues to in online businesses are security and privacy. Customers feel hesitant to disclose credit card numbers over Internet because of security problems such as theft of credit card number.

iii) **Customer Relations Problems:** Organization needs loyal customers to run their online business for long time. Online businesses cannot continue without loyal customers in today's competition.

iv) **Lack of Trust and User Resistance:** Face-to-face contact and paper transactions are important in business deals and transactions since it is related to trust. So for any consumer switching from physical to online stores is difficult.

v) **Lack of Touch and Feel:** Consumers may want to touch and feel a product before purchasing online. Online businesses do not provide the touch and feel experience to consumer on items such, as clothes, shoes etc. vi) **Corporate Vulnerability:** Online businesses have high availability of information related to product, price, catalogues, and others. This information makes web sites vulnerable to access by competition. This process of extracting business intelligence from competitor's web pages is called Web farming.

vi) **Corporate Vulnerability:** Online businesses have high availability of information related to product, price, catalogues, and others. This information makes web sites vulnerable to access by competition. This process of extracting business intelligence from competitor's web pages is called Web farming.

vii) **Legal Issues:** When buyers and sellers do not know each other, there is chance of fraud over the Internet. Hence there are may legal problems related to e-commerce. Some common legal issues encountered in e-commerce are:

- a) Software and Copyright Violations.
- b) Credit Card Fraud and Stolen Identities.
- c) Illegal Bargains and Criminal Law.

Q) Reasons for transacting online

The emergence of new technologies has made transacting online cheaper and faster. There are many reasons to transact online.

Expanding market research :

The business gains access to the world wide market of being limited to a certain geographical areas which gives it the advantage of a broader customer base and potential increase in sales.

On the internet every company that offers goods, services or information is reduced to the same size to the size of the customer's browser window. Therefore it is easy for a small online transaction service to compete with a larger one.

Generating visibility :

It is important for every company to present itself in market at very low cost. If your company is better known in the market, more people will be interested in doing business with you.

Strengthening business relationship:

Electronic Data Interchange (EDI) is the computer-to-computer, exchange of business documents between companies in standard data format, using networks such as WAN's or the internet. Through EDI suppliers, manufacturers, distributors and retailers are able to share information on the inventory and enhance the flow of

information and goods through the supply chain. Business get benefits of EDI such as reduced cost, increased processing speed, information security, reduced errors and improved relationships with business partners.

Responsiveness :

The accessibility and convenience of online transactions for the customers is leading to increased customer satisfaction. using email and other voice, image, word communication facilities not only saves money and provides greater responsiveness.

Cost reduction :

One of the main reason to transact online is its lowered cost. This method can indirectly save their operational costs. Transacting online also eliminates the cost and burden of infrastructure required for conducting business. An e-commerce merchant does not need a prominent physical location.

Just – in – time delivery(JIT):

In today's competitive business scenario, company can beat competitors by effective implementation of JIT delivery. It is the need of time for company to keep track of its assets. It is important for the supplier to confirm the delivery date in advance at the contract stage.

Q) Explain types of E-Commerce?

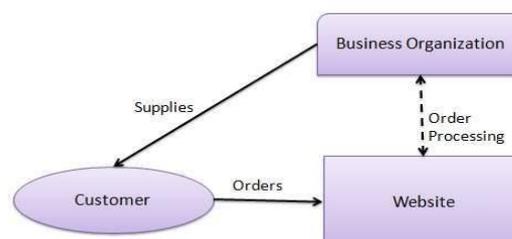
E-commerce is buying and selling goods and services over the Internet. Ecommerce is part of e- business. E-Commerce or Electronics Commerce is a methodology of modern business which addresses the need of business organizations, and customers to reduce cost and improve the quality of goods and services while increasing the speed of delivery. E-commerce refers to paperless exchange of business information.

The several types of e-commerce in use today are classified based on the nature of the transactions:

- BUSINESS-TO-CONSUMER (B2C) E-COMMERCE
- BUSINESS-TO-BUSINESS (B2B) E-COMMERCE
- CONSUMER-TO-CONSUMER (C2C) E-COMMERCE
- CONSUMER-TO-BUSINESS (C2B):
- BUSINESS TO GOVERNMENT (B2G)
- GOVERNMENT TO BUSINESS(G 2 B)
- GOVERNMENT TO CITIZEN(G 2 C)

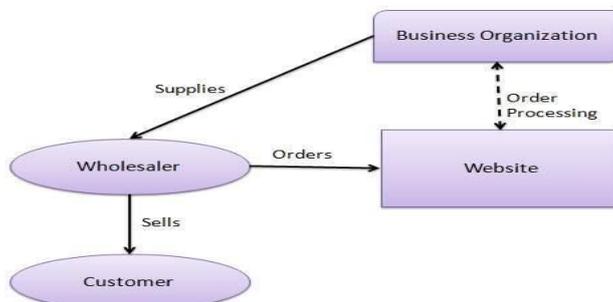
BUSINESS-TO-CONSUMER (B2C) E-COMMERCE

A website following the B2C business model sells its products directly to a customer. A customer can view the products shown on the website. The customer can choose a product and order the same. The website will then send a notification to the business organization via email and the organization will dispatch the product/goods to the customer.



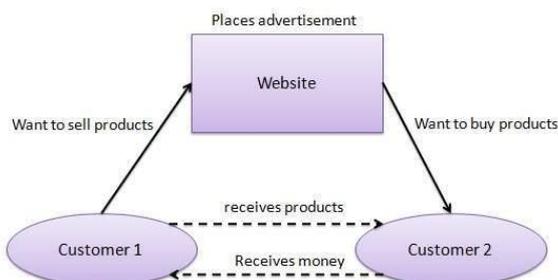
BUSINESS-TO-BUSINESS (B2B) E-COMMERCE

. A website following the B2B business model sells its products to an intermediate buyer who then sells the product to the final customer. As an example, a wholesaler places an order from a company's website and after receiving the consignment, sells the endproduct to the final customer who comes to buy the product at one of its retail outlets



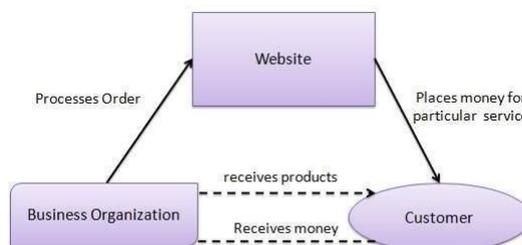
CONSUMER-TO-CONSUMER (C2C) E-COMMERCE

A website following the C2C business model helps consumers to sell their assets like residential property, cars, motorcycles, etc., or rent a room by publishing their information on the website. Website may or may not charge the consumer for its services. Another consumer may opt to buy the product of the first customer by viewing the post/advertisement on the website.



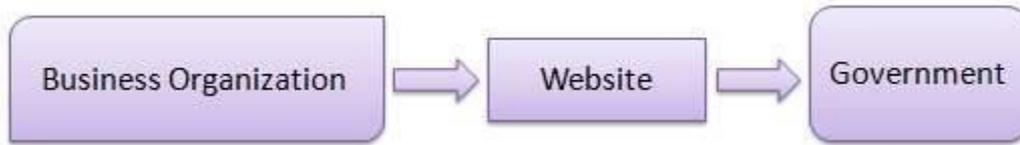
CONSUMER-TO-BUSINESS (C2B):

This is the exchange of products, information or services from individuals to business. A classic example of this would be individuals selling their services to businesses. Consumer-to-business (C2B) e-commerce that involves individuals selling to businesses may include a service/product that a consumer is willing to sell. Individuals offer certain prices for specific products/services. Companies such as pazaryerim.com and mobshop.com are examples of C2B.



BUSINESS - TO - GOVERNMENT (B2G)

B2G model is a variant of B2B model. Such websites are used by governments to trade and exchange information with various business organizations. Such websites are accredited by the government and provide a medium to businesses to submit application forms to the government.



GOVERNMENT - TO – BUSINESS (G2B)

Governments use B2G model websites to approach business organizations. Such websites support auctions, tenders, and application submission functionalities.



GOVERNMENT - TO – CITIZEN (G2C)

Governments use G2C model websites to approach citizen in general. Such websites support auctions of vehicles, machinery, or any other material. Such website also provides services like registration for birth, marriage or death certificates. The main objective of G2C websites is to reduce the average time for fulfilling citizen's requests for various government services.



Q) Explain key elements of E-Commerce business models?

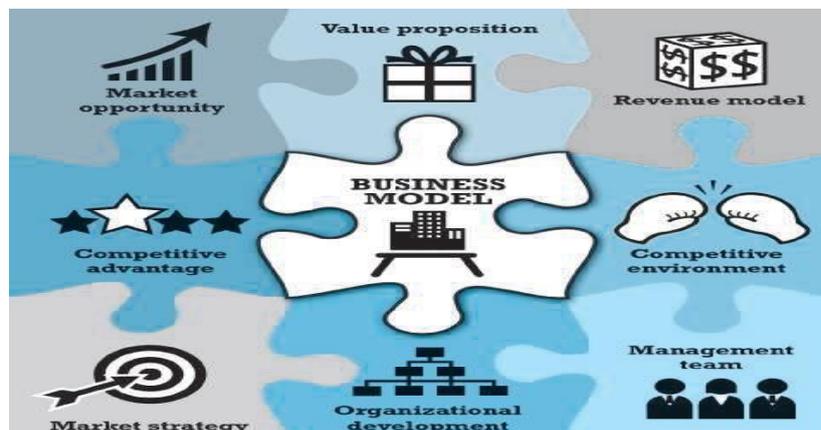
A **business model** is a set of planned activities (sometimes referred to as *business processes*) designed to result in a profit in a marketplace. A business model is not always the same as a business strategy, the business model is at the center of the business plan.

A **business plan** is a document that describes a firm's business model. A business plan always takes into account the competitive environment.

An **e-commerce business model** aims to use and leverage the unique qualities of the Internet, the Web, and the mobile platform.

Key Elements Of A Business Model

A business model that aims to use and leverage the unique qualities of the Internet, the Web, and the mobile platform.



Value Proposition:

- A company's value proposition is at the very heart of its business model.
- A **value proposition** defines how a company's product or service fulfills the needs of customers.
- From the consumer point of view, successful e-commerce value propositions include personalization and customization of product offerings, reduction of product search costs, reduction of price discovery costs, and facilitation of transactions by managing product delivery.

Revenue Model:

- A firm's **revenue model** describes how the firm will earn revenue, generate profits, and produce a superior return on invested capital.
- There are many different e-commerce revenue models that have been developed, most companies rely on one, or some combination, of the following major revenue models: advertising, subscription, transaction fee, sales, and affiliate.

Advertising revenue model

A company provides a forum for advertisements and receives fees from advertisers.

Subscription revenue model

A company offers its users content or services and charges a subscription fee for access to some or all of its offerings

Premium strategy

Companies give away a certain level of product or services for free, but then charge a subscription fee for premium levels of the product or service

Transaction fee revenue model

A company receives a fee for enabling or executing a transaction

Sales revenue model

A company derives revenue by selling goods, information, or services

Affiliate revenue model

A company steers business to an affiliate and receives a referral fee or percentage of the revenue from any resulting sales

Market Opportunity

- The term **market opportunity** refers to the company's intended **marketspace** (i.e., an area of actual or potential commercial value) and the overall potential financial opportunities available to the firm in that marketspace.
- The market opportunity is usually divided into smaller market niches. The realistic market opportunity is defined by the revenue potential in each of the market niches where you hope to compete.

Competitive Environment

- A firm's **competitive environment** refers to the other companies selling similar products and operating in the same marketspace.
- It also refers to the presence of substitute products and potential new entrants to the market, as well as the power of customers and suppliers over your business.

Competitive Advantage

- Firms achieve a **competitive advantage** when they can produce a superior product and/or bring the product to market at a lower price than most, or all, of their competitors (Porter, 1985).

- Firms also compete on scope. Some firms can develop global markets, while other firms can develop only a national or regional market. Firms that can provide superior products at the lowest cost on a global basis are truly advantaged.

Market Strategy

- **Market strategy** is the plan you put together that details exactly how you intend to enter a new market and attract new customers.
- For instance, Twitter, and YouTube have a social network marketing strategy that encourages users to post their content for free, build personal profile pages, contact their friends, and build a community. In these cases, the customer becomes part of the marketing staff!

Organizational Development

- **Organizational development** that describes how the company will organize the work that needs to be accomplished.
- Typically, work is divided into functional departments, such as production, shipping, marketing, customer support, and finance.

Management Team

- The single most important element of a business model is the **management team** responsible for making the model work.
- A strong management team gives a model instant credibility to outside investors, immediate market-specific knowledge, and experience in implementing business plans.

Q) Categorizing e – commerce business model

Internet based business offer personalized, high quality customer service and improved supply chain management. Business models have been defined and categorized in following ways;

Brokerage model:

Brokerage models such as ebay, bring buyers and sellers together in a bid-and-ask market place and facilitate transactions. Brokers can play a frequent role of B2B, B2C or C2C markets. A broker charges a fee or commission for each transaction.

Merchant model:

B2B and B2B models sell products and services via websites. In the merchant model, a merchant (wholesalers and retailers) simply sells good and services directly to buyers. Merchant models such as amazon.com, operate storefronts on the internet similar to catalog shopping.

Community model :

The community model can be B2C or B2B. The consumer gives reviews of products and services on websites such as social networking like facebook, twitter.

Infomediary model:

The infomediary is a neutral entity, a third – party provider that gathers and links information on particular subjects on behalf of commercial organizations and their customers. Some infomediaries such as autobytel.com and bizrate.com offer consumers a place to gather information about specific products and companies before they make purchasing decisions.

Affiliate model:

It is a type of pay-for – performance model in which a business rewards one or more affiliates for each visitor or customer brought by the affiliate’s own marketing efforts. Affiliates are webmasters who allow ads to be placed on their own websites. These ads contain links to an advertising merchant’s site. If an internet visitor clicks that links and travels to the merchant site, the affiliate can earn a referral fee.

Advertising model :

The advertising business model is an extension of the traditional media broadcast model. Google is a best example of the advertising model. It employs paid text advertisements, search placement, and user- tracking to steer advertising to consumers as they browse the internet.

Manufacturer model :

This model allow manufacturers to reach buyers directly and thereby compress the distribution channel. The manufacturer model can be based on efficiency, improved customer service and a better understanding of customer preferences. Cisco, the digital electronic parts manufacturer is the best example for manufacturer’s direct model.

Subscription model :

In this model, user are charged a periodic fee to access a service or product. Websites that use the subscription business model provide text, audio or video content to users who subscribe for a fee to gain access to the service. Netflix is one of the most successful companies that use the subscription business model.

Q) Explain the Forces Behind e-commerce

Environmental factors that create Business Pressures:

- ❖ Economic Forces
- ❖ Market Forces
- ❖ Technology Forces
- ❖ Societal and environmental forces

Economic Forces

- ❖ **Lower marketing costs:** marketing on the Internet maybe cheaper and can reach a wider crowd than the normal marketing medium.
- ❖ **Lower sales costs:** increase in the customer volume do not need an increase in staff as the sales function is housed in the computer and has virtually unlimited accessibility
- ❖ **Lower ordering processing cost:** online ordering can be automated with checks to ensure that orders are correct before accepting, thus reducing errors and the cost of correcting them.
- ❖ **New sales opportunities:** the website is accessible all the time and reaches the global audience which is not possible with traditional storefront.

Market Forces

- ❖ Strong competition between organizations,
- ❖ extremely low labor cost in some countries,
- ❖ frequent and significant changes in markets and

Technology Forces

- ❖ The development of information and communications technology (ICT) is a key factor in the growth of ecommerce.
- ❖ This in turn has made communication more efficient, faster, easier, and more economical as the need to set up separate networks for telephone services, television broadcast, cable television, and Internet access is eliminated.
- ❖ From the standpoint of firms/ businesses and consumers, having only one information provider means lower communications costs.

Societal and environmental Forces

- Changing nature of workforce
- Government deregulations
- Shrinking government subsidies
- Increased importance of ethical and legal issues
- Increased social responsibility of organizations
- Rapid political changes

Q) Explain history or evolution of internet?

The Evolution Of The Internet: 1961—The Present

Internet

An interconnected network of thousands of networks and millions of computers linking businesses, educational institutions, government agencies, and individuals. The Internet provides approximately 3.3 billion people around the world (including about 267 million people in the United States) with services such as e-mail, apps, newsgroups, shopping, research, instant messaging, music, videos, and news (eMarketer, Inc., 2016a, 2016b).

The **Web** is one of the Internet's most popular services, providing access to billions, perhaps trillions, of web pages, which are documents created in a programming language called HTML that can contain text, graphics, audio, video, and other objects, as well as "hyperlinks" that permit users to jump easily from one page to another. Web pages are navigated using web browser software.

The history of the Internet can be segmented into three phases

STAGES IN THE DEVELOPMENT OF THE INTERNET



During the **Innovation Phase**, from 1961 to 1974, the fundamental building blocks of the Internet—packet-switching hardware, a communications protocol called TCP/ IP, and client/server computing (all described more fully later in this section)—were conceptualized and then implemented in actual hardware and software. The Internet's original purpose was to link large mainframe computers on different college

campuses. This kind of one-to-one communication between campuses was previously possible only via the telephone system or private networks owned by the large computer manufacturers.

During the *Institutionalization Phase*, from 1975 to 1995, large institutions such as the U.S. Department of Defense (DoD) and the National Science Foundation (NSF) provided funding and legitimization for the fledging Internet. Once the concepts behind the Internet had been proven in several government-supported demonstration projects, the DoD contributed \$1 million to further develop them into a robust military communications system. This effort created what was then called ARPANET (Advanced Research Projects Agency Network). In 1986, the NSF assumed responsibility for the development of a civilian Internet (then called NSFNET) and began a 10-year-long \$200 million expansion program.

During the *Commercialization Phase*, from 1995 to the present, the U.S. government encouraged private corporations to take over and expand the Internet backbone as well as local service beyond military installations and college campuses to the rest of the population around the world.

Q) What are the features of Internet?

The Internet And The Web: Features And Services

The Internet and the Web have spawned a number of powerful software applications upon which the foundations of e-commerce are built. You can think of all these as web services, and it is interesting as you read along to compare these services to other traditional media such as television or print media. If you do, you will quickly realize the richness of the Internet environment.

Communication Tools

The Internet and Web provide a number of communication tools that enable people around the globe to communicate with one another, both on a one-to-one basis as well as a one-to-many basis. Communication tools include e-mail, messaging applications, online message boards (forums), Internet telephony applications, and video conferencing, video chatting, and telepresence.

E-mail

- **Electronic mail**, or **e-mail**, 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 snail mail (the U.S. Postal Service).
- In addition to text typed within the message, e-mail also allows **attachments**, which are files inserted within the e-mail message. The files can be documents, images, sounds, or video clips.

Messaging Applications

- **Instant messaging (IM)** allows you to send messages in real time, unlike e-mail, which has a time lag of several seconds to minutes between when messages are sent and received.
- IM displays text entered almost instantaneously.
- Recipients can then respond immediately to the sender the same way.
- To use IM, users create a buddy list they want to communicate with, and then enter short text messages that their buddies will receive instantly (if they are online at the time).
- In IM, more advanced systems also provide voice and video chat functionality. Instant messaging over the Internet competes with cell phone Short Message Service (SMS) and Multimedia Messaging Service (MMS) texting

An online message board

- It is a web application that enables Internet users to communicate with each other, although not in real time.
- A message board provides a container for various discussions (or “threads”) started (or “posted”) by members of the board, and depending on the permissions granted to board members by the board’s administrator, enables a person to start a thread and reply to other people’s threads.
- Most message board software allows more than one message board to be created.
- The board administrator typically can edit, delete, move, or otherwise modify any thread on the board.

Internet Telephony

- If the telephone system were to be built from scratch today, it would be an Internet based, packet-switched network using TCP/IP.
- It would be less expensive and more efficient than the alternative existing system
- If cable television systems were built from scratch today, they most likely would use Internet technologies for the same reasons.

Video Conferencing, Video Chatting, and Telepresence

- Internet video conferencing is accessible to anyone with a broadband Internet connection and a web camera (webcam).
- The most widely used web conferencing suite of tools is WebEx (now owned by Cisco). VoIP companies such as Skype provide more limited web conferencing capabilities, commonly referred to as video chatting.
- Telepresence takes video conferencing up several notches. Rather than single persons “meeting” by using webcams, telepresence creates an environment in a room using multiple cameras and screens, which surround the users.

Search Engines

- **Search engines** identify web pages that appear to match keywords, also called queries, entered by a user and then provide a list of the best matches (search results).
- Almost 85% of U.S. Internet users regularly use search engines from either desktop or mobile devices, and they generate around 16 billion queries a month on desktop computers, about 10.2 billion of which are conducted using Google.
- Desktop search volume is declining, as more and more search activity moves to mobile devices. In fact, Google has reported that mobile search queries exceeded desktop queries.
- There are hundreds of different search engines, but the vast majority of the search results are supplied by the top three providers: Google, Microsoft’s Bing, and Yahoo.

Q) Explain website system Development Life Cycle? Website Systems Development Life Cycle (Or) Building An E-Commerce Presence: A Systematic Approach (Or) Factors To Consider In Developing An E-Commerce Presence

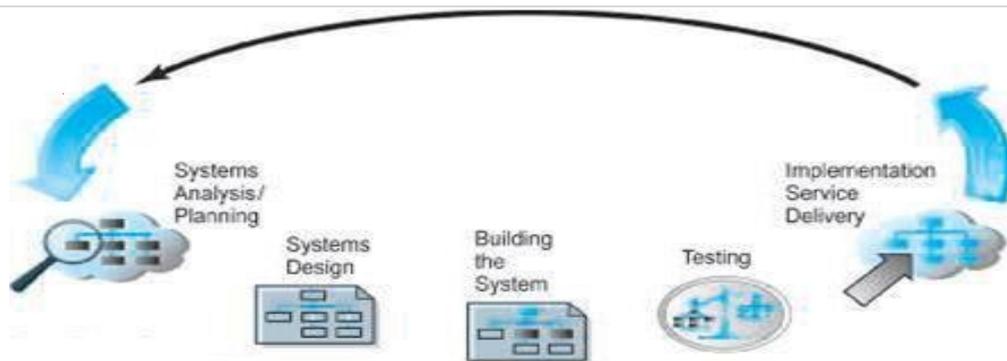
Building a successful e-commerce presence requires a keen understanding of business, technology, and social issues, as well as a systematic approach. E-commerce is just too important to be left totally to technologists and programmers.

The two most important management challenges are

- (1) developing a clear understanding of your business objectives and
- (2) knowing how to choose the right technology to achieve those objectives.

The **systems development life cycle (SDLC)** is a methodology for understanding the business objectives of any system and designing an appropriate solution. Adopting a life cycle methodology does not guarantee success, but it is far better than having no plan at all. The SDLC method also helps in creating documents that communicate objectives, important milestones, and the uses of resources to management. There are five major steps involved in the systems development life cycle for an e-commerce site:

- Systems analysis/planning
- Systems design
- Building the system
- Testing
- Implementation



➤ **SYSTEMS ANALYSIS/PLANNING:**

In System analysis and planning step Identify Business Objectives, System Functionality, and Information Requirements:

One way to start is to identify the specific business objectives for your site, and then develop a list of system functionalities and information requirements.

- **Business objectives** are simply capabilities you want your site to have.
- **System functionalities** are types of information systems capabilities you will need to achieve your business objectives.
- The **information requirements** for a system are the information elements that the system must produce in order to achieve the business objectives.

➤ **SYSTEM DESIGN: HARDWARE AND SOFTWARE PLATFORMS**

Once you have identified the business objectives and system functionalities, and information requirements, you can begin to consider just how all this functionality will be delivered.

System design : The system design itself can be broken down into two components:

- Logical design
- Physical design.

A **logical design** includes a data flow diagram that describes the flow of information at your e-commerce site, the processing functions that must be performed, and the databases that will be used. The logical design also includes a description of the security and emergency backup procedures that will be instituted, and the controls that will be used in the system.

A **physical design** translates the logical design into physical components. For instance, the physical design details the specific model of server to be purchased, the software to be used, the size of the telecommunications link that will be required, the way the system will be backed up and protected from outsiders, and so on.

TESTING THE SYSTEM

Once the system has been built and programmed, you will have to engage in a testing process. Depending on the size of the system, this could be fairly difficult and lengthy. Testing is required whether the system is outsourced or built in-house. A complex-commerce site can have thousands of pathways through the site, each of which must be documented and then tested. It is important to note that testing is generally under budgeted. There are different types of testing's performed on the system:

- **Unit testing** involves testing the site's program modules one at a time.
- **System testing** involves testing the site as a whole, in the same way a typical user would when using the site.
- **Acceptance testing** requires that the firm's key personnel and managers in marketing, production, sales, and general management actually use the system as installed on a test Internet or intranet server. This acceptance test verifies that the business objectives of the system as originally conceived are in fact working.
- Another form of testing is called **A/B testing** (or **split testing**). This form of testing involves showing two versions (A and B) of a web page or website to different users to see which one performs better. There are several different types of A/B testing that can be used for a website design project.
- **Multivariate testing** involves identifying specific elements, or variables, on a web page, such as a headline, image, button and text, creating versions for each element, and then creating a unique combination of each element and version to test.

IMPLEMENTATION AND MAINTENANCE

Most people unfamiliar with systems erroneously think that once an information system is installed, the process is over. In fact, while the beginning of the process is over, the operational life of a system is just beginning. Systems break down for a variety of reasons—most of them unpredictable. Therefore, they need continual checking, testing, and repair. Systems maintenance is vital, but sometimes not budgeted for.

Q) BUILDING THE SYSTEM: IN-HOUSE VERSUS OUTSOURCING

There are many choices, and much depends on the amount of money you are willing to spend. Choices range from outsourcing everything (including the actual systems analysis and design) to building everything yourself (in-house).

Outsourcing means that you will hire an outside vendor to provide the services involved in building the site rather than using in-house personnel.

The most commonly approaches are :

- **In- house :**

In – house is developing and building a website on your own. It takes little web programming knowledge to develop a simple website. Complex websites can assembled with readily available tools and building blocks.

In – house includes :

1. Simplest solutions
2. Use of pre-built template(e.g.,yahoo merchant solutions, amazon stores etc)
3. Time consuming as it requires building site from scratch using tools like Adobe Dreamweaver and Microsoft expressions.
4. High number of risks.
5. High skilled set required.

- **Outsourcing :**

Outsourcing is hiring an outside vendor to provide the services which cannot be performed with in-house personnel. Developing a website in- house may be an option for some organizations but for many organizations outsourcing will be the most appropriate option.

Giving the project out to external web design agencies can have the following advantages :

1. Reduce expenses related to hiring new employees, buying a new equipment but also labour costs of new team member.
2. Immediate access to all kinds of IT professions, from all around the world.
3. Time saving on recruiting and on boarding programmers.
4. Gives you more control over the project.