Unit-I

History of E-commerce:

1969: CompuServe, the first significant eCommerce company is established by Dr John R. Goltz and Jeffrey Wilkins by utilizing a dial-up connection. This is the first time eCommerce was introduced.

1979: Michael Aldrich invented electronic shopping (he is also considered as founder or inventor of eCommerce). This was done by connecting a transaction-processing computer with a modified TV through a telephone connection. This was done for transmission of secure data.

1982: The continued growth of technology, particularly in electronics led to the launch of the first eCommerce platforms by Boston Computer Exchange.

1992: The 90s took the online business to the next level by introducing Book Stacks Unlimited as an online bookstore by Charles M. Stack. It was one of the first online shopping site created at that time.

1994: Web browser tool introduced by Netscape Navigator by Marc Andreessen and Jim Clark. It was used on the Windows platform.

1995: The year marked the iconic development in the history of eCommerce as Amazon and eBay were launched. Amazon was started by Jeff Bezos, while Pierre Omidyar launched eBay.

1998: PayPal launched the first eCommerce payment system as a tool to make money transfers.

1999: Alibaba started its online shopping platform in 1999 with more than $25 million as capital. Gradually it turned out to be an eCommerce giant.

2000: Google launched the first online advertising tool named Google AdWords as a way to help retailers to utilize the pay-per-click (PPC) context.

The four years saw the development of eCommerce in the following ways:

2005: Amazon Prime membership was launched by Amazon to help customers get free two-day shipping at an annual fee.

Etsy was launched in 2005 to enable small and medium scale retailers to sell goods online. In 2009, Jack Dorsey and Jim McKelvey started

2005: Square, Inc as an app-based service is launched

2005: Eddie Machaalani and Mitchell Harper launched BigCommerce as an online storefront platform.

The years experienced massive development in the sphere of eCommerce, such as:

2011: Google launches its online wallet payment app

2011: One of the earliest moves by Facebook to launch sponsored stories for advertisements

2014: Apple launched Apply Pay, an online payment application

2014: Jet.com was launched in 2014 as an online shopping portal.

2017: Instagram introduces shoppable tags- enabling people to sell directly from the social media platform

Definition of E-Commerce:

E-Commerce or Electronic Commerce means buying and selling of goods, products, or services over the internet. E-commerce is also known as **electronic commerce or internet commerce.** These services provided online over the internet network. Transaction of money, funds, and data are also considered as E-commerce.

These business transactions can be done in four ways: Business to Business (B2B), Business to Customer (B2C), Customer to Customer (C2C), Customer to Business (C2B). The standard definition of E-commerce is a commercial transaction which is happened over the internet. Online stores like Amazon, Flipkart, Shopify, Myntra, Ebay, Quikr, Olx are examples of E-commerce websites.

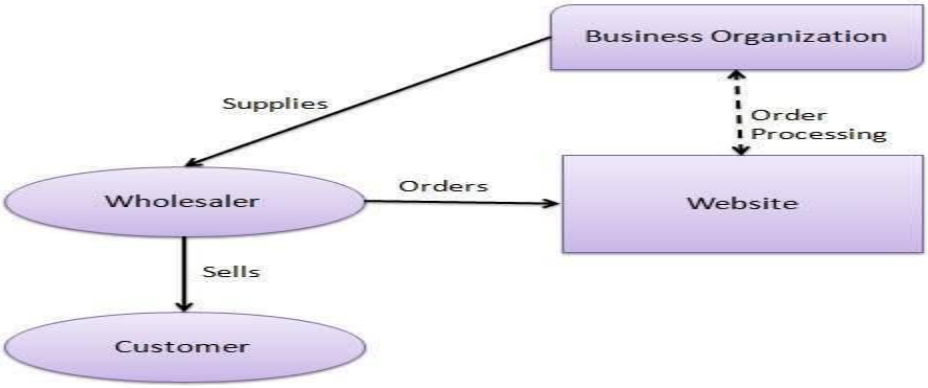
Market model of E-Commerce:

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)

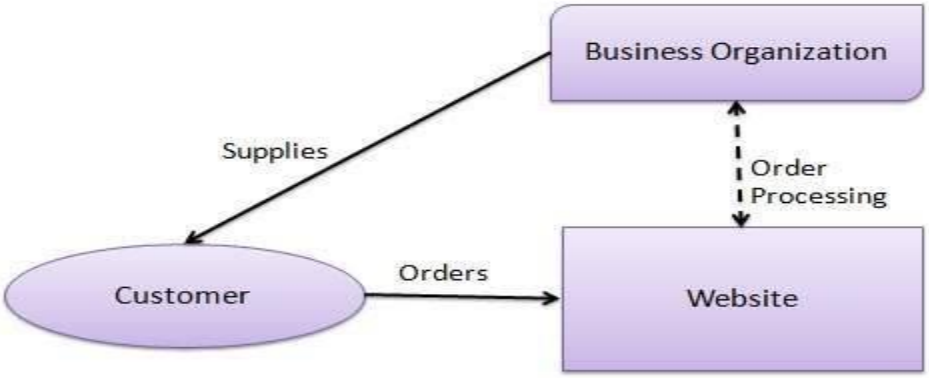
Business - to - Business

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.



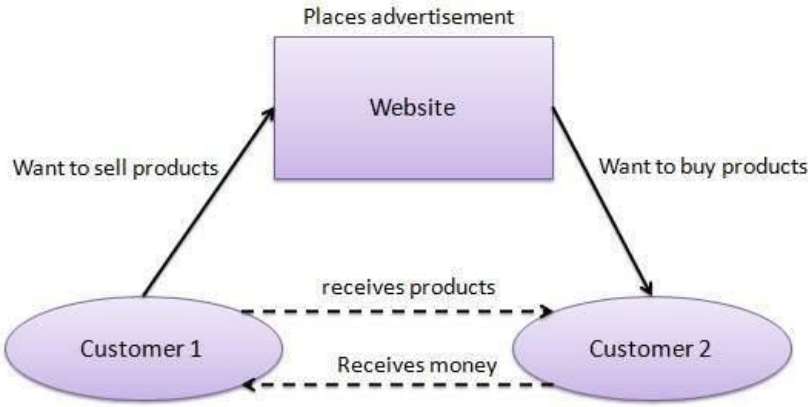
Business - to - Consumer

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.



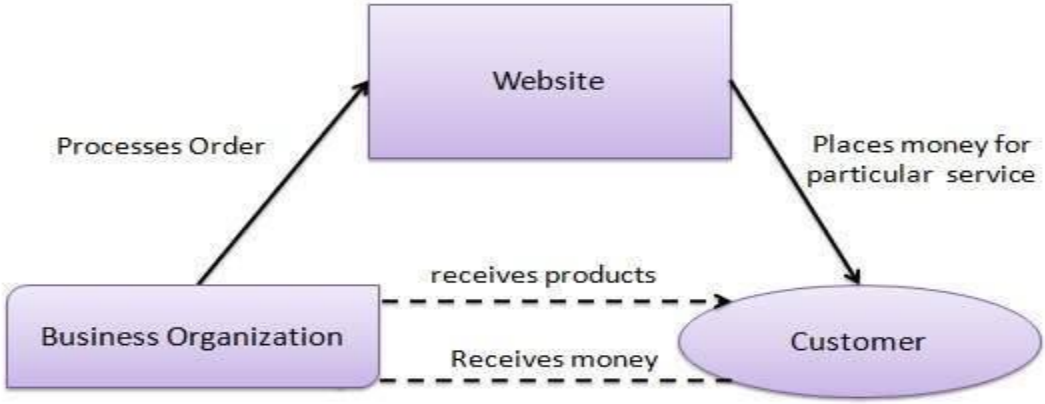
Consumer - to - Consumer

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.



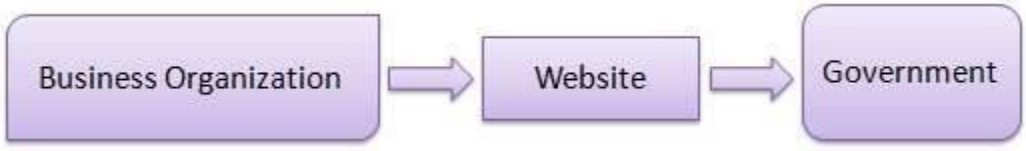
Consumer - to - Business

In this model, a consumer approaches a website showing multiple business organizations for a particular service. The consumer places an estimate of amount he/she wants to spend for a particular service. For example, the comparison of interest rates of personal loan/car loan provided by various banks via websites. A business organization who fulfills the consumer's requirement within the specified budget, approaches the customer and provides its services.



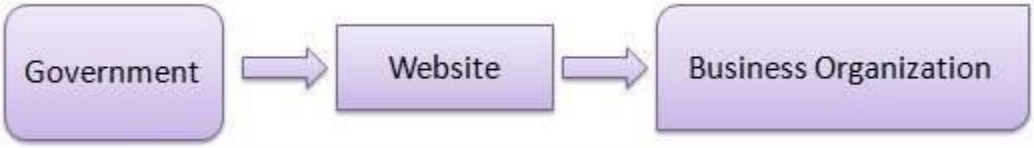
Business - to - Government

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

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



Government - to - Citizen

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.

Applications of E-Commerce:

The most common Applications of E-commerce are as follows:

Retail and wholesale:

E-commerce has a number of applications in retail and wholesale.

E-retailing or on-line retailing is the selling of goods from Business-to-Consumer through electronic stores that are designed using the electronic catalog and shopping cart model.

Cybermall is a single Website that offers different products and services at one Internet location. It attracts the customer and the seller into one virtual space through a Web browser.

Marketing:

Another application e-commerce is Marketing.

Data collection about customer behavior, preferences, needs and buying patterns is possible through Web and E-commerce. This helps marketing activities such as price fixation, negotiation, product feature enhancement and relationship with the customer.

Finance:

Financial companies are using E-commerce to a large extent.

Customers can check the balances of their savings and loan accounts, transfer money to their other account and pay their bill through on-line banking or E-banking.

Another application of E-commerce is on-line stock trading. Many Websites provide access to news, charts, information about company profile and analyst rating on the stocks.

Manufacturing:

E-commerce is also used in the supply chain operations of a company.

Some companies form an electronic exchange by providing together buy and sell goods, trade market information and run back office information such as inventory control.

This speeds up the flow of raw material and finished goods among the members of the business community. Various issues related to the strategic and competitive issues limit the implementation of the business models.

Companies may not trust their competitors and may fear that they will lose trade secrets if they participate in mass electronic exchanges.

Auctions:

Customer-to-Customer E-commerce is direct selling of goods and services among customers.

It also includes electronic auctions that involve bidding. Bidding is a special type of auction that allows prospective buyers to bid for an item.

For example, airline companies give the customer an opportunity to quote the price for a seat on a specific route on the specified date and time.

Architecture of E-Commerce:

There are four types of E-commerce Architecture

1. Client Server Architecture
2. Two-Tier Architectures
3. Three-Tier Architectures
4. Distributed Enterprise Architecture

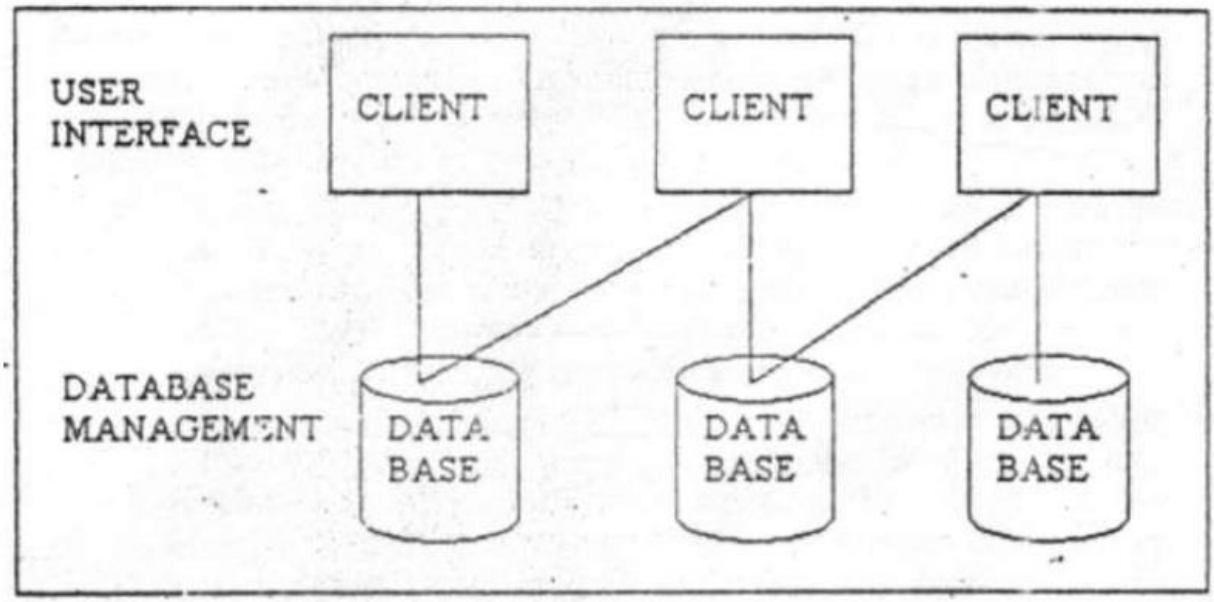
E- Commerce System Architecture: Two-tier architecture:

In two-tier client-server architecture the user interface runs on the client and the database is stored on the server. The business application logic can either run on the client or the server. The user application logic can either run on the client or the server. It allows the client processes to run separately from the server processes on different computers.

The client processes provide an interface for the customer that gather and present the data on the computer of the customer. This part of the application is known as presentation layer. The server processes provide an interface with the data store of the business.

This part of the application is known as **data layer**. The business logic, which validates data, monitors security and permissions and performs other business rules, can be kept either on the

client or the server. The following Figure shows the e commerce system two-tier architecture diagram.



E- Commerce System Architecture: Three-tier architecture:

The three-tier architecture emerged in the 1990s to overcome the limitations of the two-tier architecture. In three-tier architecture, the user interface and the business application logic, also known as business rules and data storage and access, are developed and maintained as independent modules.

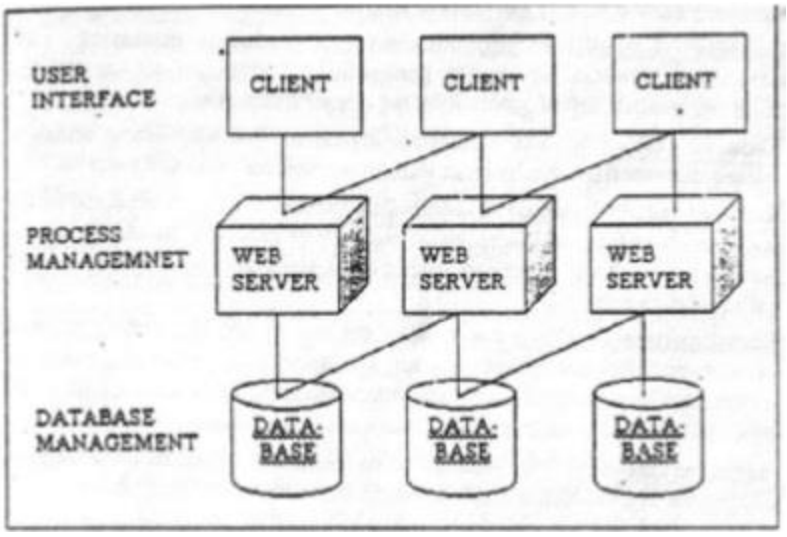
The three-tier architecture includes three tiers: top tier, middle tier and third tier.

The top tier includes a user interface where user services such as session, text input, and dialog and display management reside.

The middle tier provides process management services such as process development, process monitoring and process resourcing that are shared by the multiple applications.

The third tier provides database management functionality. The data management component ensures that the data is consistent throughout the distributed environment, the centralized process logic in this architecture, which makes administration easier by localizing the system functionality, is placed on the middle tier.

The following Figure shows the outline of the e commerce system Three - tier architecture diagram.



Advantages and Disadvantages of E-Commerce:

E-Commerce advantages can be broadly classified in 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 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.

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.

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.