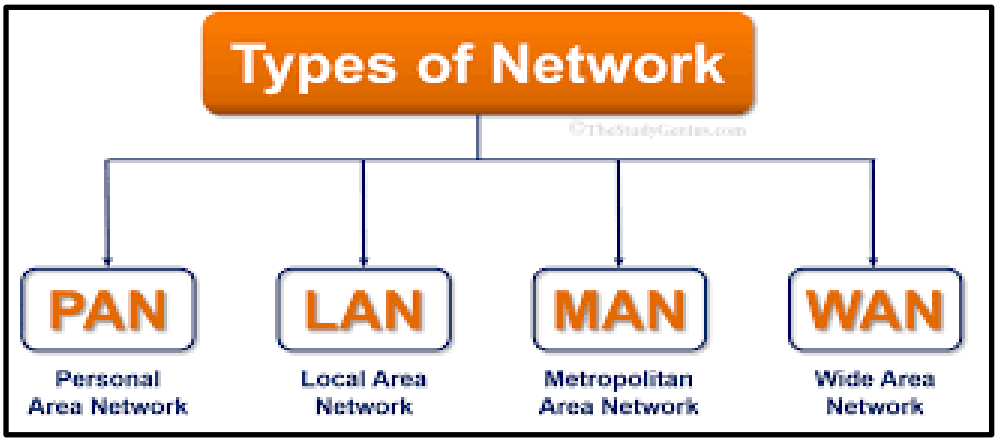
Unit -2 Networks & Digital promotions

2.1 Types of networks

A Computer Network is a group of two or more interconnected computer systems that use common connection protocols for sharing various resources and files. You can establish a computer network connection using either cable or wireless media. Every network involves hardware and software that connects computers and tools.
There are various types of Computer Networking options available. The classification of networks in computers can be done according to their size as well as their purpose.
The size of a network should be expressed by the geographic area and number of computers, which are a part of their networks. It includes devices housed in a single room to millions of devices spread across the world.
There are mainly five types of Computer Networks

1. Personal Area Network (PAN)
2. Local Area Network (LAN)
3. Metropolitan Area Network (MAN)
4. Wide Area Network (WAN)

Following are the popular types of Computer Network:



1. PAN (Personal Area Network)

PAN (Personal Area Network) is a computer network formed around a person. It generally consists of a computer, mobile, or personal digital assistant. PAN can be used for establishing communication among these personal devices for connecting to a digital network and the internet.

Characteristics of PAN

Below are the main characteristics of PAN:

- It is mostly a personal devices network equipped within a limited area.
- Allows you to handle the interconnection of IT devices at the surroundings of a single user.
- PAN includes mobile devices, tablet, and laptop.
- It can be wirelessly connected to the internet called WPAN.
- Appliances use for PAN: cordless mice, keyboards, and Bluetooth systems.

Advantages of PAN

Here are the important pros/benefits of PAN network:

- PAN networks are relatively secure and safe
- It offers only short-range solution up to ten meters
- Strictly restricted to a small area

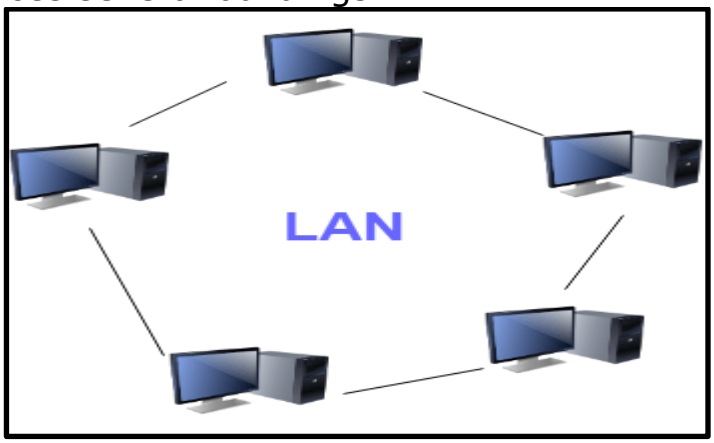
Disadvantages of PAN

Here are the cons/drawbacks of using PAN network:

- It may establish a bad connection to other networks at the same radio bands.
- Distance limits.

2. LAN (Local Area Network)

A **Local Area Network** (LAN) is a group of computer and peripheral devices which are connected in a limited area such as school, laboratory, home, and office building. It is a widely useful network for sharing resources like files, printers, games, and other application. The simplest type of LAN network is to connect computers and a printer in someone's home or office. In general, LAN will be used as one type of transmission medium. It is a network which consists of less than 5000 interconnected devices across several buildings.



Local Area Network (LAN)

Characteristics of LAN:

Here are the important characteristics of a LAN network:

- It is a private network, so an outside regulatory body never controls it.
- LAN operates at a relatively higher speed compared to other WAN systems.
- There are various kinds of media access control methods like token ring and Ethernet.

Advantages of LAN

Here are the pros/benefits of LAN:

- Computer resources like hard-disks, DVD-ROM, and printers can share local area networks. This significantly reduces the cost of hardware purchases.
- You can use the same software over the network instead of purchasing the licensed software for each client in the network.
- Data of all network users can be stored on a single hard disk of the server computer.
- You can easily transfer data and messages over networked computers.
- It will be easy to manage data at only one place, which makes data more secure.
- Local Area Network offers the facility to share a single internet connection among all the LAN users.

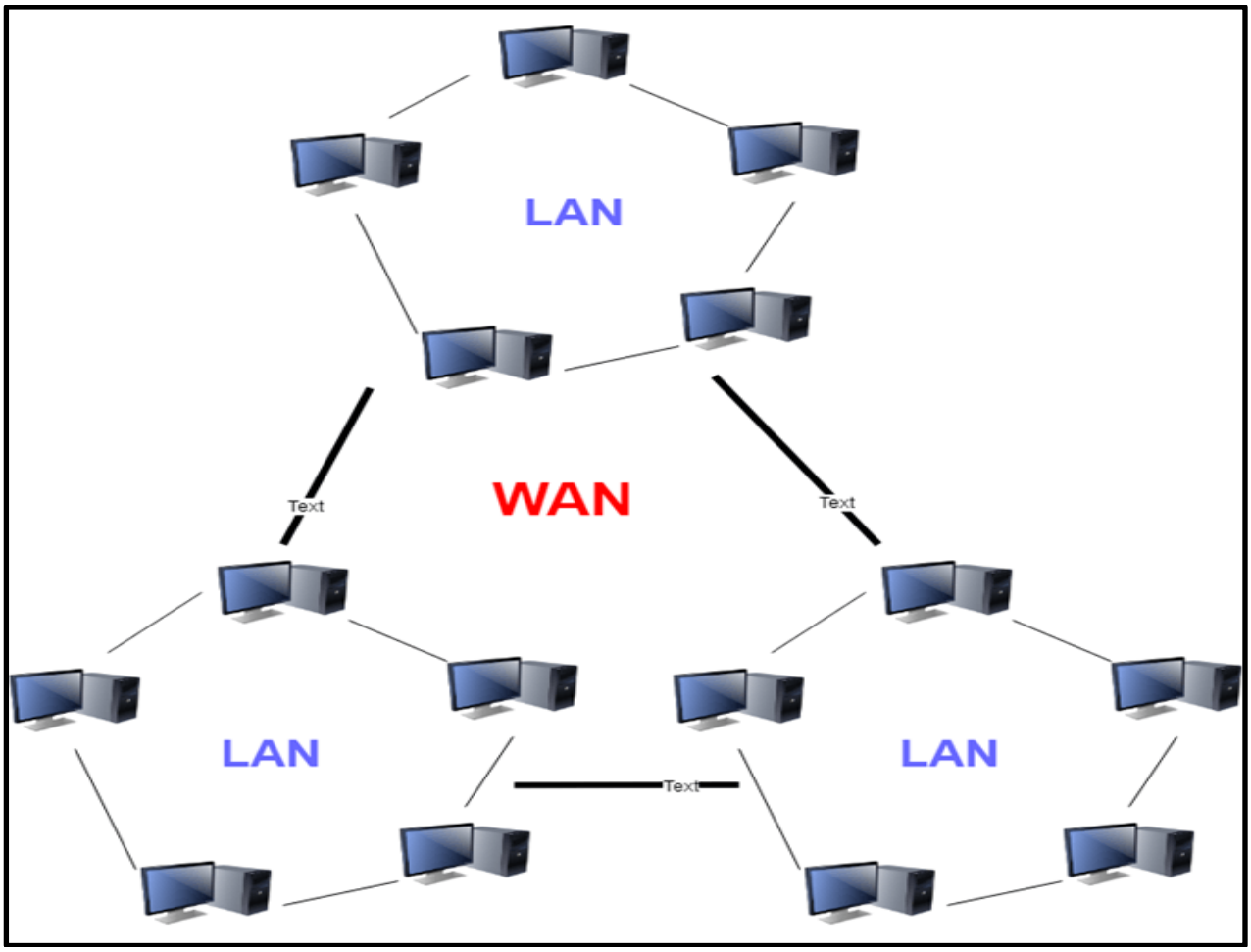
Disadvantages of LAN

Here are the cons/drawbacks of LAN:

- LAN will indeed save cost because of shared computer resources, but the initial cost of installing Local Area Networks is quite high.
- The LAN admin can check personal data files of every LAN user, so it does not offer good privacy.
- Unauthorized users can access critical data of an organization in case LAN admin is not able to secure centralized data repository.
- Local Area Network requires a constant LAN administration as there are issues related to software setup and hardware failures

3. WAN (Wide Area Network)

WAN (Wide Area Network) is another important computer network that which is spread across a large geographical area. WAN network system could be a connection of a LAN which connects with other LAN's using telephone lines and radio waves. It is mostly limited to an enterprise or an organization.



Wide Area Network (WAN)

Characteristics of WAN

Below are the characteristics of WAN:

- The software files will be shared among all the users; therefore, all can access to the latest files.
- Any organization can form its global integrated network using WAN.

Advantages of WAN

Here are the benefits/pros of WAN:

- WAN helps you to cover a larger geographical area. Therefore business offices situated at longer distances can easily communicate.
- Contains devices like mobile phones, laptop, tablet, computers, gaming consoles, etc.
- WLAN connections work using radio transmitters and receivers built into client devices.

Disadvantages of WAN

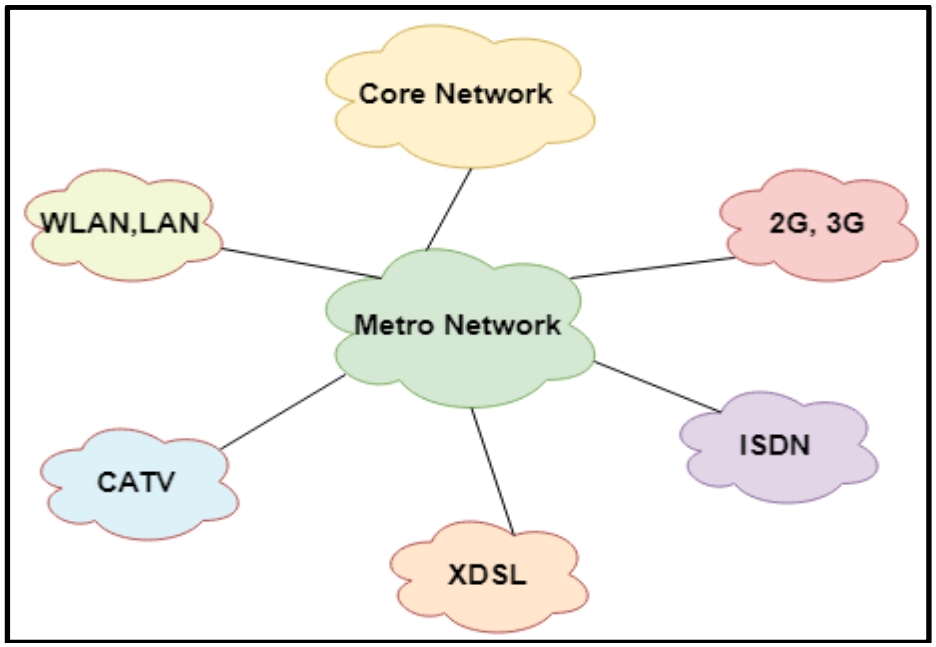
Here are the drawbacks/cons of WAN network:

- The initial setup cost of investment is very high.

- It is difficult to maintain the WAN network. You need skilled technicians and network administrators.
- There are more errors and issues because of the wide coverage and the use of different technologies.
- It requires more time to resolve issues because of the involvement of multiple wired and wireless technologies.
- Offers lower security compared to other types of network in computers.

4. MAN (Metropolitan Area Network)

A **Metropolitan Area Network** or MAN is consisting of a computer network across an entire city, college campus, or a small region. This type of network is large than a LAN, which is mostly limited to a single building or site. Depending upon the type of configuration, this type of network allows you to cover an area from several miles to tens of miles.



Metropolitan Area Network (MAN)

Characteristics of MAN

Here are important characteristics of the MAN network:

- It mostly covers towns and cities in a maximum 50 km range
- Mostly used medium is optical fibers, cables
- Data rates adequate for distributed computing applications.

Advantages of MAN

Here are the pros/benefits of MAN network:

- It offers fast communication using high-speed carriers, like fiber optic cables.

- It provides excellent support for an extensive size network and greater access to WANs.
- The dual bus in MAN network provides support to transmit data in both directions concurrently.
- A MAN network mostly includes some areas of a city or an entire city.

Disadvantages of MAN

Here are drawbacks/cons of using the MAN network:

- You need more cable to establish a MAN connection from one place to another.
- In MAN network it is tough to make the system secure from hackers

Other Types of Computer Networks

1. Wireless Local Area Network (WLAN)
2. Storage Area Network (SAN)
3. System-Area Network (SAN)
4. Passive Optical Local Area Network (POLAN)
5. Enterprise Private Network (EPN)
6. Virtual Private Network (VPN)
7. Home Area Network (HAN)

2.2.1 Role of internet in B2B application :

1. Business:

The internet plays a significant role in each side of our trendy life. Internet Technologies play a significant role in business. As a Business owner, knowing the role of the net in business can assist you benefit from the powerful opportunities it offers to grow you business and build operations simpler.Here are different ways in which the Internet has contributed to the success and growth of businesses.

2. Communication:

The internet makes Communication quick and valuable. Businesses use web technologies like Skype web and video calls, email and video conferencing to create communication nearly instant.

3. Growth:

The internet plays an enormous role within the growth of companies. It provides businesses a chance to achieve a wider international Audience. Promoting through the net is additionally the way to extend sales and reach the specified growth level. Business also can expand by having an online division.

4. Marketing:

One of the role of the net in business involves Selling And Advertising. Most businesses are taking advantage of the web to plug their Product And Services to a world audience. The foremost notable net Technologies here embrace search engines like Google.

5. Networking and Recruiting :

Social Networking websites play a job in business networking by connecting similar Professionals. Through the web, folks have found business partners and Nice Staff.

6. Outsourcing Services :

The internet has helped cut prices by Outsourcing services to countries wherever it's cheaper to produce these services. except for the price reduction through the outsourcing role of the web in business, outsourcing allows businesses to focus on their core services and become a lot more economical.

7. ONLINE SHOPPING ROLE

One role of the web in business is the birth of eCommerce websites and on-line payment solutions that permit Individuals to buy on-line from the comfort of their own homes.

8. New Opportunities:

The internet has unfolded new business opportunities and giving rise to a group of victorious on-line Business Owners. This can be a strong role as anyone can currently begin an internet business.The role of net in business can't be exaggerated. New businesses area unit taking advantage of the powerful role the net plays in business to grow and succeed at a quicker rate than was antecedently attainable.Traditional businesses also are not being left behind as they're making on-line divisions. A business owner will solely ignore the role the net plays in business at the peril of his or her business.

2.2.2 Building own website in e commerce:

2.3 Benefits of targeted email :

Email marketing tactics have changed significantly in recent years thanks to technological advances. Targeted email marketing is a way of ensuring your emails make an impact in the inbox.

Using the information you already hold about your customers, you can send tailored messages to specific sets of subscribers. You target them.

To improve your email marketing strategy, it's important to segment and personalize based on customer information like their interests, age, and gender.
This level of personalization impresses readers and improves their experience with your brand.
This increases the likelihood that they'll act on your calls to action and remain loyal customers.

a.Improve relevancy:

Segmentation ensures you're sending a more relevant message to your audience. You can divide your customer base into distinct groups based on shared characteristics, such as demographics, preferences, past purchase behaviour, or engagement history.
By categorizing customers into these segments, you can tailor your email campaigns to address the unique needs, desires, and expectations of each specific group. Customers who receive relevant content are more likely to engage with your email marketing efforts. Customers will click and convert because targeted emails appeal to their goals and offer value to them.

b. Increase ROI:

Sending targeted and personalized emails leads to higher engagement rates and increased sales conversions. With more customers converting, your revenue will naturally rise. By understanding your customers' preferences and needs, you can provide them with targeted discounts and promotions that cater to their interests. This approach allows you to deliver the appropriate message at the right moment, resulting in higher customer engagement. When you deliver relevant messages, engaged readers convert faster. And more conversions mean more revenue.

c. Better customer relationships:

Improved relevancy in your emails will demonstrate your brand's value to the customer. In the long run, it will also help you build and nurture long-term relationships with your customers. When you know your customers and segment and personalize your emails accordingly, customers will hold your marketing in high regard. By regularly sending relevant content, customers will develop high expectations from your emails. The more you meet – and exceed – these expectations, the more their trust and respect for your brand will increase.

d. Longer customer retention:

Targeted email marketing not only makes building relationships with subscribers easier; it also makes retaining them easier. Creating personalized and targeted email marketing campaigns can greatly enhance customer retention. It's important to build strong relationships with both potential and existing customers by continuously learning about their preferences and optimizing your email campaigns.

2.4.1 Banner exchange:

The *exchange of banners* is an advertising technique that consists of a reciprocal exchange in which two web pages agree to exchange this type of advertising format on their respective sites. The exchange can be arranged for free or through an Ad Server, which allows the rotation of a banner on a multitude of websites.

Networks where participating sites display banner ads in exchange for credits which are converted (using a predetermined exchange rate) into ads to be displayed on other sites.

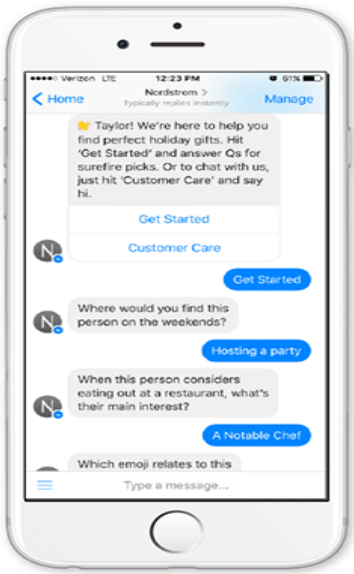
Banner exchange networks differ from simple link swaps in terms of potential visitors reached. Members of large banner exchanges have the potential for their ads to be shown on thousands of other sites.
Also, unlike simple link swaps, which are often hard-coded directly to a page, banner exchange networks allow rotation of ads among many different sites, sometimes with the benefit of sophisticated targeting.

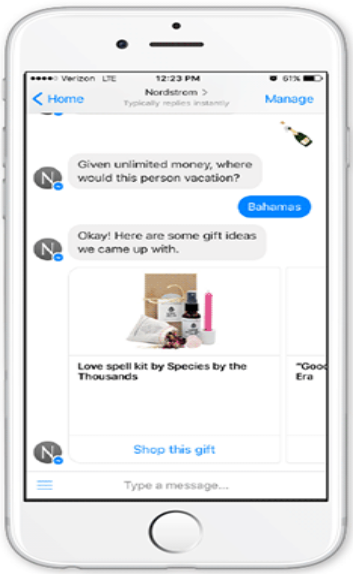
Credits allow you to display your banner ads on other sites in the network. The amount of credits earned is a factor of how many banners are displayed on your site and the exchange rate. A 2:1 exchange rate means that for every two ads shown on your site, a credit is earned to have your banner shown on another member's site.

2.4.2 Shopping Bots:

A shopping bot is an online price comparison software tool which automatically searches the products of many different online stores to locate the most affordable rates for customers.
A shopping bot is a conversational solution that allows people to shop for their favorite products from brands within the messaging channels they use the most - such as WhatsApp, Instagram, Facebook, SMS, and others.
Shopping bots bring the entire product catalog to the messaging channels, enabling people to compare products, view customer reviews, add products to their cart and complete the payment without ever leaving the channels.
Generally, these shopping bots rank items by price and let buyers link directly to the website of an online merchant site to actually buy their preferred product.
Shopping bots, short for "shopping robots," can find the best online deals for products, including films, books, video games, computer devices, TVs, etc. Using shopping bots, buyers can get quotes from multiple retailers for the same product instantly, without spending extra time searching for each retailer's price.
When buyers search for a product using shopping bots, they find the products and report back with prices, descriptions, etc.

However, in reality, there are many bots with slightly different features. So, shopping bots can be websites, plugins, browser-based, price-comparison-only, etc. Also, some find online products only while others search mail-order catalogues or brick-and-mortar shops.





Some popular shopping bots are:

- mySimon: This is the most popular shopping bot, with top ratings from reviewers. It queries 1,700 plus merchants in various categories.

- DealPilot: This is a browser-based bot, which presents price comparison on bars toward the bottom of a browser. It performs the online search and reports back with the details on where the customer can get the best deal, in addition to information on availability and shipping.

- iChoose: This one sends an advisor along with the customers (it is a free download) as they browse and shop through their preferred sites. When the customers find a preferred item, it informs them if there is a better deal to select from, along with info on the pricing, shipping as well as taxes.

- Shoppinglist.com: This site provides the customers with the latest information on sales and special offers at the brick-and-mortar stores near their location.

- StoreRunner.com: This site helps customers find services and products form 1,000-plus brands. Then, it is up to the customers to decide whether they need to buy online or make use of the Shop Local feature to locate the best rates in the neighbourhood.

TOP TYPES OF CHATBOTS

THE FUTURE OF AI

1 SUPPORT CHATBOTS

Designed to solve a specific problem, support chatbots require context awareness, a personality and multi-turn capability. Most of the support chatbots use deep learning and natural language processing to perform actions.

2 SKILLS CHATBOTS

It's a single-turn-type chatbot that doesn't require much of contextual awareness. It can just follow a command to perform an action.

3 ASSISTANT BOTS

Assistant bots, like support bots, need to be good at conversations and answering FAQs. They must also be entertaining to maintain user interest.

4 TRANSACTIONAL BOTS

These bots can be roughly classified into assistant bots as they often act on behalf of humans to perform various transactions. For example, placing an order, making a reservation etc.

5 INFORMATIONAL BOTS

Information gathering bots can act as research assistants by extracting as much information as possible either from a human or from an internet resource like a website or an ebook.

6 CONVERSATIONAL BOTS

Several put conversational bots as a separate category but with the current user requirements and technology, each bot must be able to have a conversation with a human in some way or another. Hence, all types of bots are ultimately conversational chatbots.

2.5 Secure transaction over internet

Secure Electronic Transaction (SET) is a system and electronic protocol to ensure the integrity and security of transactions conducted over the internet. E-commerce websites implemented this early protocol to secure electronic payments made via debit and credit cards.

Digital transactions can be conducted through different mediums such as credit cards, mobile wallets, bank NEFTs, etc. These are increasingly being preferred by consumers considering the convenience and ease of conducting transactions. Digital transactions have become all the more important with the current situation where everyone is working at home and looking at carrying out all transactions online.

Digital transactions also tend to have some risks, including data breaches, security risks, thefts, and the likes. Therefore, consumers must ensure to take extra precautions while using digital mediums for monetary transactions.

Although online transactions offer cashless modes of transferring funds and making payments, an increasing number of cyber-attacks are proving to be a challenge in maintaining financial security. Today, cyber-attacks are commonplace and bank robberies are conducted digitally.

To help users carry out digital transactions safely, we have listed here some of the precautions that you can take.

1. **Never save card details**
   A user's debit/credit card details must never be saved while making any kind of purchase online. While this may offer convenience for repeat purchases and enable faster payment, it is safer to wipe your card information once the purchase transaction is complete. Though it seems a little inconvenient, this will help in avoiding any risk of the card information being stolen.
2. **Never share passwords**
   Most users would have come across this advice, but it is an integral part of preserving a user's financial security. Internet banking passwords must be extra strong and should never be shared with anyone. Users must also change these regularly to avoid thefts through cyber-attacks. In case a user receives phone calls asking for password details or ATM PIN, he/she must immediately inform the bank while making sure that no details are shared.Many times, users end up sharing OTP with someone through phone calls or SMS. These are fraudulent modes of trapping users in online monetary frauds. OTPs are also never to be shared, just like a net banking or account password.
3. **Download apps from trusted sources**
   With the constant influx of app-based services, users should be aware that there are also many illegitimate apps available for download. These can be easily identified by going through user reviews, statistics regarding the number of downloads, and the absence of a 'verified'

badge.
When users download applications on their smartphones, it is important to ensure that the same is verified and legitimate. This rule applies even to mobile banking apps or mobile wallet apps. Most apps request permission to access the user's camera, phone contacts, SMS, etc. While allowing these, users must always exercise caution or they could deny access if the source does not seem trusted. A tip that users can use is to check whether the app is well-known/popular and whether it asks for personal or bank details that are generally not shared.

4. **Use 2-factor authentication at all times**
While making online payments, users get an option to use the secure password or ATM pin, or OTP. OTP is also known as the One-Time Password. To be secure while performing online transactions, users must try to choose a two-factor authentication method. This will require the use of a password and OTP. In the absence of such a method, users can try to choose the OTP method.

   OTP can help to secure a digital transaction, provided it is never shared with anyone. The latest known fraud is to call people on the pretext of representing a bank and asking them to share a recent OTP that would be received on the user's mobile phone. It is best to refuse such requests and contact the bank or service provider immediately. This can help in preventing online fraud.
5. **Conduct transactions through a private window**
Users of online transactions can protect their finances by using a private browser and secure connections for transactions. An example of a private browser is to go into 'incognito' mode wherein the history, search results, passwords, etc do not get saved. These are designed for safer online banking transactions and help to prevent theft of cookies and credentials. Users must also make sure to log out of the page as soon as the transaction is complete. This will ensure further safety.
6. **Avoid the use of public networks or computers for digital transactions**
While making any online transactions, it is wise to avoid using public devices or Wi-Fi networks. These are prone to cyber-attacks, thefts, and many other fraudulent activities. Users must ensure to go for reputed and verified websites while making online transactions. Trusted websites come with higher security levels and can protect user information during online payment transactions.

   Often, users who want to complete a cashless transaction urgently may end up using a public computer or public Wi-Fi network. Such transactions are extremely unsafe and can easily expose the user to data theft. Therefore, it is sensible to use a personal computer and always opt for a trusted Wi-Fi source for all kinds of financial transactions. If you have to use it, make sure you use an incognito window and use a virtual keypad to enter sensitive information like your password.

7. **Don't fall prey to unknown messages or emails**
   Users must always check for the email address or source of SMS before clicking or opening them. Many emails may seem similar to what the user's bank would generally send, however, double-checking the source is of utmost importance. Many users tend to fall prey to online phishing attacks because they end up clicking on a reference in an email or SMS. If the email address looks different from usual or contains spelling errors, users may want to avoid accessing it and better still may delete it.To be extra secure, users must install good antivirus software to protect themselves against online frauds. This helps in tracking any malicious activity on the user's computer.

2.6 Privacy issues

In recent years, purchases and sales of products and services via the Internet have grown meteorically. The growth of e-commerce (as we more commonly know it) whilst increasingly convenient for sellers and customers alike, also reveals new risk areas for them both as well.

It is almost impossible to complete a transaction without sharing your personal data and it's for this exact reason that data privacy has now become one of the most significant and pressing concerns in e-commerce. Naturally then, companies need to reflect on how to approach such a complex topic, namely through defining a privacy policy.

The most typical security and privacy threats include phishing and social engineering, personal or card data theft or misuse, malware, and hacking.

Privacy issues:

With the large amount of data on user social media accounts, scammers can find enough information to spy on users, steal identities and attempt scams. Data protection issues and loopholes in privacy controls can put user information at risk when using social media. Other social media privacy issues include the following.

1. Data mining for identity theft

Scammers do not need a great deal of information to steal someone's identity. They can start with publicly available information on social media to help target victims. For example, scammers can gather usernames, addresses, email addresses and phone numbers to target users with phishing scams.Even with an email address or phone number, a scammer can find more information, such as leaked passwords, Social Security numbers and credit card numbers.

2. Privacy setting loopholes

Social media accounts may not be as private as users think. For example, if a user shared something with a friend and they reposted it, the friend's friends can also see the information. The original user's reposted information is now in front of a completely different audience.

Even closed groups may not be completely private because postings can be searchable, including any comments.

3. Location settings

Location app settings may still track user whereabouts. Even if someone turns off their location settings, there are other ways to target a device's location. The use of public Wi-Fi, cell phone towers and websites can also track user locations. Always check that the GPS location services are turned off, and browse through a VPN to avoid being tracked.

User location paired with personal information can provide accurate information to a user profile. Bad actors can also use this data to physically find users or digitally learn more about their habits.

4. Harassment and cyber bullying

Social media can be used for cyber bullying. Bad actors don't need to get into someone's account to send threatening messages or cause emotional distress. For example, children with social media accounts face backlash from classmates with inappropriate comments.

Doxxing -- a form of cyberbullying -- involves bad actors purposely sharing personal information about a person to cause harm, such as a person's address or phone number. They encourage others to harass this person.

5. False information

People can spread disinformation on social media quickly. Trolls also look to provoke other users into heated debates by manipulating emotions.

Most social media platforms have content moderation guidelines, but it may take time for posts to be flagged. Double-check information before sending or believing something on social media.

6. Malware and viruses

Social media platforms can be used to deliver malware, which can slow down a computer, attack users with ads and steal sensitive data. Cybercriminals take over the social media account and distribute malware to both the affected account and all the user's friends and contacts.