



SREENIVASA INSTITUTE OF TECHNOLOGY
AND MANAGEMENT STUDIES
(AUTONOMOUS) CHITTOOR

Lecture Notes

E- BUSINESS

DIGITAL BUSINESS MODELS & ELECTRONIC COMMERCE

BRANCH/YEAR/SEMESTER: CSE & DS/IV/VII

REGULATION: R23

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IV – B.Tech VII - Semester							
Course Code	E-BUSINESS			L	T	P	C
23HSM471B				3	-	-	3
COURSE EDUCATIONAL OBJECTIVES:							
1. To provide knowledge on emerging concept on E-Business related aspects							
2. To understand various electronic markets & business models.							
3. To impart the information about electronic payment systems & banking.							
4. To create awareness on security risks and challenges in E-commerce.							
5. To make the students aware on different e-marketing channels & strategies							
Unit - 1	E-BUSINESS			Lecture Hrs: 8			
Introduction – Nature, meaning, significance, functions and advantages - Definition of Electronic Business - Functions of Electronic Commerce (EC)-Advantages & Disadvantages of E-Commerce – E-Commerce and E-Business, Internet Services, Online Shopping- ECommerce Opportunities for Industries.							
Unit – 2	Electronic Market & E-Business			Lecture Hrs: 9			
Introduction –E-Shops-E-Malls E-Groceries - Portals - Vertical Portals-Horizontal Portals - Advantages of Portals -Business Models- Business to Business (B2B)-Business to Customers (B2C) - Business to Government(B2G)-Auctions-B2B Portals in India							
Unit - 3	Electronic Payment System (EPS)			Lecture Hrs: 9			
Introduction to electronic payment systems (EPS) -Types of electronic payments - Credit/debit cards, e- wallets, UPI, and crypto currencies -Smart cards and digital wallets: Features and usage -Electronic Fund Transfer (EFT): Role in business transactions - Infrastructure requirements and regulatory aspects of e-payments							
Unit - 4	E- Security			Lecture Hrs: 10			
Security risks and challenges in electronic commerce - Cyber threats - Phishing, hacking, identity theft, and malware - Digital Signatures & Certificates - Security protocols over public networks (HTTP, SSL, TLS) - Firewalls in securing e-business platforms.							
Unit - 5	E - Marketing			Lecture Hrs: 9			
Introduction – Online Marketing – Advantages of Online Marketing – Internet Advertisement – Advertisement Methods – Conducting Online Market Research– – Emarketing planning: Online branding, social media marketing, and email marketing - Ebusiness strategies: Digital advertising, content marketing, and analytics E-Customer Relationship Management (e CRM) E-supply chain management (e-SCM)							
Course Outcomes				POs			
CO1	Outline the concept of E-Business & its scope and functions.			PO9, PO11, PO12			
CO2	Apply the E-market-Models in various business situations and organizations			PO9, PO11, PO12			
CO3	Analyze the various E-payment systems & importance of net banking			PO8, PO9, PO11, PO12			
CO4	Demonstrate the knowledge gained in E -security and its challenges			PO1, PO6, PO8, PO9, PO11, PO12			
CO5	Evaluate market research strategies& E-advertisements.			PO8, PO9, PO10, PO11, PO12			
Text Book							
1. Arati Oturkar & Sunil Khilari. E-Business. Everest Publishing House, 2022							
2. P.T.S Joseph. E-Commerce, Fourth Edition, Prentice Hall of India, 2011							
References books							
1. Debjani, Kamalesh K Bajaj. E-Commerce, Second Edition Tata McGrawHill's, 2005							
2. Dave Chaffey.E-Commerce E-Management, Second Edition, Pearson, 2012.							

3. Henry Chan. E-Commerce Fundamentals and Application, Raymond Leatham Wiley India 2007.
4. S. Jaiswal. E-Commerce Galgotia Publication Pvt Ltd., 2003.

Reference Webiste

1. <https://www.slideshare.net/fatimahAlkreem/e-businessppt-67935771>
2. <https://www.slideshare.net/VikramNani/e-commerce-business-models>
3. <https://www.slideshare.net/RiteshGoyal/electronic-payment-system>
4. <https://www.slideshare.net/WelingkarDLP/electronic-security>

CO/PO Mapping (Detailed; High:3; Medium:2; Low:1;

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO.1	-	-	-	-	-	-	-	-	2	-	3	3
CO.2	-	-	-	-	-	-	-	-	2	-	3	3
CO.3	-	-	-	-	-	-	-	2	3	-	3	3
CO.4	2	-	-	-	-	2	-	2	3	-	3	3
CO.5	-	-	-	-	-	-	-	2	2	3	3	3
CO*	2	-	-	-	-	2	-	2	2.6	3	3	3

UNIT – I

ELECTRONIC BUSINESS

“The Internet is becoming the town square for the global village of tomorrow” – Bill Gates

Unit Overview

This unit introduces the fundamental concepts of Electronic Business (E-Business) and Electronic Commerce (E-Commerce). It explains how digital technologies and the Internet have transformed traditional business operations by enabling online communication, transactions, and service delivery. The unit also covers Internet services, online shopping, opportunities offered by E-Business, and the challenges organizations face in implementing digital business models. Students will gain a foundational understanding of how businesses leverage electronic platforms to improve efficiency, customer satisfaction, and global reach.

Key Terminologies

Term	Meaning
E-Business	Conducting all business activities using digital technologies and the Internet.
E-Commerce	Buying and selling goods and services electronically.
Internet Commerce (I-Commerce)	Commercial transactions conducted through the Internet.
Digital Business	Business operations supported by digital technologies and data-driven processes.
Online Shopping	Purchasing products or services through Internet-based platforms.
Website	An online platform that provides information or business services.
Web Portal	A website that offers multiple services and information from different sources.
Cloud Computing	Delivery of computing services over the Internet.
Digital Transformation	Integration of digital technologies into business processes.
Customer Experience (CX)	The overall experience of customers while interacting with a business.

Learning Objectives

After completing this unit, students will be able to:

1. **Define** the concepts of E-Business, E-Commerce, and Internet commerce.
2. **Differentiate** between E-Business and E-Commerce with suitable examples.
3. **Explain** the role of Internet services and online shopping in modern business.
4. **Identify** the opportunities, benefits, and challenges of electronic business.
5. **Analyse** how digital technologies are transforming traditional business operations.

Learning Outcome

Students learn how traditional businesses can digitally transform using e-business technologies.

Importance of Studying this Unit

Electronic Business has transformed the way organizations operate by integrating digital technologies into business processes. Understanding the fundamentals of E-Business helps students recognize how businesses use the Internet to improve communication, customer service, marketing, and operational efficiency. This unit provides the foundation for all subsequent units by introducing the core concepts, opportunities, and challenges of digital business. It also enables students to appreciate the role of technology in driving innovation and competitiveness in modern organizations.

E-Business: An Introduction

Electronic Business (E-Business) represents a fundamental shift in how companies operate, communicate, and create value. It goes far beyond just buying and selling online to encompass the entire digital transformation of core business processes.

Definition of E-Business

E-Business (Electronic Business) is the comprehensive use of digital technologies and the internet to run and manage an entire business enterprise.

Meaning of E-Business

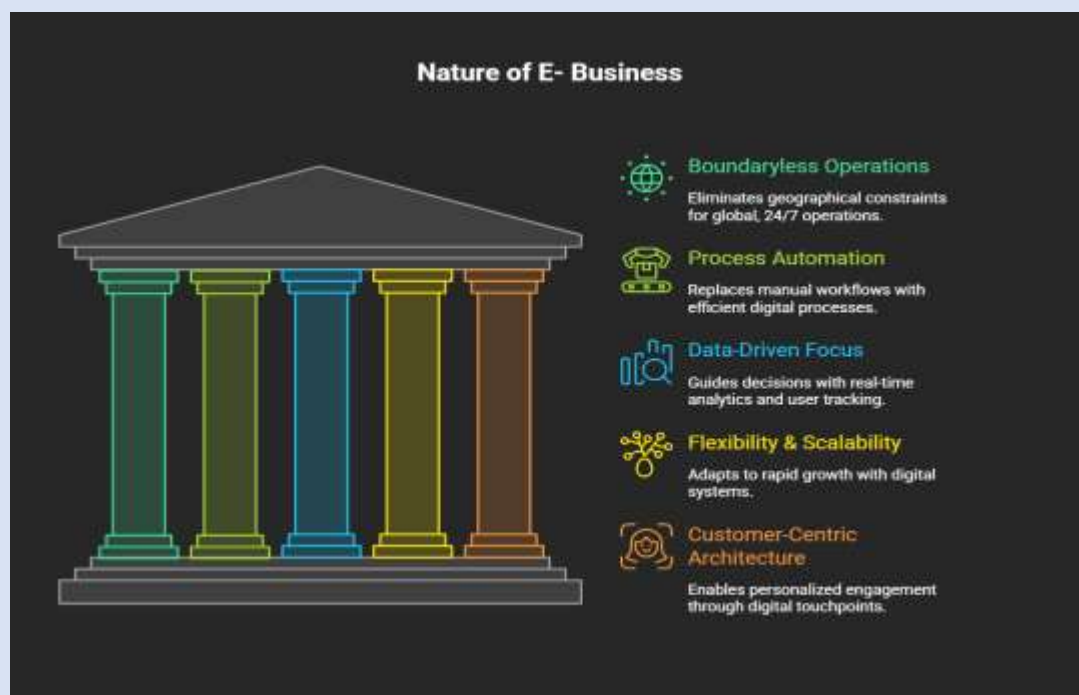
E-Business is the administration and execution of any business activity using digital networks, electronic media, and information technologies. Coined by IBM in 1997, the term expands on electronic commerce (e-commerce) by integrating front-office customer interactions with back-office internal processes.

E-Business vs. E-Commerce:

While **E-Commerce** strictly refers to the outward-facing transactional buying and selling of goods and services online, **E-Business** is the broader umbrella. It includes e-commerce but also covers internal activities like supply chain management, human resources, production planning, and customer relationship management.

Nature of E-Business

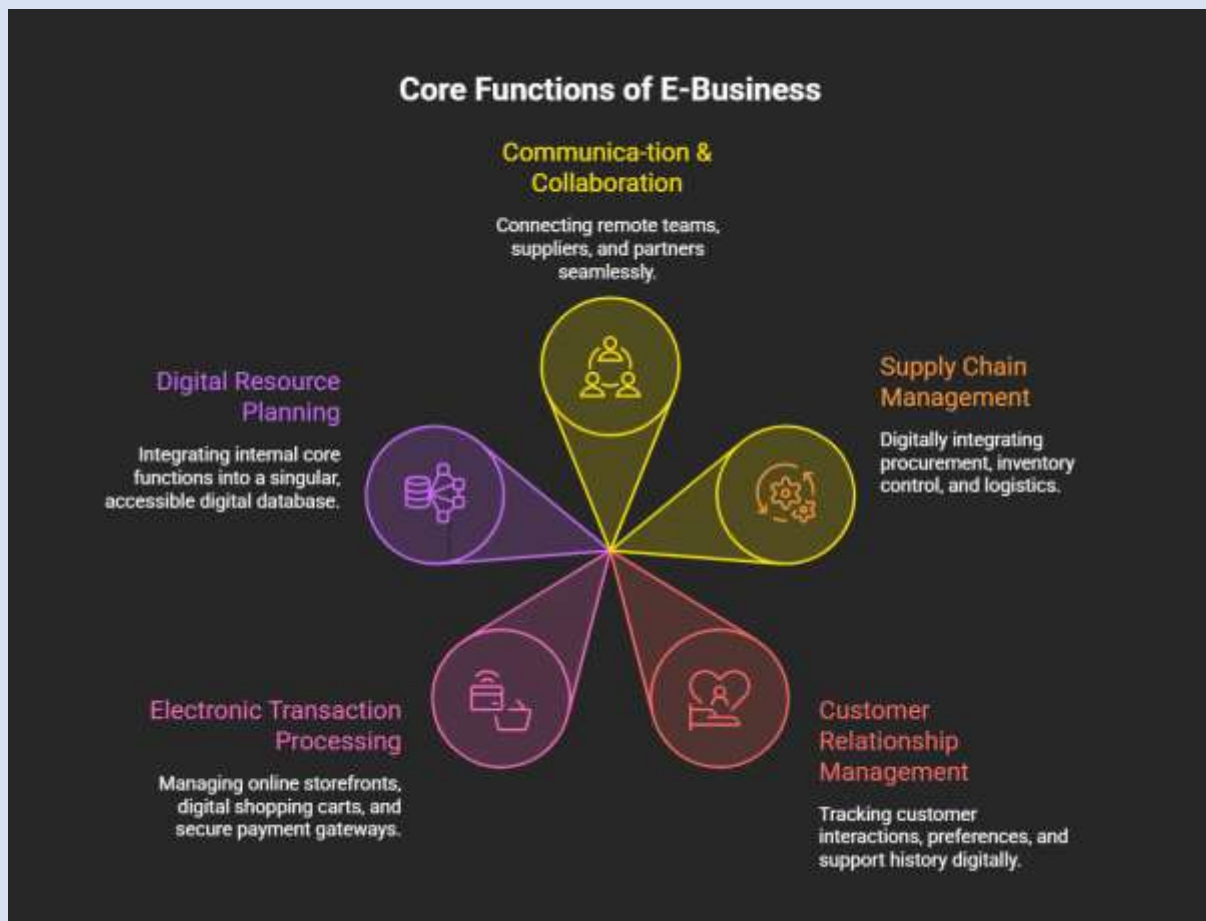
The inherent characteristics that define E-Business include:



- **Boundaryless Operations:** It eliminates geographical and physical constraints, allowing a business to operate globally 24/7/365.
- **Process Automation:** It replaces manual, paper-based workflows with automated, digital processes (e.g., automated inventory tracking, digital invoicing).
- **Data-Driven Focus:** Decisions are guided by real-time analytics, user behaviour tracking, and digital transaction history.
- **High Flexibility & Scalability:** Digital systems can handle rapid increases in transaction volume or user bases far more easily than traditional physical infrastructure.
- **Customer-Centric Architecture:** It enables direct, personalized engagement with consumers through various digital touchpoints.

Core Functions of E-Business

E-Business architecture reorganizes traditional corporate operations into interconnected, digital functions:



- **Enterprise Communication & Collaboration:** Utilizing tools like email, video conferencing, and shared project spaces to connect remote teams, suppliers, and partners seamlessly.
- **Supply Chain Management (SCM):** Digitally integrating procurement, inventory control, and logistics to ensure materials and products move efficiently with minimal waste.

- **Customer Relationship Management (CRM):** Tracking customer interactions, preferences, and support history digitally to maximize retention and optimize marketing.
- **Electronic Transaction Processing:** Managing online storefronts, digital shopping carts, and secure electronic payment gateways.
- **Digital Resource Planning (ERP):** Integrating internal core functions—like finance, manufacturing, and HR—into a singular, accessible digital database.

Significance of E-Business

In the modern corporate landscape, adopting e-business strategies is no longer optional; it is vital for survival.

- **Market Demanded Relevance:** Consumer behaviour has permanently shifted toward digital-first discovery and purchasing.
- **Informed Decision Making:** Access to vast amounts of behavioural and operational data allows leadership to pivot strategies with high precision.
- **Levelling the Playing Field:** Small and medium enterprises (SMEs) can leverage digital infrastructure to compete globally against multinational corporations without needing massive physical capital.

Advantages of E-Business

Category	Advantage	Impact
For the Business	Global Reach	Expands the target market from a local neighbourhood to anyone with an internet connection.
	Lower Operational Costs	Reduces overhead from brick-and-mortar rent, manual paperwork, and excessive retail staffing.
	Inventory Optimization	Just-in-time inventory models reduce holding costs by linking sales data directly to supplier orders.
For the Customer	Convenience	Allows shopping, tracking orders, and managing accounts anytime, anywhere.
	Price Comparison	Enables consumers to find the best deals quickly across multiple digital platforms.
	Instant Delivery	Digital goods (software, ebooks, streaming) are delivered immediately upon purchase.

E-Commerce



Electronic Commerce (E-commerce) has completely transformed how business is done. At its core, it is about buying and selling goods or services using the internet, alongside the transfer of money and data to execute these transactions.

Here is a breakdown of how it functions, followed by its main advantages and disadvantages.

Core Functions of E-Commerce

E-commerce isn't just an online shopping cart; it relies on several moving parts working together to create a seamless transaction:

- **Electronic Marketing:** Driving traffic to the store through SEO (Search Engine Optimization), targeted social media ads, and personalized email marketing.
- **Online Transaction Processing (OTP):** Managing the secure, real-time processing of sales, updating inventory automatically the moment a customer buys.
- **Electronic Data Interchange (EDI):** The business-to-business (B2B) transmission of data, allowing companies to share shipping schedules, invoices, and inventory needs instantly without paperwork.
- **Automated Supply Chain Management:** Tracking products smoothly from the manufacturing floor to warehouses, and finally to the customer's doorstep.
- **Customer Relationship Management (CRM):** Tracking customer behaviour, handling support tickets, and offering personalized recommendations to keep buyers coming back.
-

Advantages of E-Commerce

E-commerce offers massive benefits, but the perks look a bit different depending on whether you are the shop owner or the shopper.



For Businesses

- **Global Reach:** A physical store is limited by its neighbourhood. An online storefront can sell to anyone, anywhere in the world, without setting up a brick-and-mortar shop.
- **Drastically Lower Costs:** Rent, utilities, in-store security, and a massive floor staff aren't necessary. This keeps overhead remarkably low.
- **24/7 Availability:** The store never closes. It generates revenue while the owners are asleep, through holidays, and during storms.
- **Data-Driven Insights:** Online tools track exactly what a user clicked, how long they stayed, and what they left in their cart. This allows for hyper-targeted marketing.

For Customers

- **Ultimate Convenience:** Shopping can happen from bed, on a lunch break, or while riding the bus. No driving, parking, or waiting in long checkout lines.
- **Endless Variety:** Buyers aren't limited by what a local store has on its shelves. They can compare millions of products across dozens of sites in minutes.
- **Easy Price Comparison:** Tools and search engines let shoppers find the absolute lowest price or the best discount code with a few clicks.

Disadvantages of E-Commerce

Despite the massive growth, e-commerce comes with specific friction points and risks that traditional retail doesn't face.

For Businesses

- **Intense Competition:** Because the barrier to entry is low, everyone is doing it. Standing out in a sea of global competitors requires heavy spending on digital ads.
- **Technical Dependencies:** If the website crashes, the payment gateway fails, or the hosting server goes down, the business completely stops making money.
- **Shipping & Logistics Headaches:** Managing shipping delays, broken items, missing packages, and international customs can become a logistical nightmare.

For Customers

- **The "Touch and Feel" Gap:** You cannot try on the clothes, test the couch, or check the build quality of an item before handing over your money. This often leads to high return rates.
- **Security & Privacy Risks:** Cyber threats, data breaches, and identity theft are constant concerns. Customers must trust the site with their credit card details.
- **Delayed Gratification:** Unlike traditional retail where you walk out holding your purchase, e-commerce requires waiting days, or even weeks, for delivery.

Internet Services

Internet Services refer to the various facilities and applications offered through the Internet that enable users to communicate, share information, perform online transactions, access digital resources, and conduct business activities efficiently.

Internet Service	Business Use
E-mail	Official communication
Cloud Computing	Data storage and collaboration
Video Conferencing	Virtual meetings
E-commerce	Online sales
Online Banking	Digital payments
Social Media	Marketing and customer engagement
Search Engines	Market research
FTP	Website management

Online Shopping

Online shopping is the process of buying goods or services over the Internet using websites or mobile applications. Customers can browse products, compare prices, place orders, make online payments, and have products delivered to their doorstep.

Features

- Available 24×7
- Wide variety of products
- Easy price comparison
- Secure online payment options
- Home delivery
- Order tracking
- Customer reviews and ratings
- Easy return and refund policies

Advantages

- Saves time and travel costs
- Convenient shopping from anywhere
- Access to global products
- Attractive discounts and offers
- Multiple payment methods
- Faster purchasing process

Disadvantages

- No physical inspection of products
- Delivery delays
- Risk of online fraud
- Product quality may differ from expectations
- Return and refund issues



Applications

- Buying electronics, clothing, groceries, books, medicines, and household items
- Booking travel tickets and hotel reservations
- Purchasing digital products and subscriptions

Major E-Commerce Opportunities Across Industries

1. Retail Industry

The retail industry has been one of the largest beneficiaries of e-commerce.

Opportunities

- Online stores operating 24×7
- Global customer reach
- Personalized shopping experiences

Examples: Amazon, Flipkart, Myntra

2. Manufacturing Industry

Manufacturers use e-commerce platforms to streamline procurement and sales.

Opportunities

- Business-to-Business (B2B) sales
- Direct-to-Consumer (D2C) selling
- Online procurement of raw materials

3. Banking and Financial Services

Financial institutions offer digital services through secure online platforms.

Opportunities

- Internet banking
- Mobile banking
- Online fund transfers

Examples: UPI, Net Banking, Mobile Banking Apps

4. Healthcare Industry

Healthcare providers use e-commerce to improve accessibility and patient care.

Opportunities

- Online doctor consultations (Telemedicine)
- Online pharmacy services
- Appointment booking

5. Education Industry

Educational institutions use e-commerce to provide digital learning solutions.

Opportunities

- Online courses
- E-books
- Virtual classrooms

Examples: Coursera, Udemy, SWAYAM

6. Tourism and Hospitality

Travel companies use e-commerce to simplify travel planning.

Opportunities

- Online ticket booking
- Hotel reservations
- Tour package booking

Examples: MakeMyTrip, Booking.com

7. Agriculture

Digital platforms connect farmers directly with buyers.

Opportunities

- Online agricultural marketplaces
- Crop price information
- Farm equipment purchasing

8. Entertainment Industry

Entertainment companies distribute digital content through online platforms.

Opportunities

- Video streaming
- Music streaming
- Online gaming

Examples: YouTube, Netflix, Spotify

9. Food and Restaurant Industry

Restaurants increasingly depend on online ordering systems.

Opportunities

- Food delivery
- Online table reservations

- Digital menus

Examples: Swiggy, Zomato

10. Logistics and Supply Chain

Logistics companies use digital platforms for efficient delivery management.

Opportunities

- Real-time shipment tracking
- Warehouse automation
- Route optimization

Questions Section

2 Marks Questions:

Q.No	Question	Bloom's Level
1	Define E-Business.	L1
2	Define E-Commerce.	L1
3	List any four Internet services used in E-Business.	L1
4	State any four advantages of E-Business.	L1
5	Differentiate between E-Business and E-Commerce.	L2
6	Explain the concept of Internet Commerce.	L2
7	Identify the opportunities provided by E-Business.	L1
8	Describe online shopping and its significance.	L2
9	State the major challenges faced by E-Business.	L1
10	Summarize the importance of digital business in today's economy.	L2

10 Marks Questions:

Q.No	Question	Bloom's Level
1	Analyze the impact of E-Business on traditional business models with suitable examples.	L4
2	Compare and analyze E-Business and E-Commerce with respect to scope, functions, applications, advantages, and limitations.	L4

Q.No	Question	Bloom's Level
3	Evaluate the opportunities and challenges of implementing E-Business in Indian organizations.	L5
4	Analyze how Internet technologies have transformed business operations and customer relationships.	L4
5	Evaluate the future prospects of E-Business in the digital economy and justify your opinion with suitable examples.	L5

High Order Thinking Questions (L5&L6):

1. A traditional bookstore in Chittoor is losing customers to online retailers. As a business consultant, suggest how the store can transform into an e-business.
2. Compare E-Commerce and E-Business. Which model offers greater long-term competitive advantage? Justify your answer with suitable examples.

Case Study: From Local Store to E-Business

Sri Lakshmi Book House, a bookstore in Chittoor, has been serving customers for more than 20 years. Recently, the owner noticed a significant decline in sales because many customers prefer purchasing books online through Amazon and Flipkart.

To overcome this challenge, the owner launched a website, enabled online ordering, accepted UPI payments, and started promoting books through Instagram and WhatsApp. Within six months, online orders accounted for 40% of total sales, and customers from nearby districts also began purchasing books.

However, the owner faced challenges such as website maintenance, online payment security, and managing deliveries.

Questions

1. Identify the e-business activities adopted by Sri Lakshmi Book House.
2. Explain the difference between E-Business and E-Commerce using this case.
3. What are the advantages gained after implementing e-business?
4. What challenges does the business still face?
5. Suggest additional digital services to improve customer satisfaction.

Reference Book:

Debjani & Bajaj — *E-Commerce* (2005)

Website:

[fatimahAlkreem/e-businessppt](https://www.fatimahAlkreem.com/e-businessppt)

UNIT – II
ELECTRONIC MARKET &
BUSINESS MODELS

“In the world of Internet Customer Service, it’s important to remember your competitor is only one mouse click away” – Doug Warner

Unit Overview

This unit explains how electronic markets facilitate online buying and selling through various digital business models. Students will learn about B2B, B2C, C2C, C2B, and B2G models, along with concepts such as e-shops, e-malls, e-auctions, and e-procurement. The unit highlights the role of electronic marketplaces in improving business efficiency, expanding market reach, and enabling digital transactions.

Key Terminologies

Term	Meaning
Electronic Market	A digital platform where buyers and sellers interact online.
Business Model	A framework describing how a business creates and delivers value.
B2B	Business-to-Business transactions.
B2C	Business-to-Consumer transactions.
C2C	Consumer-to-Consumer transactions.
C2B	Consumer-to-Business transactions.
B2G	Business-to-Government transactions.
E-Shop	An online store operated by a business.
E-Mall	A collection of multiple online stores on a single platform.
E-Auction	An online bidding system for buying or selling products.
E-Procurement	Electronic purchasing of goods and services.
Marketplace	A platform that connects multiple buyers and sellers.

Learning Objectives

After completing this unit, students will be able to:

1. **Describe** the concept and characteristics of electronic markets.
2. **Explain** various e-business models such as B2B, B2C, C2C, C2B, and B2G.
3. **Differentiate** between e-shops, e-malls, and e-procurement systems.
4. **Discuss** the applications of e-auctions, e-brokers, and online marketplaces.
5. **Evaluate** the suitability of different business models for various business scenarios.

Learning Outcome

Students understand e-shops, e-malls, B2B, B2C, and B2G models in a practical context.

Importance of Studying this Unit

Businesses today operate in highly competitive digital environments where electronic marketplaces play a crucial role in connecting buyers and sellers across the globe. Studying different electronic business models helps students understand how organizations create value, generate revenue, and

deliver products and services through digital platforms. Knowledge of e-shops, e-mails, e-auctions, and e-procurement prepares students to analyse online business strategies and identify suitable digital business models for different industries.

E-Shops (Electronic Shops)



Definition

An **E-Shop** is an online store where a business sells its products or services directly to customers through the internet. It is the digital version of a traditional retail shop.

Features

- Operates 24/7.
- Displays products with images and descriptions.
- Allows online ordering and payment.
- Provides multiple payment options (credit/debit cards, UPI, net banking, wallets, Cash on Delivery).
- Offers order tracking and customer support.
- Can be accessed through websites or mobile applications.

Advantages

- Convenience of shopping from anywhere.
- Lower operational costs than physical stores.
- Wider customer reach.
- Easy comparison of products.
- Personalized recommendations.
- Faster marketing through digital platforms.

Disadvantages

- Customers cannot physically inspect products.
- Security and privacy concerns.
- Shipping delays.

- Product returns can be inconvenient.
- Dependence on internet connectivity.

Examples

- Amazon
- Flipkart
- Myntra
- Nykaa

E-Malls (Electronic Malls)

Definition

An **E-Mall** is an online marketplace that hosts multiple independent sellers under one digital platform, allowing customers to purchase products from different vendors in one place.

Features

- Multiple sellers offer products.
- Large variety of product categories.
- Centralized payment system.
- Customer reviews and ratings.
- Search and filter options.
- Shopping cart for multiple vendors.

Advantages

- Wide selection of products.
- Competitive pricing.
- Easy comparison between brands.
- One platform for multiple sellers.
- Increased customer trust through reviews.

Disadvantages

- Quality may vary among sellers.
- Counterfeit products may appear.
- Different sellers may have different delivery times.
- Return policies vary.
- High competition among sellers.

Difference between E-Shop and E-Mall

Basis	E-Shop	E-Mall
Ownership	Single business	Multiple businesses
Sellers	One seller	Many sellers
Product Range	Limited to one company	Wide range from different vendors
Example	Nike Online Store	Amazon Marketplace

Examples

- Amazon Marketplace
- Flipkart Marketplace
- eBay
- Etsy

E-Groceries (Electronic Grocery Stores)

Definition

E-Groceries refer to online platforms that sell groceries such as fruits, vegetables, dairy products, packaged foods, beverages, and household essentials, delivering them directly to customers' homes.

Features

- Online grocery catalogue.
- Same-day or scheduled delivery.
- Fresh produce availability.
- Digital payment options.
- Subscription and membership services.
- Discount offers and coupons.
- Order tracking.

Types of E-Grocery Models

1. Inventory-Based Model

- Company owns inventory and warehouses.
- Faster delivery.
- Better quality control.

2. Marketplace Model

- Platform connects customers with local grocery stores.
- Products are supplied by partner retailers.

3. Hyperlocal Delivery Model

- Orders are fulfilled by nearby supermarkets.
- Delivery usually within 10–60 minutes.

Advantages

- Saves time and travel.
- Doorstep delivery.
- Easy price comparison.
- Contactless shopping.
- Regular discounts and cashback offer.
- Convenient for elderly and working professionals.

Disadvantages

- Delivery charges.
- Freshness concerns.
- Stock availability issues.
- Delivery delays during peak demand.
- No physical inspection before purchase.

Examples

- Blinkit
- Zepto
- Instamart
- BigBasket
- Amazon Fresh

Portals

A **Portal** is a web-based platform that serves as a gateway to information, services, applications, and resources available on the internet. It provides users with a single point of access to various types of content and online services.

In an e-business environment, portals help customers, employees, suppliers, and business partners access relevant information efficiently.

Types of Portals

Portals are mainly classified into:

1. Horizontal Portals
2. Vertical Portals

Horizontal Portals

Definition

A **Horizontal Portal** is a portal that provides a broad range of information and services across different topics and industries. It caters to a large and diverse audience.

Features

- Covers multiple subject areas
- Provides general information
- Offers email, news, entertainment, search engines, and shopping services
- Large user base
- Wide content coverage

Examples

- Google
- Yahoo
- MSN

Advantages

- Access to diverse information
- High traffic and visibility
- Suitable for mass audiences
- Multiple services on one platform

Limitations

- Information overload
- Less specialized content
- May not satisfy industry-specific needs

Vertical Portals (Vortals)

Definition

A **Vertical Portal (Vortal)** is a portal that focuses on a specific industry, business sector, profession, or interest group. It provides specialized information and services to a targeted audience.

Features

- Industry-specific information
- Specialized services
- Targeted audience
- Expert content

- Professional networking opportunities

Examples

- WebMD (Healthcare)
- Naukri.com (Jobs)
- ResearchGate (Research and Education)

Advantages

- Relevant and focused information
- Better decision-making
- Industry-specific solutions
- Professional networking

Limitations

- Limited audience
- Narrow content scope
- Less general information

Difference Between Horizontal and Vertical Portals

Basis	Horizontal Portal	Vertical Portal
Coverage	Broad topics	Specific industry/topic
Audience	General public	Targeted users
Information	General information	Specialized information
Content Scope	Wide	Narrow and focused
Purpose	Serve multiple needs	Serve specific needs
Example	Google, Yahoo	Naukri.com, WebMD

Advantages of Portals in E-Business Context

1. Centralized Information Access

Portals provide a single platform where users can access various business services and information.

2. Improved Customer Service

Customers can obtain product details, support services, FAQs, and order information from one location.

3. Enhanced Communication

Portals facilitate communication among customers, suppliers, employees, and business partners.

4. Increased Operational Efficiency

Business processes become faster through automated workflows and integrated systems.

5. Better Collaboration

Employees and business partners can share information, documents, and resources effectively.

6. Personalization

Users receive customized content and recommendations based on their preferences and activities.

7. Cost Reduction

Online information sharing reduces paperwork, administrative expenses, and communication costs.

8. Faster Decision-Making

Real-time access to data and reports helps managers make informed decisions quickly.

9. Increased Business Reach

Organizations can connect with customers globally through internet-based portals.

10. Higher Customer Satisfaction

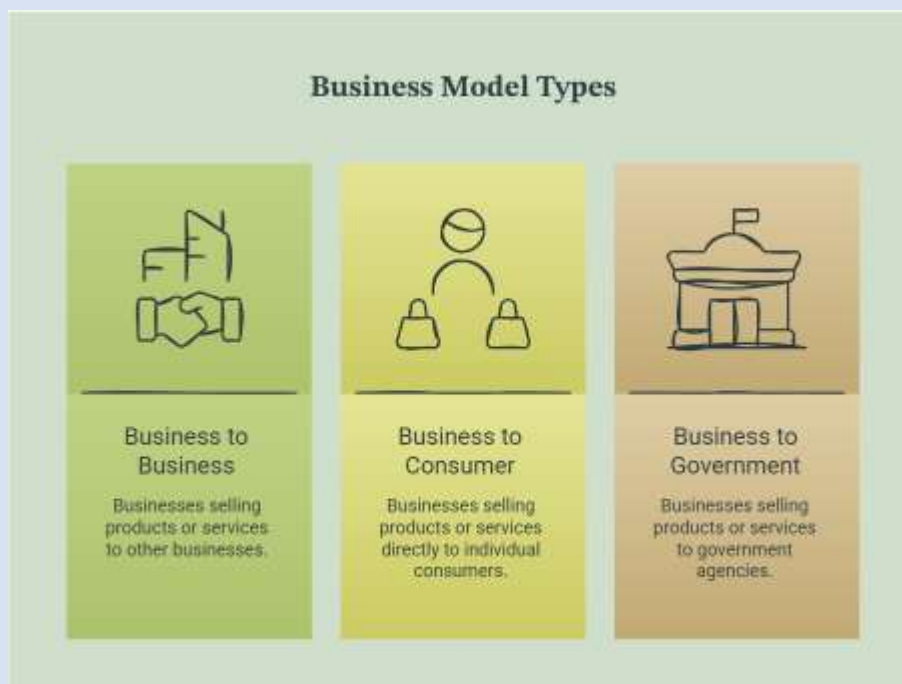
Easy access to services and information improves the overall customer experience.

Business Models

Definition

A **Business Model** is the method by which a business creates value, delivers products or services to customers, and earns revenue.

In **e-business**, business models describe how businesses use the internet to conduct transactions with customers, other businesses, or government organizations.



Business-to-Business (B2B) is a business model where one business sells products or services to another business through online platforms.



Features

- Transactions occur between businesses.
- Usually involves bulk orders.
- Long-term business relationships.
- Larger transaction value.

Advantages

- Faster procurement process.
- Lower operational costs.
- Better supply chain management.
- Builds long-term business relationships.

Examples

- IndiaMART
- Alibaba
- Udaan

Business-to-Consumer (B2C) is a business model where businesses sell products or services directly to individual customers through websites or mobile apps.



Features

- Direct selling to consumers.
- Small quantity purchases.
- Online payment and home delivery.
- Available 24×7.

Advantages

- Wider customer reach.
- Convenient shopping.
- Lower business costs.
- Faster buying process.

Examples

- Amazon
- Flipkart
- Myntra

Business-to-Government (B2G) is a business model where businesses provide goods or services to government departments through online tenders and procurement systems.



Features

- Business deals with government agencies.
- Uses online tendering and bidding.
- Large-value contracts.
- Governed by rules and regulations.

Advantages

- Large business opportunities.
- Transparent procurement process.
- Reduces paperwork.
- Improves efficiency.

Examples

- Government e-procurement portals
- Online tendering systems
- Companies supplying IT services, construction materials, or medical equipment to government departments

Difference Between B2B, B2C, and B2G

Basis	B2B	B2C	B2G
Full Form	Business to Business	Business to Consumer	Business to Government
Buyer	Business	Individual Customer	Government

Transaction Size	Large	Small	Large
Relationship	Long-term	Direct with customers	Contract-based
Examples	IndiaMART, Alibaba	Amazon, Flipkart	E-procurement portals

Auctions

Meaning

An **auction** is a method of buying and selling goods or services in which buyers and sellers participate through a bidding process. In e-business, auctions are conducted online, allowing participants from different locations to bid electronically. The highest bidder generally wins the auction in a forward auction, while the seller offering the lowest price wins in a reverse auction.

Types of Auctions

- **Forward Auction:** A single seller offers products or services to multiple buyers. The highest bidder purchases the product.
- **Reverse Auction:** A single buyer invites multiple sellers to bid. The seller quoting the lowest price is usually selected.

Advantages of Online Auctions

- Ensures transparent pricing.
- Reaches a larger number of buyers and sellers.
- Saves time and transaction costs.
- Provides competitive pricing.
- Increases market efficiency.

Applications

- Government asset auctions
- Procurement of goods and services
- Sale of industrial equipment
- Real estate and vehicle auctions

Question Section

2Marks Questions:

Q.No	Question	Bloom's Level
1	Define an Electronic Market.	L1
2	What is an E-Business Model?	L1
3	Define the B2B business model.	L1
4	Define the B2C business model.	L1
5	Differentiate between B2B and B2C business models.	L2
6	Explain the concept of an E-Shop.	L2
7	Explain the concept of an E-Mall.	L2
8	Identify the purpose of E-Procurement.	L1
9	State the applications of E-Auctions.	L1
10	Differentiate between E-Shop and E-Mall.	L2

10 Marks Questions:

Q.No	Question	Bloom's Level
1	Analyze the characteristics and applications of different E-Business models with suitable examples.	L4
2	Compare and Analyse B2B, B2C, C2C, C2B, and B2G business models.	L4
3	Evaluate the role of electronic marketplaces in improving business efficiency.	L5
4	Analyze the advantages and limitations of E-Shops, E-Malls, E-Auctions, and E-Procurement.	L4
5	Evaluate the suitability of different E-Business models for manufacturing, retail, and service organizations.	L5

High Order Thinking Questions (L5&L4):

1. A company wants to sell industrial machinery. Should it adopt a B2B or B2C business model? Analyse both options and recommend the most suitable one.
2. Flipkart functions as both an e-shop and an e-mall. Analyse how these benefits both customers and sellers.

Case Study: Handmade Crafts Marketplace

Case

Ananya Handicrafts, a small business in Andhra Pradesh, initially sold handmade products through its own website. Although the products were of good quality, customer traffic remained low.

The owner later registered as a seller on Amazon Marketplace and Flipkart Marketplace. She also listed products on IndiaMART for bulk buyers and accepted government orders through the Government e-Marketplace (GeM).

Within one year:

- Customer orders tripled.
- Bulk B2B orders increased.
- Government agencies placed regular orders.
- Competition among sellers also increased.

Questions

1. Identify the different e-business models used in the case.
2. Differentiate between an E-Shop and an E-Mall.
3. Which business model generated bulk orders?
4. Explain the advantages of selling through online marketplaces.
5. Suggest strategies to compete with other online sellers.

Reference Book:

Debjani & Bajaj — *E-Commerce* (2005)

Website:

VikramNani/e-commerce-business-models

UNIT – III
ELECTRONIC PAYMENT SYSTEMS
(EPS)

“Banking is necessary, banks are not” – Bill Gates

Unit Overview

This unit focuses on electronic payment systems and their role in facilitating secure and efficient online transactions. It introduces various payment methods, including credit cards, debit cards, UPI, e-wallets, smart cards, and cryptocurrencies. Students will also learn about Electronic Fund Transfer (EFT), payment infrastructure, and regulatory aspects governing digital payment systems.

Key Terminologies

Term	Meaning
Electronic Payment System (EPS)	A system that enables electronic transfer of money.
UPI	Unified Payments Interface for instant bank transfers.
Credit Card	A payment card that allows users to borrow funds for purchases.
Debit Card	A payment card linked directly to a bank account.
E-Wallet	A digital application used to store payment information electronically.
Digital Wallet	An application for making secure electronic payments.
Smart Card	A card with an embedded microchip for secure transactions.
Electronic Fund Transfer (EFT)	Electronic transfer of money between bank accounts.
Payment Gateway	A service that securely processes online payments.
Cryptocurrency	A decentralized digital currency secured by cryptography.
Tokenization	Replacing sensitive payment information with secure digital tokens.

Learning Objectives

After completing this unit, students will be able to:

1. **Explain** the concept and importance of Electronic Payment Systems (EPS).
2. **Describe** different electronic payment methods, including credit cards, debit cards, UPI, e-wallets, cryptocurrencies, smart cards, and digital wallets.
3. **Illustrate** the working of Electronic Fund Transfer (EFT) in business transactions.
4. **Identify** the infrastructure requirements and regulatory aspects of e-payment systems.
5. **Analyse** the advantages, limitations, and applications of digital payment technologies in modern businesses.

Learning Outcome

Students understand practical implementation of electronic payment systems and related infrastructure

Importance of Studying this Unit

Digital payment systems have become an essential component of modern commerce, enabling secure, fast, and convenient financial transactions. Understanding electronic payment methods such as UPI, credit cards, debit cards, e-wallets, smart cards, and Electronic Fund Transfer (EFT) helps students appreciate how businesses facilitate online transactions efficiently. This unit also introduces the technological infrastructure and regulatory aspects required for secure digital payments, making it highly relevant for today's cashless economy.

Electronic Payment System

An **Electronic Payment System (EPS)** is a method of making payments electronically without using physical cash or paper cheques.

It allows customers to transfer money through computers, smartphones, ATMs, Point of Sale (POS) machines, and the Internet.

Electronic payment systems have become an important part of **E-Commerce, Online Banking, Digital Business, and Government Services.**

Definition

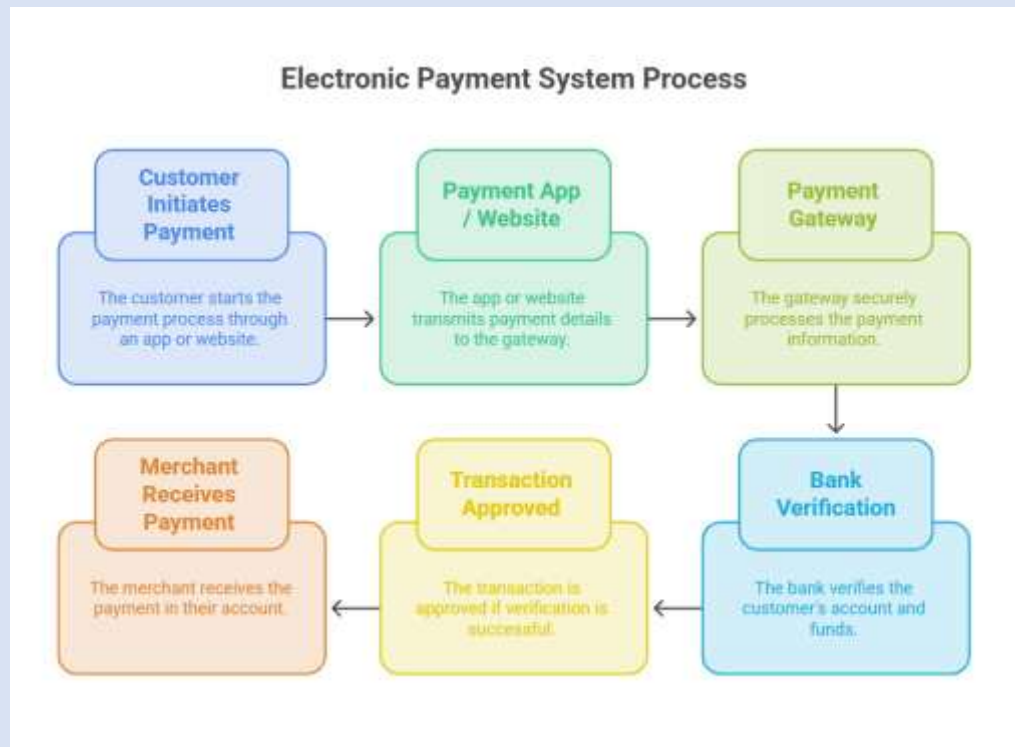
Electronic Payment System (EPS) is a digital method that enables buyers and sellers to transfer money electronically using banking networks or digital platforms.

Need for Electronic Payment Systems

Traditional payment methods have several limitations:

- Carrying cash is risky.
- Writing cheques takes time.
- Manual transactions are slow.
- Difficult to maintain transaction records.
- Limited operating hours.

Electronic payment systems overcome these problems by providing fast and secure transactions.



Evolution of Payment Systems

Period	Payment Method
Ancient Period	Barter System
Early Civilization	Coins
Modern Banking	Paper Currency & Cheques
Internet Era	Debit/Credit Cards
Digital Era	UPI, Mobile Wallets, Internet Banking, QR Payments

Types of Electronic Payments

Electronic payments can be classified into the following categories:

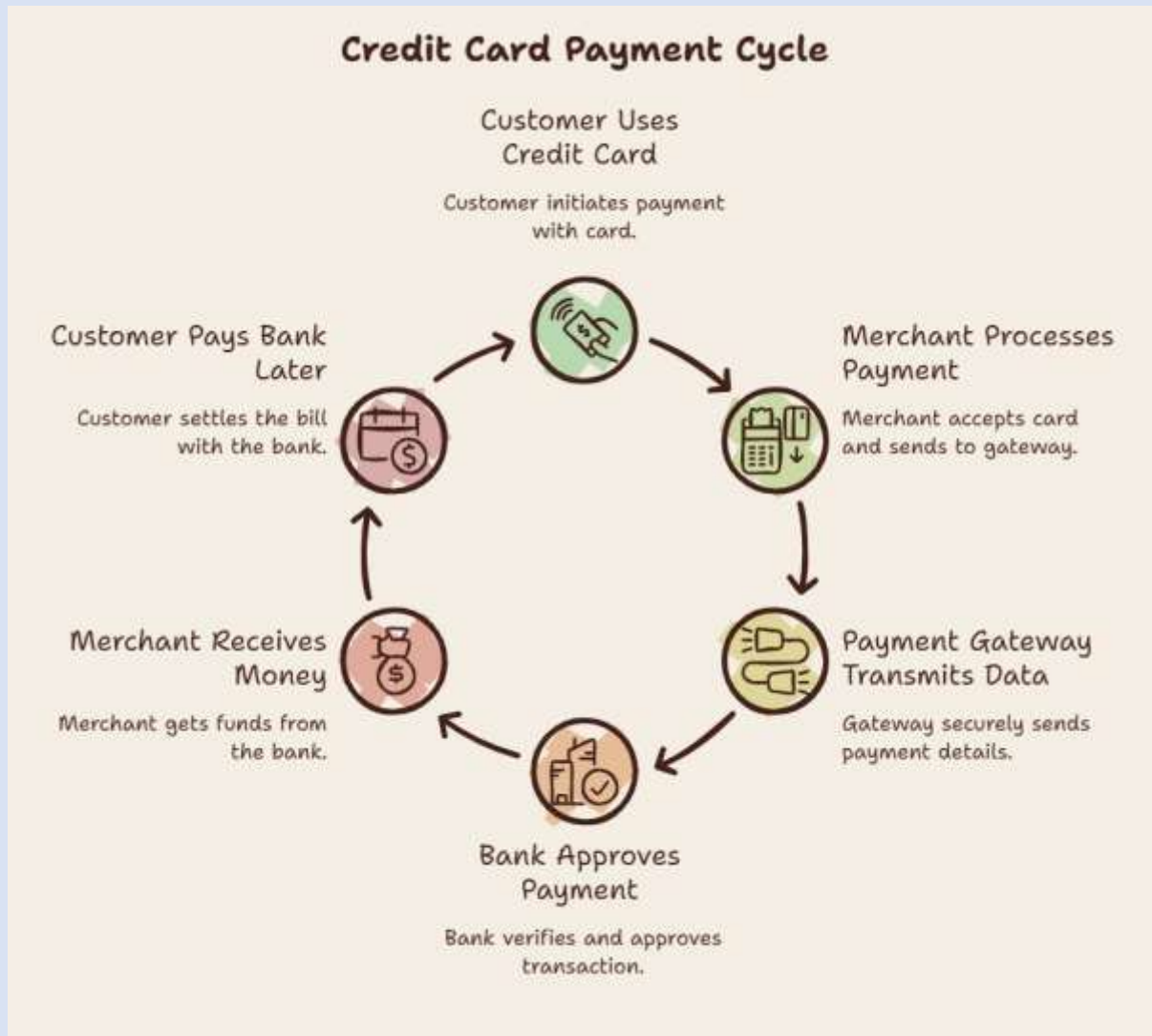
1. Credit Cards
2. Debit Cards
3. E-Wallets
4. Unified Payments Interface (UPI)
5. Cryptocurrencies
6. Smart Cards
7. Digital Wallets

Credit Cards

Definition

A **credit card** is a payment card issued by a bank or financial institution that allows customers to purchase goods and services on credit. The bank pays the merchant immediately, and the customer repays the amount later.

Working Process



Features

- Buy Now, Pay Later facility
- Credit limit assigned by the bank
- Monthly billing cycle
- Reward points and cashback
- Contactless payment support
- International acceptance

- Fraud protection through PIN/OTP

Advantages

- Convenient for online shopping
- Useful during emergencies
- Improves purchasing power
- Reward programs and discounts
- Builds credit history

Disadvantages

- High interest on unpaid balances
- Possibility of overspending
- Annual maintenance charges
- Risk of fraud if card details are stolen

Applications

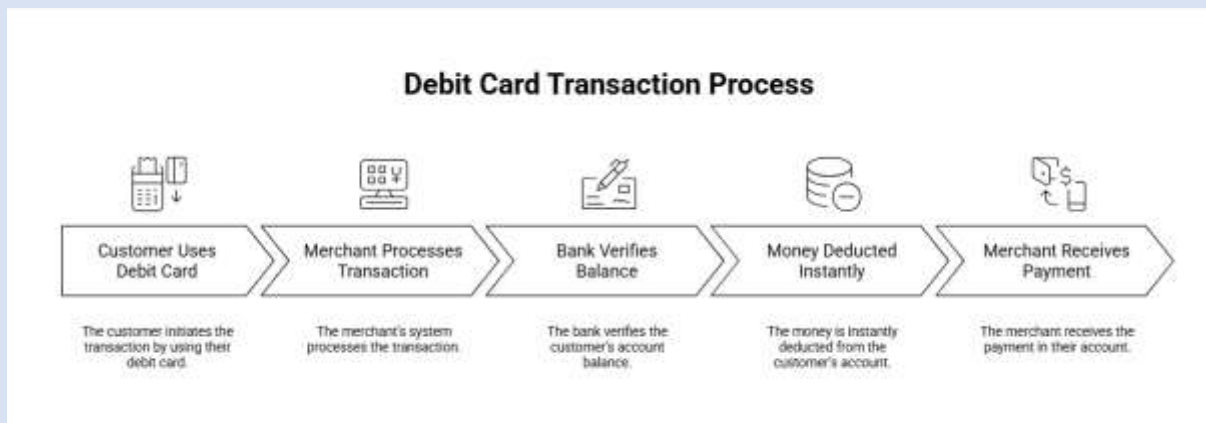
- Online shopping
- Hotel reservations
- Airline ticket booking
- International transactions
- Utility bill payments

Debit Cards

Definition

A **debit card** allows customers to make payments directly from their bank account. The amount is deducted immediately after the transaction.

Working Process



Features

- Direct bank account access

- Instant deduction
- ATM cash withdrawal
- PIN-based authentication
- Online and offline usage
- Contactless payment option

Advantages

- No debt accumulation
- Easy to use
- Widely accepted
- Helps control spending
- No interest charges

Disadvantages

- Requires sufficient account balance
- Card theft risks
- Limited fraud protection compared to credit cards

Applications

- ATM withdrawals
- Retail shopping
- Online purchases
- Bill payments

Difference Between Credit Card and Debit Card

Credit Card	Debit Card
Bank lends money	Uses customer's own money
Payment made later	Payment deducted immediately
Credit limit available	Depends on account balance
Interest charged if unpaid	No interest
Builds credit score	Does not build credit score

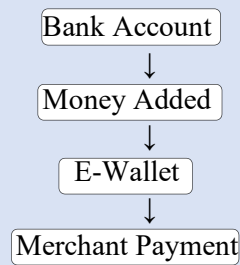
E-Wallets (Electronic Wallets)

Definition

An **E-Wallet** is a digital application that stores money electronically and allows users to make online or offline payments.

Users can load money into the wallet or link it to a bank account or card.

How E-Wallet Works



Features

- Stores money digitally
- QR code payment
- Mobile recharge
- Bill payments
- Online shopping
- Instant money transfer
- Transaction history

Advantages

- Fast transactions
- Easy to use
- Cashback offers
- Less dependence on cash
- Secure authentication

Disadvantages

- Internet required
- Smartphone required
- Wallet balance limitations
- Risk of hacking

Applications

- Shopping
- Recharge
- Movie tickets
- Food delivery
- Utility bills

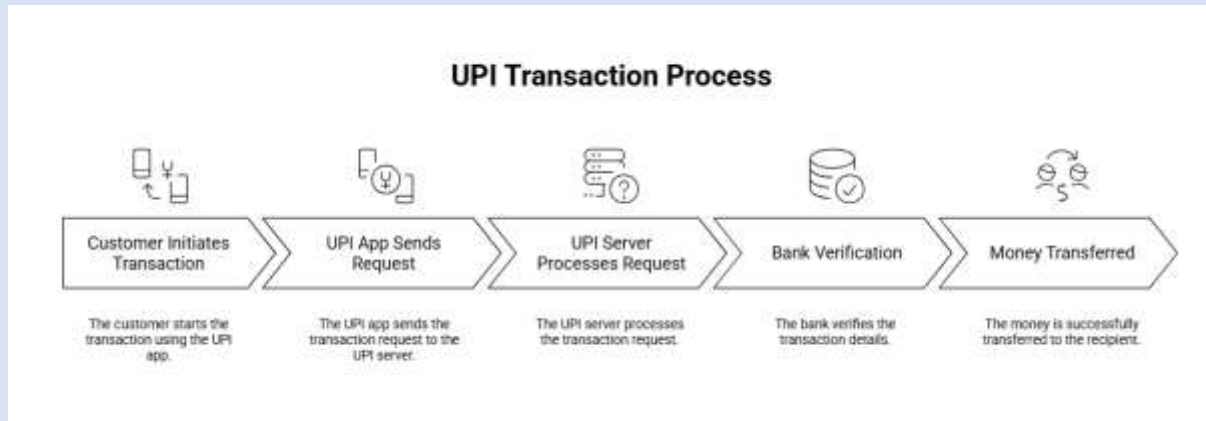
Unified Payments Interface (UPI)

Definition

UPI is an instant real-time payment system that enables direct bank-to-bank money transfer through a mobile application.

Instead of entering account numbers, users can transfer money using a Virtual Payment Address (VPA), QR code, or mobile number linked to their bank account.

Working Process



Features

- Instant transfer
- 24×7 availability
- QR code support
- No account number required
- Multi-bank support
- Mobile-based payment

Advantages

- Fast
- Free or low-cost
- Highly secure
- Easy to use
- Widely accepted

Disadvantages

- Internet required
- Smartphone needed
- Risk of phishing attacks
- Daily transaction limits

Applications

- Merchant payments

- Online shopping
- Utility bills
- Peer-to-peer transfers
- Government services

Cryptocurrencies

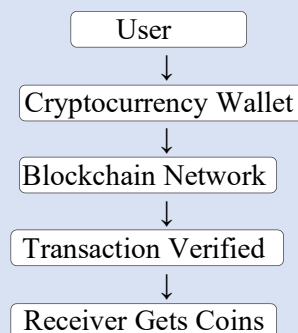
Definition

A **cryptocurrency** is a digital or virtual currency secured using cryptography and typically operated on a decentralized blockchain network.

Unlike traditional currencies, cryptocurrencies are generally not issued or controlled by a central bank.

Examples include Bitcoin, Ethereum, and Litecoin.

Working Process



Features

- Decentralized
- Blockchain technology
- Secure encryption
- Global transactions
- Peer-to-peer transfer
- Transparent ledger

Advantages

- Fast international transfers
- High security
- Lower transaction costs
- Transparency
- No intermediary bank required

Disadvantages

- High price volatility
- Regulatory uncertainty in many countries
- Risk of losing wallet credentials
- Limited merchant acceptance

Applications

- International payments
- Online investments
- Digital assets
- Blockchain-based applications

Smart Cards

Definition

A **Smart Card** is a plastic card containing an embedded microprocessor chip that stores and processes data securely. Smart cards are widely used for secure authentication and electronic payments.

Types of Smart Cards

Contact Smart Card

Requires insertion into a card reader.

Contactless Smart Card

Uses Radio Frequency Identification (RFID) or Near Field Communication (NFC) technology by tapping near the reader.

Features

- Embedded microchip
- Secure data storage
- PIN authentication
- Contact/contactless operation
- Reusable
- High durability

Advantages

- Strong security
- Fast transactions
- Reduced fraud
- Convenient

Disadvantages

- Higher production cost
- Requires compatible card readers
- Damage to chip may prevent use

Applications

- ATM cards
- Metro cards
- Employee ID cards
- Student ID cards
- Health cards

Digital Wallets

Definition

A **Digital Wallet** is software that securely stores payment information such as debit cards, credit cards, and bank account details, allowing users to make electronic payments without carrying physical cards.

Unlike some e-wallets that store a prepaid balance, many digital wallets primarily store payment credentials and facilitate transactions using linked accounts or cards.

Features

- Stores payment credentials
- QR code payment
- Contactless payment
- Biometric authentication
- Multiple card storage
- Transaction history

Advantages

- Highly convenient
- Secure
- Quick checkout
- Reduces need to carry physical cards
- Supports online and offline payments

Disadvantages

- Smartphone dependency
- Internet may be required for many transactions
- Device loss can temporarily affect access
- Cybersecurity risks

Applications

- Online shopping
- Retail payments
- Travel booking
- Food delivery
- Ticket booking

Electronic Fund Transfers (EFT)



An **Electronic Fund Transfer (EFT)** is the digital movement of money from one bank account to another without the direct intervention of bank staff or physical paper documents (like cash or checks). It serves as an umbrella term for various types of digital financial technologies.

Key Types of EFT Platforms

- **Automated Clearing House (ACH):** Centralized networks used for batch-processing high-volume, recurring transactions (e.g., direct deposits, payroll, or recurring utility bills).
- **Wire Transfers:** Premium, high-value transfer systems designed for real-time or same-day domestic and international cross-border transactions (e.g., SWIFT, Fedwire).
- **Electronic Funds Transfer at Point of Sale (EFTPOS):** Credit card, debit card, or contactless (NFC) card reader transactions handled instantly at checkout.
- **Instant/Real-Time Payments:** Near-instant retail payment architectures allowing 24/7 money movement (e.g., IMPS/UPI in India, FedNow in the US, SEPA Instant in Europe).
- **E-Checks (Electronic Checks):** Digital representations of paper checks that capture the routing and account number to authorize a one-time ACH debit.

Role of EFT in Business Transactions

EFT platforms have completely transformed modern commerce by replacing slow, paper-based workflows with dynamic cash management tools.

- **B2B (Business-to-Business) Operations:** Companies use wire transfers or ACH networks to handle raw material procurement, bulk vendor payments, and inventory invoicing smoothly across borders.
- **B2C (Business-to-Consumer) Operations:** E-commerce storefronts and brick-and-mortar retail rely heavily on payment gateways, QR code processing, and card readers to capture instantaneous authorization during checkouts.
- **Cash Flow Optimization & Working Capital:** Unlike physical checks that take days to clear, fast EFT networks settle funds within seconds or hours. This velocity gives businesses accurate, real-time control over their daily cash positions.
- **Automated Bookkeeping & Reconciliation:** Because every transfer generates a unique transaction ID and an immutable digital paper trail, matching bank statements with accounting software is highly automated, cutting out human ledger errors.
- **Drastic Cost Reduction:** Eliminating the printing, postage, security transport, and manual sorting associated with physical cash and paper checks significantly lowers baseline operational costs.

Infrastructure Requirements for E-Payments

To process digital transactions securely and reliably, an e-payment system relies on a tightly layered tech stack consisting of specialized hardware, software, and financial networks.

A. Core Software & Network Architecture

- **Payment Gateways:** Tokenized software applications that act as front-end portals, securely capturing card/account data from online platforms and routing it to the processor.
- **Core Banking Systems (CBS):** The internal back-end ledger platforms used by banks to handle central processing, balance verification, and real-time ledger updates.
- **Interbank Financial Communication Networks:** Highly guarded global or local transmission lines that securely route payment directives between separate financial entities (e.g., **SWIFT** for global banking, local central clearing houses).

B. Hardware & Endpoint Devices

- **POS Terminals & Smart Readers:** Physical checkout hardware equipped with EMV microchip capabilities and Near-Field Communication (NFC) antennas for contactless cards or digital wallets.
- **Hardware Security Modules (HSMs):** Specialized, tamper-resistant physical crypto-processors embedded in banking data centers to handle the generation, storage, and management of sensitive digital keys.

C. Cybersecurity Measures

- **End-to-End Encryption (E2EE):** Systems that scramble transaction data immediately at initiation, keeping it completely unreadable as it transits across the open web.
- **Tokenization:** A protocol that substitutes sensitive card numbers or account details with non-sensitive algorithmic placeholders called "tokens" during transit.

- **Multi-Factor Authentication (MFA):** Systems requiring multiple validation barriers before executing a transfer (e.g., passwords combined with one-time OTPs or biometric markers).

Regulatory Aspects of E-Payments

Because digital finance is a frequent target for criminal fraud, money laundering, and data exploitation, strict regional and global legal frameworks govern e-payments.

A. Consumer Protection & Liability

- **Regulation E (Electronic Fund Transfer Act - US):** Establishes explicit consumer rights, dictates strict rules for error resolution on bank statements, and strictly caps consumer liability for unauthorized debit card/ATM transactions if reported promptly.
- **Chargeback Frameworks:** Strict processing guidelines maintained by payment networks (Visa, Mastercard) allowing consumers to formally dispute unauthorized or fraudulent merchant transactions.

B. Financial Integrity & Security Compliance

- **Anti-Money Laundering (AML) & Know Your Customer (KYC):** Strict international banking standards that require financial service companies to fully verify customer identities and flag suspicious transaction velocities to combat illegal activities.
- **PCI-DSS (Payment Card Industry Data Security Standard):** A universal, mandatory security blueprint enforced on any enterprise storing, processing, or transmitting credit card information to prevent data breaches.
- **PSD2 / PSD3 (Payment Services Directive - Europe):** Pioneered mandatory Strong Customer Authentication (SCA) laws and created structural provisions for Open Banking—allowing verified third-party applications to interface with traditional banking API layers safely.

Question Section

2 Marks Questions:

Q.No	Question	Bloom's Level
1	Define Electronic Payment System (EPS).	L1
2	What is UPI?	L1
3	Define an E-Wallet.	L1
4	Define Electronic Fund Transfer (EFT).	L1
5	Differentiate between Credit Card and Debit Card.	L2
6	Explain the concept of a Smart Card.	L2
7	Describe the purpose of Digital Wallets.	L2
8	State the benefits of Electronic Payment Systems.	L1
9	Define Cryptocurrency.	L1

Q.No	Question	Bloom's Level
10	Explain the role of EFT in business transactions.	L2

10 Marks Questions:

Q.No	Question	Bloom's Level
1	Analyze the role of Electronic Payment Systems in facilitating digital business transactions.	L4
2	Compare and analyze Credit Cards, Debit Cards, UPI, E-Wallets, Smart Cards, and Cryptocurrencies.	L4
3	Evaluate the advantages and limitations of various electronic payment methods in modern business.	L5
4	Analyze the infrastructure requirements and regulatory aspects of Electronic Payment Systems.	L4
5	Evaluate the impact of digital payment technologies on business growth and customer convenience.	L5

High Order Thinking Questions (L5):

1. A rural business owner wants to start accepting digital payments but has limited internet connectivity. Recommend the most appropriate electronic payment system and justify your choice.
2. Compare UPI, credit cards, and cryptocurrencies for online business transactions. Which would you recommend for an Indian startup? Explain with reasons.

Case Study: Digital Payments at FreshMart

Case

FreshMart Supermarket accepted only cash payments. Customers frequently complained about waiting in long billing queues and the lack of digital payment options.

The supermarket introduced:

- UPI QR codes
- Debit and credit card machines
- Digital wallets
- Smart POS terminals

Within three months:

- Billing time reduced by 50%.
- Digital transactions increased to 75%.
- Sales increased due to faster checkout.

However, some customers experienced payment failures because of poor internet connectivity.

Questions

1. List the electronic payment systems used by FreshMart.
2. Explain the advantages of adopting electronic payment systems.
3. What infrastructure is required for smooth digital payments?
4. Identify the challenges faced by FreshMart.
5. Recommend solutions to improve payment reliability.

Reference Book:

Dave Chaffey — *E-Commerce E-Management* (2012)

Website:

[RiteshGoyal/electronic-payment-system](https://www.riteshgoyal.com/electronic-payment-system)

UNIT – IV

E - SECURITY

*“There are only two types of companies: those that have been hacked and those that will be” –
Robert Mueller*

Unit Overview

This unit introduces the importance of information security in E-Business and Electronic Commerce. It discusses common cyber threats, digital signatures, digital certificates, SSL/TLS protocols, encryption, firewalls, and other security mechanisms used to protect online transactions. The unit emphasizes the need for confidentiality, integrity, authenticity, and availability in digital business environments.

Key Terminologies

Term	Meaning
E-Security	Protection of digital information and online business systems.
Cybersecurity	Safeguarding computer systems from cyber threats.
Digital Signature	An electronic method of verifying the authenticity of digital documents.
Digital Certificate	A digital credential that verifies the identity of users or websites.
SSL	Secure Sockets Layer protocol for secure communication.
TLS	Transport Layer Security, the successor to SSL.
Encryption	Converting readable data into a secure coded format.
Firewall	A security system that monitors and filters network traffic.
Phishing	Fraudulent attempts to obtain sensitive information.
Malware	Malicious software designed to damage computer systems.
Authentication	Verifying the identity of users before granting access.

Learning Objectives

After completing this unit, students will be able to:

1. **Identify** common security risks and cyber threats in electronic commerce.
2. **Explain** the role of digital signatures, digital certificates, and encryption in securing online transactions.
3. **Describe** the functions of SSL/TLS protocols and firewalls in protecting e-business systems.
4. **Discuss** best practices for ensuring confidentiality, integrity, availability, and authenticity in e-commerce.
5. **Recommend** appropriate security measures to protect online business applications and customer information.

Learning Outcome

Students learn the importance of cybersecurity in protecting e-commerce platforms and customers.

Importance of Studying this Unit

Security is one of the most critical factors influencing the success of electronic business. As organizations increasingly rely on digital platforms, protecting customer information and business data from cyber threats has become a top priority. This unit equips students with knowledge of digital signatures, encryption, SSL/TLS protocols, firewalls, and other security mechanisms used to safeguard online transactions. Understanding these concepts enables students to recognize potential security risks and recommend appropriate measures to build secure and trustworthy e-business systems.

Security Risks and Challenges in E-Commerce

Electronic commerce operates over an open, public infrastructure: the internet. Because transactions happen remotely without physical interaction, e-commerce platforms must build a digital perimeter that replicates the security of a traditional brick-and-mortar establishment.

The Pillars of Information Security (CIA Triad + 1)

To safely conduct online business, every e-commerce system must enforce these four foundational principles:



- **Confidentiality:** Private information (e.g., credit card numbers, home addresses, account passwords) must only be accessible to authorized entities. Data must be kept hidden from eavesdroppers.
- **Integrity:** Data must not be altered, modified, or deleted during transit between the customer's browser and the store's server. If a customer buys an item for \$10, a hacker must not be able to modify the packet to show \$1.
- **Availability:** The e-commerce storefront, inventory database, and payment gateways must remain functional and accessible 24/7, especially during peak traffic periods (e.g., Black Friday sales).
- **Non-Repudiation:** Mechanics that ensure a party to a transaction cannot deny their actions later. Once a purchase order is digitally authorized, neither the merchant nor the consumer can claim the transaction never occurred.

Key Management Challenges

- **The Trust Deficit:** Merchants must balance security with convenience. Making authentication *too* strict (e.g., excessive passwords or verification screens) causes "cart abandonment," while making it too lax invites fraud.
- **Third-Party Vendor Vulnerabilities:** Modern online stores rely on dozens of third-party plugins (for shipping calculators, review systems, or analytics tracking). If a single third-party plugin is weak, it can compromise the entire store.

Core Cyber Threats Facing E-Commerce

Cyber threats target distinct weaknesses in systems, humans, or software code. They can be broadly categorized into social engineering, exploitation, theft, and malicious code.



A. Phishing (Social Engineering)

- **What it is:** A psychological attack where criminals mimic legitimate organizations to trick users into handing over usernames, passwords, or financial data.
- **Mechanism:** Attackers send spoofed emails or SMS messages (*Smishing*) that look identical to notifications from major brands (e.g., Amazon, PayPal, or a major bank). They often use urgent language ("Your account is suspended! Click here to verify your identity"). The link directs the victim to a fraudulent clone website designed to log their credentials.

B. Hacking (System Exploitation)

- **What it is:** Uncovering and exploiting security vulnerabilities in an e-commerce website's underlying application code, operating system, or network to gain unauthorized administrative access.
- **Primary Methods:**
 - **SQL Injection (SQLi):** If an online shop input field (like a search bar or login box) is poorly programmed, a hacker can input malicious database commands. This forces the backend database to execute unauthorized actions, such as dumping customer credit card lists or deleting files.

- **Cross-Site Scripting (XSS):** Hackers inject malicious scripts into trusted websites. When an innocent customer loads that webpage, the script runs automatically in their browser, allowing the hacker to steal the customer's active session cookies or hijack their account.

C. Identity Theft

- **What it is:** The unauthorized acquisition and fraudulent use of an individual's Personal Identifying Information (PII) to pose as that consumer.
- **Application in E-Commerce:** Attackers buy stolen credit card numbers or databases of user information off the dark web. They use this information to open new store lines of credit, make unauthorized high-value purchases, or practice "Synthetic Identity Fraud" (combining real stolen details with fake details to create an entirely new persona).

D. Malware (Malicious Software)

- **What it is:** Intrusive software intentionally written to cause damage, steal information, or take hostage of computers and servers.
- **Major Types in E-Commerce:**
 - **Ransomware:** Encrypts an e-commerce merchant's critical databases, freezing their operational capabilities. The hackers demand an expensive ransom payment (usually in cryptocurrency) to provide the decryption key.
 - **Keyloggers:** Spyware that runs silently in the background of a merchant's or consumer's computer, tracking and recording every keystroke to harvest passwords and banking credentials.
 - **E-Skimming (Magecart Attacks):** Attackers inject malicious JavaScript directly into an online store's checkout page code. When a customer types their credit card number during a purchase, the code silently copies and routes those payment details directly to the hacker's server without disrupting the transaction.

Digital Signatures and Digital Certificates

To ensure authenticity and non-repudiation in a digital environment where the parties cannot see each other, the internet relies on **Public Key Infrastructure (PKI)**. PKI uses asymmetric encryption, which relies on a mathematically paired set of keys: a **Public Key** (shared with everyone) and a **Private Key** (kept secret by the owner).

A. Digital Signatures

A digital signature acts as a tamper-evident, mathematical seal. It proves two things: the document originates from the specific sender, and it has not been modified since it was signed.

How a Digital Signature is Created and Verified:

1. **Hashing:** The sender uses a mathematical algorithm (like SHA-256) to convert the electronic document or transaction data into a unique, fixed-length string of characters called a **Message Digest** (or hash). Think of this as the document's unique digital fingerprint.
2. **Signing:** The sender encrypts this message digest using their own **Private Key**. This encrypted hash is the **Digital Signature**. It is attached to the document and sent.

3. **Decryption:** The recipient receives the document and decrypts the digital signature using the sender's widely distributed **Public Key**. This reveals the original message digest calculated by the sender.
4. **Comparison:** The recipient runs the incoming document through the exact same hashing algorithm independently to create a new message digest.
5. **The Verdict:** If the recipient's calculated digest matches the decrypted digest perfectly, it proves that the document was not altered in transit, and it genuinely came from the holder of that private key.

B. Digital Certificates

A digital signature only works if you are certain that the public key you are using actually belongs to the person or company you think it does. A **Digital Certificate** solves this problem by binding a public key to an absolute identity.

- **The Certificate Authority (CA):** Digital certificates are issued, signed, and validated by trusted independent third-party institutions called Certificate Authorities (e.g., DigiCert, Let's Encrypt). They act as digital passport offices.
- **Core Contents of a Digital Certificate:**
 - The domain name or organization identity.
 - The owner's verified Public Key.
 - The issuing Certificate Authority's name.
 - Valid start and expiration dates.
 - The CA's own digital signature, ensuring the certificate itself has not been faked.

Security Protocols Over Public Networks

Standard data transmission across the web uses **HTTP (HyperText Transfer Protocol)**. However, HTTP sends data across the internet in completely unencrypted plaintext. If a customer enters a password or credit card into an HTTP site, any network intermediary (like an open Wi-Fi router or an internet service provider) can read that sensitive data using basic packet-sniffing tools.

To fix this vulnerability, security protocols wrap HTTP traffic inside an encrypted tunnel, transforming it into **HTTPS (HTTP Secure)**.

SSL vs. TLS

- **SSL (Secure Sockets Layer):** Developed by Netscape in 1995 to secure web traffic. Over time, cryptographic flaws were found in SSL 2.0 and SSL 3.0. It is now completely deprecated and unsafe to use.
- **TLS (Transport Layer Security):** The modern, vastly upgraded successor to SSL. While many people casually use the term "SSL," modern secure websites are running **TLS (specifically TLS 1.2 or TLS 1.3)**.

The TLS Handshake (How Encrypted Connections are Made)

Before any e-commerce transaction details are exchanged, the user's browser and the store's web server perform a multi-step negotiation called a **TLS Handshake**:

1. **Client Hello:** The user's web browser contacts the server, requesting a secure session and presenting a list of cryptographic algorithms (Cipher Suites) it knows how to use.
2. **Server Hello & Certificate Delivery:** The server responds, selects a compatible cipher suite, and transmits its **Digital Certificate** (containing its public key) to the browser.
3. **Verification:** The browser checks the certificate against its built-in database of trusted Certificate Authorities. It verifies that the certificate is valid, unexpired, and matches the website's real URL.
4. **Session Key Generation:** Using asymmetric encryption, the browser and server securely exchange or calculate a unique, temporary **Symmetric Session Key**.
5. **Symmetric Encryption Begins:** Asymmetric encryption is mathematically slow, so it is only used to set up the connection safely. Once both sides possess the secret Session Key, they switch to high-speed symmetric encryption. Every web request, credit card submission, or page load for the rest of that visit is scrambled using this temporary key.

Firewalls in Securing E-Business Platforms

A **Firewall** is a specialized network security device or software program that monitors and controls incoming and outgoing network traffic based on a set of predetermined security rules. It establishes a protective barrier between a secure, trusted internal network and an untrusted network (the public internet).

Types of Firewalls Applied to E-Commerce Infrastructure

1. Packet Filtering Firewalls

Operating at the network layer, these firewalls inspect raw packets of data passing through the network. They look only at superficial metadata: the Source IP address, Destination IP address, protocol type, and port numbers. If a packet violates a rule (e.g., trying to access an internal administrative port from an external IP), it is blocked. They are fast but cannot look *inside* the packet payload to see what information it contains.

2. Next-Generation Firewalls (NGFW)

NGFWs do everything a standard packet filter does, but they add **Deep Packet Inspection (DPI)**. They open up the data payloads inside the network packets to analyze their actual content, matching them against known signatures of malware, virus activity, or unauthorized corporate data exfiltration.

3. Web Application Firewalls (WAF)

A **WAF is the most critical firewall tier for an online business**. While standard firewalls protect the perimeter network, a WAF sits directly in front of the web application itself, analyzing application-layer traffic (Layer 7 of the OSI model).

- **E-Commerce Specific Defense:** A WAF reads incoming HTTP/HTTPS traffic dynamically. It is specifically calibrated to recognize and neutralize web application attack patterns, instantly blocking SQL Injection attempts, Cross-Site Scripting (XSS) code, and automated malicious botnets designed to buy out limited store inventory before real humans can check out.

Questions Section:

2 Marks Questions:

Q.No	Question	Bloom's Level
1	Define E-Security.	L1
2	What is Phishing?	L1
3	Define Digital Signature.	L1
4	Define Digital Certificate.	L1
5	Differentiate between SSL and TLS.	L2
6	Explain the purpose of a Firewall.	L2
7	State the objectives of E-Commerce security.	L1
8	Describe Identity Theft.	L2
9	List any four cyber threats in E-Commerce.	L1
10	Explain the role of encryption in E-Commerce security.	L2

10 Marks Questions:

Q.No	Question	Bloom's Level
1	Analyze the major security threats and challenges in Electronic Commerce.	L4
2	Analyze the working of Digital Signatures and Digital Certificates in securing online transactions.	L4
3	Evaluate the effectiveness of SSL/TLS protocols and Firewalls in protecting E-Commerce applications.	L5
4	Analyze different cyber-attacks affecting E-Commerce and recommend suitable preventive measures.	L5
5	Evaluate the importance of information security in building customer trust in E-Business.	L5

High Order Thinking Questions (L6&L5):

1. An online shopping website has experienced repeated phishing attacks on its customers. As a cybersecurity consultant, propose measures to improve its security.
2. Do you think digital signatures alone are sufficient to secure online transactions? Support your answer with suitable arguments.

Case Study: Cyber Attack on FashionHub

Case

FashionHub, an online clothing retailer, received several customer complaints stating that fake emails requesting password verification were being sent in the company's name.

Some customers unknowingly entered their credentials on fake websites, resulting in unauthorized purchases.

The company responded by implementing:

- SSL certificates
- Two-factor authentication (2FA)
- Digital certificates
- Firewalls
- Customer awareness campaigns

The number of successful phishing attacks reduced significantly.

Questions

1. Identify the cyber threat described in the case.
2. Explain how phishing affects customers and businesses.
3. What security measures were implemented?
4. Why are SSL/TLS protocols important in e-commerce?
5. Suggest additional methods to improve e-security.

Reference Book:

Henry Chan — *E-Commerce Fundamentals and Application* (2007)

Website:

WelingkarDLP/electronic-security

UNIT – V

E - MARKETING

“The aim of marketing is to know and understand the customer so well the product or service fits him & sells itself” – Peter Drucker

Unit Overview

This unit introduces the concepts and strategies of electronic marketing used by businesses to promote products and services online. It covers Internet advertising, online market research, branding, social media marketing, email marketing, analytics, electronic customer relationship management (e-CRM), and electronic supply chain management (e-SCM). Students will understand how digital marketing technologies help organizations attract, engage, and retain customers.

Key Terminologies

Term	Meaning
E-Marketing	Marketing products and services using digital technologies.
Digital Marketing	Promotion of products through online channels.
Internet Advertising	Displaying advertisements on websites, search engines, and social media.
SEO	Search Engine Optimization to improve website visibility.
SEM	Search Engine Marketing using paid advertisements.
Social Media Marketing (SMM)	Marketing through social networking platforms.
Email Marketing	Promoting products through email campaigns.
Online Market Research	Collecting and analyzing market data through digital platforms.
Analytics	Measuring and analyzing digital marketing performance.
E-CRM	Electronic Customer Relationship Management for managing customer interactions.
E-SCM	Electronic Supply Chain Management using digital technologies.
Conversion Rate	Percentage of visitors who complete a desired action on a website.

Learning Objectives

After completing this unit, students will be able to:

1. **Explain** the concepts and importance of online marketing and Internet advertising.
2. **Describe** various digital advertising methods and online market research techniques.
3. **Discuss** the process of e-marketing planning, branding, and social media marketing.
4. **Explain** the role of analytics, e-CRM, and e-SCM in improving business performance.
5. **Apply** digital marketing concepts to develop effective e-business strategies.

Importance of Studying this Unit

Digital marketing has revolutionized the way organizations reach, engage, and retain customers. This unit introduces students to modern online marketing strategies, including Internet advertising, search

engine optimization (SEO), social media marketing, email marketing, analytics, e-CRM, and e-SCM. Studying these concepts enables students to understand how businesses leverage digital channels to enhance customer relationships, improve operational efficiency, and achieve sustainable competitive advantage in an increasingly digital marketplace.

Learning Outcome

Students understand how digital marketing, analytics, and customer relationship management contribute to business growth.

Online Marketing



Online marketing (also known as digital marketing) is the practice of leveraging web-based channels to spread a message about a company's brand, products, or services to its potential customers.

Below are comprehensive notes outlining the core aspects and the distinct advantages of online marketing over traditional methods.

1. What is Online Marketing?

Online marketing combines the creative and technical aspects of the internet, including design, development, advertising, and sales. It relies on a variety of digital channels to connect with audiences where they spend a large portion of their time: online.

Core Channels Include:

- **Search Engine Optimization (SEO):** Optimizing website content to rank higher in organic search engine results.
- **Social Media Marketing (SMM):** Engaging audiences on platforms like Instagram, LinkedIn, TikTok, and YouTube.
- **Pay-Per-Click Advertising (PPC):** Paid ads that appear on search engines or social networks where the business pays per click.
- **Content & Email Marketing:** Nurturing leads and building brand loyalty by distributing valuable articles, videos, and newsletters.



2. Key Advantages of Online Marketing

Compared to traditional media (like billboards, print, and TV), digital marketing provides highly precise control over campaigns, budgets, and audience engagement.

A. Unmatched Hyper-Targeting

Traditional marketing casts a wide, often inefficient net. Online marketing allows businesses to filter audiences based on incredibly specific parameters:

- **Demographics & Geographics:** Targeting users by age, gender, occupation, language, or exact zip code.
- **Behavioral & Psychographic Tracking:** Delivering ads based on active search intent, past purchase history, personal interests, and browsing habits.
- **Lookalike Audiences:** Using machine learning to identify and target new users who share similar characteristics with a business's highest-value existing customers.

B. High Cost-Effectiveness & Scalability

Online marketing levels the playing field, allowing small startups to compete directly with multinational corporations.

- **Low Barrier to Entry:** Setting up a social media page or running a targeted local ad campaign can cost as little as a few dollars.
- **Flexible Budgets:** Unlike a fixed-cost billboard contract, digital ad spend can be increased, paused, or reallocated instantly based on daily performance.

C. Measurability and Data Analytics (ROI)

One of the greatest flaws of traditional marketing is the difficulty in calculating a precise **Return on Investment (ROI)**. Online marketing removes the guesswork by tracking a user's entire digital journey.

- **Real-Time Metrics:** Businesses instantly see impressions (how many saw the ad), clicks, conversions (how many bought), and bounce rates (users leaving immediately).

- **Attribution Modeling:** Software can pinpoint exactly which keyword, ad creative, or blog post directly led to a specific sale.

D. Global Reach vs. Local Precision

Digital marketing effectively erases geographical boundaries.

- **24/7 Global Storefront:** A small home-based business can easily sell products to customers on the other side of the world.
- **Hyper-Local SEO:** Conversely, brick-and-mortar stores can use geo-fencing and "Near Me" search optimization to catch foot traffic exactly when a local customer is searching for their services.

E. Two-Way Customer Engagement

Traditional ads are a monologue; online marketing is a dialogue.

- **Community Building:** Through comment sections, direct messages, and social media reviews, brands can interact directly with their audience, answer questions, and handle customer service publicly.
- **Instant Feedback Loop:** Consumer reactions to a product or campaign are immediately visible, allowing companies to pivot or improve their products rapidly.

3. Comparison: Traditional vs. Online Marketing

Feature	Traditional Marketing (TV, Print, Radio)	Online Marketing (SEO, Social Ads, PPC)
Cost	High fixed costs; expensive to produce and place.	Highly scalable; adjustable budgets starting very low.
Targeting	Broad, mass-audience targeting with low control.	Highly granular (interests, habits, demographics).
Tracking	Delayed, estimated metrics (ratings, circulation).	Instant, 100% measurable real-time analytics.
Flexibility	Rigid; cannot change an ad once it is printed or aired.	Dynamic; easily run A/B tests and modify ads on the fly.
Interactivity	Static, one-way communication.	Highly interactive, two-way communication.

Internet advertising (often called digital advertising) refers to the practice of delivering promotional marketing messages to consumers via internet-connected devices. It bridges the gap between brands and online users by placing ads across websites, social media, search engines, streaming platforms, and mobile apps.

1. Core Formats of Internet Advertising

Digital advertising is highly dynamic and takes many shapes depending on where the target audience spends their time:

- **Paid Search Ads (Pay-Per-Click - PPC):** Text-based advertisements that appear at the top of search engine results pages (like Google) when users look up specific terms. Advertisers only pay when a user clicks the link.
- **Social Media Ads:** Sponsored posts, carousels, and stories on platforms like Instagram, TikTok, LinkedIn, and YouTube. These platforms leverage deep user data to serve ads tailored to hobbies, demographics, and behaviors.
- **Display and Banner Ads:** Visual image or rich-media boxes placed on third-party websites, news outlets, and blogs, typically managed through ad networks like Google Display Network.
- **Native Advertising:** Paid content designed to match the form, feel, and function of the media platform it appears on (e.g., "Sponsored Articles" on news sites or suggested feeds), making them feel less intrusive.
- **Video Advertising:** Pre-roll, mid-roll, or post-roll ads embedded inside video streaming content. Short-form vertical video ads dominate social media feeds today.
- **Programmatic Advertising:** The automated buying and selling of online ad inventory in real-time through algorithmic bidding, matching ads to specific users within milliseconds of a page loading.

2. Key Pricing Models

Unlike traditional media, where space is bought at a flat rate, internet advertising offers flexible, performance-driven payment structures:



Pricing Model		Acronym	How It Works	Best Used For
Cost-Per-Click	CPC		The advertiser pays only when a user actively clicks on the ad.	Driving website traffic and high-intent leads.

Cost-Per-Mille	CPM	The advertiser pays a flat rate per 1,000 impressions (views), regardless of clicks.	Brand awareness and scaling mass visibility.
Cost-Per-Acquisition	CPA	The advertiser pays only when a user completes a specific action (e.g., a purchase or signup).	E-commerce sales and direct response marketing.

3. The 2026 Internet Advertising Landscape

The digital advertising ecosystem has evolved rapidly due to changes in privacy, technology, and user behaviour:

- **AI-Generated Creative and Bidding:** Artificial intelligence now handles real-time audience optimization, automated A/B testing of ad copy, and localized asset generation at a massive scale.
- **The Post-Cookie Era:** With the phasing out of traditional third-party tracking cookies, the industry relies heavily on **First-Party Data** (data collected directly with user consent) and smart contextual targeting (matching ads strictly to the content of the page being read).
- **Search Everywhere Strategy:** Advertising has expanded beyond traditional search engines. Brands heavily target conversational AI platforms, visual search tools, and social media search bars where users increasingly look for product recommendations.
- **Social Commerce:** The barrier between an advertisement and a storefront has completely dissolved. Interactive social media ads now allow users to view, select, checkout, and pay for an item directly inside the ad itself.

Advertisement Methods:

To get maximum return on investment, modern businesses rarely rely on a single advertising method. Instead, they mix and match different channels depending on their target audience, campaign goals, and budget.

These comprehensive notes cover the primary methods of advertising, categorized by their execution and delivery platforms.

1. Digital & Internet-Based Methods

Digital methods dominate the modern advertising space due to their precise targeting capabilities and measurable data.

- **Search Engine Marketing (SEM / PPC):** Placing text ads at the very top of search engine results pages (like Google). Because these ads trigger based on specific keywords typed by a user, they capture high-intent buyers exactly when they are looking for a solution.
- **Social Media Advertising:** Running highly tailored image, carousel, or video campaigns across platforms like Instagram, TikTok, LinkedIn, and YouTube. These platforms leverage deep behavioral data, allowing brands to target users based on their hobbies, career paths, or buying patterns.

- **Display & Banner Advertising:** Visual text or image boxes placed across a vast network of third-party websites, news portals, and blogs.
- **Native Advertising:** Paid content designed to mimic the look, feel, and editorial style of the platform it lives on (e.g., "Sponsored Content" sections on news websites). It is highly effective because it doesn't *feel* like a disruptive ad.
- **Video & CTV (Connected TV) Ads:** Promotional videos ranging from 5-second unskippable social clips to mid-roll ads on streaming apps like Netflix, Hulu, or YouTube, capturing highly engaged viewing audiences.
- **Influencer & Affiliate Marketing:** Partnering with content creators who have established authority and trust within a niche community. The brand leverages the influencer's endorsement to drive authentic conversions.

2. Traditional & Mass Media Methods

While digital ads offer precision, traditional methods remain unrivaled for building massive, broad brand awareness across an entire population.

- **Broadcast Advertising (TV and Radio):** Producing commercials for traditional television networks and radio stations. While expensive to produce and air, they offer massive, simultaneous reach.
- **Print Advertising:** Placing ads in physical newspapers, trade magazines, brochures, or directories. This method is highly effective for reaching localized demographics or specific industry professionals via niche publications.
- **Out-of-Home (OOH) Advertising:** Physical or digital media found in public spaces. Examples include highway billboards, transit ads (buses, subways, airports), and street furniture. **Digital OOH (DOOH)** now allows billboards to change dynamically based on the time of day or weather conditions.
- **Direct Mail Marketing:** Sending physical catalogs, postcards, or promotional flyers directly to a consumer's home mailbox. Despite being a traditional method, it still boasts high open rates because it physically lands in a prospect's hands.

3. Specialized & Emerging Methods

As consumer habits change, advertisers find non-traditional ways to seamlessly weave messages into daily routines.

- **Product Placement / Embedded Marketing:** Unobtrusively featuring a brand's product within a movie, TV show, video game, or music video (e.g., a character prominently drinking a specific brand of soda).
- **Experiential & Event Advertising:** Creating immersive, real-world experiences or pop-up events that invite consumers to interact directly with a brand. This focuses on creating an emotional connection rather than a direct sales pitch.
- **In-App and Mobile Gaming Ads:** Serving rewarded video ads (e.g., "watch this ad to get an extra life") or banner pop-ups inside mobile applications and games where user attention is intensely focused.

Conducting Online Market Research

Conducting online market research is the systematic process of gathering, analyzing, and interpreting digital data about a target market, consumers, competitors, and industry trends. It allows businesses to make data-driven decisions quickly and cost-effectively.

1. Primary vs. Secondary Online Research

Online research generally falls into two core categories:

- **Primary Online Research (Gathering New Data):** Collecting fresh information directly from the source.
 - *Examples:* Deploying digital surveys (Typeform, Google Forms), hosting virtual focus groups via video conferencing, or analyzing website polls.
- **Secondary Online Research (Analyzing Existing Data):** Reviewing data that has already been compiled, organized, and published by others.
 - *Examples:* Analyzing government databases, industry whitepapers, academic research, and published market reports.

2. Step-by-Step Process for Online Research

Step 1: Define the Objective: Clearly state what you need to discover (e.g., "Identify why user churn increased last quarter" or "Assess demand for a new product feature").

Step 2: Choose Your Digital Tools: Select the right platform based on your goals (e.g., Google Analytics for traffic data, SEO tools for keyword intent, or social listening software).

Step 3: Collect Data Safely: Deploy surveys, monitor forums, scrape public data, or pull analytics reports, ensuring strict adherence to user privacy laws like GDPR and CCPA.

Step 4: Clean and Analyze: Filter out biased responses, bots, or incomplete data points to find recurring trends, correlations, or anomalies.

Step 5: Formulate Actionable Insights: Translate the data findings into business strategies (e.g., adjusting pricing, refining an ad campaign, or tweaking product design).

3. Essential Tools & Techniques

- **Social Listening & Sentiment Analysis:** Monitoring public forums, Reddit, and social platforms using tools like Brandwatch or Mention to gauge how consumers honestly feel about a brand or industry.
- **Search Engine Intent (SEO Tools):** Using platforms like SEMrush or Ahrefs to look at global and local search volumes. What people search for reveals exactly what problems they are trying to solve.
- **Web & Behavior Analytics:** Using tools like Google Analytics or Hotjar heatmaps to track how users behave on a live website, showing where they get confused or lose interest.
- **Competitor Intelligence:** Analysing rival websites, their backlink profiles, digital ad history, and pricing structures using automated public intelligence tools.

E-Marketing planning:

An effective E-marketing plan moves away from fragmented digital tactics and integrates them into a unified strategy. By aligning your brand identity across social media and email marketing, you build a cohesive digital funnel that transforms casual browsers into loyal customers.

1. The Foundation: Online Branding

Online branding (or digital branding) is how a business designs and project its identity, values, and reputation across the internet. It is not just a logo; it is the entire digital experience a user has with a company.

Key Components:

- **Brand Identity & Consistency:** Maintaining the same visual assets (color palettes, typography) and brand voice (casual, professional, authoritative) across websites, social apps, and digital touchpoints.
- **The Digital Value Proposition (DVP):** Clearly stating on digital storefronts why a customer should buy from you instead of a competitor online.
- **Trust and Authority Building:** Showcasing social proof, customer reviews, third-party security badges, and clear privacy policies to overcome the inherent skepticism of online transactions.

2. The Engine: Social Media Marketing (SMM)

Social media serves as a major engine for **audience acquisition and active engagement**. It is where brands build community, listen to consumer feedback, and run targeted campaigns.

Key Pillars:

- **Platform Selection Strategy:** Businesses must go where their target demographics hang out rather than trying to occupy every platform equally:
 - *B2B / Professional Services:* Focus heavily on **LinkedIn** for thought leadership.
 - *Visual / E-Commerce / B2C:* Leverage **Instagram, TikTok, and YouTube Shorts** for short-form video and product discovery.
- **Content Pillars:** Balancing content so it is not entirely promotional. A healthy mix includes educational content (how-to guides), entertaining content (behind-the-scenes), and transactional content (sales and product launches).
- **Social Listening:** Actively monitoring brand mentions, competitor moves, and broader industry keywords to jump onto emerging trends dynamically.

3. The Converter: Email Marketing

While social media is exceptional for building awareness, **email marketing remains the highest-ROI channel for retention and conversion**. This is because email gives you direct access to an audience without relying on third-party platform algorithms.

Key Strategies:

- **Permission-Based List Building:** Using high-value "lead magnets" (e.g., free e-books, exclusive discount codes, interactive tools) to encourage users to opt-in to your list willingly.

- **Segmentation:** Dividing an email list into specific sub-groups based on customer behavior, purchase history, or demographics. This ensures users only receive content that is highly relevant to them.
- **Automated Lifecycle Workflows:** Setting up automated, trigger-based email sequences that run entirely in the background:

E-Business Strategies: Digital Advertising, Content Marketing, & Analytics

Successful e-businesses do not rely on guesswork; they integrate customer acquisition tactics with hard analytical data to continuously optimize their growth funnel.

A. Digital Advertising

Digital advertising focuses on **buying traffic** to generate immediate visibility, leads, or sales. Unlike traditional media, it offers high agility and variable pricing models.

- **Search Engine Marketing (SEM / PPC):** Bidding on high-intent keywords (e.g., Google Ads) so your site appears at the top of search results exactly when a user intends to buy.
- **Social & Programmatic Ads:** Using deep demographic and behavioral data to place visual or video ads across social feeds and third-party media applications.
- **Retargeting / Remarketing:** Serving ads specifically to users who have previously visited your e-commerce storefront or app but left without completing a transaction.

B. Content Marketing

While digital advertising *buys* attention, content marketing *earns* it. It involves creating and distributing valuable, relevant, and consistent non-promotional content to attract a clearly defined audience.

- **The Inbound Pull:** Instead of interrupting users with ads, it pulls them in by answering their questions via blogs, educational videos, whitepapers, or infographics.
- **SEO Synergy:** High-quality, authoritative content naturally ranks well on search engines over time, driving free, sustainable organic traffic.
- **Building Brand Equity:** Informative content builds trust and thought leadership, converting a cold reader into a brand advocate.

C. Analytics

Analytics acts as the nervous system of an e-business strategy. It involves tracking user behavior across your digital properties to turn raw traffic data into business decisions.

- **Conversion Rate Optimization (CRO):** Analyzing where users drop out of your checkout or sign-up funnels to fix friction points.
- **Key E-Business Metrics:**
 - **CAC (Customer Acquisition Cost):** Total marketing spend divided by the number of new customers acquired.
 - **LTV (Lifetime Value):** The total revenue a single customer is expected to generate for your business over time. (*An e-business is healthy if $LTV > 3 \times CAC$*).
 - **ROAS (Return on Ad Spend):** Gross revenue generated from a specific advertising campaign divided by its cost.

2. E-Customer Relationship Management (e-CRM)

e-CRM is the digital expansion of traditional customer relationship management. It leverages internet-based channels—web portals, mobile apps, emails, and automated chatbots—to manage customer relationships, tracking habits, and communication loops.

Core Differences & Advantages:

- **Omnichannel Integration:** e-CRM unifies every customer touchpoint. A customer service representative can see a buyer's past emails, live chat history, social media complaints, and order records on a single unified dashboard.
- **Hyper-Personalization:** Utilizing predictive data to offer personalized product recommendations, targeted loyalty discounts, or automatic anniversary messages unique to individual customer behaviors.
- **Automated Self-Service:** Implementing AI chatbots and interactive FAQs to resolve common inquiries instantly 24/7, reducing operational strain on customer service teams.

The e-CRM Lifecycle:

1. **Customer Acquisition:** Catching data early through opt-in newsletters, gated tools, or account creation incentives.
2. **Customer Enhancement:** Upselling or cross-selling based on explicit user patterns.
3. **Customer Retention:** Detecting flags of low engagement (churn risk) and triggering re-engagement automated email campaigns.

3. E-Supply Chain Management (e-SCM)

While front-end marketing brings in customers, e-SCM ensures the product actually gets delivered. e-SCM uses internet technologies to orchestrate the flow of goods, information, and finances seamlessly among suppliers, manufacturers, logistics providers, and retailers.

Core Components of e-SCM:

- **E-Procurement:** Digitizing the purchasing of raw materials from business suppliers via automated electronic bidding platforms and marketplaces, lowering procurement overhead.
- **Real-Time Collaborative Planning:** Giving upstream suppliers direct, live visibility into your current inventory levels and retail demand data. This eliminates the **Bullwhip Effect** (where minor shifts in retail demand cause massive overproduction further up the supply chain).
- **Automated Inventory & Warehousing:** Utilizing IoT sensors, RFID tags, and cloud software to automate stock levels, auto-reorder inventory when it falls below a threshold, and optimize pick-and-pack routing.
- **End-to-End Tracking:** Providing absolute transparency from factory floor to final doorstep delivery via unified logistics APIs shared between carriers and the end customer.

Question Section

2 Marks Questions:

Q.No	Question	Bloom's Level
1	Define E-Marketing.	L1
2	What is Internet Advertising?	L1
3	Define Online Market Research.	L1
4	Define E-CRM.	L1
5	Explain the concept of E-Supply Chain Management (E-SCM).	L2
6	Describe Search Engine Optimization (SEO).	L2
7	State the objectives of Social Media Marketing.	L1
8	Explain the purpose of Email Marketing.	L2
9	List the benefits of Online Marketing.	L1
10	Differentiate between traditional marketing and E-Marketing.	L2

10 Marks Questions:

Q.No	Question	Bloom's Level
1	Analyze the role of Online Marketing in the growth of E-Business.	L4
2	Evaluate the effectiveness of various Internet Advertising methods in achieving business objectives.	L5
3	Analyze the process of conducting Online Market Research and its significance in decision-making.	L4
4	Evaluate the role of branding, Social Media Marketing, and Email Marketing in developing an effective E-Marketing strategy.	L5
5	Analyze the contribution of Analytics, E-CRM, and E-SCM in improving organizational performance and customer satisfaction.	L4

High Order Thinking Questions (L6&L5):

1. A startup has a marketing budget of ₹1 lakh. How would you allocate the budget among SEO, social media marketing, email marketing, and online advertising? Justify your decisions.
2. Analyse the digital marketing strategy of a company such as Amazon, Swiggy, or Zomato. Which techniques contribute most to its success?

Case Study: Digital Marketing Success of GreenLeaf Organics

Case

GreenLeaf Organics, a startup selling organic food products, had limited sales through its physical store.

The company launched:

- Instagram marketing
- Facebook advertisements
- Email newsletters
- Search engine optimization (SEO)
- Google Ads

The business also used Google Analytics to study customer behavior and implemented an e-CRM system to provide personalized offers.

Within one year:

- Website traffic increased by 180%.
- Online sales doubled.
- Customer retention improved by 35%.

Questions

1. Identify the e-marketing strategies used by GreenLeaf Organics.
2. Explain the role of SEO and social media marketing in increasing sales.
3. How did analytics help the company?
4. What is the importance of e-CRM in this case?
5. Suggest additional digital marketing techniques to expand the business.

Reference Book:

S. Jaiswal — *E-Commerce* (2003)