

Lecture notes on Fundamental of E-commerce Course code: BBA-N-606

Unit-I

Introduction to Commerce

Commerce is basically an economic activity involving trading or the buying and selling of goods.

For e.g. a customer enters a book shop, examines the books, select a book and pays for it. To fulfil the customer requirement, the book shop needs to carry out other commercial transactions and business functions such as managing the supply chain, providing logistic support, handling payments etc.

As we enter the electronic age, an obvious question is whether these commercial transactions and business functions can be carried out electronically.

In general, this means that no paperwork is involved, nor is any physical contact necessary.

This often referred to as electronic commerce (e-commerce).

The earliest example of e-commerce is electronic funds transfer. This allows financial institutions to transfer funds between one another in a secure and efficient manner.

Later, electronic data interchange (EDI) was introduced to facilitate inter-business transactions.

Definition of E-commerce:

- “E-Commerce or Electronic Commerce, a subset of E-Business, is the purchasing, selling and exchanging of goods and services over computer networks (such as Internet) through which transactions are performed”.
- “E-Commerce can be defined as a modern business methodology that addresses the needs of organizations, merchants and consumers to cut costs while improving the quality of goods and services and increasing the speed of service delivery by using Internet”.
- E-Commerce takes place between companies, between companies and their customers, or between companies and public administration.
- Electronic commerce, commonly known as E-commerce is trading in products or services using computer networks, such as the Internet.
- Electronic commerce draws on technologies such as mobile commerce, electronic funds transfer, supply chain management, Internet marketing, online transaction processing, electronic data interchange (EDI), inventory management systems, and automated data collection systems.
- Modern electronic commerce typically uses the World Wide Web for at least one part of the transaction's life cycle, although it may also use other technologies such as e-mail.

FEW EXAMPLES OF E-Commerce are:

- Amazon.com, an online bookstore started in 1995 grew its revenue to more than 600\$ million in 1998.
- Microsoft Expedia, an integrated online travel transaction site helps to choose a flight, buy an airline ticket, book a hotel, rent a car etc. in only a few minutes.

Definition of E-commerce:

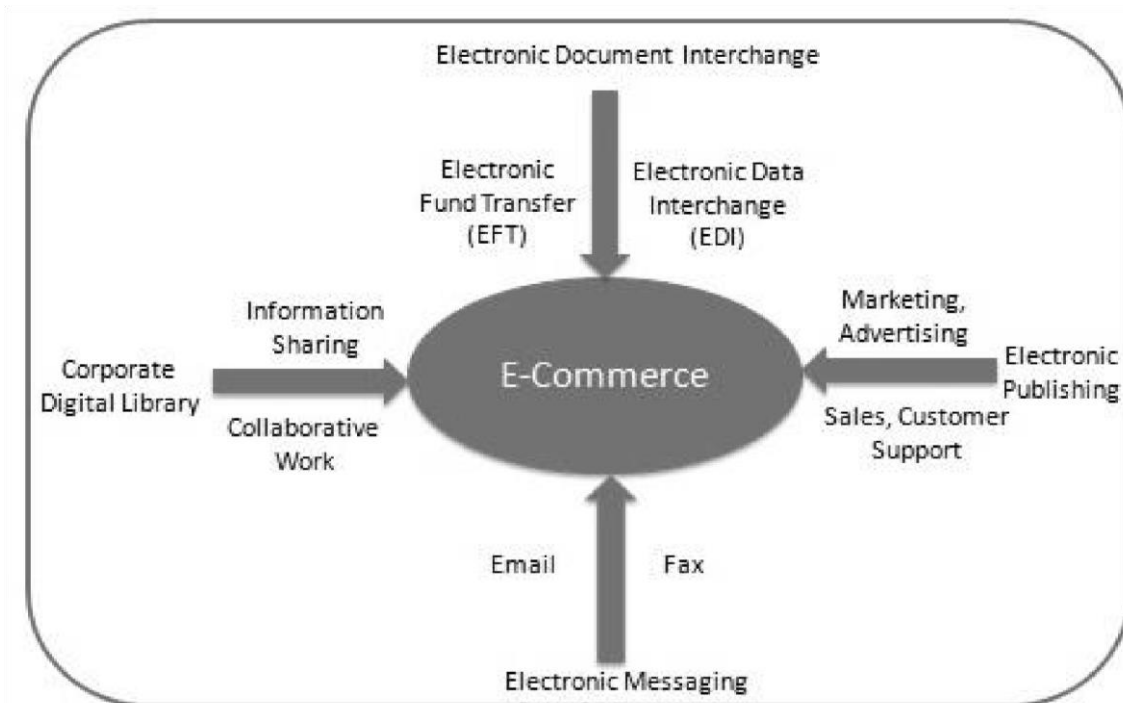
Sharing business information, maintaining business relationships and conducting business transactions using computers connected to telecommunication network is called E-Commerce.

E-COMMERCE:-

E-Commerce or Electronics Commerce is a methodology of modern business, which addresses the requirements of business organizations. It can be broadly defined as the process of buying or selling of goods or services using an electronic medium such as the Internet.

E-Commerce or Electronics Commerce is a methodology of modern business, which addresses the need of business organizations, vendors and customers to reduce cost and improve the quality of goods and services while increasing the speed of delivery. E-commerce refers to the paperless exchange of business information using the following ways:

- Electronic Data Exchange (EDI)
- Electronic Mail (e-mail)
- Electronic Bulletin Boards
- Electronic Fund Transfer (EFT)
- Other Network-based technologies



E-Commerce Categories(scope of E-commerce):

1. Electronic Markets

Present a range of offerings available in a market segment so that the purchaser can compare the prices of the offerings and make a purchase decision.

Example: Airline Booking System

2. Electronic Data Interchange (EDI)

- It provides a standardized system
- Coding trade transactions
- Communicated from one computer to another without the need for printed orders and invoices & delays & errors in paper handling
- It is used by organizations that make a large no. of regular transactions

Example: EDI is used in the large market chains for transactions with their suppliers

3. Internet Commerce

- It is used to advertise & make sales of wide range of goods & services.
 - This application is for both business to business & business to consumer transactions.
- Example: The purchase of goods 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.

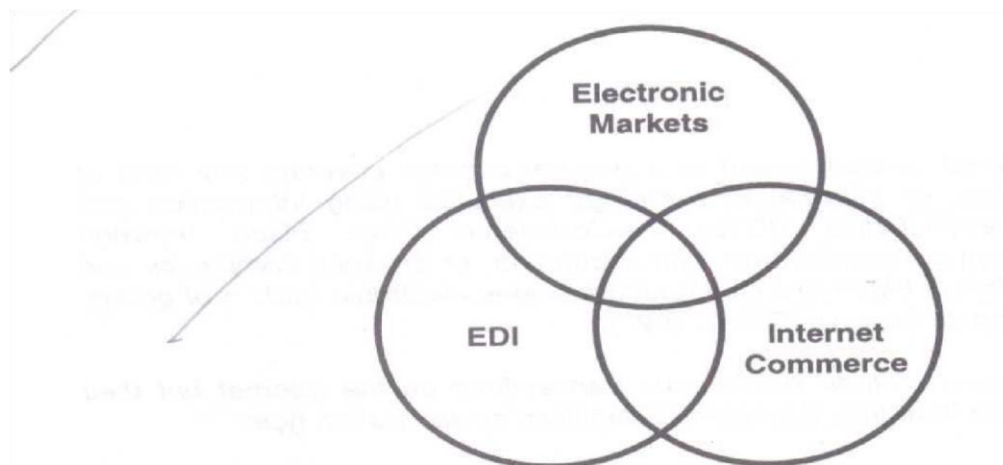


Fig. 1.1 The three categories of e-Commerce.

Features

E-Commerce provides the following features:

- **Non-Cash Payment:** E-Commerce enables the use of credit cards, debit cards, smart cards, electronic fund transfer via bank's website, and other modes of electronics payment.
- **24x7 Service availability:** E-commerce automates the business of enterprises and the way they provide services to their customers. It is available anytime, anywhere.
- **Advertising/Marketing:** E-commerce increases the reach of advertising of products and services of businesses. It helps in better marketing management of products/services.
- **Improved Sales:** Using e-commerce, orders for the products can be generated anytime, anywhere without any human intervention. It gives a big boost to existing sales volumes.
- **Support:** E-commerce provides various ways to provide pre-sales and post-sales assistance to provide better services to customers.
- **Inventory Management:** E-commerce automates inventory management. Reports get generated instantly when required. Product inventory management becomes very efficient and easy to maintain.

Communication improvement: E-commerce provides ways for faster, efficient, reliable communication with customers and partners.



Traditional Commerce v/s E-Commerce

Traditional Commerce	E-Commerce
Heavy dependency on information exchange from person to person.	Information sharing is made easy via electronic communication channels making a little dependency on person to person information exchange.
Communication/transactions are done in synchronous way. Manual intervention is required for each communication or transaction.	Communication or transactions can be done in asynchronous way. The whole process is completely automated.
It is difficult to establish and maintain standard practices in traditional commerce.	A uniform strategy can be easily established and maintained in e-commerce.
Communications of business depends upon individual skills.	In e-commerce, there is no human intervention.
Unavailability of a uniform platform, as traditional commerce depends heavily on personal communication.	E-commerce websites provide the user a platform where all the information is available at one place.
No uniform platform for information sharing, as it depends heavily on personal communication.	E-commerce provides a universal platform to support commercial/business activities across the globe.

Advantages of E-Commerce

The advantages of e-commerce can be broadly classified into three major categories:

- Advantages to Organizations
- Advantages to Consumers
- Advantages to Society

Advantages to Organizations

- Using e-commerce, organizations can expand their market to national and international markets with minimum capital investment. An organization can easily E-Commerce 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 organizations to provide better customer service.
- 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.

Advantages to Customers

- It provides 24x7 support. 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 provides substantial discounts to customers.

Advantages 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.

Disadvantages OF E-COMMERCE

The disadvantages of e-commerce can be broadly classified into two major categories:

- Technical disadvantages
- Non-technical disadvantages

Technical Disadvantages

- There can be lack of system security, reliability or standards owing to poor implementation of e-commerce.
- The software development industry is still evolving and keeps changing rapidly.
- In many countries, network bandwidth might cause an issue.
- Special types of web servers or other software might be required by the vendor, setting the e-commerce environment apart from network servers.
- Sometimes, it becomes difficult to integrate an e-commerce software or website with existing applications or databases.
- There could be software/hardware compatibility issues, as some e-commerce software may be incompatible with some operating system or any other component.

Non-Technical Disadvantages

- Initial cost: The cost of creating/building an e-commerce application in-house may be very high. There could be delays in launching an e-Commerce application due to mistakes, and lack of experience.
- User resistance: Users may not trust the site being an unknown faceless seller. Such mistrust makes it difficult to convince traditional users to switch from physical stores to online/virtual stores.
- Security/ Privacy: It is difficult to ensure the security or privacy on online transactions.
- Lack of touch or feel of products during online shopping is a drawback.

- E-commerce applications are still evolving and changing rapidly.
- Internet access is still not cheaper and is inconvenient to use for many potential customers, for example, those living in remote villages.

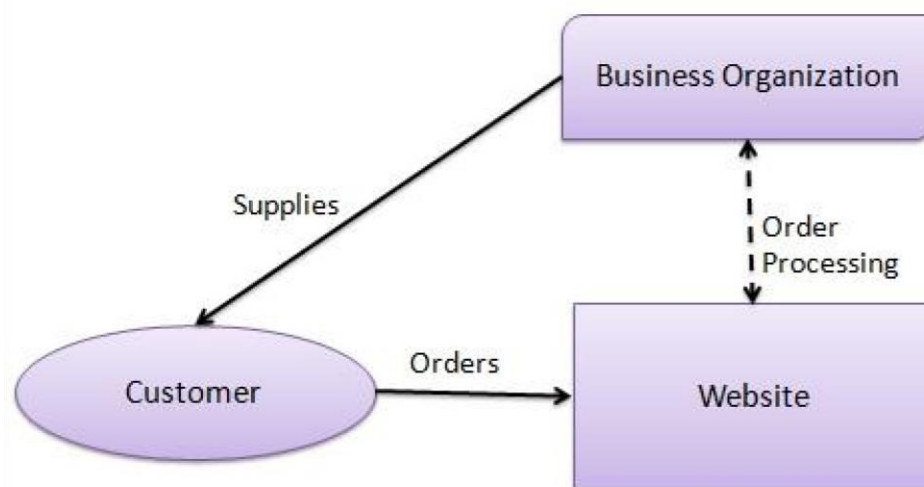
Business models of e-commerce (types of e-commerce):

E-commerce business models can generally be categorized into the following categories

- Business - to - Business (B2B)
- Business - to - Consumer (B2C)
- Consumer - to - Consumer (C2C)
- Consumer - to - Business (C2B)
- Business - to - Government (B2G)
- Government - to - Business (G2B)
- Government - to - Citizen (G2C)

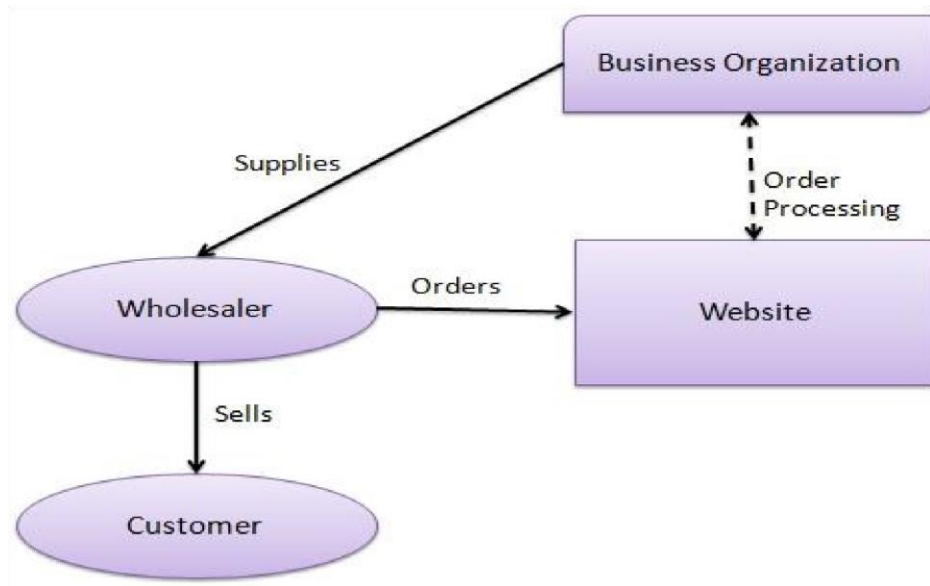
Business-to-Consumer (B2C)

In a Business-to-Consumer E-commerce environment, companies sell their online goods to consumers who are the end users of their products or services. Usually, B2C E-commerce web shops have an open access for any visitor, meaning that there is no need for a person to login in order to make any product related inquiry.



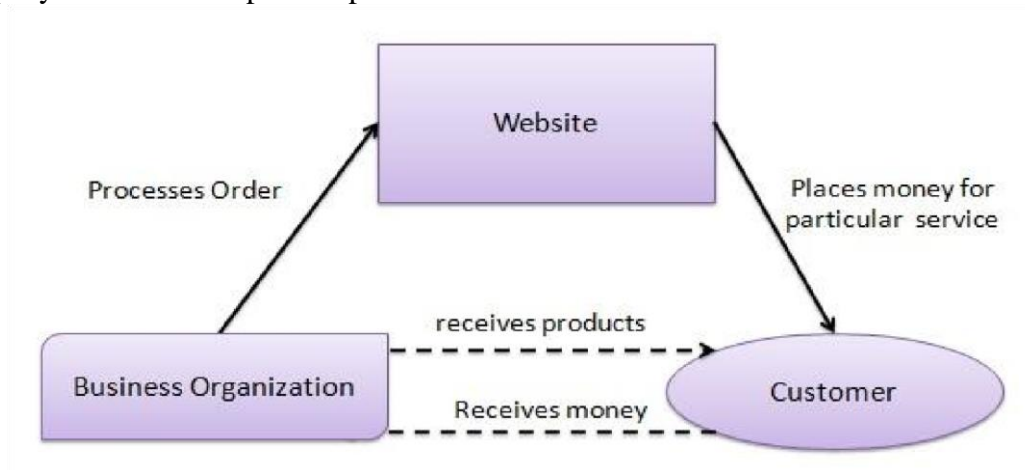
Business-to-Business (B2B)

In a Business-to-Business E-commerce environment, companies sell their online goods to other companies without being engaged in sales to consumers. In most B2B E-commerce environments entering the web shop will require a log in. B2B web shop usually contains customer-specific pricing, customer-specific assortments and customer-specific discounts.



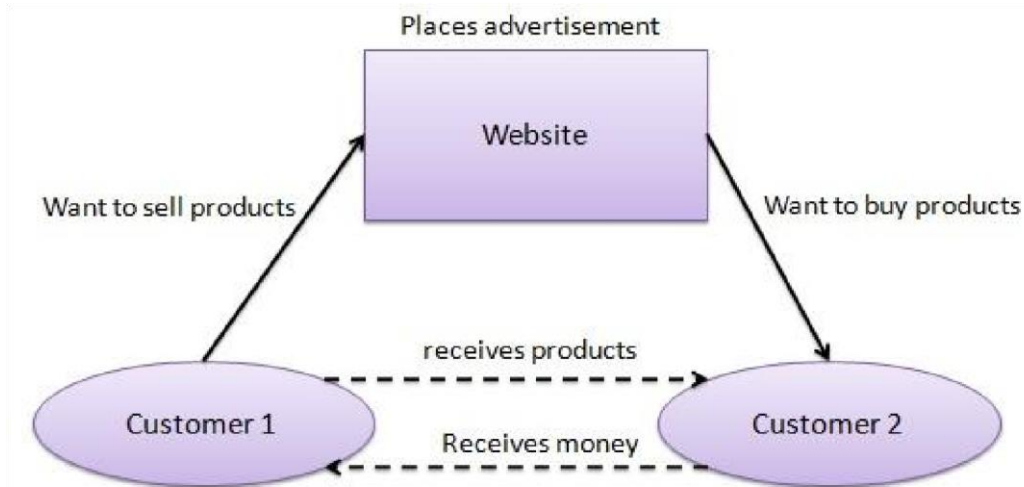
Consumer-to-Business (C2B)

In a Consumer-to-Business E-commerce environment, consumers usually post their products or services online on which companies can post their bids. A consumer reviews the bids and selects the company that meets his price expectations.



Consumer-to-Consumer (C2C)

In a Consumer-to-Consumer E-commerce environment consumers sell their online goods to other consumers. A well-known example is eBay.



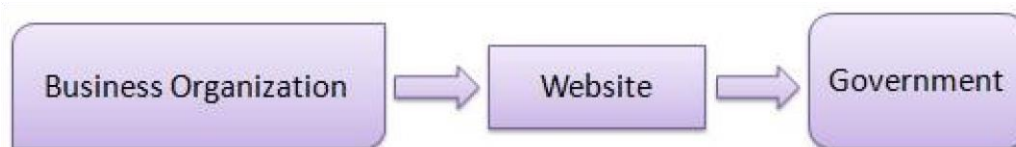
1.8 E-Governance:

E-governance is the application of information and communication technology (ICT) for delivering government services, exchange of information communication transactions, integration of various stand-alone systems and services between government-to-customer (G2C), government-to-business (G2B), government-to-government (G2G) as well as back office processes and interactions within the entire government framework.

Through e-governance, government services will be made available to citizens in a convenient, efficient and transparent manner. The three main target groups that can be distinguished in governance concepts are government, citizens and businesses/interest groups. In e-governance there are no distinct boundaries.

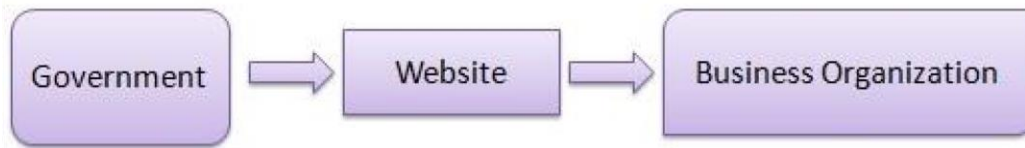
Business - to - Government (B2G)

B2G model is a variant of B2B model. Such websites are used by government 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)

Government uses B2G model website to approach business organizations. Such websites support auctions, tenders and application submission functionalities.



Government - to - Citizen (G2C)

Government uses G2C model website 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. Main objectives of G2C website are to reduce average time for fulfilling people requests for various government services.



Basic Requirements for 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.

Technical 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. For full-fledged e-commerce transaction the banking infrastructure requirements should be as follows:

Dependable telecommunication network

Use of integrated banking software for back office and front office data processing

Use of WAN and Internet for banking operations

Availability of Electronic fund transfer System

Availability of Electronic Clearing System

Availability of Public Key based Encryption System

Availability of Credit Card System both for local and international payment

Availability of Foreign Exchange Remittance Mechanism over the Internet

Availability of Legal Infrastructure supporting online payment mechanism Interim Solution:

If local telecommunication services in a country do not allow for direct connection of a web site to secure payment facilities, and in particular to those offered by credit card companies, it may be possible to host a web site in a neighboring location that is capable of providing the necessary financial connections.

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. The following factors, often influenced by national policy, should be considered: Perceived political risk, Predictability of the legal environment, Soundness of economic and monetary policy, Openness to foreign direct investment, Convertibility of local currency, Restrictions on capital flows, Credit card usage, Credit card processing protocols, Access to credit, Entrepreneurial culture, Access to startup capital, Regulations and restrictions on small business.

Threats of E-commerce:

Hackers attempting to steal customer information or disrupt the site A server containing customer information is stolen.

Imposters can mirror your ecommerce site to steal customer money

- Authorised administrators/users of an ecommerce website downloading hidden active content that attacks the ecommerce system.
- A disaffected employee disrupting the ecommerce system.
- It is also worth considering where potential threats to your ecommerce site might come from, as identifying potential threats will help you to protect your site. Consider:
- Who may want to access your ecommerce site to cause disruption or steal data; for example competitors, ex-employees, etc.
- What level of expertise a potential hacker may possess; if you are a small company that would not be likely to be considered a target for hackers then expensive, complex security may not be needed.

Features of E-Commerce:

- **Ubiquity**

Internet/Web technology is The marketplace is extended beyond traditional available everywhere: at work, at home, and boundaries and is removed from a temporal and elsewhere via mobile devices, anytime. geographic location. —Marketspace is created; shopping can take place anywhere. Customer convenience is enhanced, and shopping costs are reduced.

- **Global reach**

The technology reaches Commerce is enabled across cultural and across national boundaries, around the earth. national boundaries seamlessly and without modification.

—Marketspace includes potentially billions of consumers and millions of businesses worldwide.

- **Universal standards**

There is one set of There is one set of technical media standards technology standards, namely Internet across the globe.

- **Richness**

Video, audio, and text messages Video, audio, and text marketing messages are are possible. integrated into a single marketing message and consuming experience.

➤ **Interactivity**

The technology works Consumers are engaged in a dialog that through interaction with the user. dynamically adjusts the experience to the individual, and makes the consumer a coparticipant in the process of delivering goods to the market.

➤ **Information density**

The technology Information processing, storage, and reduces information costs and raises quality. communication costs drop dramatically, while currency, accuracy, and timeliness improve greatly. Information becomes plentiful, cheap, and accurate.

➤ **Personalization/Customization**

The Personalization of marketing messages and technology allows personalized messages to customization of products and services are be delivered to individuals as well as groups.

based on individual characteristics.

Factors affecting the growth and Needs of Electronic Commerce

- 1) **Supply chain coordination** – Due to supply chain coordination money can be saved by the availability of the material and for this companies should maintain proper internal IT systems to get the benefits of e-commerce.
- 2) **Global sourcing** – Global sourcing creates more capacity, which causes a temporary excess of lower prices and for this there is a need of finding global suppliers especially for custom fabricated products.
- 3) **MRO** – Online MRO purchasing reduces transaction costs. For this it is needed to utilize a software to connect corporate employees with vendor's catalog.
- 4) **Price Monitoring** – Companies want close relationships with vendors, but at the same time want to monitor the prices. For this companies need service to provide pricing information for both catalog and custom fab parts.
- 5) **Security** – Security is needed for growing volume of transactions and rising price tags. But for this greater security is needed for orders, company information provided to vendors and payments.
- 6) **Minimizing Up front cost and Risk** – E-commerce needs substantial investment with substantial risks. It also needs cost and time for completion and functionality. For this company need to pay per transaction or per month with low up front expense and risk.

- 7) **Extranets** – It is the need of the companies to make production plans and capabilities accessible to vendors and buyers and not to competitors. Use of extranet can solve this problem.
- 8) **Pushing ecommerce to less sophisticated buyers** – Here technology resistant buyers will accept convenience while convenient technology will be used for less sophisticated buyers for e.g. kitchen counter scanners.
- 9) **Growing internet usage** – For this e-commerce will grow both in number of users and their intensity of use. For this it is needed to grow internet infrastructure which needs routers, bandwidth, computers and appliances etc.

Prospects of Electronic Commerce

- 148 million people are online and the figure would increase year by year.
- In 1999, 100 million shoppers are expected to spend US dollar 15 Million in the cyber market space.
- The areas which will be growing are financial services, entertainment, travel and groceries.
- Returns from e-commerce depend upon how the processes are being influenced by e-commerce.

Recommender systems in e-commerce

Recommender systems are the systems in e-commerce which help in information processing and allow the customer to choose the product according to their needs. For the real world this is impossible for the physical market but in e-commerce it is possible. These systems help in suggesting the products to their customers before purchasing the product. The product is suggested depending upon the top sellers on the site and the demographics or the previous buying behavior of the customer upon which it will decide the future behavior. Recommendations of forms include product suggestions for the customer, product information of the required product, summarizing community opinion and then providing community critiques. These systems help to analyze the recommender systems at six market leading sites. Recommender systems are the systems which help in customizing the products according to the product needs of the customers to sell them on the website. . Recommender systems are similar in some respect and are different than marketing systems and supply-chain decision-support systems. Recommender systems which make use of computer are called as *automatic recommender systems*. The examples of the recommender systems are **Amazon.com**,

Drugstore.com, and MovieFinder.com. E-commerce sales is increased using recommender systems in three ways –

- 1) **Making website useful for sales:** Visitors only look over the site to see the product information and do not purchase anything. Recommender systems find the product of the choice of the customer.
- 2) **Increasing cross sell:** Recommender systems increase sales by suggesting additional products to the customers.
- 3) **Building faith:** Trust is an important factor for the online business. Recommender systems build trust by creating a value added relationship between the site and the customer.