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.

EXAMPLE OF E-Commerce is:
- Amazon.com, an online bookstore started in 1995 grew its revenue to more than 600$ million in 1998.

E-Business

- "E-Business is the conduct of business on the Internet, not only buying and selling but also servicing customers and collaborating with business partners".
- E-Business means connecting critical business systems directly to customers, vendors and suppliers- via the Internet, Extranet and Intranets.

E-Business enables organizations to accomplish the following goals:

- Reach new markets.
- Create new products or services.
- Build customer loyalty
- Make the best use of existing and emerging technologies.
- Achieve market leadership and competitive advantage.
- Enrich human capital.

Advantages of E-Commerce to Customers:

- Reduced Prices
- 24-Hour Access
- Global Marketplace
- More Choices

Advantages of E-Commerce to Businesses

- Increased potential market share
- Low cost Advertising
- Low barriers to Entries
- Strategic Benefits

Disadvantages of E-Commerce

- Hidden Costs
- Lack of Security
- Lack of Privacy
- Network Unreliability
- Low Service Levels

Scope of E-Commerce

- E-Commerce is a general concept covering any form of business transaction or information exchange executed using information and communication technologies (ICT's).
- It includes electronic trading of goods, services and electronic material.

It takes place between companies, between companies and their customers or between companies and public administrations.

Functions of E-Commerce:-

- Marketing
- Human Resource Management
- Business law and ethics
- Management Information System
- Product Operations and Management
- Finance and Accounting
- Economy

The key framework feature which are vital for E-Commerce businesses are:-

1) Quality Search Functionality
2) Content Management System (CMS)
3) Multi-channel Functionality
4) Mobile Supported E-commerce
5) Third Party Systems and Plug-ins
6) Business Intelligence

E-commerce Architecture:

E-commerce is based on the client-server architecture.
A client can be an application, which uses a Graphical User Interface (GUI) that sends request to a server for certain services.
In client-server architecture, a machine can be both a client as well as a server.

There are two types of client server architecture that E-commerce follows: two-tier and three-tier.

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.

E- Commerce System Architecture: Three-tier architecture:

The three-tier architecture emerged in the 1990s to overcome the limitations of the two-tier architecture.
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 client server architecture advantages:

The client-server architecture provides standardized, abstract interfaces to establish communication between multiple modules.
This reduces the network traffic. In the client-server architecture, a programmer can develop presentation components without knowing the business application logic.

E-Commerce Applications

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

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.

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.

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.
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.
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.

Sale, Purchase of Goods
Real Estate Market
Online Banking
Import and Export
Supply Chain Management
E-Tailing

The following are the impacts of e-commerce on the global economy:

1. Impacts on Direct Marketing:
i. Product Promotion
ii. New Sales Channel
iii. Direct Savings
iv. Reduced Cycle Time v. Customer Service
vi. Corporate Image
vii. Customization
viii. Advertisements
2. Impacts on Organization:
i. Technology and Organizational Learning
ii. Changing Nature of Work
iii. New Product Capabilities
3. Impacts on Manufacturing

4. Impacts on Finance

5. Impact on Supply Chain Management

Anatomy of E-Commerce applications E-Commerce applications are:

1. Multimedia Content for E-Commerce Applications

2. Multimedia Storage Servers & E-Commerce Applications

i. Client-Server Architecture in Electronic Commerce
ii. Internal Processes of Multimedia Servers
iii. Video Servers & E-Commerce

3. Information Delivery/Transport & E-Commerce Applications

4. Consumer Access Devices

• **E-Commerce Consumer applications:**

• People needs entertainment on demand including video, games, news on-demand, electronic retailing via catalogs etc.
• Currently now we are taking the video on-demand.
• Why most companies betting heavily on this?
• 93 million homes have television
• Americans spend nearly half their free time watching television
• Every evening, more than one-third of the population is in front of a television sound, and motion combine to make television a powerful means of marketing

four various types of consumer-oriented applications of e-commerce-

1. Personal finance and home banking management
2. Micro transaction of information
3. Entertainment
4. Home shopping

E-Commerce Organization applications:-

Changing business Environment
§ The traditional business environment is changing rapidly.
§ Many companies are looking outside and within to shape business strategies.

E-Commerce and the retail Industry
§ Conditions are changing in the "new economy" with respect to the retail industry.
§ Consumers are demanding lower prices, better quality, a large selection of in-season goods.

Marketing and E-Commerce
§ E-commerce is forcing companies to rethink the existing ways of doing target marketing and even event marketing.
§ Consumer information services are a new type of catalog business.

E-commerce in India:

India has an internet users base of about 475 million as of July 2019, about 40% of the population. This number is expected to be 627 million by the end of 2019. Despite being the second-largest user base in world, only behind China (650 million, 48% of population), the penetration of e-commerce is low compared to markets like the United States (266 million, 84%), or France (54 M, 81%), but is growing, adding around 6 million new entrants every month. The industry consensus is that growth is at an inflection point.

In India, cash on delivery is the most preferred payment method, accumulating 75% of the e-retail activities.

Demand for international consumer products (including long-tail items) is growing faster than in-country supply from authorized distributors and e-commerce offerings. Long tail business strategy allows companies to realize significant profits by selling low volumes of hard-to-find items to many customers, instead of only selling large volumes of a reduced number of popular items.

It is estimated that one in every three Indian shops via smart phone and online retailers deliver to 20,000 pin codes out of the 100,000 pin codes in India.

POINTS:
Closures
Collaborations
Infrastructure
Funding
Niche retailers

E-Commerce Services in India: Prospects:-

Electronic commerce (e-commerce) as part of the information technology revolution became widely used in the world trade in general and Indian economy in particular. With advancements in technology, there have been changes in the methodology for business transactions. India, being a rapid adaptor of technology is apace with the current scenario of electronic data exchanges and has taken to e-commerce.

 The low cost of the PC and the growing use of the Internet is one of reasons for that. There is a growing awareness among the business community in India about the opportunities offered by e-commerce. Textile Industry is second largest industry in the country contributing 14% to GDP. E-commerce and electronic applications in automation has brought in tremendous growth in India.

The future does look very bright for ecommerce in India. India is showing tremendous growth in the E-business. India has an internet user base of over 100 million users.

India is yet to witness a breakthrough E-commerce success story particularly in online retail. It also creates new opportunities for education and academics line.

It raises key challenges that are being faced by consumers relating to e-commerce viz., Ethical issues, Perceptions of risk in e-service encounters, challenges for e-business education and legal system.

The new Innovative Technologies in Electronic and IT applications is backbone of the Industry development. India needs to promote E-commerce business to develop rural India by developing effective communication to map value of the goods produced and make available goods and services at low cost to the consumers.

Network Infrastructure For E Commerce:-
Global information distribution networks are the infrastructure that are connecting countries and continents. Extranets, Intranets and the Internet, the above parties are spread over diverse locations, extranets use the internet as a network to reach out to these parties.

Intranet:-This is a network that is not available to the world outside of the Intranet. If the Intranet network is connected to the Internet, the Intranet will reside behind a firewall and, if it allows access from the Internet, will be an Extranet.

Extranet:-An Extranet is actually an Intranet that is partially accessible to authorized outsiders. The actual server (the computer that serves up the web pages) will reside behind a firewall.

EXTRANET:-An extranet is a private network that uses Internet protocols and the public telecommunication system to securely share part of a business's information or operations with suppliers, vendors, partners, customers, or other businesses.
An extranet can be viewed as part of a company's Intranet that is extended to users outside the company.

INTERNET BACKBONE IN INDIA:-

The first publicly available internet service in India was launched by state-owned <u>Videsh Sanchar Nigam Limited</u> (VSNL) on 15 August 1995.At the time, VSNL had a monopoly over international communications in the country and private enterprise was not permitted in the sector. The internet service, known as the Gateway Internet Access Service (GIAS), provided a speed of 9.6 kbit/s speed and was priced at $160 for 250 hours for individuals, $500 for institutional dial-up SLIP/PPP accounts, and higher for leased line services. GIAS was available immediately from Mumbai, Delhi, Kolkata and Chennai.

There were 358 Internet Service Providers (ISPs) offering broadband and narrowband services in India as on 31 December 2019. The ten largest ISPs account for 99.50% of the total subscriber base. Jio (51.60%), Airtel (23.24%), Vodafone Idea (19.77%), BSNL (4.21%) and Atria Convergence Technologies (0.21%) were the five largest ISPs by subscribers in India as on 31 December 2019. The total International Internet bandwidth owned by Indian ISPs was 2,933 Gbit/s as on 30 June 2017.International Bandwidth is the maximum rate of data transmission from a single country to the rest of the world.

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E-commerce industry:
No. of Indian consumers who purchased something online in 2018: **120 Million**
No. of Indian consumers who are expected to purchase something online in 2020: **175** Million
Indian e-commerce Industry in 2017: **$38.5 Billion**
Indian e-commerce Industry is expected to grow by 2026: **$200 Billion**

ISP AND SERVICES IN INDIA:

The Internet Service Providers Association of India (ISPAI) was set up in 1998 with a mission to 'Promote Internet for the benefit of all'. ISPAI is the collective voice of the ISP fraternity and by extension the entire Internet community. Over the years ISPAI has helped influence, shape and mould the telecom policies, so that ISPs and entrepreneurs in the business of Internet can setup and grow their services in an environment that is supportive and enabling.

In the last 10 years of it's existence, it has been party to breaking down monopolistic structures in telecom, bringing down barriers to entry for ISPs. It helped shape India from being a bandwidth hungry to a bandwidth surplus country. it was the competitive spirit of the ISP members of ISPAI that, Internet access became so widely and cost effectively available to our countrymen. These very ISPs helped connect India to the rest of the world so effectively that today BPO and Call Centers cannot but make their global presence felt based on IP connectivity.

Today ISPAI is the recognized apex body of Indian ISPs worldwide. ISPAI has access to and interacts frequently with international bodies and platforms and is frequently consulted by them on measures for future trends and growth of Internet. It works closely with the Government, the Regulator as well as the major Industry Chambers. It supports exchange of delegations, business visitors from across the globe which provides ISP members a chance to network widely and seek opportunities elsewhere too.

It's a platform for the Solution Provider's community such as Hardware and Software manufacturer's and suppliers to gain easy access to their ISP clients, promote their products and services through personal meetings and through events supported or sponsored by ISPAI.

OSI MODEL:

Open System Interconnection (OSI) model, an ISO standard for worldwide communication Networks that defines a networking framework for implementing protocol in seven layers. Layering the communications process means breaking down the communication process into **Smaller** and **Easier** to handle interdependent categories. The convention and rules used in such communications are collectively known as **Layer protocol**. **Open Systems Interconnection (OSI)** model is developed by ISO (International organization for standardization) in **1984**. ISO is the organization dedicated to defining global communication and standards.

This model is called Open System Interconnection (OSI) because this model allows any two different systems to communicate regardless of their underlying architecture. Therefore OSI reference model allows open communication between different systems without requiring changes' to the logic of the underlying hardware and software.

The seven layers can be grouped into three groups -

Network, **Transport** and **Application**.
• Layer 1, 2 and 3 i.e. physical, data link, and network are network support layers.
• Layer 4, Transport layer provides end to end reliable data transmission.
• Layer 5, 6 and 7 i.e. Session, Presentation, and Application layer are user support layers.

Communication between the layers in OSI model
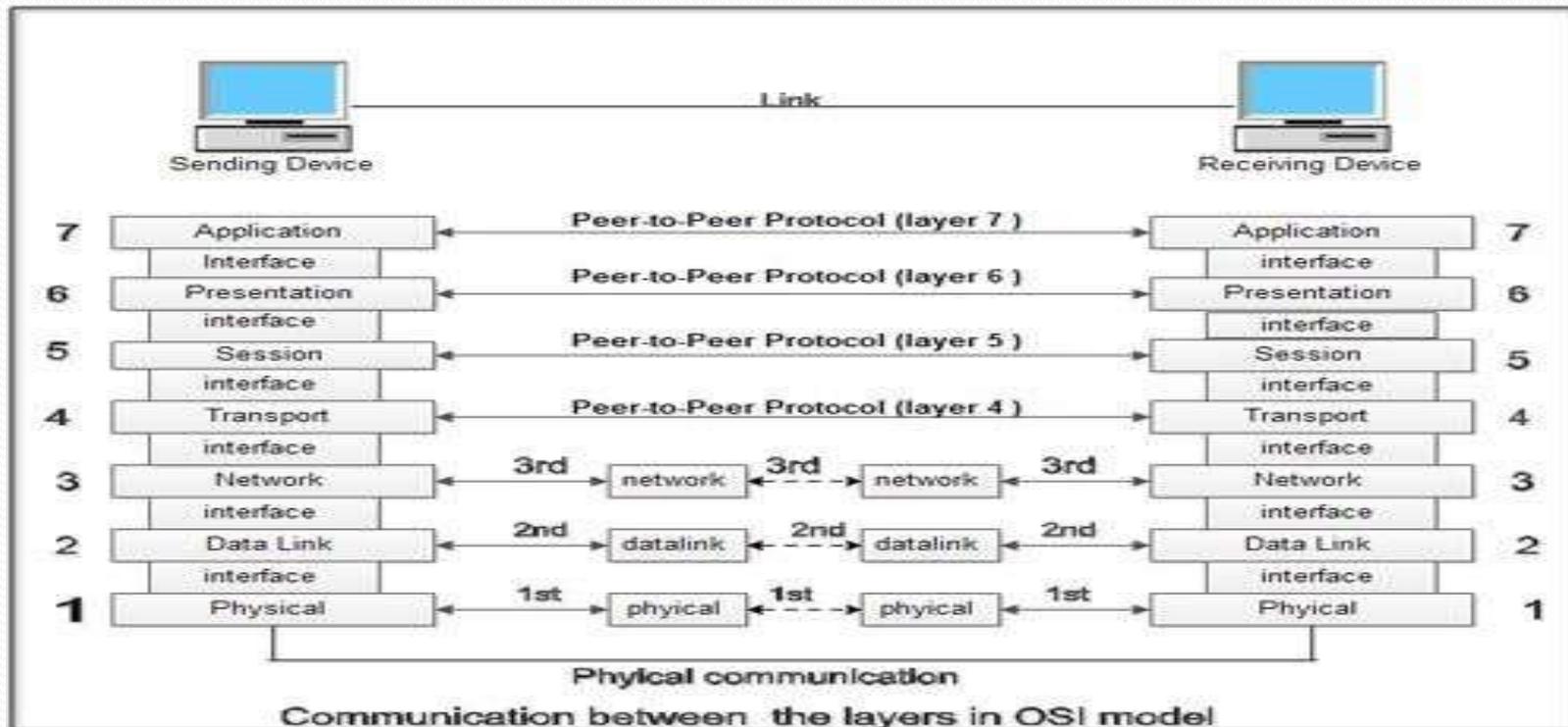
Overview of TCP/IP:-

The positive impact of computer communications increases with the number and type of computers that participate in the network.
The name "TCP/IP" refers to an entire suite of data communications protocols. The suite gets its name from two of the protocols that belong to it: the Transmission Control Protocol (TCP) and the Internet Protocol (IP). TCP/IP is the traditional name for this protocol suite and it is the name used in this book. The TCP/IP protocol suite is also called the Internet Protocol Suite (IPS). Both names are acceptable.

TCP/IP Features:-

Independence from specific physical network hardware.
A common addressing scheme that allows any TCP/IP device to uniquely address any other device in the entire network.
Standardized high-level protocols for consistent, widely available user services.

Protocol Standards:

Protocols are formal rules of behavior. In international relations, protocols minimize the problems caused by cultural differences when various nations work together.

In data communications, these sets of rules are also called *protocols*.
 RFCs that define official protocol standards are STDs and are given an STD number in addition to an RFC number. Creating an official Internet standard is a rigorous process.

 Standards track RFCs pass through three *maturity levels* before becoming standards:
Proposed Standard
Draft Standard
Internet Standard

INTERNET SECURITY:-Following are the essential requirements for safe e-payments/transactions −

Confidentiality
Integrity
Availability
Authenticity

Major security measures are following −
Encryption
Digital Signature
Security Certificates

Secure Socket Layer (SSL):-
It is the most commonly used protocol and is widely used across the industry. It meets following security requirements −
Authentication
Encryption
Integrity
Non-reputability