BUSINESS INFORMATICS

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Module I
Introduction to E-Commerce

▸ E-commerce or Electronic commerce is the process of buying or selling goods, products or services over the electronic medium.

▸ In other words, e-commerce is a medium of trading for goods and services between buyers and sellers through an electronic medium.

▸ Ecommerce refers to the paperless exchange of business information using Electronic Data Exchange (EDI), Electronic Bulletin Boards, Electronic Fund Electronic Mail (e-mail), Transfer (EFT) and Other Network-based technologies.

Features of E-Commerce

- Global reach
- Universal Standa
- Social technolog
- Personalization
- Customization
- Information dens
- Interactivity
- Richness
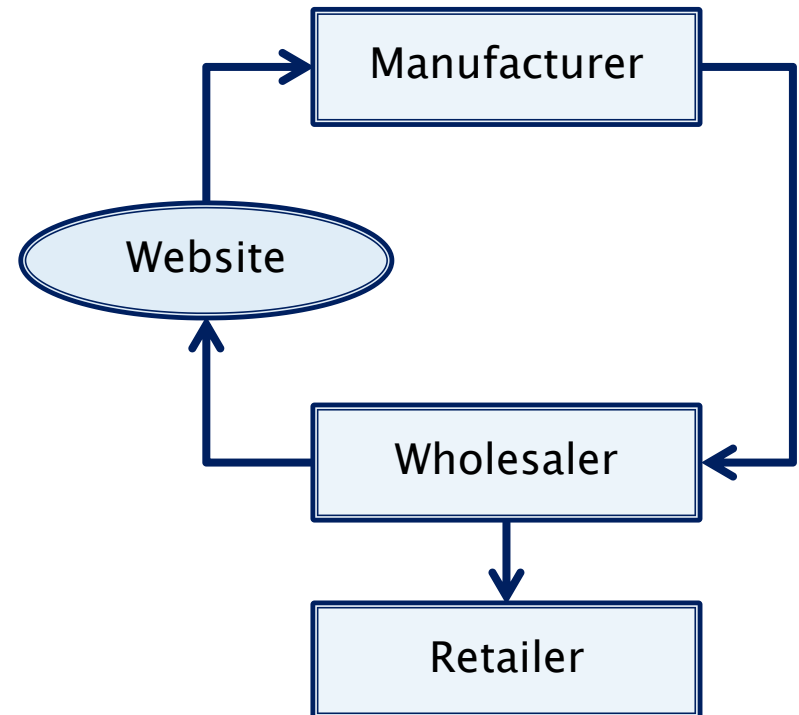- Ubiquity
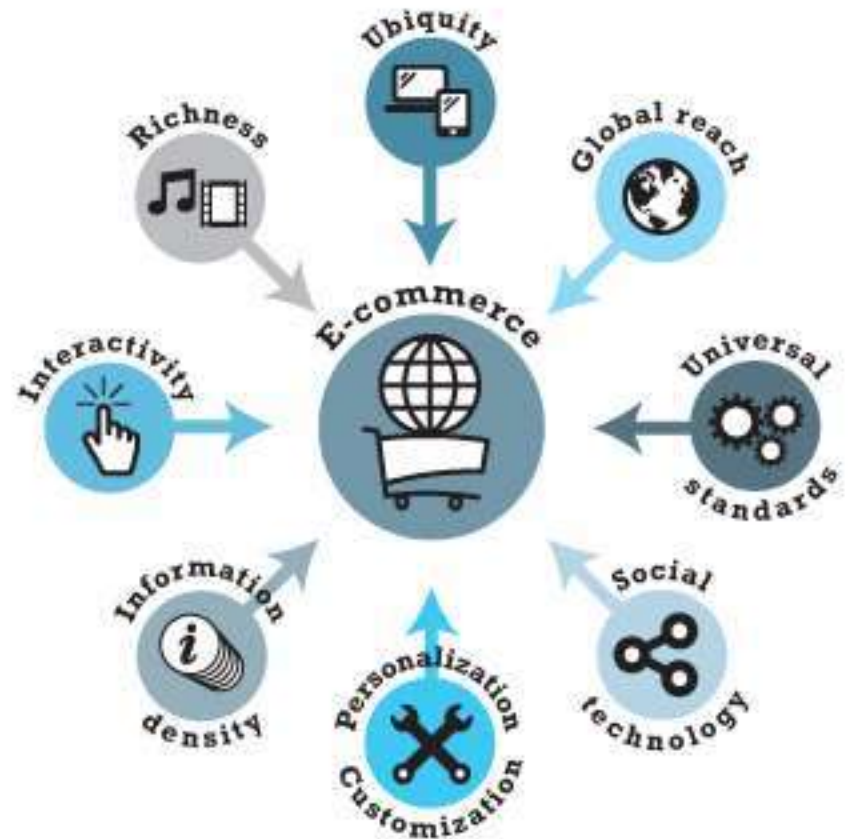
Types of E-commerce

- Business   – to – Business   (B2B)

- Business   – to – Consumer   (B2C)

- Consumer   – to – Consumer   (C2C)

- Consumer   – to – Business   (C2B)

- Business   – to – Government (B2G)

- Government – to – Business   (G2B)

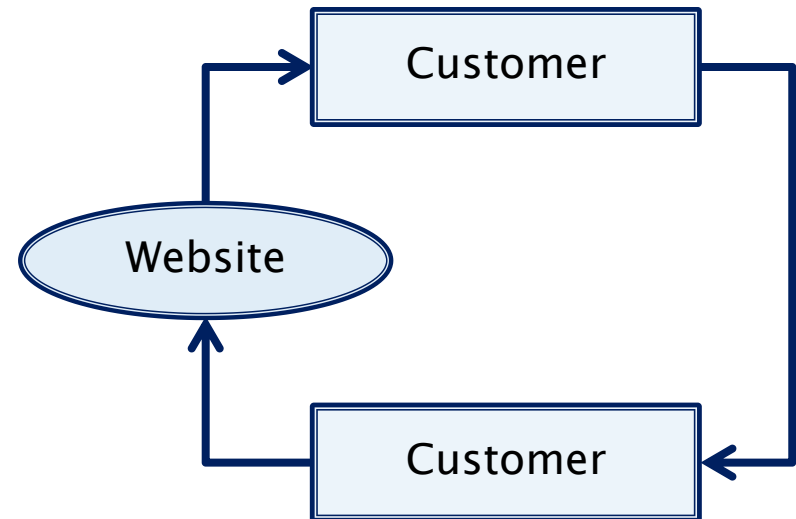- Government – to – Citizen   (G2C)

B2B (Business – to – Business)

- B2B e-commerce can be simply defined as the commerce between companies.

- In Business-to-Business type of electronic commerce system, companies do business with each other.

- For example, a manufacturer selling a product to a wholesaler and a wholesaler selling a product to the retailer.

Here manufacturer, wholesaler and retailer all are doing their separate businesses.

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        ┌──────────────┐
        │ Manufacturer │
        └──────────────┘

   ┌───────────┐
   │  Website  │
   └───────────┘

        ┌──────────────┐
        │  Wholesaler  │
        └──────────────┘

        ┌──────────────┐
        │   Retailer   │
        └──────────────┘
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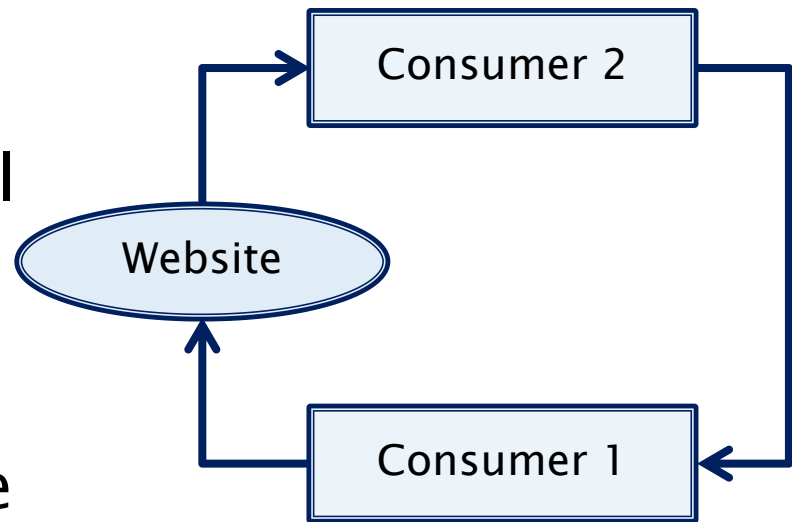
B2C (Business-to-Consumer)

- The company sells their products, goods or services directly to the consumer online.

- Here the customer can view products on the website that they want to buy and can order it.

- After receiving the order details, the company will process the order and then send the products directly to the customer.

- Amazon, Flipkart etc are this type of e-commerce business model.

```
        ┌──────────┐
   ┌───►│ Customer │───┐
   │    └──────────┘   │
┌──────┐               │
│Website│              │
└──────┘               │
   ▲    ┌──────────┐   │
   └────│ Customer │◄──┘
        └──────────┘
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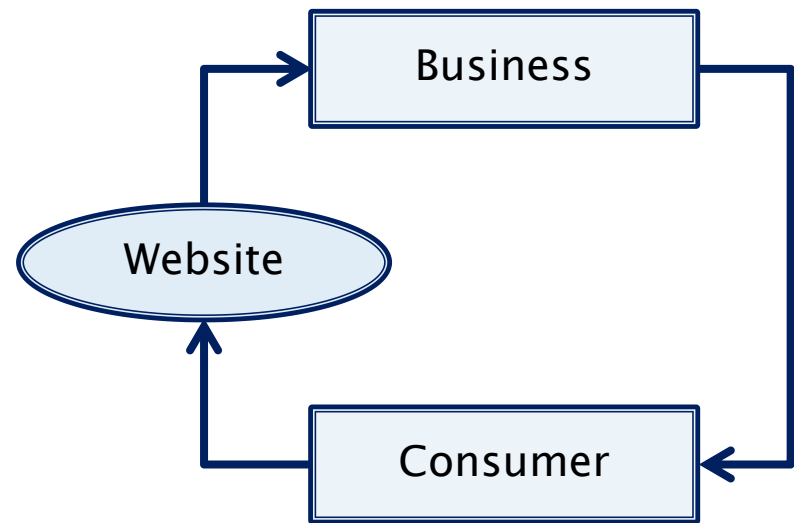
C2C (Consumer-to-Consumer)

- A consumer sells products, goods or services to other consumers using the internet or the web technologies.
- The C2C business model helps us to sell our assets or properties like a car, house, bike, electronics etc via online to other consumers.
- OLX, Quickretc are this type of business model.

C2B (Consumer-to-Business)

▸ Consumer to the business model is a type of commerce where a consumer or end user provides a product or service to an organization.

▸ It is the reverse model of the B2C or business to consumer model, where businesses produce products and services for consumer consumption.

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        ┌──────────────┐
     ┌─▶│   Business   │──┐
     │  └──────────────┘  │
 ┌───────┐                │
│ Website │               │
 └───────┘                │
     ▲  ┌──────────────┐  │
     └──│   Consumer   │◀─┘
        └──────────────┘
```

B2G (Business-to-Government)

- Business to government (B2G) also referred as the (B2A)business to administration commerce.
- It is a derivative of B2B e-commerce model.
- In this model, the businesses and government agencies (administration) use central websites to exchange information and do business with each other more efficiently than they usually can off the web.
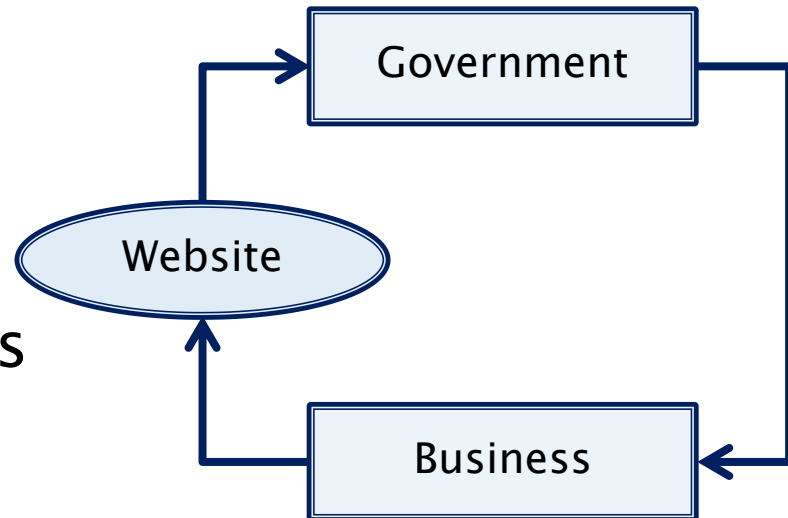
G2C (Government-to-Citizen)

- Government to citizen or government to consumer e-commerce model helps consumers to request information or post various feedbacks regarding public sectors directly to the government authorities or administration including paying taxes, registering vehicles, and providing information and services.
- For example, making electricity bill payments through the government website, making payment of taxes, payment of health insurance etc are G2C type of business model.

Administration

Website

Consumer
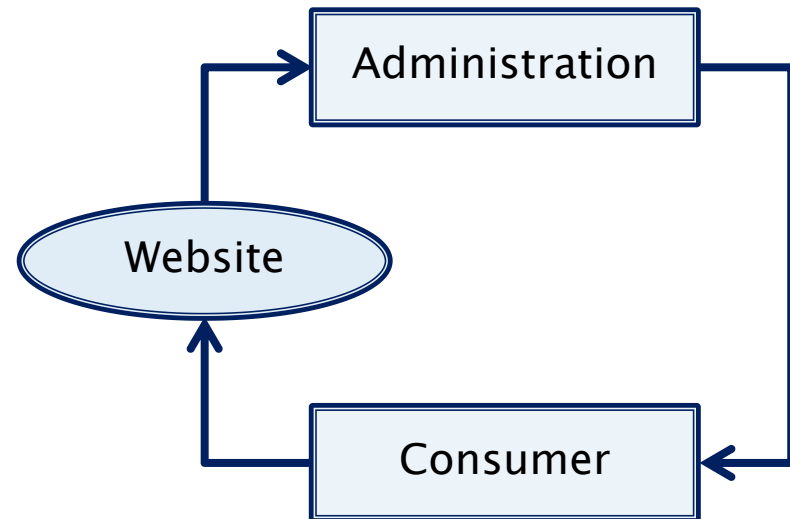
Benefits of E-Commerce

- The global nature of the technology.
- Low cost.
- Opportunity to reach hundreds of millions of people.
- Interactive nature.
- Variety of possibilities.
- Rapid growth services to organizations.

Applications of E-Commerce

Globally E-Commerce is applied in the following fields.

- E Marketing
- E-Advertising
- E-Banking
- Mobile Commerce
- E-Learning
- E-Shopping
- Online training
- Search Engines
- Entertainment

E-Auctions

▸ An online auction is an electronic space where sellers and buyer meet and conduct different types of transactions. This market mechanism uses a competitive process where a seller solicits consecutive bids from buyers(forward e-auctions) or a buyer solicits bids from sellers (reverse e-auctions).

Types of E-Auctions

▪ **Regular Auction**

It is normally the forward Auction. It includes the process in which usually a seller puts up his/her products for auction and the buyers compete to offer different prices to the seller by bidding on the product.

▪ **Reverse Auction**

The roles of seller & buyer are reversed in this type of auction. In this process, the buyer puts up a request for his/her required item and thus, Sellers bid for the prices at which they are willing to sell the buyer's requested products. Lastly, the seller with the lowest bit will be the winner of the auction.

Modue II
Electronic Payment System

▸ An electronic payment system is a way of making transactions or paying for goods and services through an electronic medium, without the use of cheque or cash.

▸ It's also called an online payment system. In other words payment, without using cash or cheque, is called an e-commerce payment system.

Advantages of e-payment system

▸ Speed and Convenience   Increased Sales

▸ Saves on time   Controls expenses

▸ User- friendly   Reliabiity

▸ Reduced loss and theft risks   Convertibility

Types of E-payment System

EPS can be classified into two types.
- Digital Token-based EPS
- Retailing Payments.

▸ **Digital Token Based E-Payment systems**
- E-Cash (Online Settlement of Electronic Token)
- Cheques (post-paid token)
- Smart Card (Pre-paid Token)

▸ **Retailing Payments**
- Credit Cards
- Debit cards/e-purse

E-Money

- E-Money transactions refer to situation where payment is done over the network and the amount gets transferred from one financial body to another financial body without any involvement of a middleman.
- E-money transactions are faster, convenient, and saves a lot of time.
- Online payments done via credit cards, debit cards, or smart cards are examples of e-money transactions. Another popular example is e-cash. In case of e-cash, both customer and merchant have to sign up with the bank or company issuing e-cash.

Smart Cards

- Conventional credit cards and bank cards are regarded as the first generation smart cards.
- Smart cards contain a microprocessor chip with memory capable of storing lots of data.
- These pocket sized cards embedded with integrated circuits can process data.
- Data can be better protected through cryptographic techniques.
- Large companies and organizations use smart cards to provide secure authentication to their employees.
- When an employee uses smart card, he has access control of multiple, related software system.
- Smart cards can be used for identification, authentication and data storage.

Credit Cards

- **Credit card** is used to borrow money means buy products and services on credit.
- These are issued by banks or financial institutions.
- Credit cards are most prevalently used to avoid the complexity of digital cash and electronic cheques .
- If customer wants to utilize a service they simply send their credit-card details to the service providers involved and the credit card organization handle their payments.
- Every credit card has same shape and size as specified by the ISO 7810 standard.
- These standards also specify the credit card number, the first digit in the series will always be a 3,4,5 or 6. This number designates the type of the card. The remaining numbers in the series are used for other purpose depending upon the card type and issuer.

Debit Cards

- **A debit card** is a plastic payment card that can be used instead of cash when making purchases. It is similar to credit card ,the money is immediately transferred from the cardholder's bank account when performing any transaction.
- Debit cards are also called **e- purse**. They are wallets size cards embedded with programmable micro chips that store details of money and used instead of paper cash.
- Debit cards are relationship – based cards as they are credit-based and settlement occurs at the end of billing cycle.

Security Concerns In E –Commerce

This massive increase in the uptake of e-Commerce has led to a new generation of associated security threats, but any e-Commerce system must meet four integral requirements:

- **Privacy** – information exchanged must be kept from unauthorized parties
- **Integrity** – the exchanged information must not be altered or tampered with
- **Authentication** – both sender and recipient must prove their identities to each other and
- **Non-repudiation** – proof is required that the exchanged information was indeed received (Holcombe, 2007).

Encryption

- **Encryption** is the method by which information is converted into secret code that hides the information's true meaning.
- The science of encrypting and decrypting information is called **cryptography**.
- In computing, unencrypted data is also known as **plain text** and encrypted data is called **cipher text**.
- Converting plain text into cipher text is known as encryption and converting cipher text into plain text is known as **decryption**.
- The formulas used to encode and decode messages are called **encryption algorithms** or ciphers.

Secret Key Cryptography

▸ Secret-key cryptography refers to cryptographic system that uses the same key to encrypt and decrypt data.

▸ A key is a piece of information that determines the functional output of a cryptographic algorithm.

▸ Secret key cryptography is also called symmetric key cryptography.

Symmetric Encryption
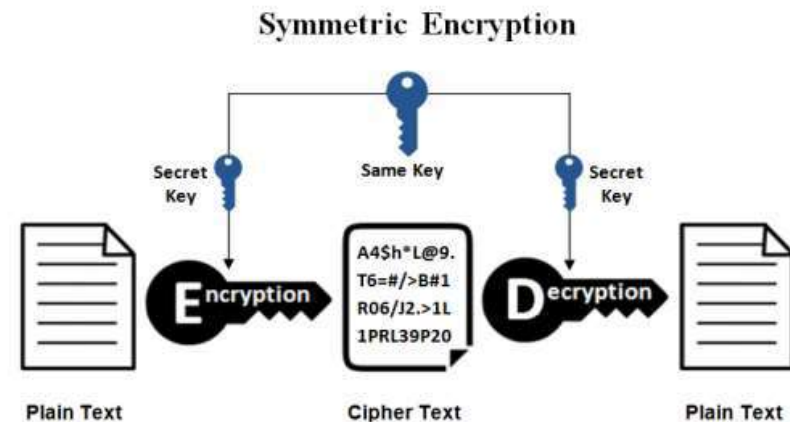
Public Key Cryptography

▸ Public-key cryptography, or asymmetric cryptography, is a cryptographic system that uses pairs of keys public keys, which may be disseminated widely, and private keys, which are known only to the owner.

▸ The generation of such keys depends on cryptographic algorithms based on mathematical problems to produce one way functions.

▸ Effective security only requires keeping the private key private; the public key can be openly distributed without compromising security.


Asymmetric Encryption
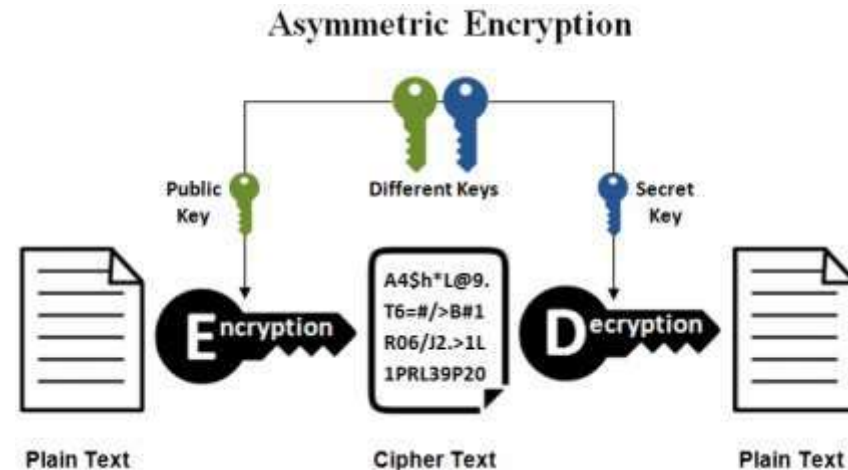
Digital Signatures

- Digital signatures are the public–key primitives of message authentication.
- In the physical world, it is common to use handwritten signatures on handwritten or typed messages. They are used to bind signatory to the message.
- Similarly, a digital signature is a technique that binds a person/entity to the digital data.
- This binding can be independently verified by receiver as well as any third party.
- Digital signature is a cryptographic value that is calculated from the data and a secret key known only by the signer.

Firewall

▸ A firewall is a network security device that monitors incoming and outgoing network traffic and decides whether to allow or block specific traffic based on a defined set of security rules.

▸ It is a system designed to prevent unauthorized access to or from a private network.

▸ You can implement a firewall in either hardware or software form, or a combination of both.
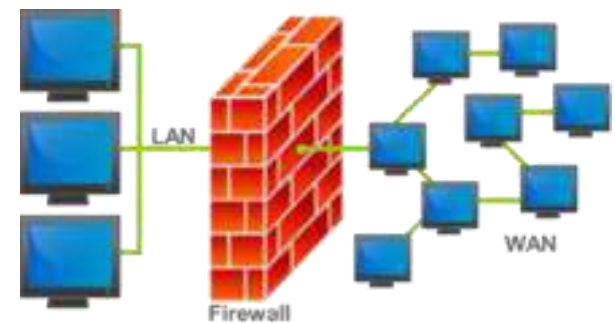
Module III
Marketing

- **Marketing** Is the process of getting people interested in your company's product or service.

- The main Goal of marketing is to research, promote the product along with increasing audience engagement, leading to ultimately selling of the product or service.

- This happens through market research, analysis, and understanding your ideal customer's interests Marketing pertains to all aspects of a business, including product development, distribution methods, sales, and advertising.
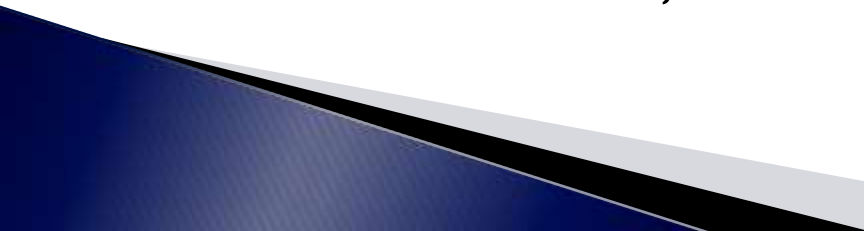
Mass Marketing

▸ **Mass marketing** is a market strategy whose aim is to capture the largest portion of the market.

▸ This marketing strategy focuses on high sales volumes at lower price points, traditionally using radio, television and print media to gain maximum exposure for the product.

Features

▸ The process of devising products with appeal and promoting them to all types of customers.

▸ Aims to broadcast a message to the largest number of people possible.

▸ High volume sales and low prices maximize economies of scale.

▸ A larger number of selling or buying is possible.

Market Segmentation

- Market Segmentation is a process of dividing the market of potential customers into different groups and segments on the basis of certain characteristics.
- The member of these groups share similar characteristics and usually have one or more than one aspect common among them.
- Market segmentation helps the marketers to devise and implement relevant strategies to promote their products amongst the target market.
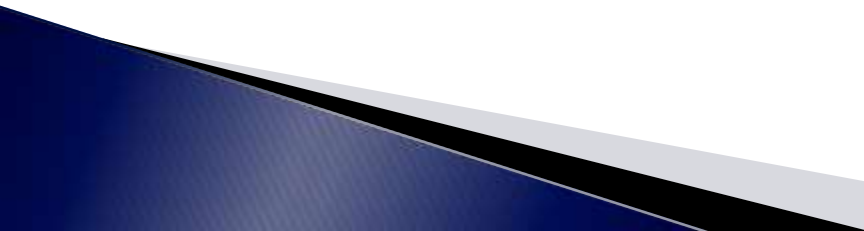- A market segment consists of individuals who have similar choices, interests and preferences.

Steps in Market Segmentation

IDENTIFY THE TARGET MARKET	IDENTIFY EXPECTATIONS OF TARGET AUDIENCE	CREATE SUB GROUPS	REVIEW THE NEEDS
NAME THE MARKET SEGMENT	OCCUPATION	SIZE OF THE MARKET	REVIEW THE BEHAVIOUR

Types of Market Segmentation

- **Demographic segmentation**: It refers to statistical data about a group of people. For ex. Age, Gender, Income, Location, Family Situation, Education, Ethnicity

- **Psychographic segmentation**: It categorizes audiences and customers by factors that relate to their personalities and characteristics. For example, Personality traits, Values, Attitudes, Interests and Lifestyles

- **Behavioral segmentation**: While demographic and psychographic segmentation focus on who a customer is, but it focuses on how the customer acts. For example, Purchasing habits, Spending habits, User status and Brand interactions.

- **Geographic segmentation**: Geographic segmentation is the simplest type of market segmentation. It categorizes customers based on geographic borders. For example, ZIP code, City, Country, Radius around a certain location, Climate and Urban or rural

One-to-One Marketing

▸ One-to-one marketing , also known as individual marketing/ Personalized marketing.

▸ One-to-one marketing is a customer relationship management strategy that centers on personalized interactions with customers.

▸ In other words, it is a strategy that emphasizes having an individualized experience with customers.

▸ One-to-one is not necessarily a new concept. The one-to-one approach is about as old as business itself.

Behavioural Marketing

- Behavioural marketing targets consumers based on their behaviour on Web sites, rather than purely by the content of pages they visit.
- Behavioural marketers target consumers by serving ads to predefined segments or categories.
- It is a marketing method that uses web user information to strengthen advertising campaigns.
- The technique involves gathering data from a variety of sources about the potential customer's online browsing and shopping behaviors.

Web Advertising

- Web advertising is a form of marketing and advertising which uses the Internet to deliver promotional marketing   messages to consumers.

- Many consumers find online advertising disruptive and have increasingly turned to ad blocking for a variety of reasons.

- It is also known as online advertising or internet advertising When software is used to do the purchasing, it is known as programmatic advertising.

Online Advertising Methods
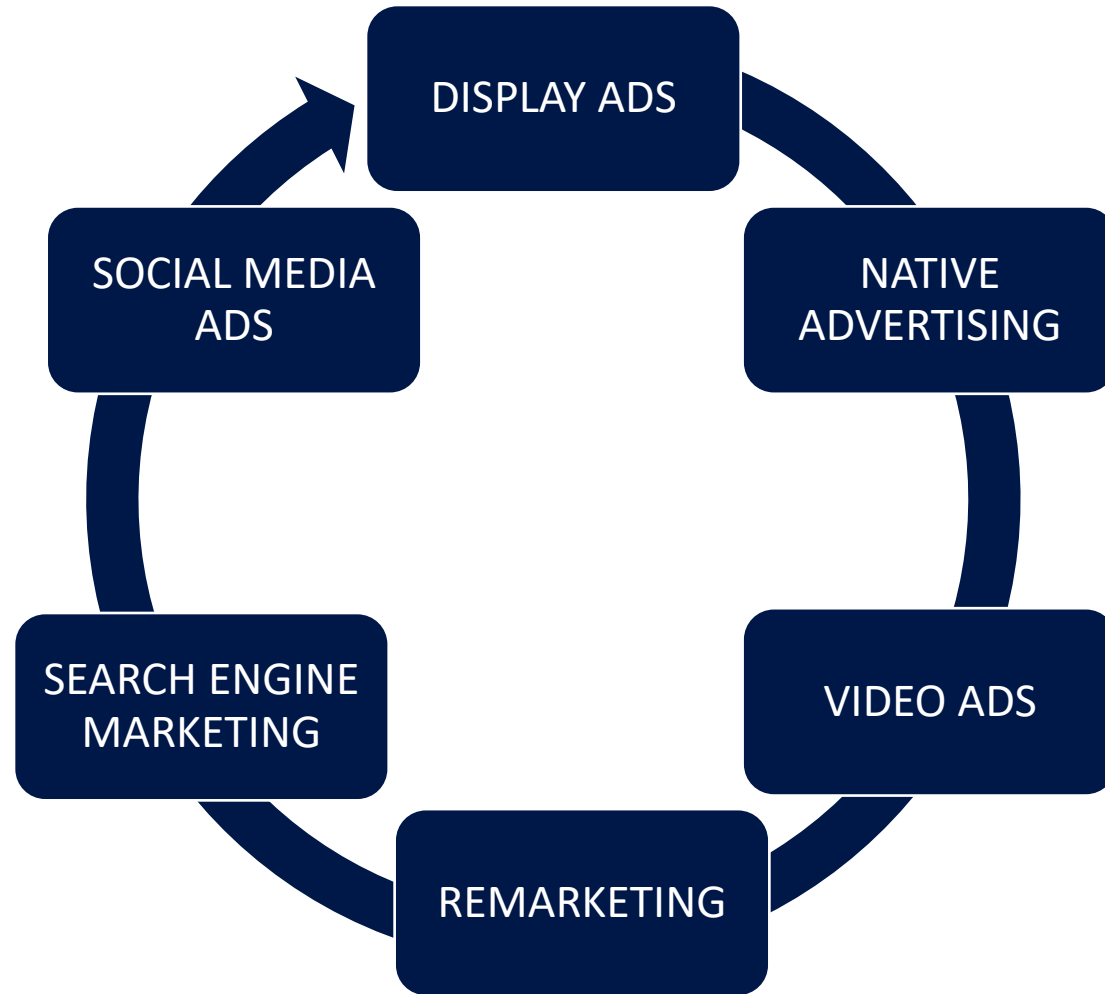
Advertising Strategies and Promotions

- **Advertising strategies** and promotion are used by manufacturers as a means for consumers to make a specific action, such as buying a product.
- **Promotional strategies** are generally for short-term work, trying to get consumers to act fast before the promotion expires. Advertising is generally used in conjunction with promotional strategies to get the message of the product reaches the consumer.
- An advertising strategy is designed to sell a product. It is a one-way form of communication, from company to consumer, geared toward giving consumers the information necessary to make a purchasing decision. Advertisements tell consumers about the product and how to get it.

Module IV
Mobile Commerce

- Mobile commerce, also called m-commerce includes any monetary transaction completed using a mobile device.

- In other words Mobile commerce is defined as "Mobile Commerce (or m-commerce) refers to the browsing, buying, and selling of products and services on mobile devices such as cell phones or tablets.

- M-commerce implies the use of mobile devices, so people can do their business transactions anywhere they go as long as they can access the internet on their smart phones and can perform transactions with just a few taps on the screen.

Advantages

- Added customer retention by being more easily accessible.
- More convenience for customers in comparing prices, reading reviews and making purchases without the need of a desktop computer.
- Wider variety of products and services.
- Automates a businesses' point of customer contact and sales.

Disadvantages

- A poorly executed mobile experience can deter customers from making purchases.
- Mobile payment options are not available in every geographic location and may not support every type of digital wallet.
- Businesses must know and comply with tax laws and regulations of all countries they ship to (some businesses will avoid this by only allowing purchases and shipping from their country of origin).

Mobile Devices

▸ A mobile device is a handheld computer or any other electronic device that is designed with portability in mind.

▸ Some of the most common mobile devices we use today i
  - ✓ Smartphones
  - ✓ Tablets
  - ✓ Laptop computers
  - ✓ Smart watches
  - ✓ E-readers
  - ✓ Handheld gaming consoles

Computing Software

- Computer software, also called software, is a set of instructions and its associated documentations that tells a computer what to do or how to perform a task.
- Software includes all different software programs on a computer, such as applications and the operating system.
- Ex: Microsoft Windows , Linux, Microsoft office, Wolfram Mathematica

Wireless Telecommunication devices

- Wireless communication is a type of data communication that is performed and delivered wirelessly.
- This is a broad term that incorporates all procedures and forms of connecting and communicating between two or more devices using a wireless signal through wireless communication technologies and devices.

The following are the different types of wireless communication technologies.

- Radio and Television Broadcasting.
- Radar Communication.
- Satellite communication.
- Cellular Communication.
- Global Positioning System.
- WiFi.
- Bluetooth.
- Radio Frequency Identification.

Mobile Finance Applications

- Quicken
- Money spire
- Cash App
- You need a Budget
- Acorns
- Personal Capital
- My Money
- Money dance

Web 2.0

- Web 2.0 is the term used to describe a variety of web sites and applications that allow anyone to create and share online information or material they have created.
- A key element of the technology is that it allows people to create, share, collaborate & communicate.
- In other words, Web 2.0 is the name used to describe the second generation of the World Wide Web, where it moved static HTML pages to a more interactive and dynamic web experience.

Virtual Communities

- A virtual community is a social network of individuals who interact through specific social media, potentially crossing geographical and political boundaries in order to pursue mutual interests or goals.
- Some of the most pervasive virtual communities are online communities operating under social networking services.
- A virtual community is a community of people sharing common interests, ideas, and feelings over the Internet or other collaborative networks.

Online Social Networking

- An online social network (OSN) is a social structure made of individuals (or organizations) that can be called as "nodes", and the links that are the different types of relationships/interdependency, established between nodes.
- In fact, a social network is based on two parameters: nodes and links.
- A node is a basic unit of a data structure, Nodes contain data and may link to other nodes.
- Some social media sites are: Facebook, Twitter, Snap chat, TikTok etc

Web 3.0

- The web 3.0 is also known as the "Semantic web".
- It includes several technologies in order to arrange and structure data you can find on the internet to make it available and usable by programs and software thanks to a metadata system.
- The purpose is to make the web readable by machines and not only by humans.
- The web 3.0 will have to gather the following benefits:
    - ✓ Website or Web Solution
    - ✓ Mobile
    - ✓ Universal
    - ✓ Accessible

Web 4.0

- Web 4.0 is also known as the "Symbiotic Web".
- The idea being the symbiotic web is that once the metadata are organized (web 3.0), human and machines can interact in symbiosis. Meaning that we would be able to build more powerful interfaces like mind controlled interfaces for example.
- But let's be clear, the web 4.0 is still an underground idea in progress. There is no definition of it yet.
- People also talk about ambient intelligence, webOS, artificial intelligence.

Laws

Civil Law

- Civil law is a body of rules that defines and protects the private rights of citizens, offers legal remedies that may be sought in a dispute, and covers areas of law such as contracts, torts, property and family law.

Intellectual Property Law

- Intellectual property (IP) refers to creations of the mind, such as inventions; literary and artistic works; designs; and symbols, names and images used in commerce.
- Intellectual property is a category of property that includes intangible creations of the human intellect.
- There are many types of intellectual property these are patent, Trademark, copy right etc

Laws

Common Law

- Common law is a body of unwritten laws based on legal precedents established by the courts.
- Common law influences the decision-making process in unusual cases where the outcome cannot be determined based on existing statutes or written rules of law.
- Common law is generally unmodified. This means that there is no comprehensive compilation of legal rules and statutes.

EC Legal Issues

- Internet fraud and its sophistication have grown even faster than the Internet itself.
- There are various legal issues associated with ecommerce businesses as well. And if these issues are not taken care of in time, they can lead to serious problems for your business.
- Described below are some of the common legal issues an e-commerce business faces.
  - ✓ Incorporation Problem
  - ✓ Trademark Security Problem
  - ✓ Copyright Protection Issue
  - ✓ Transaction Issues
  - ✓ Privacy Issues