E-Commerce & E-Governance

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Course Overview

- Module 1 : Introduction to E-Commerce
- Module II : Electronic Payment System
- Module III : E-Governance
- Module IV : Public-Private-Partnership

Technologies In E- Commerce



Module I Introduction to E-Commerce



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Introduction

- Commerce is the exchange of "something of value" between two entities.
- "something" may be goods, services, information, money or anything.
- Electronic commerce meant the facilitation of commercial transactions by Electronic Data Interchange(EDI) and Electronic Fund Transfer(EFT).

History of E-Commerce

- The emergence of electronic commerce started in the early 1970's.
- Earliest was Electronic Fund

 Transfer(EFT), which allows
 organizations to transfer fund
 between one another electronically.
- Electronic data interchange(EDI) helps to extend inter business transactions from financial institutions to other types of business.
- In 1980 there was a growth in acceptance of credit cards, Automated Teller Machines(ATM) and telephone banking.

- Online shopping became possible when the internet was opened to the public during 1990.
- Enterprise Resource Planning systems(ERP),data mining and data warehousing in 1992.
- Amazon.com was one of the first ecommerce sites in the US to start selling products online.
- Thousands of businesses have followed Amazon for selling their products online.

What is E-Commerce?

- "Electronic commerce means buying and selling of goods and services across internet".
- According to Jackob Nielsen "e-commerce is the conduct of financial transactions by electronic means. Ecommerce usually refers to shopping at online stores on the World Wide Web also known as e-commerce websites ".

Parts

- E-tailing also called as "virtual storefronts": a"virtual mall".
- Electronic data exchange (EDI): the business to business exchange of data.
 - E-mail and fax and their use as media.
- Business to business buying and selling.



Features of E-Commerce

- **Non-Cash Payment** : use of credit cards, debit cards, smart cards, electronic fund transfer via bank's website, and other modes of electronics payment.
- **Service availability** : E-commerce automates the business of enterprises and services to their customers. It is available anytime, anywhere.
- **Advertising / Marketing** :Increases the reach of advertising of products and services of businesses. It helps in better marketing management of products/ services.
- **Improved Sales** Orders for the products can be generated anytime, anywhere without any human intervention.
- **Support** Provides various ways to pre-sales and post-sales assistance to provide better services to customers.



- **Inventory Management** Automates inventory management. Reports get generated instantly when required..
- **Communication improvement** Provides faster, efficient, reliable communication with customers and partners

Traditional Commerce

E-commerce

- Manual intervention is required for each
 communication or transaction.
- Communication/ transaction are done in
 synchronous way. Manual intervention is required for each communication or transaction.
- It is difficult to establish and maintain standard practices in traditional commerce.
- Communications of business depends upon individual skills.
- Unavailability of a uniform platform as traditional commerce depends heavily on personal communication.

No uniform platform for information sharing as it depends heavily on personal communication.

- Information sharing is made easy via electronic communication channels.
- Communication or transaction can be done in asynchronous way. Electronics system automatically handles when to pass communication to required person or do the transactions.
- A uniform strategy canbe easily established and maintain in e-commerce.
- In e-Commerce or Electronic Market, there is no human intervention.
- E-Commerce website provides user a platform where al I information is available at one place.
- E-Commerce provides a universal platform to support commercial / business activities across the globe.

Categories of E-Commerce

- Electronic Markets:
- The purchaser can compare the prices and offerings in different market segments and make a purchase decision
- Electronic Data Interchange (EDI)
 - It provides a standardized system
 - $\circ~$ Coding trade transactions
 - Communicated from one computer to another without the need for printed orders and invoices without delays & errors in paper handling
- Internet Commerce:
- It is use to advertise & make sales of wide range of goods & services.

This application is for both business to business(B2B) & business to consumer (B2C)transactions.

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)

Business - to – Business (B2B)

• A website following the B2B business model sells its products to an intermediate buyer who then sells the product to the final customer.



Business - to – Consumer (B2C)

 A website following the B2C business model sells its products directly to a customer. A customer can view the products shown on the website. The customer can choose a product and order the same.



Consumer - to – Consumer (C2C)

- It helps consumers to sell their assets like residential property, cars, motorcycles, etc., or rent a room by publishing their information on the website.
- Another consumer may opt to buy the product of the first customer by viewing the post/advertisement on the website.



Consumer - to – Business (C2B)

- A consumer approaches a website showing multiple business organizations for a particular service. The consumer places an estimate of amount he/she wants to spend for a particular service.
- A business organization who fulfills the consumer's requirement within the specified budget, approaches the customer and provides its services.





Business - to – Government (B2G)

• This model is a variant of B2B model. Such websites are used by governments to trade and exchange information with various business organizations. Such websites are accredited by the government and provide a medium to businesses to submit application forms to the government.



Government - to - Citizen (G2C)

 Such websites support auctions of vehicles, machinery, or any other material. Such website also provides services like registration for birth, marriage or death certificates. The main objective of G2C websites is to reduce the average time for fulfilling citizen's requests for various government services.





Advantages

Advantages to Organizations:

- Organizations can expand their market to national and international markets with minimum capital investment
- Improves the brand image of the company., reduces the paper work by digitizing the information., helps organization to provide better customer services.

Advantages to Customers

 It provides 24x7 support to customers., provides users with more options and quicker delivery of products, provides users with more options to compare and select the cheaper and better optionsA customer can put review comments.

Advantages to Society

- Helps in reducing the cost of products, so less affluent people can also afford the products.
- Ecommerce helps the government to deliver public services such as
- healthcare, education, social services at a reduced cost and in an improved manner.
- Customers need not travel to shop a product, thus less traffic on road and low air pollution.

Disadvantages

Technical disadvantages

- There can be lack of system security, reliability or standards owing to poor implementation of e-commerce.
- The software development industry is still evolving and keeps changing rapidly.
- There could be software/hardware compatibility issues, as some e-commerce software may be incompatible with some operating system or any other component.

Non-Technical Disadvantages

- Initial cost
- User resistance
- Security/ Privacy
- No provision for checking quality of product.
- Internet access is still not cheaper and is inconvenient to use for many potential customers.

E-commerce Applications

Some applications of E-Com are,

• Education

- In educational training e-commerce has a major role in interactive education, video conferencing, online class and for connecting different educational training centers.
- Due to the success growth in the e-commerce business sector, many educational institution have decided to create a new learning with new trends and challenges.

• Manufacturing

E-Commerce is included and used in the chain operations (supply) of a company. There are companies that form the electronic exchange. This is by providing buying and selling items together, trading market information and the information of runback office like inventory control. This is a way that speeds up the flow of finished goods and the raw materials among the business community members.

Auctions

- Electronic auctions that involve bidding system. Bidding allows prospective buyers to bid an item. In Airline Company they give bidding opportunity for customers to quote the price for a seat on a specific route, date and time.
- Frketing
 - The marketing activities like price fixing, product feature, and its enhancement, negotiation, and the relationship with the customer can be made using e-com.

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 Auctions

One Buyer, many potential Sellers:-

Two popular types of auctions in which there is one buyer and many potential sellers are reverse auctions and name-you-own-price auctions.

Reverse Auctions:-

When there is one buyer and many potential sellers, a reverse auction is in place.

Benefits to sellers	Benefits to buyers	Benefits to E-auctioneers
 Increased revenue from broadening bidder base and shortening cycle time. Can sell anywhere globally. 	 Opportunities to find unique items and collectibles 	 Higher repeat purchases. Marketresearch.com found that auction sites. Such as eBay, tend to gamer higher repeat-purchase rates than the top B2C sites, such as Amazon.com
• Opportunity to bargain instead of selling at a fixed price. Can sell at any time and conduct frequent auctions	• Entertainment, participation in e- auctions can be entertaining and exciting (eg: virtual live auction site tophatter.com)	 High "stickiness" to the web sites (The tendency of customers to stay at sites longer and come back more often) Auction sites are frequently "stickier" than fixed- priced sites. Stickier sites generate more ad revenue for the e-auctioneer
 Optimal price setting determined by the market (more buyers, more information) Sellers can gain more customer dollars by offering items directly (saves on the commission to intermediaries: also, physical auctions are very expensive compared to e-auctions) Can liquidate large quantities quickly Improved customer relationship and loyalty (in the case of specialized B2B auction sites and electronic exchanges) 	 Convenience. Buyers can bid from anywhere, even using a mobile device; they do not have to travel to a physical auction place. Anonymity. With the help of a third party, buyers can remain anonymous. Possibility of finding bargains, for both individuals and organizations. 	Easy expansion of the auction business.

Module II Electronic Payment Systems

E-Payment Systems

• Electronic payment is a financial exchange that takes place online between buyers and sellers.

The various factors that financial institutions to make use of electronic payments are,

- Decreased technology cost.
- Reduced operational and proceeding cost.
- Increasing online commerce.



Main Concerns In Internet Banking

- Security is the most important issue of online banking.
- To Banking Securely: Use Encryption to protect data.
- A multi-layered security architecture comprising firewalls, filtering routers, encryption and digital certification ensures that your account information is protected from unauthorized access.
- Firewalls and filtering routers ensure that only the legitimate Internet users are allowed to access the system.
- Encryption techniques used by the bank (including the sophisticated public key encryption) would ensure that privacy of data flowing between the browser and the Infinity system is protected.



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-Cash

Digital cash is a system of purchasing cash credits in relatively small amounts ,storing the credits in your computer ,and then spending them when making electronic purchases over internet.

Eg: e-coins, e-wallet etc.

Properties

- Monetary value: Electronic money should have equal value of paper cash and it should be acceptable by every bank.
- Interoperable: It should transferable or exchangeable, i.e, exchangeable for other e-cash, paper cash, goods and services, lines of credit, deposits, bank notes, etc.
- Storable and retrievable: E-cash is storable on a device that cannot be altered. This device should have suitable interface to facilitate personal authentication using passwords or other means and a display so that user can view the card's content.

Security: It should not be easy to copy, this includes preventing, or detecting duplication.

Schematic Overview of E-cash in Action



E-Cheques

- E-Cheque is an electronic document which substitute the paper cheque for online transactions.
- Digital signatures replace handwritten signatures.
- Also called "Net Cheques.
- They are designed for these persons who might prefer to pay on credit or not through cash.
- Security features include authentication, public key cryptography, digital signatures and encryption, among others.

Five parties in E-cheque payment systems are,

Purchaser

Vendor

Purchaser's bank

Vendor's bank



Smart Card

- 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 cards 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 creditcard 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.

Risk in E-Payment Systems

Various security issues or risks arise from the choice of technology by a user.

• Fraud and theft:

Electronic financial systems connected to public networks extend the opportunities of stealing small amounts to organized criminal activities involving large sums.

• Malfunctioning:

When a merchant sells electronic goods or services, unauthorized access to the merchant server will result in taking away of the goods or services without payment.

Merchant Risk:

For online merchants the chances of getting orders with stolen credit card numbers are possible.

Components of E-Payment System

- **Database Integration :**An integration database is a database which acts as the data store for multiple applications, and thus integrates data across these applications.
- **Brokers:** The role of electronic brokers facilitates financial transactions electronically.
- **Standards:** The e-payment standards enable payment users to link with various networks and other payment systems.
- Pricing: Payment card networks, such as Visa, require merchants' banks to pay substantial "interchange" fees to cardholders' banks, on a per transaction basis.
 - **Privacy:** Protecting the privacy of evaluators and their information is nother important policy concern of e-payment system.

Module III • E-Governance

E-Governance

• E-Governance is the application 3of information and communication technology(ICT) for delivering government services ,exchange of information, communication transactions ,integration of various stand alone systems between government,citizens,businesses etc at national, state and local levels.

Stages of e-Governance:

- Computerization: Availability of personal computers in government offices.
- Networking: government organizations are connected through a hub leading to sharing of information and flow of data between different government entities.
 - On-line presence: In maintenance of websites by government departments and other entities.

On-line interactivity: To lessen the scope of personal interface with government entities by providing downloadable Forms, Instructions, Acts, Rules.

Architecture Technology Requirements

• The technology options for the architecture solution for a comprehensive e-governance solution will mostly depend on economic, political, technical and cultural amongst others.

The requirements are classified into two categories

- Architecture technology requirements that discusses the core technology requirements.
- An application requirement which discusses abstraction of common code required for multiple applications/departments.



Generic Architecture Requirements

- Should have a unified approach and implement the solution in phases.
- Since Government offices are more and geographically distributed, it is neither be economical nor technically feasible to roll out the entire system together.
- Architecture with core structure, peripheral components being added as when required (Fig).
- The architecture should support processes involving multi
 - department and multi-agency

It is necessary to share the same underlying back-end database and applications among departments.

- Architecture should be capable of scaling with time in terms of number and complexity of applications, number of locations and number of users/usage.
- It should be reliable ,also have efficient back-up capabilities and the ability to handle contingencies and recover from failures.



Application Requirements

Architecture for e-governance needs to incorporate common code as part of the architecture itself.

- In addition to generic applications, the architecture should support interfaces to vertical-specific applications like government-to-business (G2B), government-to-employees (G2E), government-to-citizens (G2C) and citizen-to-citizen (C2C).
- Various security services like authentication, multiple levels of access control confidentiality, privacy, data integrity and non-repudiation need to be provided.
- Ability to generate access logs for sensitive data, use of public key certificates and digital signatures, record management, a simple common interface facilitate greater usage and that reduces the training cost should be required.

which include messaging, instant messaging, video conferencing and mission-critical inter-application communication etc.

Challenges For E-Governance In India

• Environmental and Social Challenges

- Different Language: . The diversity of people in context of language is a huge challenge for implementing e-Governance projects as e-Governance applications are written in English language.
- Low Literacy: Literacy level of India is very low which is a huge obstacle in implementation of e-Governance projects.
- Low IT Literacy: Much of the Indian people are not literate and those who are literate, do not have much knowledge about Information Technology (IT).
- Recognition of applications: Recognition of the e-Governance facilities by the citizens.
- User friendliness of government websites: Users of e-governance applications are often non-expert users who may not be able to use the applications in a right manner.
 - Services are not accessible easily: Some people may have limited access to ICT and devices.

Challenges For E-Governance In India

• Economical Challenges and Technical Challenges.

- Cost: In developing countries like India, cost is one of the most important obstacles in the path of implementation of e-Governance where major part of the population is living below poverty line.
- Applications must be transferrable from one platform to another:Egovernance applications must be independent from hardware or software platforms.
- Maintenance of electronic devices: As the Information Technology changes very fast and it is very difficult for us to update our existing systems very fast.
- Limited financial resources: The Gross Domestic Product (GDP) is one of the measures of national income and a country's economy.

Phases of E-Governance

- **G2G (Government to Government):** G2G is the online communications between government organizations, departments and agencies based on a super-government database.
- **G2C (Government to Citizens):** G2C maintains the relationship between government and citizens. It allows citizens to access government information and services promptly, and conveniently from everywhere, by use of multiple channels.
- G2B (Government to Business): In G2B, e-Governance tools are used to help the business organizations that provide goods and services to seamlessly interact with the government. It include various services exchanged between government and the business sectors that include distribution of policies, memos, rules and regulations.

C2E (Government to Employees): The aim of this relationship is to serve employees and offer some online services such as applying online for an annual leave, checking the balance of leave, and reviewing salary payment record etc.

Module IV

- Public-Private-Partnership
- Technologies In E- Commerce

Public-Private-Partnership(PPP)

A new model in governance

- Partnership between public sector and private sector in financing, designing and developing infrastructural facilities.
- Participation of private sector in government projects.



Private sector- Money, Technical knowledge and Managerial expertise.

PPP formed in

- Power projects
- Transport
- Water
- Healthcare
- Education

Features

- Facilitate partnership
- Management for specified time
- High priority projects
- Revenue sharing
- Risk sharing

Benefits To Stakeholders

1. Benefits to Government(Public Sector)

- Knowledge of specialist organizations available for e-government projects.
- Financial participation from outside sources
- Better Risk management
- Projects management skills available
- Choice of partners, according to their competencies and skill sets.
- Government can concentrate on their core activities.
- Technological hassle of running, maintain and upgrading services
 taken off the heads of the government.

Benefits To Stakeholders

2.Benefits to the Citizen/Businesses

- Easy access to services
- Single window/one stop shop
- 24x7 convenience

- Flexibility in the choice of access methods and devices.
- Saving of indirect cost and hardship

3.Benefits to the private sector

- Reliable streams of revenue, Low risk
- Exposure, learning and richness of experience in working with the government
- Creation of employment in the development
- Implementation and delivery
 - Capturing business from related sectors.

Technology In Government

- Technology is the most non-linear tool that can affect the fundamental changes in the ground rules of economic competitiveness." By APJ Abdul Kalam.
- Smart Cards: A Smart card similar to a credit card, has a microprocessor or memory chip embedded in it, coupled with a reader.
- The Smart cards were introduced in India in the year 1990.
- The Indian smart card market is divided into five application areas, namely Telecom, Banking, Transportation, Healthcare and Government.



Technology In Government

• **BIOMETRICES**

Biometrics refers to the automatic identification of a person based on his/her physiological or behavioral characteristics. Biometric can potentially prevent unauthorized access to or fraudulent use of ATMs, cellular phones, smart cards, desktop PCs, workstations and computer networks.

Biometric system should be:

- Measurable: A human trait, which can be easily converted in to digital format
- Robust: The pattern should not change with time. For example, iris is more robust a compared to a person's voice.
- Distinct: Pattern should be distinct. For example, iris and retina are highly distinct as compared to hand and finger patterns.
- Verification and Identification: A biometric system can be treated either as a verification (authentication) system or an identification system. For rentification question is : "who is X?" and is simply one to many relationship. In the verification system, it answers the question "Is this X?" and is one to one search.

- Location Based Service System (LBS)
- The wireless technology offers a new dimension of opportunities to wireless carries, infrastructure vendors, and application providers.
- Wireless tracking of location enables an innovative breed of applications that provide new levels of safety, convenience and productivity such as personalized traffic reports and directions, asset tracking applications and other special offers according to the customer's proximity.
- Mobile location services can locate users in the current network, can offer some of the most interesting government applications.
- A successful LBS technology must meet the position accuracy requirements determined by the respective service, at the lowest possible cost and with minimal impact on network and the equipment.

Location Based System



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Application of LBS In Government Sector

- Security of the land
- Security of the citizen
- Universal health
- Universal education
- Disaster Management
- Management of resources, planning and development
- Other services like Location Based Employment, video Conferencing, Research and Exploration.



Open Source Software

- Open source software (OSS) refers to software that is developed, tested, or improved through public collaboration and distributed with the idea that the must be shared with others, ensuring an open future collaboration.
- Richard Stallman's idea of Free Software Foundation, and the desire of users to freely choose among a number of products led to the Open Source movement and the approach to developing and distributing programs as open source software.

Eg: Linux Operating System.



Thank You...

