BCS-062

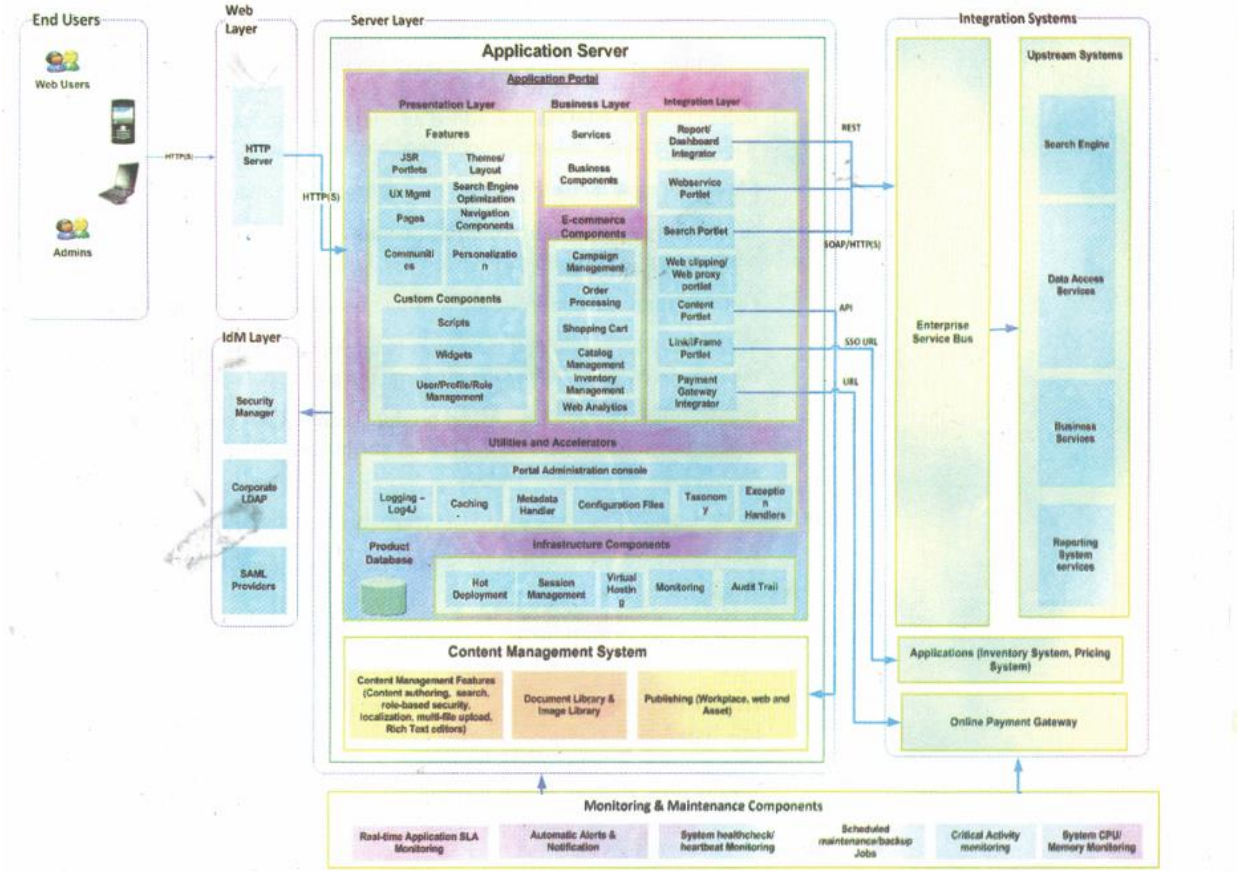
E-COMMERCE

December 2017

1.

(a) With the help of a neat block diagram, explain the multi-layered architecture of an online shopping e-commerce portal covering aspects such as presentation layer, integration layer, identity management layer, monitoring and maintenance components. 10

Ans: The following is a sample logical architecture of the online shopping e-commerce portal:



Various components of e-commerce portal are explained below. The multi-layered architecture is mainly based on MVC architecture.

Presentation Layer: Includes presentation components like web pages and user experience components. The key components are explained below:

- Web pages: HTML compliant pages such as home page, search page, products page, shopping cart and check out page.
- Themes/Layout: Pages will be designed with consistent themes and layout.
- Navigation components: Include navigation left navigation component, etc.
- Personalization engine: The engine tracks the purchase history of user and uses the user profile attributes such as interests, location to provide personalized product recommendations. The engine also tracks customer's web behaviors, click path, downloads to fine tune the product recommendation.
- Search Engine Optimization (SEO): Makes the pages search engine friendly so that they get higher ranking in search engine results driving more traffic.

E-commerce Components: Include server side business components and services to satisfy the core e-commerce requirements.

* Campaign management module: Helps the business and marketing team to setup the sales and marketing campaigns, and seasonal offers and promotions. The content is mainly retrieved from content management systems (CMS) to perform dynamic delivery.

* Order processing module: Manages all parts of order flow such as order placement, order fulfilment, and order tracking. This is integrated with online payment gateways and supports varieties of payment modes. For Indian context, COD is also added as one of the modes of payment along with net banking and credit/debit card based payment.

* Shopping cart module: Allows the user to add to and update shopping cart.

* Inventory management module: Interacts with internal inventory management ERP (Enterprise Resource Planning) system.

* Catalog management module: Maintains and categorizes product catalog.

* Web analytics module: Tracks user behavior on the web pages to improve the effectiveness of personalization and recommendation.

* Search: Includes keyword based product search. User can filter the search results based on price, model, product attributes such as color, size, brand etc.

Integration Layer: Primarily involves service based integration components.

- Data services component: Uses Data Access Object (DAO) to access the product database.
- Web services component: Is built into the application using JAX-WS to support any future services based integration.

- Iframe/link based integration component is provided to support any future link based integration.
- Search engine component: Helps in indexing product details to provide query-based search results.

Identity Management (IDM) Layer: It includes security manager, LDAP and SAML providers.

- LDAP server acts as the user registry. It stores the user profile information.
- Online shopping applications provide security at coarse-grain level through authentication and at fine-grained level through authorization. Additional security measures include admin access to catalog management and personalized promotion management.

Monitoring and Maintenance Component: Includes real time application SLA monitoring, automatic alerts and notifications, system health check/ heart beat monitoring, scheduled maintenance/backup jobs, critical activity monitoring and system CPU/ memory monitoring.

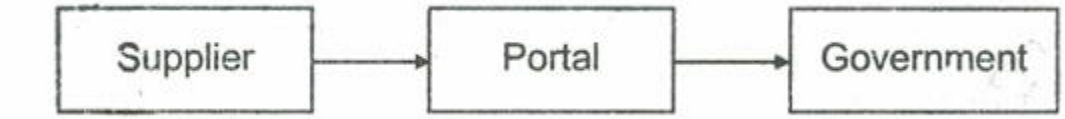
- Real-time application SLA monitoring components would check the live production of web pages.
- Automatic alerts and notification through email when the page/system performance falls below a pre-configured threshold value.
- System health-check/heartbeat monitoring to ping the availability of portal system and all interfacing systems to ensure that they are responding within expected response time. Automatic notification is trigged if any system is down.
- Scheduled maintenance and backup jobs to perform system clean-up and back up activities.
- Web analytics will be configured to monitor the business-critical process/activities in real-time. This could include activities such as page load time, search processing time etc. Additionally reports would be designed to display the monitoring data.
- System CPU /Memory monitoring is done.

(b) Describe the characteristics of B2G, G2B and G2C. Also give an example for each. 10

Ans:

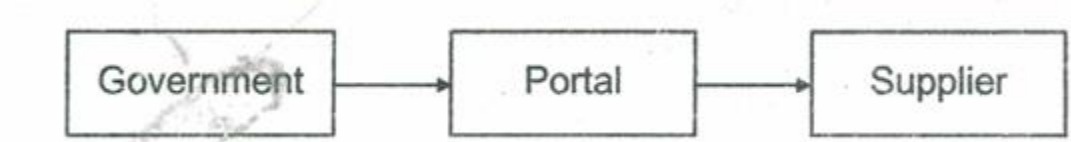
B2G: It refers to Business to Government. Such websites are used by Government to trade and exchange information with various business organizations. Such websites are

accredited by the Government and provide a medium to businesses to submit applications to the Government. An example of B2G portal is http://www.lockheedmartin.com.



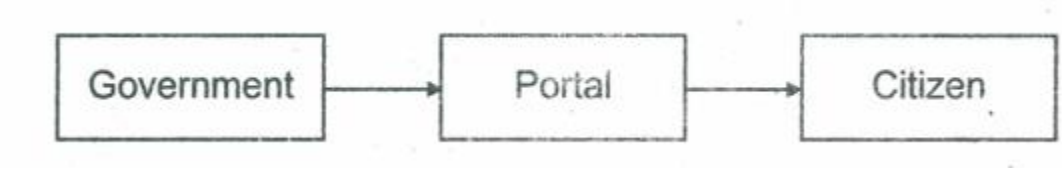
G2B :

Government uses G2B model to approach business organizations. Such websites support auctions, tenders and other functionalities such as submission of application forms, etc. An example ofG2B portal is http://www.dti.gov.uk.



G2C:

It refers to Government to Citizens. Government uses G2C model to approach citizens in general. It supports auctions of vehicles, machinery or any other material. It also provides services like registration of birth, marriage or death, etc. One of the main objectives of a G2C portal is to reduce time for performing various government services. An example ofG2C portal is http://www.incometaxindia.gov.in.



Characteristics of G2C :

Accessibility: G2C services are designed to be easily accessible to citizens. This includes online platforms and mobile applications that provide necessary information and services.

Services: It provides a variety of services like registration of birth, marriage, auction of machinery.

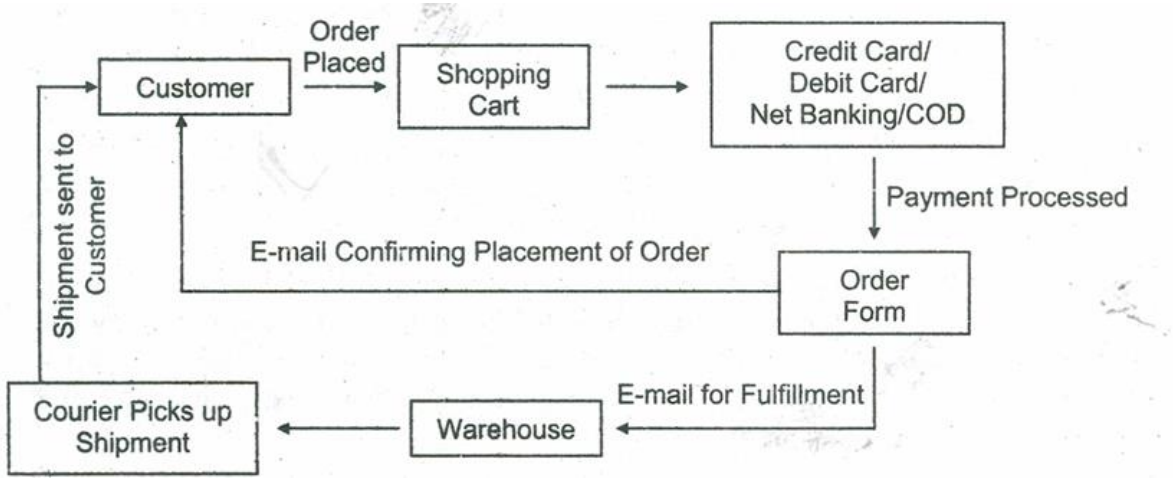
Transparency: It promotes transparency in government operations by making information available to the public, such as budgets, spending and decision making processes.

2.

(a) With the help of a block diagram, explain the e-commerce work-flow. 5

Ans:

The customer searches the online store for a product and compare a few different models with prices. The bonus is that the customer can also go to other online product review sites, and discussion forums. Once the customer likes a product after all research, s/he can order for it online. The customer selects items and adds them to their virtual shopping cart. E-commerce has also made it easy to pay. Several methods have evolved to pay your dealers such as Credit Cards, Debit Cards, PayPal account, Direct Online Money Transfer etc. Once the payment is processed and order form is created and an email confirming placement of order is sent to the customer. The warehouse is sent an email the package for shipping. An email is sent to the warehouse to fulfill the order of customer. The shipping company is notified, and a shipping label is generated. The courier company picks up the shipment from the warehouse. The package is shipped to the customer via the chosen shipping method. The package is shipped to the customer via the chosen shipping method which reaches the doorstep of the customers within few days.



E-commerce work-flow

(b) With reference to any e-newspaper website, explain the features of it. Also, mention its advantages and disadvantage.

Ans: Electronic newspaper is normally called e-paper. Online newspapers are becoming more and more popular to news readers who are Internet savvy. Electronic newspaper is

the newspaper which exists on the Internet either separately or as online version of a printed periodical. Examples of popular e-papers are: http://www.timesofindia.com and http://www.thehindu.com.

Features of e-newspaper with reference to http://www.thehindu.com are:

Search: Readers can easily search for specific news or articles. This makes it convenient to find relevant news.

Interactive content : Most online newspapers include videos, podcasts,hyperlinks and interactive infographics that enhance the reading experience.

Customize: Users can customize their news feed based on interests, helping them to focus on topics they are interested in.

Archives are easily available. The Hindu e-paper offers access to archived editions, enabling users to easily find and revisit past articles.

Sharing articles: The e-paper enables easy sharing of articles with others through social media or email.

Advantages:

- It is accessible 24* 7. The e-paper can be easily accessed on smartphones, tablets, or laptops, allowing for convenient reading while commuting or traveling.
- It can be read anywhere, anytime.
- The reader can select the news of interest and avoid the rest.
- It is environmentally friendly than getting a printed newspaper.
- It is a reliable source of news as it is updated at regular intervals.
- E-newspapers do not require physical storage and can avoid cluttering in the home.

Disadvantages:

- Prolonged screen time can lead to eye strain and digital distractions, potentially detracting from the immersive reading experience.
- Not everyone has access to the internet which can limit readership.
- Misinformation**:** The online sphere can be less regulated, potentially leading to the spread of misinformation, which readers need to be aware of and filter out.
- A newspaper company should be prepared for reduced revenues if it provides e-paper free of cost.

3.

(a) Discuss the security concerns in e-commerce with respect to client, communication channel and server. 5

Ans:

Security Concerns of the Client : Client security means privacy of the client and integrity of his computer.

Some of the major concerns of the client are:

Active Content: Active content is a major area of concern in client security. Active content is the program embedded transparently in web pages which can cause actions to occur. For example, display moving graphics, download and play audio etc. It is used in e-commerce in the form of Java applets, ActiveX controls etc. It creates security risk because malicious programs hidden inside webpage can reveal and destroy the confidential and sensitive information in the form of cookies. These cookies remember user names, passwords, etc. on the client computers.

Virus, Worms and Trojan Horses: Another security issue that arises to client and his computer are the viruses, worms and Trojan horses which can damage the systems. These viruses can delete stored data or manipulate actual data. Malicious software can damage the system and is a major threat.

Virus is a piece of software that is designed to replicate itself.by copying itself into other programs stored in a computer which can cause the program to operate incorrectly or corrupt the Computer's memory.

Worm is software that is capable of reproducing itself. It can also spread from one computer to the next over a network.

Trojan horse is a program that appears to have a useful function but contains a hidden function which is harmful.

Masquerading : Another security concern of client is masquerading. Masquerading occurs when one person uses the identity of another to gain access to a computer. This may be done in person or remotely.

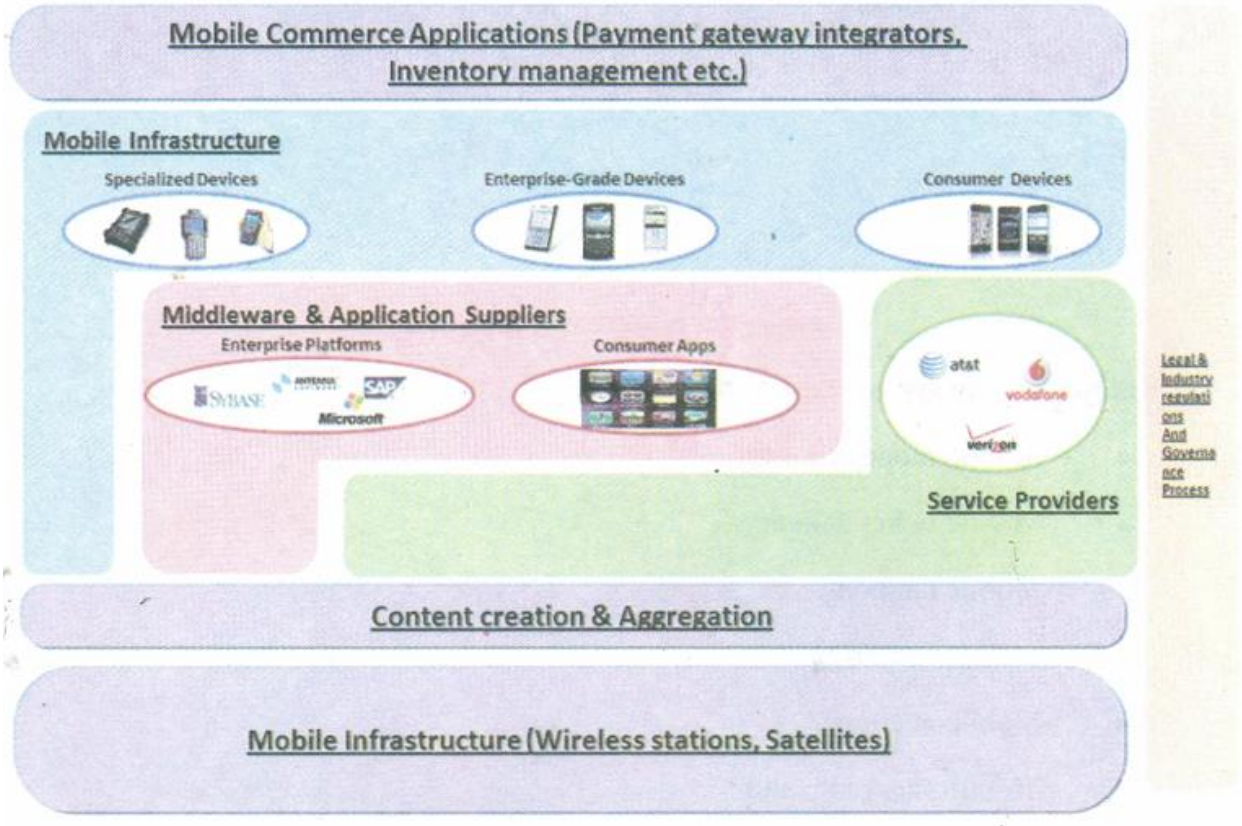
Security Concerns of the Communication Channel: Another major concern in any e-commerce application is the security of the communication channel. That is, the security of the message when it passes through the Internet. The data/message being transferred through the network must be secured from any unauthorized disclosure and alterations. Any theft of sensitive or personal information may become a significant danger. Replaying

old messages, tapping of communications, unauthorized changes to messages, misuse of remote maintenance accesses are the dangers to the communication channel.

Security' Concerns of Server : Another major concern in any e-commerce application is the security of the web server, commerce server and databases. Database contains valuable and sensitive information. Any loss or manipulation of stored data can create irreparable damages. The server is required to be protected from break-ins, site vandalism, and denial of service attacks. The more complex software becomes, the higher is the probability that errors exist in the codes.

(b) With a neat diagram explain the various components of m-commerce framework. 5

Ans: The below diagram shows the m-commerce framework.



Various components of m-commerce framework are:

* Mobile infrastructure: It includes sufficient cell towers to provide wide coverage and sufficient network bandwidth for users to have smooth e-commerce transactions. 3G networks provide bandwidth sufficient for most of the m-commerce transactions. The mobile infrastructure should also provide robustness in providing seamless switch over to

heterogeneous networks. It also provides multicast support and user access to multiple networks.

* Content creation and aggregation: This layer is responsible for generating the content used for m-commerce transactions. The content could be stored locally such as marketing campaigns, promotion materials; targeted ads and emails or the content could be aggregated from multiple sources.

Mobile middleware: Lot of enterprise vendors such as SAP, Microsoft provide middleware software for m-commerce. This layer consists of various tools and technologies to perform following functions:

- Maintaining a device repository of all mobile devices.

- Using device repository for providing most optimal user experience and navigation experience.

- Enforce device specific policies.

- Provide network optimization techniques such as compression etc. to improve response times and reliability.

* Service providers: These operators are responsible for maintaining the quality of mobile service such as bandwidth, coverage, availability, reliability and scalability. Some of the popular service providers include Airtel, Vodaphone, AT&T and Verizon, etc.

* M-commerce applications: These are the applications running on mobile devices. The applications can be of two types: Native applications for targeted mobile platforms or browser based applications. The applications include selling/buying product, mobile inventory management, payment gateway integrations, etc.

* Legal and industry regulation and governance process: This layer consists of various processes to comply with regulations at both national and international levels.

4.

(a) Discuss the impact of e-commerce in the following areas : 2x3=6

(i) Marketing:

Ans: Issues of online advertising, marketing strategies, consumer behaviour and cultures. One of the areas in which it impacts particularly is direct marketing. In the past, this was mainly door-to door, home parties and mail order using catalogues or leaflets. This moved to telemarketing and TV selling with the advances in telephone and television technology and finally developed into e-marketing spawning 'e-CRM' (Electronic Customer

Relationship Management), data mining etc. by creating new channels for direct sales and promotion.

(ii) Finance and Accounting

Ans: Online banking has become popular with complex transactions becoming possible without physically going to bank. It makes it possible for companies to conduct business online, which leads to an increase in transactions. Because of this growth, accounting and financial systems need to be able to effectively handle higher data quantities. Numerous financial procedures are automated by e-commerce platforms' frequent integration with accounting software. Human error is reduced, and manual data entry is decreased. Credit cards, digital wallets, and other digital payment methods have become more popular because of e-commerce. Businesses may now sell their goods worldwide thanks to e-commerce, which increases cross-border transactions.

(b) List the benefits and any four applications of EDI. 4

Ans: Benefits of EDI:

* Increased efficiency: It speeds up business-to-business transactions and communication by reducing the need for paper-based procedures. It reduces the amount of manual labor and duplication involved in exchanging corporate papers.

* It makes business exchange transactions automated.

* Directly results in higher revenue and sales because of improved collaboration.

* EDI lowers labor costs and postage and paper expenses for businesses by reducing manual entry and errors.

* More accurate orders and invoices result from automated data exchange, which reduces the possibility of human error.

Applications of EDI:

- EDI is applied in wide variety of business domains such as e-commerce, logistics, retail, healthcare etc.
- Educational institutions use EDI to share student information .
- EDI is required under the Health Insurance Portability and Accountability Act (HIPAA) standard in healthcare.
- The automotive industry streamlines operations with vendors and suppliers by using EDI.
- Retail players use EDJ to streamline their procurement processes,

- Manufacturing firms use EDI for product purchases and interaction with resellers.

5. Write short notes on any two of the following : 2x5=10

(a) Emerging Trends in m-Commerce

Ans: The following are some of the emerging trends in the space of m-commerce:

M-wallet: Using mobile devices for various ranges of financial transactions. M-wallets like Apple Pay, Google Pay are becoming more popular. It allows users to make quick and secure payments using their smartphones.

Near Field Communications (NFC) enable radio communication between smart phones and other similar devices which are in proximity (normally not more than a few inches) or when they touch each other.

Mobile coupons are expected to become popular at retail stores.

Social commerce enablement though mobile devices. Social media platforms are increasingly integrating shopping features.

Taking off of Mobile first strategy wherein the enterprises design their online strategy predominantly around mobile devices first making the user experience on mobile devices more friendlier.

In-store personalization based on mobile app which indicates the available sales and acts as a smart store guide.

Mobile shopping is going to play a major role in the shopping space.

In-store personalization based on mobile app which indicates the available sales and acts as a smart store guide.

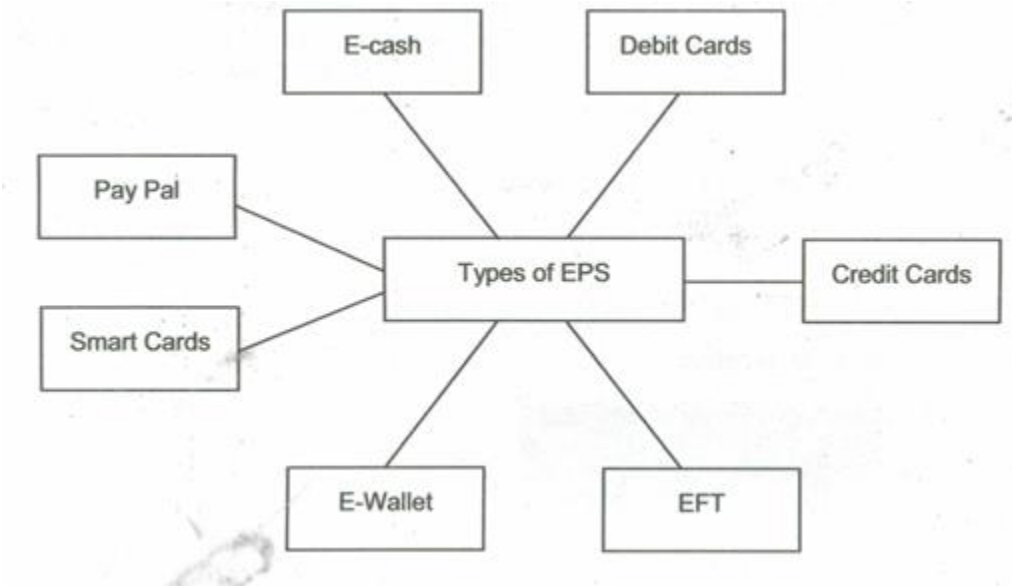
Majority of purchase decisions may be done via mobile phones during shopping. It includes product research, product comparison etc.

(b) Online Payments

Ans: The electronic transmission of funds for goods or services via the internet is referred to as online payment. This procedure has grown in popularity since it is quick, easy, and effective. The foundation of e-commerce is online electronic payments, which have transformed corporate procedures by cutting down on transaction costs, paperwork, and other expenses.

Types of Electronic Payment System:

The following are some of the types of Electronic Payment Systems (EPS)



1. Credit cards: Due to its convenience, this is one of the most often utilized payment methods for online transactions. It is the most common method allowing customers to pay directly from their card account. Its spending cap is determined by the user's credit history.

Advantage:

* Ease of use

* Secured than carrying cash

* Authentication is online. Thus, retailers are sure of payment.

Disadvantage:

* Internet frauds and phishing provide a serious security risk.

* Cost of credit card processing is more than cash payment in some cases.

2. Debit Cards : Debit cards and credit cards, which are given to consumers by banks, are similar. The major difference in debit card and credit card is that in case of debit card amount is immediately deducted from account as soon as transaction is done.

Advantage:

* Bankruptcy is less likely because the money is taken out of the associated account right away.

Disadvantages:

* Debit cards are pay now option i.e. no grace period of paying your amount,

* Debit card security is a big effort, and user pin theft is easier.

3. Smart Cards or Stored Value Cards: Smart cards resemble credit and debit cards as well, however they are made of plastic and have an extra microprocessor chip. This chip stores the customer details and digital cash value in it in encrypted form and can be accessed using customer PIN only. Smart cards are more secure and provide faster processing. Visa Cash card,Mondex cards are examples.

Advantage:

* Good for very small transactions

*It is currency neutral

Disadvantage:

* Due to lesser transaction limit, it is not suitable for B2B or B2C

* Due to high interface cost, it is not suitable for C2C

4. EFT: EFT is the computer based system that transfers the money electronically from one account to another. It is also known as e-cheque. Interbank transfers are examples of EFT.

Advantages:

* The manual cheque involves the cost of ordering cheques, stamps, envelopes, visit to bank, etc. But, EFT reduces all such administrative costs. It requires less labor and simplifies reconciliation of bills

* Money transfer is faster as transfer is normally done within 24 hours

* Process is secure when compared to cheques as no issue oflost or stolen cheques arises.

Disadvantages:

* It is limited to large companies.

* The transactions are irreversible.

5. PayPal: This is also electronic payment system in which money is transferred between the accounts. To use PayPal, you must open a PayPal account associated to your

credit card or your bank account. However, a user can pay without giving, the credit card number during the transaction.

Advantages:

* Easy to use,

* PayPal allows for quick and easy online payments

Disadvantages:

* PayPal charges fees for receiving payments, which can be a percentage of the transaction plus a fixed fee.

* Because PayPal is frequently the target of phishing emails and scams, users must exercise caution when it comes to safeguarding their accounts.

(c) Cyber Laws

Ans: Cyber laws refer to the legal regulations that govern the use of the internet and digital communication. These laws are vital for regulating the digital world, protecting individuals and businesses and ensuring a safe online experience.

Some of the Indian cyber laws are:

The Indian Penal Code, 1860 :

Relevant sections dealing with records and documents with strong legislation covering substantive criminal law was amended with the introduction of IT Act, 2000. The word 'electronic' was inserted thereby treating the electronic records at par with physical records.

The Indian Evidence Act, 1872

Another legislation amended by the IT Act was Indian Evidence Act. Prior to IT Act, all evidences in the courts were in physical form only, Now, evidence can be presented in electronic form also.

The Bankers' Books Evidence (BBE) Act, 1891

With the passing of IT Act, the provisions of Bankers' B09ks Evidence Act were also amended to include printout from a computer system or disc as a valid document and evidence, provided, it is accompanied by a certificate stating that it is a true extract from the official records of the bank and that such entries or records are from a computerised system with data integration.

The Reserve Bank of India Act, 1934

The Reserve Bank of India Act, 1934 was amended to insert a clause relating to the regulation of funds transfer through electronic means between banks (Le. transactions like RTGS and NEFT and other fund transfers) to facilitate EFT and ensure legal admissibility of documents and records therein.