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22EM106-Introduction to Cyber Security

UNIT- IV

E - Commerce and Digital Payments

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Unit -IV	8 Hrs
E - Commerce and Digital Payments Definition of E- Commerce, Main components of E-Commerce, Elements of E-Commerce security, E-Commerce threats, E-Commerce security best practices, Introduction to digital payments, Components of digital payment and stake holders, Modes of digital payments- Banking Cards, Unified Payment Interface (UPI), e-Wallets, Unstructured Supplementary Service Data (USSD), Aadhar enabled payments, Digital payments related common frauds and preventive measures. RBI guidelines on digital payments and customer protection in unauthorised banking transactions. Relevant provisions of Payment Settlement Act,2007	

- Ecommerce security refers to **the measures taken to protect your business and your customers against cyber threats**.
- E-Commerce or Electronic Commerce means buying and selling of goods, products or services over the internet.
- **electronic commerce** or **internet commerce**.
- These services provided online over the internet network.
- Transaction of money, funds, and data are also considered as E-commerce.
- Business to Business (B2B), Business to Customer (B2C), Customer to Customer (C2C), Customer to Business (C2B). The standard definition of E-commerce is a **commercial transaction which is happened over the internet.**

Examples of E-Commerce:

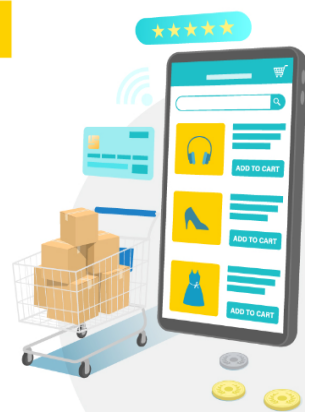
- Amazon
- Flipkart
- eBay
- Fiverr
- Upwork
- Olx
- Quikr

e-commerce is one of the fastest growing industries in the global economy

Top 10 Most **Demanded & Hot Selling** Products

In India Online 2021

- Clothing
- Cell Phones
- Stationery & Books
- Toys & Games
- Footwear
- Jewellery
- Beauty & personal care
- Electronics
- Baby care products
- Home Decor



Types of E-Commerce Models

1. **Business to Business**

Ex. online transactions only involve the manufacturers, wholesalers, retailers etc

2. Business to Consumer

Ex. Amazon, Flipkart, Jabong etc

3. Consumer to Consumer

Ex. OLX, Quikr

4. Consumer to Business

Ex. IT freelancer who demos and sells his software to a company.

Advantages of E-Commerce

- E-commerce provides the sellers with a global reach. They remove the barrier of place (geography) Now sellers and buyers can meet in the virtual world, without the hindrance of location.
- Electronic commerce will substantially lower the transaction cost. It eliminates many fixed costs of maintaining brick and mortar shops. This allows the companies to enjoy a much higher margin of profit.
- It provides quick delivery of goods with very little effort on part of the customer. complaints are also addressed quickly. It also saves time, energy and effort for both the consumers and the company.
- A customer can shop 24×7. The website is functional at all times, it does not have working hours like a shop.
- without any intermediaries.

Disadvantages of E-Commerce

- The start-up costs of the e-commerce portal are very high.
- Although it may seem like a sure thing, the e-commerce industry has a high risk of failure.
- At times, e-commerce can feel impersonal. lack of a personal touch can be a disadvantage for many types of services and products like interior designing or the jewelry business.
- Security is another area of concern. Only recently, we have witnessed many security breaches where the information of the customers was stolen. Credit card theft, identity theft etc. remain big concerns with the customers.
- Then there are also fulfilment problems. Even after the order is placed there can be problems with shipping, delivery, mix-ups etc. This leaves the customers unhappy and dissatisfied.

cyber security: importance in e-commerce

- It allows to **protect company and customers** from cybercriminals.
- cybersecurity is a concept that encompasses a set of strategies, tactics and technologies that aim to defend systems, digital services and online electronic data belonging to consumers, institutions and companies against theft, manipulation, blocking, disorientation and other damage caused by cybercriminals.
- primarily aimed at protecting consumer data.
- Prevent data such as address, telephone, CPF, credit card numbers and navigation data.
- cybersecurity must be dedicated to protecting servers, databases, networks and endpoints.
- It must find vulnerabilities and fix them before cybercriminals do.

cybersecurity is premised on ensuring:

- **Reliability**: only authorized persons can have access to systems and data;
- **Integrity**: data **cannot be altered or deleted** without authorization;
- **Authenticity**: The **identity of the people** who send data to your company must be preserved.

Why cyber security matters for e-commerce

- Protect **company and customers** from cybercriminals.
- In order for people to be able to shop at your online store, they need to **feel secure enough to enter personal details and payment details.**
- customers' data and customer's information need to be careful.
- Have a cyber security policy in place
- Create strong passphrases
- Use a secure e-commerce platform
- Don't fall for phishing scams

Reference

http://www.cert-in.org.in/

https://cert-in.org.in/s2cMainServlet?pageid=Pre_Sec_Tips1

https://cert-in.org.in/

- Most industries have deployed internet technologies as an essential part of their business operations.
- online banking customers the facilities to access and manage their bank accounts easily and globally.
- Deployed more frequently over the past few decades to support and improve the operational and managerial performance
- internet banking, e-banking or virtual banking

Threats to Online Banking

- Confidentiality, privacy and security of internet banking transactions and personal information are the major concerns.
- steal login data.
- Phishing, pharming, Cross-site scripting, adware, key loggers, malware, spyware, Trojans and viruses.

Best practices for online Banking Users

- Protect your PC.
- Protect your personal information
- Use the Internet cautiously
- Stay alert
- Prompt reporting of suspicious activity

Protect your PC:

- Anti-virus software, anti-spyware security software, firewalls, operating system and internet browser up to date

Protect your personal information:

- hard-to-guess security access codes
- Change your security access codes periodically
- Memorize your security access codes, avoid writing them down
- Do not disclose to ANYONE your security access codes
- Never leave your PC unattended when logged into Online Banking
- "Log-off" button when finished using the e-banking services

Use the Internet cautiously:

- Always access Online Banking internet only by typing the URL in the address bar of your browser.
- Never attempt to access Online Banking internet through an external link of unknown or suspicious origin appearing on other websites, search engines or e-mails.
- check for the Bank's Security Certificate details and the various signs (e.g., green address line and Lock, HTTPs)
- Ignore and delete immediately suspicious fraudulent e-mails
- Never click on a link contained in suspicious e-mails
- Avoid using Online Banking from public shared PCs

Stay alert:

- Sign-on to Online Banking regularly and review your account transactions, checking for any fraudulent activity on your account (e.g. transactions you do not recognize)
- Keep track of your last log-on date and time, displayed at the top left side of the Online Banking Home page
- Once logged into Online Banking, you can also monitor the actions performed online

Prompt reporting of suspicious activity:

- Contact your bank immediately, if you think someone knows your security access code or in case of theft of your code/ money or in case you have forgotten your credentials.
- Forward any suspicious e-mails to the bank on their phishing reporting email as well as on CERT-In email incident@cert-in.org.in
- Your prompt action is crucial to prevent any (further) damage

Mobile Banking

- usage of Smartphones
- use of a Smartphone or other cellular device to perform online banking tasks

Threats to Mobile Banking

Mobile Banking Malwares

prevention against Malware attacks:

- Download and use anti-malware protection for the mobile phone or tablet device.
- Keep the Banking App software up to date
- Use security software.
- Reputed applications should only be download onto the smart phone

Phishing/Smishing/Vishing Attack

An attacker attempts phishing on to a mobile phone through SMS (Short Message Service), text message, telephone call, fax, voicemail etc. with a purpose to convince the recipients to share their sensitive or personal information.

prevention against phishing attacks

- Emails or text messages asking the user to confirm or provide personal information (Debit/Credit/ATM pin, CVV, expiry date, passwords, etc.) should be ignored.
- SSL (Secure Sockets Layer) and TLS (Transport Layer Security) should be adequately implemented in mobile banking apps thus helping to prevent phishing and man-in-the-middle attacks.

Best Practices for Users to remain safe

- Enable Passwords On Devices
- IPIN should not be stored on the user's mobile phone.
- report the loss of mobile phone to the bank for them to disable the user's IPIN and his access to the bank's account through Mobile Banking app.
- When downloading the Bank's Mobile app in the mobile device, the user should go to a trusted source such as the App Store on the iPhone® and iPod touch® or Android Market.

Security of Credit Card and Debit Card

Security Threats

- Identity theft
- The fraudulent acquisition and use of person's private identifying information, usually for financial gain.
- It can be divided into two broad categories: Application fraud and Account takeover

Application fraud:

- criminal uses stolen or fake documents to open an account in someone else's name.
- Criminals may try to steal documents such as utility bills and bank statements to build up useful personal information.

Account takeover:

- criminal tries to take over another person's account, first by gathering information about the intended victim, and then contacting their card issuer while impersonating the genuine cardholder, and asking for the mail to be redirected to a new address.
- The criminal then reports the card loss and asks for a replacement to be sent.

Introduction to digital payments

Digital payments

- electronic payment
- phone, POS (Point of Sales) or computer, a digital channel communications
- funds are transferred much faster relative to traditional payment methods like checks.
- ePayments allow users to make payments online at any time, from anywhere in the world, and also remove the need to go to banks.
- As part of the '**Digital India**' campaign, the government has an aim to create a 'digitally empowered' economy that is '**Faceless, Paperless, Cashless**'.

Different methods of digital payments

- Banking Cards
- Unstructured Supplementary Service Data(USSD)
- Aadhaar Enabled Payment System (AEPS)
- Unified Payments Interface (UPI)
- Mobile Wallets
- Bank Prepaid Cards
- PoS Terminals
- Internet Banking
- Mobile Banking
- Micro ATMs

Benefits of Digital Payments

- **Ease and convenience**
- **Economic progress**
- **Safety and efficient tracking**
- Online retail provides an additional sales channel.
- Improved cash flow.
- Security at the forefront.
- Improved payment options for your customers.
- **Multiple payment options:** Several types of payment modes including credit cards, debit cards, net banking, EMIs, and UPI, along with Paytm Wallet and Paytm Postpaid.

Banking Cards

- Debit/credit cards, or prepaid cards.
- Andhra Bank launched the first credit card in India in 1981.
- Cards are preferred because of multiple reasons

Unstructured Supplementary Service Data(USSD)

- USSD was launched for those sections of India's population which don't have access to proper banking and internet facilities.
- Under USSD, mobile banking transactions are possible without an internet connection by simply dialing *99# on any essential feature phone.
- allows customers to avail of services including interbank account to account fund transfer, balance inquiry, and availing mini statements.
- Around 51 leading banks offer USSD service in 12 different languages, including Hindi & English.

Aadhaar Enabled Payment System (AEPS)

- Under this system, customers can use their Aadhaar-linked accounts to transfer money between two Aadhaar linked Bank Accounts.
- As of February 2020, AEPS had crossed more than 205 million as per NPCI data.
- AEPS doesn't require any physical activity like visiting a branch, using debit or credit cards or making a signature on a document.
- This bank-led model allows digital payments at PoS (Point of Sale / Micro ATM) via a Business Correspondent(also known as Bank Mitra) using Aadhaar authentication.

Unified Payments Interface (UPI)

- UPI is a payment system that culminates numerous bank accounts into a single application, allowing the transfer of money easily between any two parties.
- As compared to **NEFT, RTGS, and IMPS**, UPI is far more well-defined and standardized across banks.
- You can use UPI to initiate a bank transfer from anywhere in just a few clicks.
- The benefit of using UPI is that it allows you to pay directly from your bank account, without the need to type in the card or bank details.
- This method has become one of the most popular digital payment modes in 2020, with October witnessing over 2 billion transactions.

Mobile Wallets

- type of wallet in which you can carry cash but in a digital format.
- Often customers link their bank accounts or banking cards to the wallet to facilitate secure digital transactions.
- Another way to use wallets is to add money to the Mobile Wallet and use the said balance to transfer money.
- Some popularly used ones include Paytm, Freecharge, Mobikwik, mRupee, Vodafone M-Pesa, Airtel Money, Jio Money, SBI Buddy, Vodafone M-Pesa, Axis Bank Lime, ICICI Pockets, etc.

Bank Prepaid Cards

- A bank prepaid card is a pre-loaded debit card issued by a bank, usually single-use or reloadable for multiple uses.
- It is different from a standard debit card because the latter is always linked with your bank account and can be used numerous times. This may or may not apply to a prepaid bank card.
- A prepaid card can be created by any customer who has a KYC-complied account by merely visiting the bank's website.
- Corporate gifts, reward cards, or single-use cards for gifting purposes are the most common uses of these cards.

PoS Terminals

- PoS(Point of Sale) is known as the location or segment where a sale happens.
- The most common type of PoS machine is for Debit and Credit cards, where customers can make payment by simply swiping the card and entering the PIN.
- With digitization and the increasing popularity of other online payment methods, new PoS methods have come into the picture. First is the contactless reader of a PoS machine, which can debit any amount up to Rs. 2000 by auto-authenticating it, without the need of a Card PIN.

Internet Banking

- Internet Banking, also known as e-banking or online banking, allows the customers of a particular bank to make transactions and conduct other financial activities via the bank's website.
- E-banking requires a steady internet connection to make or receive payments and access a bank's website, which is called Internet Banking.
- Today, most Indian banks have launched their internet banking services. It has become one of the most popular means of online transactions.
- Every payment gateway in India has a virtual banking option available. NEFT, RTGS, or IMPS are some of the top ways to make transactions via internet banking.

- Digital payment methods, such as IMPS, NEFT, RTGS, IMPS, investments, bank statements, bill payments, etc., are available on a single platform in mobile banking apps.
- Banks themselves encourage customers to go digital as it makes processes easier for them too.

Modes of digital payments- Banking

https://www.meity.gov.in/modes-digital-payment

https://www.meity.gov.in/cyber-security-division

Modes of Digital Payments

- Modes of Digital Payments.
- Unified Payments Interface (UPI):
- Bharat Interface for Money (BHIM):
- UPI 123PAY:
- UPI Lite:
- Cards (including RuPay Debit Cards)
- Immediate Payment Services (IMPS):
- Aadhaar Enabled Payment System (AePS):

Thank you