IT for Business

COURSE CODE: B21BB02SE

Bachelor of Business Administration
Skill Enhancement Course
Self Learning Material

SREENARAYANAGURU
OPEN UNIVERSITY

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The State University for Education, Training and Research in Blended Format, Kerala

SREENARAYANAGURU OPEN UNIVERSITY

Vision

To increase access of potential learners of all categories to higher education, research and training, and ensure equity through delivery of high quality processes and outcomes fostering inclusive educational empowerment for social advancement.

Mission

To be benchmarked as a model for conservation and dissemination of knowledge and skill on blended and virtual mode in education, training and research for normal, continuing, and adult learners.

Pathway

Access and Quality define Equity.

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Semester - IV

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(With Model Question Paper Sets)

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MESSAGE FROM VICE CHANCELLOR

Dear learner,

I extend my heartfelt greetings and profound enthusiasm as I warmly welcome you to Sreenarayanaguru Open University. Established in September 2020 as a state-led endeavour to promote higher education through open and distance learning modes, our institution was shaped by the guiding principle that access and quality are the cornerstones of equity. We have firmly resolved to uphold the highest standards of education, setting the benchmark and charting the course.

The courses offered by the Sreenarayanaguru Open University aim to strike a quality balance, ensuring students are equipped for both personal growth and professional excellence. The University embraces the widely acclaimed "blended format," a practical framework that harmoniously integrates Self-Learning Materials, Classroom Counseling, and Virtual modes, fostering a dynamic and enriching experience for both learners and instructors.

The University aims to offer you an engaging and thought-provoking educational journey. The Bachelor of Business Administration programme is highly coveted due to the current demand for skilled professionals in the field. This factor was central to our approach while designing the curriculum for this course. It strikes a balanced combination, providing a profound understanding of theoretical concepts alongside a clear exposition of practical applications. We have been cautious in ensuring that the management modules are balanced, preserving the integrity and distinctiveness of the discipline. The Self-Learning Material has been meticulously crafted, incorporating relevant examples to facilitate better comprehension.

Rest assured, the university's student support services will be at your disposal throughout your academic journey, readily available to address any concerns or grievances you may encounter. We encourage you to reach out to us freely regarding any matter about your academic programme. It is our sincere wish that you achieve the utmost success.

Warm regards.
Dr. Jagathy Raj V. P.

01-05-2025

Contents

BLOCK - 01
Information and Communication Technology (ICT)

Unit - 1

ICT for Business

Learning Outcomes

After completing this unit, learners will be able to:

- ◊ explain the concept and significance of Information and Communication Technology (ICT) in modern business operations
- ◊ identify various components and functions of ICT with real-world applications
- ◊ classify and differentiate between LAN, MAN, and WAN network types
- ◊ describe different network topologies and assess their suitability for business use

Prerequisite

Megha, a 27-year-old fashion graduate from Kochi, decided to start her boutique, "Megha's Fashion Studio". She began with a small rented shop, a few local tailors, and a passion for sustainable clothing. Her idea was brilliant, but sales were slow. Megha quickly realised that just good designs were not enough—visibility, efficiency, and speed were also needed.

That's when she was introduced to Information and Communication Technology (ICT)—not as a buzzword, but as a real business solution. Megha purchased a basic computer system, a Wi-Fi router, and accounting software. Her first major shift was replacing paper bills and handwritten inventory records with a simple POS (Point of Sale) software that tracked sales, inventory, and customer preferences. Megha started understanding what styles were selling more and what fabrics were not moving data-driven decisions became her new design assistant. Her friend helped her create a Facebook page, and Megha started posting her new designs, discount offers, and customer stories. Soon, she added a WhatsApp

Business account to answer customer queries, send catalogues, and take orders. Megha's business started getting attention from nearby towns. People would message her for custom designs. Her visibility went beyond her small shop.

With orders increasing, Megha adopted Google Sheets to manage her production plan, deliveries, and supplier details, shared in real time with her team. She also stored customer measurements and preferences on Google Drive, so repeat orders became smoother. Her team became more organised. Remote tailors could access the latest design sketches online. No more running around with files or notes. To ensure customer trust, Megha used secure payment gateways like Razorpay and PhonePe. She also learned about antivirus software and firewalls to protect her system from data breaches. Digital payments picked up. Customers trusted her system. Megha no longer had to handle bundles of cash.

Using Instagram Insights and Google Analytics from her basic website, Megha started identifying which age groups liked her content, which posts got more clicks, and when people were most active. She planned her posts and collections better, launched festive offers, and even created a "college collection" after noticing her younger audience.

Three years later, "Megha's Fashion Studio" has:

- A website with an integrated e-commerce platform.
- A team of 10 tailors, 3 delivery staff, and 2 interns managing digital content.
- An ERP tool for inventory and order management.
- A YouTube channel for styling tips and customer testimonials.
- And most importantly—a loyal customer base across Kerala and Tamil Nadu.

Lessons:

- ICT is not optional—it's a business necessity today.
- From a local store to a regional brand, technology can empower any business.
- Real success comes when technology is used creatively and consistently.

Keywords

ICT, Data Communication, Business Technology, Cloud Computing, Network Security, LAN/WAN/MAN

Discussion

1.1.1 Information and Communication Technology (ICT)

In today's digital economy, Information and Communication Technology (ICT) is not just a support tool but a strategic enabler in every aspect of business operations. From inventory management to customer service, ICT plays a crucial role in driving efficiency, innovation, and global connectivity. Whether it's an online retail store like Amazon or a traditional bank modernising its services, ICT is at the core of transformation. Therefore, ICT refers to technologies that provide access to information through telecommunications. It includes all digital technology that assists in storing, processing, transmitting, and receiving information.

1.1.1.1 Definitions of ICT

Here are a few standard definitions:

- **UNESCO:** "ICT is a scientific, technological and engineering discipline and management technique used in handling information, its application and association with social, economic and cultural matters."
- **OECD (Organisation for Economic Co-operation and Development):** "ICT is a combination of manufacturing and services industries that electronically capture, transmit and display data and information."
- **Simplified Definition for BBA Learners:** ICT refers to all tools and systems (computers, software, networks, communication devices) used to manage, process and share information.

1.1.1.2 Importance of ICT in Business

1. Business Operations

ICT automates routine and repetitive business processes such as payroll processing, accounting, inventory management, and business reporting. This automation reduces manual errors, enhances accuracy, and saves time.

Example

- Tally ERP is used by many Indian SMEs for accounting and GST management. Instead of maintaining manual ledgers, all financial entries are recorded digitally,

and reports like profit and loss statements or balance sheets are generated in a single click.

- ◊ A retail business using Zoho Inventory can automatically track stock levels, reorder products, and get alerts when inventory is low.

Use Case: DMart, a major Indian retail chain, uses integrated ICT systems to manage its entire supply chain, right from warehouse stock to billing at check-out counters. This makes the business operation seamless and scalable.

2. Global Reach

ICT enables businesses to operate beyond geographical boundaries through e-commerce websites, mobile apps, and digital marketing strategies. It connects producers with consumers across the world in real-time.

Example

- ◊ Amazon allows Indian sellers to market their products globally via Amazon Global Selling.
- ◊ Small artisans from Rajasthan can sell handicrafts to customers in Europe through platforms like Etsy or their own Shopify stores.

Use Case: Nykaa, a beauty and wellness brand from India, initially operated online only. Through ICT-enabled e-commerce and targeted digital marketing campaigns on Instagram and Google, it expanded rapidly, reaching a national and eventually global audience.

3. Efficiency & Speed

ICT tools improve communication and coordination, reduce waiting times, and enable instant sharing of information and decisions. This increases the overall speed of business operations.

Example

- ◊ Emails, project management tools (like Trello or Asana), and instant messaging apps (like WhatsApp Business) help in task assignment, updates, and approvals without
- ◊ Using ERP (Enterprise Resource Planning) systems like SAP or Oracle reduces time in planning and reporting, as all departments are interconnected.

Use Case: A garment export firm in Tirupur adopted SAP Business One ERP. They were able to cut their order fulfilment time by 30% because design, production, procurement, and delivery teams could collaborate faster via a central system.

4. Customer Engagement

ICT tools like CRM (Customer Relationship Management) systems, chatbots, and social media platforms allow businesses to interact with customers instantly, resolve queries, and offer customised support.

Example

- ◊ Chatbots on websites like Zomato or Swiggy help users track orders and raise concerns without speaking to a human.
- ◊ CRM tools like Zoho CRM or Salesforce help businesses store customer data, purchase history, preferences, and send personalised emails or offers.

Use Case: JioMart uses ICT-driven customer service platforms integrated with WhatsApp. Customers can place orders, receive updates, and get assistance through automated replies—all without downloading an app.

5. Data Analysis

ICT enables businesses to collect, store, and analyse large volumes of data (big data). It helps in making evidence-based decisions by identifying customer trends, sales patterns, and forecasting demand.

Example

- ◊ Tools like Microsoft Power BI, Google Analytics, or Tableau help visualise data for marketing, sales, or operations.
- ◊ A café can track which items sell most in the evening and offer combo discounts accordingly.

Use Case: Flipkart uses advanced data analytics to track user behaviour on its platform, like which product categories are clicked most, bounce rates, and purchase timing, to optimise product listings and offers.

6. Remote Working

With ICT tools, employees can collaborate, communicate, and perform tasks remotely. This allows businesses to function during disruptions (like pandemics) and saves infrastructure costs.

Example

- ◊ Zoom and Google Meet enable virtual meetings.
- ◊ Slack supports real-time collaboration.
- ◊ Cloud services like Google Workspace or Microsoft 365 allow access to shared files, presentations, and spreadsheets from anywhere.

Use Case: During the COVID-19 lockdown, Infosys quickly shifted over 90% of its employees to remote working using its ICT infrastructure. This ensured uninterrupted service to global clients without any significant drop in productivity.

Table 1.1.1 Summary of Importance of ICT in Business

Area of Impact	ICT Contribution	Real-Life Example
Business Operations	Automates tasks like payroll, billing, stock management	DMart, Tally ERP
Global Reach	Enables international sales through e-commerce and online marketing	Nykaa, Etsy sellers from India
Efficiency & Speed	Speeds up internal communication, decision-making, and workflows	SAP ERP in Tirupur export unit
Customer Engagement	Enables 24/7 support and customised services using chatbots and CRMs	JioMart on WhatsApp, Salesforce CRM
Data Analysis	Analyses trends, customer data, and forecasts demand using dashboards	Flipkart's behaviour-based promotions
Remote Working	Supports virtual collaboration and decentralised workforce	Infosys during COVID-19

1.1.1.3 Functions of ICT in Business

1. Communication

One of the most basic and essential functions of ICT is enabling effective communication within and outside the organisation. ICT tools facilitate emails, instant messaging, video conferencing, file sharing, and collaborative discussions in real time—breaking geographical barriers.

Example

- ◊ Zoom is used for team meetings, webinars, client presentations, and interviews across different locations.
- ◊ Gmail/Outlook are used for internal memos, client updates, and official notifications.

Use Case: Infosys uses video conferencing tools and internal communication platforms to connect thousands of global employees across time zones for daily operations and international project collaborations.

2. Data Management

ICT helps businesses collect, store, organise, retrieve, and manage data efficiently. This includes employee records, financial data, customer databases, inventory levels, and more. The use of databases and enterprise software ensures data is stored securely and is easily accessible when needed.

Example

- ◊ SAP (Systems, Applications & Products) in Data Processing allows large companies to manage everything from HR to supply chains.

- ◊ Oracle ERP systems are used to integrate and monitor finance, procurement, and projects in real time.

Use Case: Tata Steel uses SAP ERP to manage production schedules, human resources, inventory, and procurement, leading to better resource planning and cost reduction.

3. Security

With rising cyber threats and data breaches, security functions of ICT are crucial. This includes firewalls, antivirus software, encryption, password protection, multi-factor authentication (MFA), and more. These tools protect data integrity, customer privacy, and prevent financial fraud.

Example

- ◊ Banks use biometric authentication, OTP systems, and firewalls to secure online banking services.
- ◊ Companies use SSL certificates for secure websites and VPNs for remote access.

Use Case: ICICI Bank uses advanced ICT security features such as dynamic pin verification, end-to-end encryption, and facial recognition for mobile banking security.

4. Marketing

ICT plays a transformative role in digital marketing—enabling businesses to promote their products and services through SEO (Search Engine Optimization), SEM (Search Engine Marketing), PPC (Pay-Per-Click), email marketing, and social media platforms. ICT allows brands to track customer behaviour and create targeted campaigns.

Example

- ◊ Facebook Ads Manager allows businesses to run and monitor ad campaigns based on user interests, location, behaviour, and more.
- ◊ Google Analytics helps marketers track website traffic and user activity to refine strategies.

Use Case: Coca-Cola uses ICT-driven data analysis to create personalised ad campaigns. Their "Share a Coke" campaign used data to target specific demographics on Facebook and Instagram, greatly increasing engagement.

5. Transaction Handling

ICT facilitates smooth and secure financial transactions both online and offline. From billing and invoicing to online banking, mobile payments, POS systems, and digital wallets, ICT ensures that money flow is traceable, accurate, and compliant with tax regulations.

Example

- ◊ POS (Point of Sale) machines in retail outlets accept card payments and generate digital receipts.

◊ UPI (Unified Payments Interface) apps like Google Pay, PhonePe, and Paytm allow seamless mobile payments.

Use Case: Reliance Retail integrated POS systems in all stores to handle transactions, maintain real-time stock updates, and link customer loyalty data with purchases.

6. Infrastructure Support

ICT manages and supports the hardware, software, networking tools, cloud services, and data centers that form the technological foundation of a business. It includes the installation, maintenance, and upgrading of servers, routers, backup systems, and operating platforms.

Example

◊ Businesses use Google Cloud Platform (GCP) or Amazon Web Services (AWS) to host websites, applications, and data backups.

◊ Internal IT departments maintain systems like firewalls, LAN/WAN networks, and user devices.

Use Case: Zerodha, India's largest stock brokerage firm, runs its online trading platform Kite on cloud infrastructure with real-time data processing and backup, ensuring millions of trades can happen smoothly during peak market hours.

Table 1.1.2 Summary of Functions of ICT in Business

Function	Explanation	Example Use Case
Communication	Enables internal and external digital communication	Zoom, Gmail, Slack
Data Management	Stores, retrieves, and processes business data securely	SAP, Oracle ERP
Security	Protects data using encryption, firewalls, and access controls	ICICI Bank's biometric OTP security
Marketing	Uses online channels and tools to promote products	Coca-Cola's Facebook campaigns, Google Analytics
Transaction Handling	Facilitates accurate and secure financial operations	POS terminals, UPI apps like PhonePe
Infrastructure Support	Supports and manages IT systems like cloud platforms, networks, and hardware	AWS and GCP for data storage and business applications

1.1.1.4 Components of ICT

1. Hardware

Hardware refers to the physical devices and equipment involved in information and communication technology systems. These include desktops, laptops, servers, routers, switches, printers, scanners, smartphones, biometric devices, and point-of-sale (POS) machines.

Example

- ◊ Dell computers are commonly used in office setups for tasks like documentation, communication, and design.
- ◊ HP multifunction printers are used in administrative offices for printing, scanning, and copying.
- ◊ POS terminals in retail stores like Big Bazaar process transactions and update inventory in real time.

Use Case: Axis Bank equips its branches with biometric machines, ATMs, and secure routers to provide banking services, monitor transactions, and enhance customer experience.

2. Software

Software consists of programs, applications, and operating systems that instruct hardware to perform specific tasks. It includes both system software (like Windows, Linux) and application software (like Microsoft Office, Tally, Photoshop).

Example

- ◊ Microsoft Excel is used for budgeting, data analysis, payroll, and inventory control.
- ◊ Tally ERP is used for accounting and GST compliance by many Indian businesses.
- ◊ Autocad is used by architectural firms for digital design.

Use Case: MakeMyTrip uses custom-built software for managing bookings, customer support, and dynamic pricing based on demand.

3. Networks

Networks connect multiple ICT devices, allowing them to communicate and share data. These networks include LAN (Local Area Network), WAN (Wide Area Network), Wi-Fi, and the Internet. Networking infrastructure includes routers, switches, cables, and wireless access points.

Example

- ◊ LAN connects all computers within a corporate office, enabling shared printers and file access.

- ◊ WAN connects branches of an organisation in different cities.
- ◊ VPN (Virtual Private Network) is used for secure access to corporate systems from remote locations.

Use Case: ICICI Bank connects its ATMs, branches, and headquarters using WANs, ensuring consistent data access and customer service.

4. Cloud Computing

Cloud computing refers to storing and accessing data and software over the Internet instead of local servers or hard drives. It enables remote working, scalability, and data backup with minimal infrastructure cost.

Example

- ◊ Google Drive stores files and allows team collaboration in real-time.
- ◊ Dropbox is used for project file sharing in media and design firms.
- ◊ Amazon Web Services (AWS) provides businesses with scalable cloud servers and application hosting.

Use Case: Zomato hosts its customer database, analytics tools, and user interface on cloud platforms to handle millions of users simultaneously.

5. Security Systems

Security systems in ICT safeguard information from unauthorised access, theft, viruses, and cyberattacks. They include firewalls, anti-virus software, encryption tools, biometric systems, and access control protocols.

Example

- ◊ McAfee antivirus protects systems from malware and phishing attempts.
- ◊ Firewalls prevent unauthorised access to internal networks.
- ◊ VPNs allow secure data exchange over public networks.

Use Case: Paytm uses multi-level encryption, device tracking, and OTP systems to protect user data during digital transactions.

6. Communication Tools

These are tools and platforms that allow people to exchange information in various forms—text, audio, video, and files. Communication tools are essential for teamwork, customer service, virtual meetings, and project coordination.

Example

- ◊ Slack is used for internal messaging, creating discussion threads by project/ team.

- ◊ Microsoft Teams is used for virtual meetings, presentations, and document sharing.
- ◊ WhatsApp Business helps small businesses interact with customers and confirm orders.

Use Case: UrbanClap (now Urban Company) uses WhatsApp and IVR tools to confirm bookings, assign service professionals, and collect feedback.

7. Databases

Databases are structured collections of data stored electronically. They enable businesses to store, retrieve, and manipulate large volumes of information efficiently. They are managed by Database Management Systems (DBMS) like MySQL, Oracle DB, or MongoDB.

Example

- ◊ A Customer Relationship Management (CRM) system like Salesforce stores customer profiles, past purchases, complaints, and feedback.
- ◊ Inventory databases in retail monitor stock levels in real time.
- ◊ HR databases maintain employee records, salaries, and performance reviews.

Use Case: Flipkart uses databases to store customer preferences, transaction histories, and product searches, enabling personalised recommendations and faster checkout.

1.1.2 What is a Computer Network?

A Computer Network is a system that connects two or more computing devices, such as computers, servers, printers, or mobile devices, to share resources, data, and communication tools. This connection can be wired (using cables) or wireless (using radio waves or Wi-Fi).

Example: When a group of office computers shares a single printer or accesses files from a common server, they are said to be connected through a computer network.

1.1.2.1 Importance of Computer Networks in Business

- ◊ Facilitates communication among employees and departments.
- ◊ Enables data and file sharing from central storage.
- ◊ Allows shared access to hardware like printers and scanners.
- ◊ Supports centralised software applications (e.g., ERP, CRM).
- ◊ Enhances data backup and security management.

1.1.2.2 Types of Computer Networks

Computer networks are classified based on their size, purpose, and geographical coverage. The three most common types are:

A. LAN (Local Area Network)

A LAN connects computers and devices within a limited area, such as a home, office, or school.

Key Features

i. High speed (up to 1 Gbps)

ii. Low cost of setup

iii. Covers a small area (typically a few kilometres)

Example

◊ All computers in a school computer lab connected to a single server form a LAN.

◊ An office with 10 desktops, 1 printer, and a shared file server.

Use Case: LANs are used in retail outlets, bank branches, and corporate offices for internal operations.

B. MAN (Metropolitan Area Network)

A MAN connects computers and networks within a city or a large campus. It is larger than a LAN but smaller than a WAN.

Key Features

i. Moderate coverage area (up to 100 km)

ii. Faster than WAN but slower than LAN

iii. Often used to link different branches within a city

Example

◊ A university with multiple campuses in a city connected via fibre-optic MAN.

◊ The Kerala State Wide Area Network (KSWAN) connects government offices across districts.

C. WAN (Wide Area Network)

A WAN connects computers and networks across large geographical areas, including countries or continents.

Key Features

i. Covers thousands of kilometres

ii. Uses public or leased communication lines (e.g., telephone, satellite)

iii. Slower and more complex to manage

Example

◊ The Internet is the largest WAN.

◊ Multinational companies connecting offices in India, the US, and Europe via WAN.

Use Case: Banks like SBI connect ATMS, branches, and headquarters across the country via WANS.

Table 1.1.3 Types of Network

Type of Network	Coverage Area	Example
LAN	Small/local	Office, School, Bank Branch
MAN	City/metropolitan	University Campus, Government Network
WAN	Country/Global	Internet, MNC Networks, Banking Sector

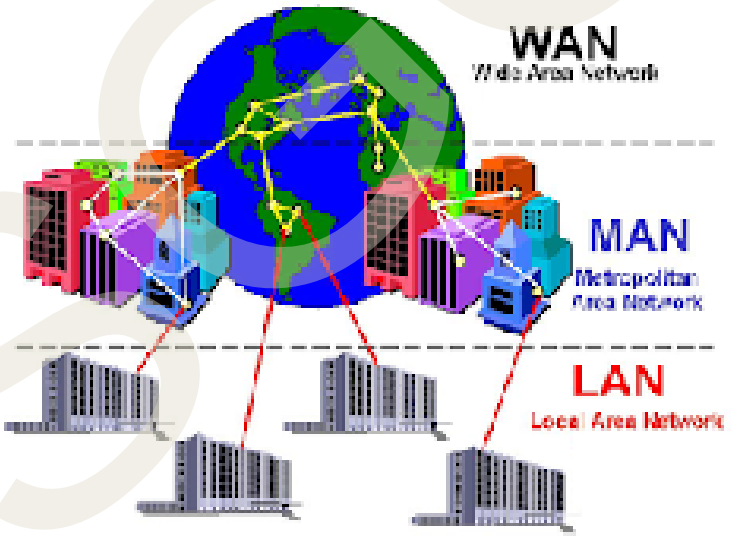

Fig. 1.1.1 Types of Network

1.1.3 Network Topology

Imagine a large housing society where multiple homes need to get water from a central water tank. Now, how the pipes are arranged to connect the homes to the tank represents network topologies. Therefore, Network Topology refers to the layout or

physical arrangement of devices in a network. It describes how devices (called nodes) are interconnected.

1.1.3.1 Types of Network Topology

There's a central water tank on the terrace, and it needs to send water to 10 flats. You're the engineer who has to decide how to lay the pipes. Each way you connect the pipes becomes a topology. Now, let's understand various types of network topology.

A. Bus Topology

You run one main pipe (a backbone) from the tank across all flats. Every flat taps into this pipe. That is a single path for data, where all devices share the same route.

- ◊ **Structure:** All devices are connected to a single backbone cable.
- ◊ **Pros:** Simple, cost-effective, easy to implement.
- ◊ **Cons:** Cable failure brings down the entire network.
- ◊ **Example:** Small offices or test labs.

B. Star Topology

You run a separate pipe from the tank to each flat directly. Here, all devices connect individually to a central hub.

- ◊ **Structure:** All devices are connected to a central hub or switch.
- ◊ **Pros:** Easy to troubleshoot, scalable.
- ◊ **Cons:** Failure of the hub affects the whole network.
- ◊ **Example:** Common in modern corporate LANs.

C. Ring Topology

You connect all the flats in a circle, and the pipe loops back to the tank. Water flows in one direction, passing through each flat. This means each device connects to two neighbours, forming a closed loop.

- ◊ **Structure:** Devices are connected in a circular fashion. Data travels in one direction.
- ◊ **Pros:** Predictable data transfer.
- ◊ **Cons:** One failure can disrupt the entire loop.
- ◊ **Example:** Some older MAN setups.

D. Mesh Topology

You install pipes from each flat to every other flat. Everyone can share water with anyone. In this type, devices are fully interconnected, offering multiple communication paths.

- ◊ **Structure:** Every device is connected to every other device.
- ◊ **Pros:** High reliability and redundancy.
- ◊ **Cons:** Very expensive and complex.
- ◊ **Example:** Military communication networks, data centres.

E. Hybrid Topology

You use a mix: maybe Star in Building A and Ring in Building B, all connected to the same tank. A hybrid topology means combining various topologies. Real-world networks often combine topologies for efficiency.

- ◊ **Structure:** Combination of two or more topologies.
- ◊ **Pros:** Flexible, adaptable to needs.
- ◊ **Cons:** Complex to design and manage.
- ◊ **Example:** Large enterprises using star + mesh for different departments.

Table 1.1.4 Topologies

Topology Type	Key Feature	Example Use
Bus	Single line connection	Small office lab
Star	Centralised hub	Modern office network
Ring	Circular data flow	Older educational networks
Mesh	Full interconnection	Data centres, military systems
Hybrid	Mixed arrangement	Corporate IT infrastructure

Illustration: A Bank's ICT Network

- ◊ **A LAN** connects all computers and printers within a branch.
- ◊ **A MAN** connects all branches within the city.
- ◊ **A WAN** connects branches across the nation.
- ◊ **Star topology** is used at each branch with a central server.
- ◊ **VPN and Firewalls** secure the network.

Recap

- ICT Defined: Refers to tools and systems that manage, store, process, and share business data digitally.
- ICT in Business: Drives automation, global reach, data analysis, and efficient communication.
- Real-World Case: Megha's Fashion Studio showed how ICT scaled a local boutique into a regional brand.
- Functions of ICT: Includes communication, data management, security, marketing, transaction handling, and infrastructure support.
- Components of ICT: Comprise hardware, software, networks, databases, cloud services, and security systems.
- Computer Networks: Systems connecting devices to share data, resources, and applications.
- Types of Networks: LAN (local), MAN (city-wide), WAN (global).
- Network Topology: The layout of interconnected devices – bus, star, ring, mesh, hybrid.
- Star Topology: Widely used in modern LANs for easy management and scalability.
- ICT and Business Efficiency: Enhances customer engagement, remote working, and digital transactions.
- Security in ICT: Critical in protecting business data and ensuring compliance.
- Hybrid Topology: Combines topologies to serve different departmental needs within large organisations.

Objective Questions

1. What does ICT stand for?
2. Name any one ERP tool.
3. Which network covers the smallest area?

4. In which topology are all devices connected to a central hub?
5. Which device connects multiple computers in a LAN?
6. Which cloud platform does Zomato use?
7. What type of network is the internet?
8. Which software is commonly used for accounting in Indian SMEs?
9. Give one example of a database management system.
10. Which app allows real-time messaging in teams?
11. What is a POS system used for?
12. What does VPN stand for?

Answers

1. Information and Communication Technology
2. SAP
3. LAN
4. Star
5. Switch
6. AWS
7. WAN
8. Tally ERP
9. MySQL
10. Slack
11. Billing and transactions
12. Virtual Private Network

Assignments

1. Explain how ICT contributes to business efficiency and decision-making using real-life examples.
2. Describe any three types of network topologies with diagrams.
3. Discuss the importance of cloud computing in business operations with examples.
4. Compare and contrast LAN, MAN, and WAN with examples from Indian business contexts.
5. Identify the role of ICT in marketing and customer engagement in e-commerce businesses.
6. Prepare a digital poster showcasing how a local business uses ICT to manage daily operations.
7. Create a comparative table showing different network topologies, their structure, and advantages.
8. Visit a local shop or office and document the ICT components used (hardware, software, network).
9. Use Google Sheets or Microsoft Excel to simulate an inventory tracking system.
10. Conduct a basic security audit of your home Wi-Fi and list measures to improve it.

Reference

1. Laudon, K. C., & Laudon, J. P. (2020). *Management Information Systems: Managing the Digital Firm* (16th ed.). Pearson.
2. Turban, E., Pollard, C., & Wood, G. (2018). *Information Technology for Management: Advancing Sustainable, Profitable Business Growth* (11th ed.). Wiley.
3. Haag, S., & Cummings, M. (2015). *Management Information Systems for the Information Age* (9th ed.). McGraw-Hill Education.

4. O'Brien, J. A., & Marakas, G. M. (2013). *Introduction to Information Systems* (16th ed.). McGraw-Hill.

5. Rainer, R. K., & Prince, B. (2020). *Introduction to Information Systems: Supporting and Transforming Business* (7th ed.). Wiley.

Suggested Reading

1. Oxford University Press India. (2021). *Information and Communication Technology: Business Applications.*

2. Kelkar, S. A. (2021). *Management Information Systems: A Contemporary Perspective*. PHI Learning.

3. Joseph, P. T. (2015). *E-commerce: An Indian Perspective* (5th ed.). PHI Learning.

4. McFedries, P. (2021). *The Little Book of Big Data: Understand the Data Deluge and What it Means.* DK Publishing.

5. Ministry of Electronics and Information Technology. (2022). *Digital India Programme Overview*. www.digitalindia.gov.in

Unit - 2
Internet for Business

Learning Outcomes

After the completion of this unit, the learner will be able to:

- ◊ explain the evolution and role of the Internet in the business environment
- ◊ distinguish between different types of wireless technologies and their business applications
- ◊ Comprehend cloud computing and categorise its service models (Iaas, Paas, SaaS)
- ◊ analyse real-life business use cases of internet technologies like web browsers, email, and search engines

Prerequisite

Once upon a time, in a small village in Kerala, there lived a curious 14-year-old girl named Ammu. She loved painting, especially colourful murals of nature. Her walls were full of birds, flowers, elephants, and temples she had never seen in real life—just from imagination. But Ammu had a dream to show her paintings to the world. One day, her uncle came from the city and gifted her a tablet. It was sleek, shiny. Ammu had never seen such a thing before.

"This can connect you to the Internet," her uncle said with a smile. "It's like a magic road that lets you travel to any place, talk to anyone, and even show your art to the whole world without leaving your home."

Ammu was amazed. She opened the tablet, and suddenly, a whole new world came alive.

She typed "peacock" into a search box and was flooded with images and videos. She saw paintings from Paris, watched a documentary from Africa, and even joined a drawing class from Mumbai—all sitting in her little room.

That night, she posted one of her paintings on Instagram. The next morning, a girl from Chennai liked it. By evening, an art teacher from Bengaluru had commented, "Wonderful use of colours!"

Ammu's eyes sparkled. The magic road was real.

What Ammu Learned?

- ◊ The Internet is not a place—it's a connection.
- ◊ Just like roads connect cities and people, the Internet connects computers, phones, and people across the globe.
- ◊ It helps us share, learn, work, shop, and create from anywhere.

From her village, Ammu was now part of the world—all because of the Internet.

Keywords

Cloud Computing, Internet Protocol, SaaS / PaaS / IaaS, Wireless Technologies, Search Engine Optimisation (SEO)

Discussion

1.2.1 What is the Internet?

The Internet is a global system of interconnected computer networks that use a set of standard communication protocols (called the Internet Protocol Suite) to serve billions of users worldwide. It allows people to share information, access websites, use apps, and communicate across continents.

1.2.1.1 Relevance of the Internet in Business

The Internet is no longer a luxury, it's a lifeline for modern businesses. From local grocery stores to global tech giants, almost every business uses internet-based tools for various core functions. Here's how:

1. Marketing (Social Media, SEO, Paid Ads)

The Internet has revolutionised marketing by enabling businesses to reach their target audience instantly, affordably, and globally. Companies can advertise, engage, and build brand loyalty through digital platforms.

Key Tools & Methods

- ◊ Social Media Marketing (SMM): Platforms like Facebook, Instagram, and LinkedIn allow businesses to run interactive campaigns and build communities.
- ◊ Search Engine Optimisation (SEO): Helps websites rank higher on search engines like Google to attract organic (unpaid) traffic.
- ◊ Pay-Per-Click (PPC) Ads: Google Ads and Meta Ads allow businesses to target specific demographics and locations.

Example

- ◊ A local bakery in Kochi may run Instagram ads with photos of its cakes during festive seasons, bringing in pre-orders.
- ◊ Nike uses global influencer marketing and YouTube ads to promote new product launches.

2. Sales (E-commerce Websites, Online Payments)

The internet facilitates 24/7 sales through online stores. Customers can browse products, compare prices, read reviews, and pay—without visiting a physical outlet.

Key Tools & Platforms

- ◊ E-commerce Websites: Platforms like Shopify, WooCommerce, and custom-built websites host product catalogues and shopping carts.
- ◊ Online Payments: Payment gateways like Razorpay, Paytm, UPI, and credit/debit cards enable secure digital transactions.

Example

- ◊ A handloom saree seller from Kannur uses a Shopify website and Instagram shopping features to sell across India and even to NRIs.
- ◊ Amazon and Flipkart are India's largest internet-driven marketplaces, enabling lakhs of small sellers to reach national customers.

3. Customer Service (Email, Live Chat, Helpdesk)

The internet enhances customer satisfaction through instant support and 24/7 availability. Automated and real-time tools help businesses respond quickly to complaints and queries.

Key Tools & Platforms

- ◊ Email Support: For issue resolution, feedback, or follow-ups.
- ◊ Live Chat: Websites integrate chatbots or agents (e.g., via Tawk.to, Zendesk).
- ◊ Helpdesk Portals: Track complaints, product issues, and support tickets.

Example

- ◊ Swiggy offers live chat support for order tracking and complaints.
- ◊ Tata Cliq uses email and a support portal to handle returns, refunds, and feedback.

4. Data Storage and Access (Cloud Services)

Businesses need to store large volumes of data securely and access it from anywhere. The internet enables this through cloud computing, replacing bulky hardware and local servers.

Key Tools & Platforms

- ◊ Google Drive, Dropbox, OneDrive: For storing files, sharing documents, and collaboration.
- ◊ Amazon Web Services (AWS) and Microsoft Azure: For hosting business applications and large databases.

Example

- ◊ A consulting firm stores client reports and contracts in Google Drive and shares links with clients instead of printing hard copies.
- ◊ Netflix runs on AWS cloud to stream videos to millions of users globally, without owning physical data centres.

5. Internal Communication (Zoom, Teams, Email)

The internet has made it possible for teams to work remotely, flexibly, and efficiently, especially during and after the COVID-19 pandemic. Internal meetings, project updates, and file sharing can all happen online.

Key Tools & Platforms

- ◊ Zoom, Google Meet, Microsoft Teams: For video conferencing, online meetings, webinars.
- ◊ Emails (Gmail, Outlook): Formal communication, memos, notifications.
- ◊ Slack: Real-time messaging, channels, and team collaboration.

Example

- ◊ A marketing agency based in Mumbai holds daily video calls with clients in the US via Zoom.
- ◊ Infosys and TCS use Microsoft Teams to connect project teams across cities and time zones.

1.2.2 Evolution of the Internet – Detailed Timeline Explanation

1. 1960s – ARPANET: The Birth of Network Communication

Milestone: ARPANET (Advanced Research Projects Agency Network)

The U.S. Department of Defense created ARPANET to develop a decentralised communication system that could withstand attacks or outages. It allowed multiple computers to communicate using packet-switching technology. ARPANET was the first real network to run on packet switching and is considered the grandfather of the modern Internet. This laid the foundation for networked computing, which is now the backbone of business IT infrastructure. The concept of email, file sharing, and remote access started taking shape here.

2. 1970s – Email Introduced: The First Internet Application

Milestone: Email as a communication tool

Programmers developed a way to send text messages between computers connected via ARPANET. Ray Tomlinson is credited with inventing email and introducing the use of the "@" symbol in addresses. Email became the first major use of network communication, allowing users to send and receive digital messages over a network. Email revolutionised business communication. Today, tools like Gmail, Outlook, and Yahoo Mail are essential for customer support, marketing, and internal coordination.

3. 1980s – TCP/IP Adopted: Laying the Internet's Foundation

Milestone: Standardisation of TCP/IP protocols

The introduction and wide adoption of Transmission Control Protocol (TCP) and Internet Protocol (IP) established a common communication language for computers.

This allowed diverse computer systems to connect and communicate, enabling the creation of a global network. January 1, 1983, is often celebrated as the birthday of the modern Internet when TCP/IP became the standard protocol for ARPANET. TCP/IP is still used today. Without it, services like websites, emails, and video conferencing wouldn't function. It made the Internet interoperable and scalable.

4. 1991 – World Wide Web (www): Browsing is Born

Milestone: Invention of the World Wide Web by Tim Berners-Lee

Berners-Lee, a British scientist, introduced the World Wide Web, which used hypertext and hyperlinks to navigate between pages. He also created the first web browser and web server.

The www allowed people to access information visually and interactively, marking the transition from a text-based network to a more user-friendly web experience. The WWW is what made the internet commercially viable. Today, every business has a website or web presence—from Amazon and Google to your local bakery.

5. 1995 – Commercialisation: Internet Goes Public

Milestone: Opening the internet for commercial use

The U.S. government lifted restrictions on the Internet, allowing private businesses and individuals to go online. This was the era of dial-up connections and web browsers like Netscape. This marked the beginning of the dot-com boom, where companies began using the internet for commerce, marketing, and customer interaction. Startups like Amazon (1994) and eBay (1995) were born. Businesses began setting up websites, emails, and online advertising, making ICT a business essential.

6. 2000s – Broadband and Wi-Fi: The Internet Gets Faster

Milestone: Introduction of broadband internet and wireless connectivity

DSL (Digital Subscriber Line), cable internet, and Wi-Fi routers replaced slow dial-up connections. Internet speed jumped from kilobits to megabits per second. This allowed users to stream video, download large files, and access rich multimedia content. Wi-Fi made it possible to connect laptops, phones, and printers without wires. E-commerce, online education, and digital media grew exponentially. Companies like YouTube (2005), Facebook (2004), and Flipkart (2007) emerged.

7. 2010s – Mobile Internet and Apps: The Smartphone Era

Milestone: Rise of mobile apps and smartphone-based internet

Widespread adoption of Android and iOS smartphones led to a massive shift from desktop to mobile internet usage. Mobile apps became the new norm. Internet access became ubiquitous and portable. Apps provided customised experiences for shopping, transport, food, entertainment, and communication. Apps like WhatsApp, Uber, Zomato, Instagram, and Paytm transformed how businesses reach and serve customers. Small businesses began using social media for marketing and online orders.

8. 2020s – 5G, IoT, and Cloud: The Connected Future

Milestone: Introduction of high-speed 5G networks, Internet of Things (IoT), and widespread cloud computing.

- ◊ 5G delivers speeds up to 100x faster than 4G.
- ◊ IoT connects everyday objects (like fridges, ACs, and cars) to the internet.
- ◊ Cloud computing enables storing data and running applications remotely on servers.

These technologies allow instant connectivity, real-time data sharing, and smart automation in industries and homes alike.

- ◊ Businesses use cloud platforms like Amazon Web Services (AWS) and Google Cloud for hosting services.
- ◊ Smart cities are deploying IoT devices for traffic, security, and waste management.

◊ 5G enables autonomous vehicles, remote surgeries, and virtual reality experiences in business and education.

Table 1.2.1 Evolution of the Internet

Year	Milestone	Real-World Significance
1960s	ARPANET	First computer network – basis for modern Internet
1970s	Email Introduced	First digital communication tool
1980s	TCP/IP Adopted	Standard protocol that made the global internet possible
1991	World Wide Web	User-friendly web browsing and information access
1995	Commercialisation	Businesses and public gained access – birth of e-commerce
2000s	Broadband & Wi-Fi	Faster, always-on connectivity – rise of digital media and services
2010s	Mobile Internet & Apps	App-based services revolutionised consumer behaviour
2020s	5G, IoT, and Cloud	Ultra-fast, smart, interconnected systems across business and society

1.2.3 Internet Protocols

There is a town called Digitalville, where people are always sending letters, photos, and messages to one another. In this town, there is a smart and highly efficient postman named I.P., short for Internet Protocol. His job is to make sure that every message reaches the correct house without getting lost. But to do this, he needs something very important—addresses. Just like every house in Digitalville has a unique address (like 101 Mango Street or 303 Banana Lane), every device connected to the internet—be it a smartphone, a computer, or a printer—has its own unique address called an IP address. This address helps I.P. know exactly where to send the message. So, when Ammu from 101 Mango Street wants to send a photo to her cousin Rahul at 303 Banana Lane, she puts the photo in an envelope, writes Rahul's address on it, and gives it to I.P. He reads the destination, finds the best route, and ensures that the photo is delivered safely and quickly.

Sometimes, a message or file is too large to carry all at once. In such cases, I.P. cleverly breaks it into smaller packets, writes the destination on each packet, and sends them separately. When all the packets reach Rahul's house, they are reassembled in the correct order to recreate the original photo. This entire process happens in the background every time we send an email, watch a video, or load a website. However, if Ammu forgets to write Rahul's address on the envelope, I.P. has no idea where to deliver the message. It simply gets lost. In the same way, if a device does not have an IP address, data cannot reach it. That's why every device on the internet must have a valid IP address.

In simple terms, the Internet Protocol (IP) is the set of rules that helps send and receive data across the Internet by assigning unique addresses to devices and guiding data to the right destination. Without IP, the internet would be a chaotic place where information would wander aimlessly without ever reaching the right person.

Internet Protocols are rules and standards that define how data is transmitted and received over the internet. Think of protocols as digital languages that enable devices to "understand" each other while exchanging data.

Table 1.2.2 Key Internet Protocols

Protocol	Full Form	Function	Real-Life Example
IP	Internet Protocol	Defines the addressing and routing of data packets to reach the right destination.	When you type www.amazon.in, IP helps direct your request to Amazon's server.
TCP	Transmission Control Protocol	Ensures reliable, error-free delivery of data between systems.	Used when downloading a file to ensure the whole file is received.
HTTP	Hypertext Transfer Protocol	Transfers web pages from a server to a browser.	Opening a web page like https://www.wikipedia.org.
HTTPS	Secure HTTP	Adds encryption to HTTP for secure transactions.	Online banking, payment gateways (like Razorpay, Paytm).
FTP	File Transfer Protocol	Used to upload/ download files between client and server.	Website developers use FTP to update site content.
SMTP	Simple Mail Transfer Protocol	Sends emails from client to server.	Sending an email via Gmail.
POP3 / IMAP	Post Office Protocol / Internet Message Access Protocol	Retrieves emails from the server to your device.	Receiving emails on your phone's mail app.
DNS	Domain Name System	Translates domain names into IP addresses.	Converts www.google.com into 142.250.182.206.
VoIP	Voice over Internet Protocol	Facilitates voice communication over the Internet.	Zoom, WhatsApp calls, Google Meet.

1.2.3.1 How Protocols Work

To understand how different internet protocols work together, think of it like sending a letter by post. Just like in the postal system, each protocol has a specific role to ensure your message gets delivered accurately, safely, and to the right person.

1. IP (Internet Protocol) = The Address on the Envelope

Just like you can't send a letter without writing the recipient's house address, every message on the internet must include the IP address of the recipient's device. This ensures the data knows where it's going.

Example: IP = "To: 123.456.78.9"

2. TCP (Transmission Control Protocol) = Ensuring the Letter is Delivered Safely

TCP is like the postal service that makes sure the letter isn't lost or damaged, and if the letter is sent in parts, TCP puts them back together in order when it arrives.

Role:

- ◊ Breaks the message into packets.
- ◊ Checks if all packets arrived safely.
- ◊ Resends any lost or corrupted packets.

3. HTTP/HTTPS = The Content Inside the Letter

HTTP (Hypertext Transfer Protocol) or its secure version HTTPS is the actual message inside the envelope—like the contents of your letter. It tells the receiving computer how to read and display the data (like a website, image, or form).

- ◊ HTTP: Used for general web data (not encrypted).
- ◊ HTTPS: Used for secure communication (encrypted), especially in online banking, shopping, and login pages.

4. DNS (Domain Name System) = The Post Office Converting a Name into an Address

When you write a letter to your friend using their name (like "Rahul, Kochi"), the post office must look up their actual address to deliver the letter. That's what DNS does—it translates website names like www.google.com into IP addresses like 142.250.183.68.

DNS = Phonebook of the Internet

It makes browsing easier so you don't have to remember number strings.

1.2.3.2 How to Secure Protocols in Business: Keeping Data Safe

1. HTTPS: Protecting Customer Transactions

In the world of online shopping or banking, HTTPS is essential. It encrypts the data (like passwords or credit card numbers) so that no one can read it even if it's intercepted.

Example: When you make a payment on Amazon or log into your bank account, HTTPS ensures your data is encrypted and safe from hackers.

2. VPN (Virtual Private Network) and IPSec: A Private Highway

VPN is like building a private tunnel through public roads, so your data stays hidden from outsiders. It uses protocols like IPSec (Internet Protocol Security) to:

- ◊ Encrypt the data.
- ◊ Authenticate both sender and receiver.
- ◊ Prevent cyber spying or data theft.

Example: A remote employee accessing a company's database from home over a VPN can work securely without the risk of information leaks.

1.2.4 Search Engine

Your school has a huge library with thousands of books. One day, your teacher asks you to find a book on "Space Exploration." How would you find the best book quickly? You approach the librarian for the book, and she finds the best-matching book for you. Beyond a librarian, a search engine quickly explores millions of websites, organises their content, chooses the best match for your query, and presents you with the most helpful information.

A search engine is a software system that helps users find information on the internet. It crawls, indexes, and retrieves relevant web pages based on keywords entered by the user.

How Does a Search Engine Work?

Imagine you need to find a specific book in a huge library. How would you find it quickly? You'd probably use the library's catalogue system. Similarly, when you type a query into a search engine (like Google), it quickly finds what you need through four simple steps:

Step 1: Crawling

Think of crawling like a librarian exploring every book on every shelf. Search engines send automated software called "spiders" or "bots" to continuously visit websites all over the internet. These bots collect information about web pages and follow links from one page to another.

Step 2: Indexing

Once collected, this information is stored and neatly organised in huge databases, just like the librarian organising books by categories and labels. This step is called indexing. Now, the search engine knows exactly where everything is stored, allowing it to find it quickly later.

Step 3: Ranking

When you search for something, the search engine uses special formulas known as algorithms to decide which web pages best match your search. These algorithms consider factors like relevance, popularity, content quality, and many more. It's similar to the librarian recommending the most suitable and popular books first.

Step 4: Results Display

Finally, the search engine shows you the results on your screen, putting the most relevant pages at the top. This is like the librarian handing you the best book at the top of the stack, making it easy for you to find exactly what you're looking for quickly.

Examples

- ◊ Google – The world's most used search engine with over 90% market share.
- ◊ Bing – Microsoft's search engine, integrated with Windows.
- ◊ DuckDuckGo – Focuses on user privacy.
- ◊ Yahoo Search – A legacy engine still used in specific markets.

Use Case in Business: A small Kerala-based tourism company, "Backwater Bliss", uses search engine optimisation (SEO) techniques to improve its visibility. By optimising their website content with keywords like "houseboat in Alleppey" and "Kerala tour packages", they attract global tourists who search on Google.

Case Study: How UrbanClap Boosted Customer Acquisition Using SEO and Google Ads

UrbanClap (now known as Urban Company) is an online platform that connects people with service providers like electricians, beauticians, plumbers, and home cleaners. Initially, UrbanClap faced tough competition from other local businesses offering similar services, especially in major cities such as Delhi and Bangalore.

To overcome this challenge, UrbanClap focused heavily on improving its online visibility. They strategically used Search Engine Optimisation (SEO) techniques—such as creating quality content, using relevant keywords (like "home cleaning services in Delhi" or "best electricians in Bangalore"), and building backlinks from trustworthy websites. These practices helped UrbanClap rank higher in Google's organic search results.

Additionally, UrbanClap used Google Ads to display targeted advertisements prominently on Google's first page whenever someone searched for related services. For instance, when users in Delhi typed "AC repair near me," UrbanClap's ads appeared right at the top, making it easy for potential customers to find and click on their services.

As a result of these SEO practices and effective advertising strategies, UrbanClap's visibility online dramatically improved. Their website started appearing consistently on the first page of Google search results. Consequently, they experienced a significant

increase in website traffic, customer enquiries, bookings, and overall customer acquisition.

Ultimately, by optimising their search engine presence, UrbanClap established itself as a market leader in home and personal services, greatly expanding their customer base in key cities like Delhi and Bangalore.

1.2.5 Web Browser

Imagine you are at home and suddenly crave pizza from your favourite pizza restaurant. To order, you pick up your phone and call the restaurant directly. Here, your phone acts similarly to a web browser, serving as your connection point. Just as you dial the restaurant's number, you type a web address or search term into your browser (like Chrome, Firefox, or Safari). When the restaurant receives your call and takes your order, it is like the browser retrieving information from a website. Finally, when the pizza arrives at your doorstep, it's similar to the webpage loading on your screen, providing the content you requested. Thus, a web browser is essentially a gateway or communication tool that allows you to easily access websites and find information on the internet, just as a phone connects you to services in your everyday life.

A web browser is a software application that allows users to access, retrieve, and view content on the World Wide Web. It acts as a bridge between the user and the internet.

How It Works

- ◊ Takes user input (like a URL or search term).
- ◊ Sends a request to a server via HTTP/HTTPS.
- ◊ Receives and displays the webpage using HTML, CSS, and JavaScript.

Examples of Web Browser

- ◊ Google Chrome – Fast and widely used, with Chrome Web Store extensions.
- ◊ Mozilla Firefox – Known for security and privacy.
- ◊ Microsoft Edge – Comes with Windows; integrates with Microsoft services.
- ◊ Safari – Default browser on Apple devices.

Use Case in Business: A fashion entrepreneur in Mumbai uses Google Chrome to manage her e-commerce store on Shopify, track analytics through Google Analytics, and manage customer service via web-based CRM.

Case Study: Zerodha's Kite—Cross-browser Compatibility for Enhanced User Experience

Zerodha, India's largest and most popular stockbroking firm, has revolutionised the way trading and investments are done in India through its innovative online platform called "Kite." One of Kite's strongest features is its remarkable cross-browser

compatibility, meaning it functions efficiently on all popular web browsers, including Chrome, Firefox, Safari, Edge, and others. This user-friendly approach eliminated the need for traders to download or install separate software applications on their devices, providing effortless access to stock market trading directly through their browsers.

By ensuring compatibility across various browsers, Zerodha's Kite managed to reach a broad and diverse audience. Traders and investors could conveniently track real-time market data, place trades instantly, and monitor their investments seamlessly, irrespective of their browser preference. This ease of access was particularly beneficial for users in India, where internet speeds and hardware capabilities vary greatly from region to region. Because Kite was designed to load quickly and function smoothly even on basic web browsers, Zerodha was able to provide uninterrupted trading experiences to millions of users nationwide.

The practical impact of Zerodha's thoughtful approach became clear as its user base surged rapidly, contributing significantly to its market dominance. Traders appreciated not just the convenience but also the reliability and speed of Kite's web platform, enhancing their overall trading experience. Consequently, Zerodha solidified its position as India's leading brokerage platform, setting a benchmark in customer satisfaction and innovation through strategic investment in cross-browser technology.

1.2.6 Electronic Mail (E-mail)

E-mail is a method of exchanging digital messages between people using electronic devices. It is one of the most widely used forms of business and personal communication today.

How It Works

- ◊ Sender composes a message using a mail client (like Gmail).
- ◊ The message is sent via a Simple Mail Transfer Protocol (SMTP).
- ◊ The recipient retrieves it using POP3 or IMAP protocols.

Examples

- ◊ Gmail – Google's free and business email platform.
- ◊ Outlook – A Microsoft email client used widely in corporates.
- ◊ Yahoo Mail – Offers 1 TB of free storage.
- ◊ Zoho Mail – Business-focused, popular in startups.

Use Case in Business: A startup called EdTech Kerala uses Zoho Mail for internal and external communication. Email is used for everything from sending newsletters and invoices to customer support and recruitment.

Case Study: How TCS Uses Outlook, Teams, and SharePoint for Efficient Collaboration

Tata Consultancy Services (TCS), India's largest IT services company, manages complex projects that involve teams spread across different locations around the globe. To effectively coordinate these diverse teams, TCS relies heavily on enterprise-level email through Microsoft Outlook, a central tool for internal communication, collaboration, and managing project documentation.

By integrating Outlook with collaboration tools like Microsoft Teams and SharePoint, TCS streamlines communication and enhances productivity. While Microsoft Teams enables quick interactions such as video meetings, real-time messaging, and instant file sharing, SharePoint acts as a secure repository for project documents, providing a structured environment for version control and easy access to files. However, email continues to play a pivotal role, especially in formal communication, documentation of critical decisions, and obtaining project approvals, which often require clear, documented evidence.

For instance, when TCS undertakes a global project such as a software implementation across multiple countries, project teams use Outlook to exchange detailed proposals, technical specifications, approval requests, and official communications. Integration with Teams and SharePoint ensures that these emails and related documents can be seamlessly archived and accessed, creating a transparent audit trail. This structured approach significantly reduces confusion, improves accountability, and helps teams adhere to timelines and standards.

Ultimately, by strategically combining Outlook with collaboration platforms like Teams and SharePoint, TCS maintains clear communication channels, effective documentation, and smooth workflow management, ensuring efficient and successful project execution on a global scale.

1.2.7 Role of the Internet in the Contemporary Business World

The Internet has revolutionised the way modern businesses operate. It is no longer a luxury or an optional tool—it is an integral part of business infrastructure, enabling organisations to work faster, smarter, and on a global scale. Whether it's communication, marketing, sales, customer service, or data management, the internet plays a pivotal role in shaping the business landscape.

Let's explore its multifaceted role:

1. E-Commerce and Online Sales

The internet has enabled the digital marketplace, allowing businesses to sell products and services online 24/7.

Example

- ◊ Amazon, Flipkart, and Myntra are Indian examples of online retail giants.
- ◊ Small-scale artisans use Etsy and Shopify to sell handmade goods globally.

Use Case: A home-based entrepreneur in Kerala selling handloom sarees sets up an Instagram shop and links it to a Shopify website. With the help of digital payments and logistics services, she can reach customers across India and even abroad.

Case Study: Nykaa's Online Success Story

Nykaa, one of India's leading beauty and wellness startups, began its journey as an online-only platform founded by entrepreneur Falguni Nayar. When it first launched, Nykaa did not have any physical retail presence; instead, it relied entirely on the power of the internet and digital technology to attract and serve customers nationwide.

Using internet-based marketing strategies, including social media promotions, influencer collaborations, targeted advertising, and content-driven campaigns, Nykaa quickly captured the attention of consumers looking for quality beauty and wellness products. Its user-friendly website and mobile app allowed customers easy access to thousands of products, along with detailed descriptions, reviews, tutorials, and beauty tips. This robust online presence significantly boosted customer engagement and trust, transforming Nykaa into a preferred choice for beauty shopping across India.

In addition to digital marketing, Nykaa effectively leveraged online logistics and distribution networks, enabling quick and reliable delivery even to smaller cities and towns. By carefully managing inventory and partnering with dependable logistics providers, Nykaa could fulfil orders rapidly and efficiently, ensuring customer satisfaction and repeat purchases.

Today, Nykaa has expanded from an internet-only brand to include a chain of physical retail stores, further increasing its consumer base. It has successfully transitioned into a publicly listed company on India's stock exchanges, with its valuation reaching billions of dollars. Nykaa's remarkable growth story highlights the transformative role that the internet and digital business models can play in achieving extraordinary commercial success in contemporary business environments.

2. Digital Marketing and Branding

The internet has changed the face of advertising. Businesses now use digital platforms to promote products through search engines, social media, email campaigns, and influencer marketing.

Tools: Google Ads, Meta Ads (Facebook/Instagram), SEO, content marketing, YouTube.

Use Case: A restaurant in Kochi launches a Facebook campaign with geo-targeting ads for food delivery. Customers within 5 km receive promo codes on their feeds, increasing orders by 30%.

Case Study: How Swiggy and Zomato Use Internet Data to Boost their Business

Swiggy and Zomato, India's leading online food delivery platforms, heavily rely on internet data to grow their businesses and keep customers coming back. These companies collect and analyze user data—such as browsing patterns, favourite cuisines, previous orders, location, and preferences—to create personalised marketing campaigns.

For instance, when a user frequently searches for or orders pizza, Swiggy and Zomato display targeted advertisements offering special discounts or promotions from pizza restaurants in the user's area. They also leverage data to introduce new eateries to users based on their past dining habits. If a new sushi restaurant opens nearby, users who previously browsed or ordered Asian cuisine might receive customised ads or notifications encouraging them to try it.

Moreover, Swiggy and Zomato use this data-driven approach to retain customers. By offering tailored discounts and incentives, like personalised coupon codes or loyalty programs, based on user history and browsing habits, these platforms effectively encourage repeat orders, boosting customer loyalty and satisfaction.

Through intelligent use of internet data, Swiggy and Zomato significantly improve their marketing effectiveness, leading to higher user engagement, increased restaurant visibility, and ultimately, greater business growth and profitability.

3. Business Communication and Collaboration

The internet facilitates instant internal and external communication, ensuring better team coordination, especially in hybrid or remote work environments.

Tools: Email (Gmail, Outlook), video conferencing (Zoom, Google Meet), team chats (Slack, Microsoft Teams), project tools (Trello, Asana).

Use Case: An IT firm with offices in Bengaluru and Kochi uses Slack for daily updates, Zoom for weekly meetings, and Google Drive to collaborate on documents in real-time.

Case Study: Infosys' Transition to Remote Work During COVID-19

When the COVID-19 pandemic struck, Infosys, a leading global IT services firm, faced a major challenge: maintaining operations while ensuring employee safety. To tackle this, Infosys quickly transitioned nearly 90% of its workforce—tens of thousands of employees globally—to remote work arrangements.

Infosys managed this massive shift by leveraging robust cloud platforms and secure communication tools. Cloud solutions allowed employees to access critical data, applications, and software remotely, ensuring continuous workflow and seamless collaboration. Platforms like Microsoft Teams, WebEx, and Zoom became essential for daily interactions, meetings, client presentations, and virtual project management.

Security, a critical concern during remote operations, was addressed through secure VPN connections, multi-factor authentication, and encrypted communication channels. This ensured sensitive client data and internal communications remained protected despite the dispersed workforce.

Remarkably, despite the scale and rapidity of this transition, Infosys reported no significant disruption in productivity or service delivery. Employees adapted swiftly, thanks to reliable internet-based systems and infrastructure that Infosys had strategically invested in prior to the pandemic.

Ultimately, Infosys' experience highlights the power of cloud computing and internet-based technologies in sustaining large-scale business operations, even under unprecedented conditions. It serves as a strong example of digital preparedness and adaptability in today's rapidly evolving business environment.

4. Digital Payments and Online Transactions

The internet supports secure and quick financial transactions, replacing cash with UPI, credit cards, wallets, and online banking.

Tools: PhonePe, Google Pay, Razorpay, Paytm, Net banking portals.

Use Case: A freelance designer sends an invoice to a client via Razorpay and receives instant payment through UPI. There's no physical meeting, cash handling, or delay.

Case Study: Reliance Retail Boosts Efficiency with Integrated POS Systems

Reliance Retail, India's largest retailer, operates thousands of stores across diverse formats, including supermarkets, electronics outlets, fashion stores, and more. To streamline its operations and enhance customer experience, Reliance implemented advanced Point-of-Sale (POS) systems integrated with real-time online payment tracking across its extensive retail network.

Previously, manual billing processes often caused long queues and delays, leading to customer dissatisfaction, particularly during peak hours or festive seasons. To solve this, Reliance adopted integrated POS solutions connected directly to secure online payment gateways. With these systems, as soon as customers completed transactions via digital wallets, debit cards, credit cards, or UPI, the payment status was immediately verified online, speeding up billing significantly.

This real-time tracking eliminated payment delays, reduced checkout times, and ensured accurate financial records across stores. Customers benefited greatly, experiencing shorter wait times, smoother checkouts, and a more convenient shopping environment. For Reliance Retail, the system provided accurate, real-time insights into sales and inventory, simplifying financial management and stock replenishment.

As a direct result of this integration, Reliance Retail observed a marked increase in customer satisfaction, leading to increased store loyalty and repeat purchases. Thus, leveraging internet-based technology within their POS infrastructure enabled Reliance Retail to greatly enhance operational efficiency and elevate customer experiences across its massive retail footprint.

5. Data Analytics and Business Intelligence

With the internet, businesses gather and analyse user data, sales trends, customer behaviour, and website traffic to make evidence-based decisions.

Tools: Google Analytics, Microsoft Power BI, Tableau, CRM analytics.

Use Case: An online bookstore uses Google Analytics to understand which genres are most searched and buys more inventory accordingly.

Case Study: How Flipkart Uses Data Analytics for Personalised Customer Experiences

Flipkart, one of India's largest e-commerce companies, relies heavily on data analytics to deliver personalised experiences to its customers. By carefully analysing customer data such as browsing history, search queries, purchase patterns, and wishlist items, Flipkart customises the shopping experience uniquely for each user.

For instance, Flipkart's homepage appears differently for every customer based on their previous interactions. A customer who frequently searches for electronic gadgets will see personalised recommendations featuring the latest electronics, while someone interested in fashion products might see relevant apparel suggestions upfront.

Additionally, Flipkart strategically offers special discounts or limited-time offers on items that customers have added to their wishlists but not yet purchased. These targeted incentives encourage users to complete their transactions, significantly increasing conversion rates.

Flipkart also uses customer data to send timely and relevant push notifications, such as price-drop alerts on previously browsed products or reminders about ongoing sales. These personalised notifications grab customers' attention and prompt immediate engagement, often resulting in higher sales and customer satisfaction.

Overall, Flipkart's effective use of customer data analytics has led to improved customer engagement, loyalty, and conversion rates, ultimately enhancing the company's market position and profitability in India's competitive e-commerce landscape.

6. Customer Relationship Management (CRM)

Internet-based CRM systems help businesses manage, track, and nurture customer relationships. They store information like purchase history, preferences, and feedback to offer personalised services.

Tools: Zoho CRM, Salesforce, Freshdesk.

Use Case: A travel agency uses Zoho CRM to send birthday offers to past customers and track follow-ups for holiday packages.

Case Study: JioMart's Integration of WhatsApp for Seamless Customer Interaction

JioMart, the online grocery and retail arm of Reliance Industries, introduced an innovative approach to customer service by integrating WhatsApp - India's most widely used messaging app—into its business operations. This move was aimed at simplifying the shopping experience and making customer interactions more convenient and familiar.

Through WhatsApp, JioMart allows customers to place and track their orders, ask questions, and receive real-time updates directly within the messaging app. For instance, a customer can initiate a conversation with JioMart by sending a simple "Hi" to their WhatsApp number. The chatbot or customer service team then provides options for checking order status, browsing ongoing offers, resolving delivery queries, and even receiving digital invoices—all without needing to install a separate app or log in to a website.

This integration not only improves customer convenience but also reduces service time. Since most users in India are already comfortable with WhatsApp, JioMart's strategy removed barriers related to app usage, especially among less tech-savvy consumers in semi-urban and rural areas. Moreover, JioMart uses WhatsApp to send personalised promotions, restock alerts, and seasonal discount messages, boosting user engagement and repeat purchases.

By embedding its services into a popular messaging platform, JioMart successfully enhanced customer satisfaction, expanded its digital reach, and streamlined communication, all contributing to stronger brand loyalty and increased sales across diverse consumer segments.

7. Cloud Computing and Infrastructure Management

Imagine you run a business and need a large storage room. You can either build one at your office (traditional computing), or rent space in a secure storage facility you can access anytime (cloud computing). Cloud Computing is the delivery of computing services—like servers, storage, databases, networking, software, analytics, and more over the internet ("the cloud") instead of through a local server or personal computer.

Cloud computing means accessing data and applications online, anytime, anywhere, without having to store them on your personal device. The cloud is a secure, flexible, scalable, and cost-effective facility.

Businesses now use cloud platforms to store data, host applications, and collaborate without relying on physical servers. This reduces infrastructure costs and increases scalability.

Tools: Google Cloud, AWS, Microsoft Azure, Dropbox.

Use Case: A startup uses Google Workspace to store files, share calendars, conduct virtual meetings, and manage emails—all in the cloud.

Case Study: Zerodha's Cloud-Based Kite Platform for Real-Time Trading

Zerodha, India's largest stock brokerage firm, has transformed the trading experience for millions of investors and traders through its flagship platform, Kite. A key factor behind Kite's performance and popularity is its cloud-based infrastructure, which supports seamless and scalable access to real-time financial data during stock market hours.

Instead of relying on traditional local servers, Zerodha hosts the Kite platform on cloud servers, enabling fast, reliable, and secure processing of massive volumes of data. This setup allows millions of users to place trades, track live market movements, and access charts and indicators without delay, even during peak trading hours when activity is at its highest.

The cloud infrastructure offers Zerodha multiple advantages: it ensures high availability, automatically scales resources based on demand, and maintains minimal latency in trade execution—a critical factor in stock trading where every second counts. In addition, the cloud-based model simplifies updates and maintenance, allowing Zerodha's tech team to implement new features, security patches, or system enhancements without causing downtime for users.

By leveraging the power of cloud computing, Zerodha has not only delivered a fast and smooth trading experience to its customers but has also maintained cost-efficiency and operational resilience. This approach has played a crucial role in Zerodha's continued growth and leadership in India's competitive financial services industry.

8. Globalisation and Remote Business

The internet has turned even small businesses into global players. With e-commerce, virtual meetings, and global payment gateways, geographical boundaries are no longer a limitation.

Use Case: A digital marketing agency in Kerala serves clients in Canada and the UAE using Zoom for consultations and PayPal for payments.

9. Cybersecurity and Data Protection

As businesses rely more on the internet, they also invest heavily in security protocols like firewalls, VPNs, encryption, and two-factor authentication to protect customer data and intellectual property.

Use Case: An EdTech firm encrypts all student information and uses HTTPS and VPNs for internal data access, ensuring regulatory compliance.

The internet is the backbone of the contemporary business world, supporting operations from local startups to global enterprises. Its role is not limited to communication or sales—it's about intelligent integration of technology into every part of the business lifecycle. In today's economy, a business without the internet is like a shop with its shutters down—invisible, outdated, and cut off from opportunity.

1.2.8 Wireless Communication Technology

Wireless Communication Technology refers to the transmission of data or voice without the use of physical cables or wires. It enables devices to connect and communicate over distances using radio waves, microwaves, infrared, or satellite signals.

Key Features

- ◊ No physical cables needed
- ◊ Flexible and portable connectivity
- ◊ Enables real-time data transmission
- ◊ Suitable for both short and long-range communication

Types of Wireless Technologies

Wireless technologies are methods of transmitting data without the use of physical cables or wires. These technologies are crucial in today's connected world, enabling mobile communication, remote access, and the Internet of Things (IoT).

1. Wi-Fi (Wireless Fidelity)

Wi-Fi allows devices like laptops, smartphones, and tablets to connect to the internet or each other through a wireless router. It is based on IEEE 802.11 standards and operates mostly in 2.4 GHz and 5 GHz frequency bands. It's ideal for indoor connectivity and supports high data speeds for activities like video streaming, video conferencing, and online learning. It Uses Local area networks (LANs)

Example: Home Wi-Fi, office internet, campus networks

Use Case: A college campus offers free Wi-Fi to students, enabling them to attend online classes and access digital libraries on their mobile devices and laptops.

2. Bluetooth

Bluetooth is a short-range wireless technology standard used for exchanging data over short distances, typically up to 10 metres. It consumes very little power, making it suitable for battery-operated devices. It uses radio waves in the 2.4 GHz range and supports point-to-point or multipoint communication. It uses Short-range communication between devices

Example: Wireless headphones, keyboards, smartwatches, file transfer

Use Case: A person connects their Bluetooth earbuds to their smartphone to listen to music while jogging, without any cables getting in the way.

3. Mobile Networks (3G, 4G, 5G)

These are generations of mobile communication technology.

- ◊ 3G enabled mobile internet and basic video calling.
- ◊ 4G brought high-speed mobile internet, supporting HD video streaming and fast downloads.
- ◊ 5G is the latest and fastest, with very low latency and high bandwidth, enabling advanced technologies like smart cities, autonomous vehicles, and AR/VR.

- ◊ Use: Cellular communication and internet access

Example: Internet on mobile phones, mobile hotspots

Use Case: A ride-hailing app like Uber works on 4G/5G networks to track the driver's live location and manage real-time bookings.

4. Infrared (IR) and NFC (Near Field Communication)

- ◊ Infrared uses light waves to transmit signals, typically in remote controls. It requires a direct line of sight between the transmitting and receiving devices.
- ◊ NFC is used for secure, contactless communication between two devices at very close range (usually under 4 cm). It's widely used in digital payments, smart cards, and ID verification.

It uses device-to-device communication over very short distances.

Example: TV remotes (IR), contactless payments (NFC-enabled cards or smartphones)

Use Case: When you tap your phone or smartwatch to a card machine to make a UPI or Google Pay payment, you're using NFC technology.

5. Satellite Communication

Satellites orbiting the Earth transmit signals back to ground receivers, enabling communication even in areas where cable or mobile towers can't reach. It's essential for global positioning systems (GPS), military communication, weather forecasting, and emergency services.

It uses long-distance communication, especially in remote areas

Example: GPS navigation, satellite TV, internet in rural or remote regions

Use Case: A fisherman in a deep-sea fishing boat uses a GPS tracker and satellite phone to navigate and communicate, even far from coastal mobile networks.

Use Cases in Business

- ◊ Wi-Fi in offices for internet access, cloud file sharing, and VoIP calls.
- ◊ Bluetooth devices like wireless printers and headsets for flexible workspaces.
- ◊ 5G in manufacturing and logistics for real-time sensor data and automation.
- ◊ NFC in retail stores for quick, contactless payments.

Case Study: Jio's Public Wi-Fi Initiative – Bridging the Digital Divide

Reliance Jio, a major player in India's telecom revolution, took a significant step toward digital inclusivity with its Jio Public Wi-Fi initiative. By installing Wi-Fi hotspots at railway stations and other public places, Jio aimed to provide free internet access to millions of Indians, particularly those in semi-urban and rural areas who had limited access to reliable mobile data or broadband services.

This initiative had a transformational impact on a wide range of users. Travellers waiting at railway stations could now access the internet to check real-time train schedules, book tickets online, or connect with loved ones. Small vendors and local shopkeepers operating in and around these public places began using digital payment apps like UPI, PhonePe, Google Pay, and Paytm—tools that require stable internet connections. This shift allowed them to move away from cash-only transactions and join India's growing digital economy.

Beyond convenience, Jio's public Wi-Fi helped bridge the urban-rural digital divide by bringing affordable, wireless internet to regions that previously lacked connectivity. Students could download study material, job seekers could search for employment opportunities, and first-time internet users were introduced to essential digital services—all from a free, accessible Wi-Fi network.

Overall, the Jio Public Wi-Fi initiative represents a powerful example of how wireless technology can be used to democratise access to information and services, making the internet a tool for empowerment and inclusion across India.

Advantages

- ◊ Enhances mobility and flexibility
- ◊ Reduces installation costs
- ◊ Easy to scale and expand
- ◊ Supports remote working and BYOD (Bring Your Own Device)

1.2.9 Cloud Computing

Cloud Computing is the delivery of computing services, including storage, servers, databases, networking, software, and analytics, over the internet ("the cloud"). It enables users to access resources on-demand, without owning physical infrastructure.

Types of Cloud Services

Cloud services are typically delivered in three major models. These models represent different levels of control, flexibility, and management, each suited to different business or personal needs.

1. IaaS – Infrastructure as a Service

You have got an empty shop for rent. You get the space, electricity, and water. But you must bring in your own furniture, design, and goods. IaaS lets users rent basic computing infrastructure like servers, storage, networking, and virtual machines from a cloud provider on a pay-as-you-go basis. Infrastructure as a Service is a cloud computing model that provides virtualized computing infrastructure like servers, storage, and networking over the internet.

Example Providers

- ◊ Amazon Web Services (AWS) – Elastic Compute Cloud (EC2)
- ◊ Microsoft Azure – Virtual Machines
- ◊ Google Cloud Platform (GCP) – Compute Engine

Use Case: A startup developing an e-commerce platform may use IaaS to host its website, databases, and customer information without buying physical servers.

Key Benefits

- ◊ Highly scalable
- ◊ Cost-effective (only pay for what you use)
- ◊ Suitable for IT administrators and system architects

2. PaaS – Platform as a Service

If IaaS is an empty shop, PaaS is like a furnished bakery where you bring your recipe (code) and ingredients (data), and the ovens, counters, and packaging systems are ready to use. PaaS offers a ready-made development environment with tools to build, test, and deploy software applications, without worrying about managing infrastructure like servers or storage.

Example Providers

- ◊ Google App Engine
- ◊ Heroku
- ◊ Microsoft Azure App Services

Use Case: A team of developers wants to quickly build and launch a mobile app. They use PaaS to access programming tools, libraries, and deployment servers—all from the cloud.

Key Benefits

- ◊ Faster development cycle
- ◊ No need to manage hardware or software updates
- ◊ Best suited for developers

3. SaaS – Software as a Service

This is like dining at a restaurant, you simply enjoy the meal without cooking, serving, or cleaning. SaaS provides fully functional software applications over the internet. Users simply log in via a browser or app without worrying about installation, updates, or infrastructure.

Example Services

- ◊ Gmail, Google Drive
- ◊ Microsoft 365 (Word, Excel online)
- ◊ Zoom, Dropbox, Salesforce

Use Case: An educational institution uses Microsoft Teams and Google Classroom for online learning. Students and teachers access these tools from any device, anytime.

Key Benefits

- ◊ No need for installation
- ◊ Accessible from anywhere
- ◊ Best suited for end-users (non-technical)

Table 1.2.3 Types of Cloud Services

Feature	IaaS	PaaS	SaaS
Target Users	IT Admins	Developers	End-users
Control Level	Highest	Medium	Lowest
You Manage	Apps, data, runtime, OS	Apps and data	Just use the app
Provider Manages	Networking, servers, storage	Infrastructure + runtime + OS	Everything
Examples	AWS EC2, Azure VMs	Google App Engine, Heroku	Gmail, Dropbox, Microsoft 365

Let's say you are building a new online bookstore:

- ◊ Use IaaS to host your website and manage databases.
- ◊ Use PaaS to build and test your shopping cart application.
- ◊ Use SaaS tools like Google Analytics and Mailchimp to market and manage customers.

Use Cases in Business

- ◊ Startups use SaaS tools like Zoho for email, accounting, and CRM.
- ◊ Educational institutions adopt Google Workspace for classes and assignments.
- ◊ IT companies run applications on AWS to avoid spending on physical servers.
- ◊ Retail brands use cloud ERP systems to manage inventory across stores.

Case Study: Zomato's Cloud-Based Scalability with AWS

Zomato, one of India's leading food delivery platforms, relies on Amazon Web Services (AWS) to power its entire digital infrastructure. Hosting the platform on

the cloud has enabled Zomato to achieve a high level of scalability, reliability, and operational efficiency, especially critical in a fast-paced, demand-driven industry like online food delivery.

Using AWS, Zomato can seamlessly handle millions of users, particularly during peak hours such as lunch and dinner times, or on weekends and public holidays. During national festivals or special promotional campaigns—when food orders spike dramatically—Zomato's system automatically scales up to meet the growing demand without delays or service disruptions. This elasticity ensures a smooth and uninterrupted customer experience, regardless of how many users are online.

In addition to scalability, Zomato benefits from AWS's robust data backup and security systems. User data including order history, payment details, and location preferences is securely stored and regularly backed up. This ensures business continuity, even in the event of system errors or cyber threats, and builds trust among customers.

Zomato's cloud-first approach has not only made its platform faster and more responsive but also cost-effective, as it avoids the need for large investments in physical servers and data centres. By leveraging cloud computing, Zomato has strengthened its ability to innovate quickly, launch new features, and maintain a competitive edge in India's rapidly growing food delivery market.

Benefits of Cloud Computing

- ◊ Cost Efficiency – Pay only for what you use.
- ◊ Scalability – Scale resources up or down as per demand.
- ◊ Accessibility – Access files and applications from anywhere.
- ◊ Data Security – Automatic backups and security protocols.
- ◊ Collaboration – Real-time teamwork on shared files or systems.

Table 1.2.4 Comparison Between Wireless Communication and Cloud Computing

Feature	Wireless Communication	Cloud Computing
Purpose	Transmit data without wires	Provide computing services via the internet
Technology Examples	Wi-Fi, Bluetooth, 5G	AWS, Google Drive, Salesforce
Business Application	Office mobility, remote access	Hosting websites, storing business data
Key Benefit	Mobility and flexibility	Scalability and cost-effectiveness
User Dependency	Hardware-enabled (devices)	Internet-enabled (cloud platforms)

Both Wireless Communication Technology and Cloud Computing are essential pillars of the modern digital business ecosystem. While wireless technologies connect people and devices effortlessly, cloud computing hosts and delivers the services and data they rely on.

Together, they enable businesses to go digital, work remotely, scale rapidly, reduce costs, and improve customer satisfaction—cornerstones of contemporary success in a competitive market.

Recap

- ◊ The Internet connects people globally and plays a crucial role in marketing, sales, and communication in business.
- ◊ Wireless technologies like Wi-Fi, Bluetooth, and 5G allow mobility, flexibility, and real-time access.
- ◊ Internet protocols like TCP/IP and DNS help route data safely and accurately.
- ◊ Cloud computing offers scalable IT solutions, classified as IaaS, PaaS, and SaaS.
- ◊ Search engines help users find relevant content by crawling, indexing, and ranking websites.

Objective Questions

1. What does IP stand for?
2. Name a cloud storage platform.
3. What does DNS do?
4. Expand SaaS.
5. Which protocol is used to send emails?
6. Name a search engine.
7. What is the full form of VPN?
8. Which wireless tech supports contactless payments?
9. Mention one business use of cloud computing.

10. What is the main function of a web browser?
11. Which protocol secures websites?
12. What is the full form of IaaS?

Answers

1. Internet Protocol
2. Google Drive
3. Converts domain names to IP
4. Software as a Service
5. SMTP
6. Google
7. Virtual Private Network
8. NFC
9. Data storage
10. Access web content
11. HTTPS
12. Infrastructure as a Service

Assignments

1. Explain the evolution of the Internet from ARPANET to 5G with business relevance.
2. Discuss the role of cloud computing in modern business operations with examples.
3. Compare and contrast SaaS, PaaS, and IaaS.
4. Describe how businesses use SEO and search engines to attract customers.

5. What are Internet protocols? How do they ensure secure and reliable communication?
6. Create a flowchart showing how a web search query is processed by a search engine.
7. Conduct a case study analysis of a business (e.g., Zomato or Zerodha) that uses cloud computing.
8. Set up a Gmail account and explore its security protocols (HTTPS, 2FA).
9. Use a free trial of Google Analytics or SEMrush to analyse a website's online performance.
10. Interview a small business owner and document how they use the Internet in daily operations.

Reference

1. Laudon, K. C., & Traver, C. G. (2021). *E-commerce 2021: Business, Technology, Society*. Pearson.
2. Turban, E., Volonino, L., & Wood, G. (2018). *Information Technology for Management*. Wiley.
3. Rajaraman, V. (2018). *Introduction to Information Technology*. PHI Learning.
4. Mehta, V. (2020). *Digital Marketing: Concepts and Cases*. McGraw Hill Education.
5. Miller, M. (2020). *Cloud Computing: Web-Based Applications That Change the Way You Work and Collaborate Online*. Que Publishing.

Suggested Reading

1. Kurose, J. F., & Ross, K. W. (2021). Computer Networking: A Top-Down Approach. Pearson.
2. Singh, A. (2019). Digital Transformation: Survive and Thrive in an Era of Mass Extinction. Wiley.

3. Sharma, D., & Sharma, R. (2021). Business Analytics: Data-Driven Decision Making. Sage Publishing.

4. Sinha, P. (2021). Data Science and Analytics for Business. Cengage India.

5. Bhaskar, B. (2019). Electronic Commerce: Framework, Technologies and Applications. McGraw Hill Education.

BLOCK - 02
Application of ICT in Business and Management

Unit - 1
Emerging Trends in E-Business

Learning Outcomes

After completing this unit, the learners will be able to:

- ◊ understand the concept and components of e-business and e-commerce
- ◊ comprehend e-commerce models and internet marketing
- ◊ learn about electronic payment systems, including types, internet banking, and mobile banking

Prerequisite

A traditional retail business, "FashionHub," specializing in clothing and accessories, has been operating in a brick-and-mortar setup for over 10 years. To expand its reach and adapt to the digital age, the company decided to transition into an e-business. FashionHub incorporated several key components into its e-business strategy, such as a user-friendly, responsive website with detailed product listings, high-quality images, and customer reviews, secure and efficient online payment gateways to facilitate purchases, an efficient Supply Chain Management system to track stock levels and streamline order fulfilment and implemented a CRM system to manage customer interactions, personalize marketing efforts, and enhance customer service.

For building an e-business, FashionHub conducted thorough market research to understand customer preferences and online shopping behaviours. It transitioned to an omnichannel business model, combining online and offline operations. Developed a visually appealing and functional e-commerce website and implemented various digital marketing techniques to drive traffic and sales.

FashionHub adopted the e-commerce models such as Business-to-Consumer (B2C) for selling products directly to individual customers through the website, Business-to-Business (B2B) for offering bulk purchasing options to other retailers

and businesses and Consumer-to-Consumer (C2C) for an enabled a marketplace feature where customers could resell FashionHub products.

Apart from that, FashionHub utilized several internet marketing strategies that optimized website content to rank higher in search engine results, engaged with customers on social media platforms to promote products and build brand loyalty, Sent personalized emails with exclusive offers and updates to subscribers and created blog posts, videos, and lookbooks to showcase fashion trends and styling tips.

In addition to that, FashionHub integrated multiple EPS options that allowed customers to pay directly through their bank accounts, provided a mobile app for seamless transactions on the go and included credit/debit card payments, digital wallets, and payment gateways like PayPal and Stripe.

The transformation into an e-business allowed FashionHub to reach a broader customer base, increase sales, and streamline operations. The integration of modern technologies and adherence to legal and ethical standards contributed to the company's success in the digital landscape.

Keywords

E-Business, E-Commerce, Internet Marketing, Electronic Payment Systems, Internet Banking, Mobile Banking

Discussion

As the global economy becomes more digitalized, companies are using technology to reach a wider audience, improve consumer experiences, and streamline operations. E-business practices are changing how organizations function, from cashless payments to online buying. Gaining success in the cutthroat, digital-first corporate environment requires an understanding of these ideas.

The rapid growth of the internet and technology has made it possible for businesses to adopt e-business and go beyond traditional ways. The foundation of modern commerce is e-business, which includes everything from setting up a website to using Internet tools for marketing and payment processing. Let us take a closer look at the key concepts.

2.1.1 E-Business

Many people now use the terms "e-business" and "e-commerce" interchangeably. However, they are not the same. They frequently use the word "e," which stands for

"electronic." Electronic business refers to conducting business via the internet, intranet, online, and extranet. The marketing, purchasing, and selling of goods and services via the Internet is known as electronic commerce, or e-commerce. It encompasses all aspects of selling goods and services online. E-business, on the other hand, is essentially the buying and selling of products and services as well as other commercial endeavours conducted online. It also describes the procedures and equipment that enable businesses to employ Internet-based infrastructure and technology both inside and outside of their own walls to carry out routine business operations.

E-business is the practice of doing commercial operations, such as purchasing and selling, customer support, and partner collaboration, online. It includes every type of Internet business activity.

IBM defines e-business as "the transformation of key business processes through the use of internet technologies."

For example, Amazon is a digital marketplace that enables customers to purchase diverse products, from books and electronic items to fashion and fresh foods. Besides purchasing products on its website or mobile app, Amazon also offers cloud computing services in Amazon Web Services (AWS), video streaming in Prime Video, and artificially intelligent helpers such as Alexa. Amazon's business model encompasses B2C (directly selling to customers), B2B (Amazon Business for companies), and C2C (third parties offering products on its platform).

2.1.1.1. Components of E-Business

E-business functions similarly to the digital engine that drives modern companies. It helps businesses run more effectively, provide better customer service, and maintain their competitiveness by fusing technology and creative thinking. Consider a well-oiled engine in which sales, customer service, operations, and logistics all function together harmoniously. The machinery depends on essential elements that make up e-business. Every element is an essential part of a puzzle that fits together to give businesses and consumers a flawless business experience. These elements work together to deliver goods and services from the online marketplace to your door in a simple and pleasurable manner. Let us explore it in detail.

a. E-Commerce

Consider the situations where you buy a phone on Amazon, research models, pay, and have it delivered, or when you book a cab on Uber, where you use a mobile application to schedule and pay for the journey rather than calling a cab on the street. This is exactly what we call E-commerce.

E-Commerce means buying and selling products or services over the Internet. You shop, pay, and occasionally even have your products delivered using websites or mobile applications rather than going to a physical shop.

A good example of e-commerce is eBay. eBay is an internet-based marketplace where consumers and businesses can buy and sell goods of all sorts, such as electronics,

clothing, collectables, and more. eBay mainly has a consumer-to-consumer (C2C) and business-to-consumer (B2C) format, with people able to list items for sale or auction by fixed price. It has safe payment and shipment online, thus making it one of the sites where global commerce is on high demand.

b. Customer Relationship Management (CRM)

Consider dining at a restaurant where the waiter recalls your favourite dish, is aware of your coffee preferences, and follows up to ensure everything is just right. CRM is the digital equivalent of this experience, making sure that each communication is smooth and tailored to the individual.

In E-business, customer relationship management, or CRM, refers to the use of digital technologies and tactics to establish, preserve, and improve connections with customers. To foster long-term loyalty and returning customers, the objective is to better understand consumer demands, deliver individualized experiences, and guarantee client pleasure.

Given that most consumer interactions with enterprises take place online, CRM is essential in the environment of e-business. Businesses employ technology to handle and improve these relationships in the absence of in-person interactions.

One such example of Customer Relationship Management (CRM) is Salesforce. Salesforce is a cloud-based CRM tool that enables organizations to manage customer interactions, sales, marketing, and customer support in one location. Salesforce is used by organizations to monitor leads, automate tasks, and customize customer communication to improve customer satisfaction as a whole. Its analytical features and AI-driven insights enable businesses to make informed decisions to further enhance customer relationships.

c. Enterprise Resource Planning (ERP)

Imagine an eatery at rush hour without a system: customers leave frustrated, orders are confused, ingredients run out suddenly, and payments take too long. There is chaos everywhere!

ERP can help with this; it is similar to employing a manager in a restaurant who makes use of an organized system to make sure everything goes without a hitch. It can ensure smoothness in functioning as follows,

- ◊ Using real-time orders, the manager makes sure the kitchen understands what to prepare.
- ◊ When supplies run low, they automatically place more orders based on the ingredient levels they monitor in the storage area.
- ◊ The cashier receives unambiguous updates about who paid for what.
- ◊ They make sure servers are aware of which table placed which order.

ERP is the effective manager in the world of e-business, coordinating all departments (cook, storage, cashier, and waiters) to ensure that the restaurant (company) provides its clients with exceptional service without any errors or delays.

In addition, ERP makes sure that e-business activities run smoothly by integrating departments such as finance, sales, inventory, and logistics into a single system, which speeds up, simplifies, and improves the reliability of the entire process.

A good example of Enterprise Resource Planning (ERP) is SAP ERP. It is a complete software solution that brings together different business functions, including finance, supply chain management, human resources, and procurement, in a unified system. Companies utilize SAP ERP to automate operations, enhance efficiency, and make data-driven decisions. Large companies, such as manufacturers and retail chains, utilize SAP ERP to effectively manage their intricate business functions.

d. Supply Chain Management (SCM)

Suppose you have a pizza delivery framework where the supplier supplies the restaurant with flour, cheese, and vegetables, the restaurant manufactures the pizza, stores it in the oven for a short time (warehousing), distributes it to the customer's door (distribution), and the customer eats it (final delivery).

All of these steps are managed digitally in e-business. Online orders are placed automatically, and you receive notifications like "Your pizza is on the way!" as the kitchen is alerted to prepare the pie and the delivery agent receives the route through an app.

This guarantees accuracy, speed, and efficiency all essential components of supply chain management in e-business.

Managing the movement of products, services, data, and funds from the producer to the consumer is known as supply chain management, or SCM. SCM is carried out electronically in the setting of e-business, utilizing digital tools and the internet to increase efficiency, save costs, and streamline procedures.

A prime example of Supply Chain Management (SCM) is that of Walmart's supply chain model. Walmart exploits sophisticated SCM strategies, such as real-time observation, automated storages, and effective vendor collaborations, to preserve the continuity of product flow between vendors and shop floors. Its JIT-based inventory system minimizes storage costs along with maintaining well-stocked stores with popular merchandise. Walmart keeps its supply chain highly efficient and cost-saving in nature by adapting technologies such as RFID, big data analytics, and artificial intelligence.

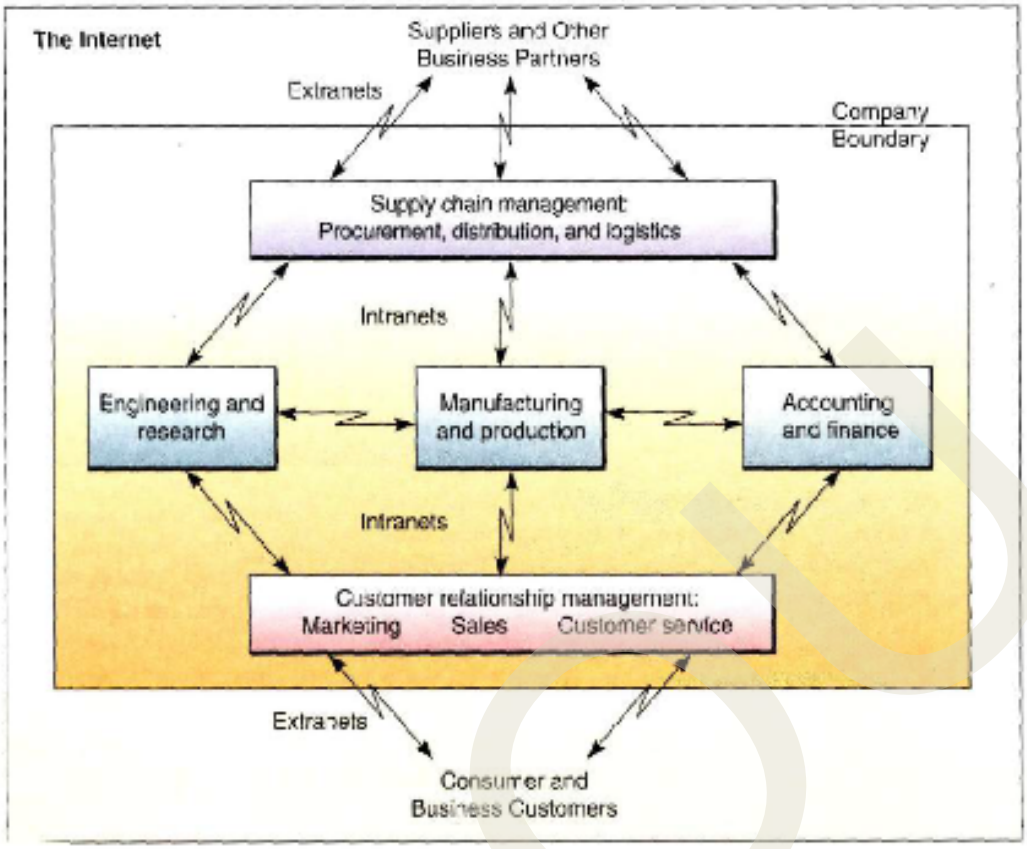

Fig. 2.1.1 E-Business Framework

2.1.1.2 Steps in Building an E-Business

Establishing an online business requires a number of methodical procedures to guarantee a successful launch and ongoing operation. Here is a brief explanation.

a. Idea Generation and Business Plan

Think of this phase as creating a design for your house. Without a good plan, construction cannot start. Identify the product or service you will offer online. Examine the market, your rivals, and your unique selling proposition (USP). Example: You want to start an online bakery offering customized cakes

b. Register Your Business and Domain Name

This is similar to deciding on the name and location of your internet store. Select a distinctive domain name (website address) for your e-business and officially register your organization.

c. Build Your Website or Platform

Consider the website as your online storefront, where clients may view, engage with, and buy your goods. So, create a user-friendly, intuitive website or application. Ensure that it contains; listings of goods or services, secure payment methods and a shopping cart, customer service information and contact details, and mobile-friendly layout.

d. Set Up a Payment Gateway

This is like to setting up a cash register in your store, but in a safe, digital format. Incorporate safe payment methods that let clients use digital wallets, UPI, debit cards, or credit cards to make purchases. Use payment processors such as PayPal, Stripe, or Razorpay, for instance.

e. Organize Logistics and Supply Chain

Logistics are similar to the trucks that transport goods from your store to the residences of your clients. Establish a procedure for managing inventories, processing returns, and delivering products. Select logistics partners such as delivery applications or courier services. For instance, to send cakes promptly and in ideal condition, collaborate with FedEx or nearby delivery providers.

f. Digital Marketing and Promotion

Digital Marketing is similar to employing flyers, banners, and word-of-mouth, except it takes place online. As an instance, an online bakery might advertise for special events like birthdays or anniversaries, post lovely pictures of their cakes on Instagram, and give discounts. Digital marketing includes email marketing to reach clients directly, search engine optimization (SEO) for your website, social media platforms (Facebook, Instagram), and sponsored advertisements (Google Ads, Facebook Ads).

g. Launch and Monitor Performance

Consider this phase as assessing the health of your store by looking at the number of customers, their purchases, and their preferences. Start your online business, use tools like Google Analytics or social media insights, and monitor performance indicators like website traffic, customer reviews, sales, and profit trends.

h. Customer Support and Improvement

It is similar to cultivating enduring relationships with clients to encourage repeat business. To keep customers and promote repeat business, deliver exceptional customer service. Update your systems and website frequently in response to consumer input. Businesses may promptly answer consumer questions, address grievances, and provide discounts to devoted clients.

2.1.2 E-Commerce

E-commerce is similar to a huge online mall, where you can shop at any business with just a click and have your products delivered right to your home.

The term “electronic commerce,” or “e-commerce,” encompasses a wide variety of online business operations involving goods and services. Additionally, it applies to “any type of business activity in which the parties connect electronically instead of through direct physical contact or physical exchanges.” E-commerce is commonly defined as any activity involves the exchange of ownership or the right to use products or services via a computer-mediated network, including buying and selling via the Internet. Despite

being widely accepted, this definition falls short in addressing current advancements in this brand-new, ground-breaking corporate phenomenon.

Myntra is a classic case of e-commerce. It is the online fashion and lifestyle retailer for India that offers clothes, shoes, accessories, and beauty products of various brands. Myntra follows a B2C business model and makes the experience of buying by providing end-of-season sales and individualized recommendations to customers. It is most famously known to have exclusive brand associations and Indian cyberspace for fashion.

2.1.2.1 E-Commerce Models

Shopping on the internet can be conducted in a variety of ways. We can categorize e-commerce into many business models based on the type of business and the way it is conducted. In the online marketplace, every e-commerce model has a distinct function. E-commerce effectively connects everyone in the digital world, whether you are a firm purchasing raw materials, a freelancer selling talents, or a consumer looking for goods

Fig. 2.1.2 E-Commerce Models

E-commerce models explain the interactions between companies and consumers in an online economy. Let us thoroughly explore them:

a. B2B (Business-to-Business)

B2B is like a factory providing a bakery with raw materials. E-commerce between businesses is known as business-to-business (B2B) e-commerce. This kind of e-commerce focuses on the connections between and among companies. This sort of e-commerce accounts for around 80% of all e-commerce, and according to most experts, B2B e-commerce will continue to develop at a higher rate than B2C e-commerce.

E-markets and E-Infrastructure are the two main parts of the B2B market. The B2B architecture is known as E-Infrastructure, and it mostly consists of the following:

- ◊ Logistics - transportation, warehousing and distribution (e.g., Procter and Gamble);
- ◊ Application service providers - deployment, hosting and management of packaged software from a central facility (e.g., Oracle);
- ◊ Outsourcing of functions in the process of e-commerce, such as Web- hosting, security and customer care solutions (e.g., outsourcing providers such as eShare);
- ◊ Auction solutions software for the operation and maintenance of real- time auctions in the Internet (e.g., OpenSite Technologies);
- ◊ Content management software for the facilitation of Web site content management and delivery (e.g., ProcureNet); and
- ◊ Web-based commerce enablers (e.g., Commerce One, a browser-based, XML enabled purchasing automation software).

The most basic definition of an e-market is a website where both buyers and sellers communicate and conduct commercial transactions.

Hewlett Packard (HP), Dell, Cisco, and IBM are the more well-known B2B examples and best practice models. For instance, more than 90% of product orders for Cisco are placed online.

b. B2C (Business-to-Consumer)

Customers who engage in business-to-consumer exchanges, collect information, buy tangible goods (like books or consumer goods) or information goods (like digital content, software or e-books); and, in the case of information goods, receive products via an electronic network.

It is the oldest and second-biggest type of online shopping. Online commerce, often known as e-tailing, is where it all began. Online retailers like Amazon.com are therefore the more prevalent B2C business models. Futurebazaar.com (from Big Bazaar), thehindushopping.com, indiaverta.com, fabmart.com, and others are a few Indian B2C e-commerce companies. Examples of business-to-consumer transactions incorporating information items include Expedia and Travelocity.

Applications of this kind of e-commerce are more prevalent in the fields of information and product purchase as well as personal finance management, which deals with managing one's own money and investments using online banking platforms like Quicken. By giving customers more access to information and enabling them to find the best deal on a good or service, business-to-consumer e-commerce lowers transaction costs, especially search costs.

Because setting up and maintaining a website is far less expensive than establishing a "brick-and-mortar" structure for a business, B2C e-commerce also lowers barriers to market entry. B2C e-commerce is even more alluring when it comes to information goods since it spares businesses from having to account for the extra expense of a physical distribution network. Furthermore, it becomes more practical to distribute information commodities in countries with a large and growing Internet population.

An example of a Business-to-Consumer (B2C) model is one of the old-school ones is Zappos, which is an online apparel and shoe store. Zappos functions by selling shoes, clothes, and accessories directly to customers online with perks such as free return and great customer support. The model enables customers to shop and buy products from firms without intermediaries.

c. C2C (Consumer-to-Consumer)

C2C simply refers to business dealings between consumers or private individuals. The rise of online markets and auctions, especially in vertical industries where companies can bid for what they want from a variety of providers, is what defines this kind of e-commerce. It might be the most promising for expanding into new markets.

There are at least three varieties of this kind of e-commerce;

- ◊ Peer-to-peer systems, like the Napster model (a protocol for file sharing between users used by chat forums similar to Internet Relay Chat) and other file exchange and later money exchange models;
- ◊ Classified ads at portal sites like Sulekha.com and justdial.com classifieds; and
- ◊ Auctions conducted at a portal, like eBay, which permits online real-time bidding on items being sold on the Web.

One such instance of the Consumer-to-Consumer (C2C) e-commerce model is OLX. OLX is an internet-based marketplace where people can sell and purchase second-hand items like furniture, electronics, vehicles, and household items to other consumers directly. The users can list items for sale, negotiate with potential buyers, and transfer payments without any company involvement. OLX is a peer-to-peer trading platform, thus a sweetheart of used goods.

d. B2G (Business-to-Government)

Consider the Business to Government (B2G) structure as the construction business building a government public library. Following stringent government regulations, the company competes against other businesses in an electronic tender, gets the contract, and completes the project.

Businesses that use digital platforms to supply government agencies with goods, services, or information are referred to as operating under the Business-to-Government (B2G) model. Businesses use online portals or tender systems to offer IT solutions, offer specialized products, or bid on government contracts.

Important B2G E-Commerce Features:

- ◊ Digital Tendering: Companies use internet portals to place bids for government contracts.
- ◊ Transparent Procedures: Fair and open vendor selection is guaranteed by digital platforms.
- ◊ Tailored Solutions: Companies provide specific goods or services that are suited to the requirements of the government.

- ◊ Rules Compliance: Strict guidelines and compliance requirements are followed during transactions.
- ◊ Large-Scale Contracts: Long-term service agreements or bulk purchases are typically the subject of deals.

By bridging the gap between companies and government organizations, the business-to-government (B2G) framework facilitates transparent procedures, simplified service delivery, and effective procurement. It is essential to economic growth and the digital transformation of the public sector.

A prime example of the Business-to-Government (B2G) e-commerce paradigm is IBM. IBM offers information technology solutions, cloud computing, cybersecurity, and data analytics as services to specific government agencies globally. For example, IBM collaborated with governments to build smart city solutions, enhance data security for the public sector, and create digital infrastructure. This paradigm entails companies offering goods and services to government bodies through tenders, contracts, or direct collaborations.

2.1.2.2 Components of a Typical Successful E-Commerce Transaction Loop

A number of enabling and technological requirements must be met for e-commerce to be a viable substitute for traditional transactions and to optimize its advantages.

For an e-commerce ecosystem to be successful, each element is essential, and any weak link could hinder expansion.

- ◊ **Corporate Website with E-Commerce Capabilities:** A secure platform for online transactions, enabling smooth buying and selling experiences.
- ◊ **Efficient Intranet System:** Streamlined internal processes for managing and fulfilling orders effectively.
- ◊ **IT-Literate Employees:** Skilled staff to handle system operations, manage data, and ensure seamless workflow.
- ◊ **Banking Institutions:** Reliable payment gateways and transaction processing for secure credit card payments and electronic fund transfers.
- ◊ **Freight and Logistics Services:** Cost-effective shipping solutions for national and international delivery of goods.
- ◊ **Authentication Authority:** Trusted third-party services to verify transactions and maintain security.
- ◊ **Internet-Ready Consumers:** A critical mass of customers with internet access, disposable income, and a willingness to shop online.
- ◊ **Digitally Enabled Businesses:** Companies with online order management systems and integrated supply chains for seamless B2B transactions.

- ◊ **Government Legal Framework:** Clear regulations governing electronic transactions, digital signatures, and fraud prevention.
- ◊ **Law Enforcement Mechanisms:** Institutions to ensure compliance with laws and protect stakeholders from online fraud.
- ◊ **Robust Internet Infrastructure:** Reliable, high-speed connectivity to support online operations.
- ◊ **Affordable Internet Pricing:** Cost-effective internet plans that encourage prolonged and frequent online activity.

2.1.3 Internet Marketing

Businesses now have access to a wealth of marketing opportunities because of the Internet. Through the use of various digital platforms, companies can do more than simply advertise their goods and services online; they can attract new customers and convert them to increase sales. It is astounding how quickly and easily digital media can support a business and transfer data.

Consider Internet marketing as the establishment of a dynamic online shopping center. Each channel (websites, email, and social media) draws clients with special deals and eye-catching displays, much like a different store.

The practice of advertising goods, services, or brands online and through digital platforms is referred to as internet marketing, online marketing, or digital marketing. It uses a range of tactics and resources intended to draw in, hold the interest of, and turn online audiences into paying consumers.

A well-targeted, conversion-focused, measurable, and interactive marketing strategy that uses digital innovation to reach consumers and turn them into clients in a sustainable way is known as digital marketing. Digital marketing differs greatly from traditional marketing in that its entire concept and features are more capable, efficient, goal-oriented, and measurable.

Fig. 2.1.3 Traditional marketing Vs Internet Marketing

A good example of Internet Marketing is Coca-Cola's online campaigns. Coca-Cola employs social media sites such as Instagram, Facebook, and YouTube to execute targeted advertisements, influencer partnerships, and interactive campaigns. Its most successful online marketing campaign was the "Share a Coke" campaign, where customized bottle labels promoted social sharing and user-generated content. Through online advertising, email marketing, and SEO, Coca-Cola successfully engages its audience and creates brand awareness worldwide.

2.1.3.1 Types of Internet Marketing

Businesses can use internet platforms to promote themselves in a variety of ways. While each of these forms of internet marketing has a distinct function, when combined, they form a potent plan for increasing brand recognition, drawing clients, and boosting sales online.

a. Search Engine Optimization (SEO)

SEO involves optimizing a website to improve its ranking in search engine results, making it more visible to users searching for relevant keywords. It includes on-page SEO (optimizing content, meta tags, and URLs), off-page SEO (building backlinks and social signals), and technical SEO (improving site speed, mobile-friendliness, and indexing). A well-optimized website attracts organic (free) traffic without relying on paid ads. For example, when you search for "best smartphones under Rs 500," a tech blog with strong SEO may appear at the top of Google results.

b. Search Engine Marketing (SEM) & Pay-Per-Click (PPC)

SEM involves running paid advertisements on search engines like Google Ads and Bing Ads to drive traffic to a website. PPC is a popular SEM model where advertisers pay a fee each time someone clicks their ad. These ads appear at the top of search results, marked as "Sponsored." For example, if a company selling running shoes bids on the keyword "best running shoes," their ad may show up when users search for that term, ensuring visibility and quick results.

c. Social Media Marketing (SMM)

SMM is the use of platforms like Facebook, Instagram, Twitter, LinkedIn, and TikTok to promote brands, engage audiences, and drive website traffic. Businesses post content, run paid ads, and interact with followers to build brand awareness and customer loyalty. For example, Nike uses Instagram to showcase new products, feature athlete endorsements, and engage users with interactive posts and stories.

d. Content Marketing

This strategy involves creating and distributing valuable, informative, and engaging content to attract and retain customers. It includes blogging, videos, infographics, case studies. The goal is to educate and build trust rather than directly sell. For example, HubSpot publishes detailed marketing guides and free tools to attract businesses looking for marketing solutions, ultimately converting them into customers.

e. Email Marketing

Email marketing involves sending promotional emails, newsletters, and personalized offers to customers to nurture leads and increase sales. Companies use automated emails to remind customers about abandoned carts, offer discounts, or share updates. For example, Amazon sends personalized emails recommending products based on a customer's browsing history and previous purchases, increasing the chances of repeat sales.

f. Affiliate Marketing

In affiliate marketing, businesses partner with individuals or websites (affiliates) who promote their products and earn a commission for every sale made through their referral links. This is common among bloggers, influencers, and review websites. For example, a tech blogger may write a review about a laptop and include an Amazon affiliate link—if someone buys the laptop using that link, the blogger earns a commission.

g. Influencer Marketing

This type of marketing involves collaborating with social media influencers who have a large and engaged following to promote a brand's product or service. Influencers create authentic content and recommend products to their audience, making it an effective form of digital word-of-mouth marketing. For example, beauty brands like Maybelline work with makeup influencers on YouTube and Instagram to showcase new products through tutorials and reviews.

h. Video Marketing

Video marketing involves creating and sharing engaging video content to attract customers. It includes YouTube videos, Instagram Reels, TikTok clips, and live streaming. Businesses use video marketing for product demos, testimonials, and storytelling. For example, GoPro's YouTube channel features extreme sports videos shot with their cameras, showcasing product quality while engaging adventure-loving audiences.

i. Mobile Marketing

Mobile marketing focuses on reaching users through SMS marketing, mobile apps, push notifications, and in-app advertisements. Businesses use mobile marketing to engage with customers in real time. For example, food delivery apps like Zomato and Uber Eats send push notifications with special discounts or reminders when users are likely to order food.

j. Display Advertising

Display ads include banner ads, pop-ups, and retargeting ads that appear on websites, apps, and social media platforms. Retargeting ads show products that users have previously viewed, encouraging them to complete a purchase. For example, if you browse Nike's website for sneakers but don't buy, you may later see Nike's ads on other websites, reminding you to return and make a purchase.

2.1.4 Electronic Payment Systems (EPS)

Imagine picking up a goods from a retailer and using your phone to scan a QR code or tap your card instead of paying with cash. EPS essentially does the same function, but online. EPS refers to digital methods of making payments for goods and services online.

Electronic Payment Systems (EPS) have completely changed how we conduct financial transactions in the modern digital environment. With EPS, you may pay your electricity bill, purchase a product online, or subscribe to a streaming service quickly, securely, and conveniently without using cash or cheques.

EPS streamlines transactions and eliminates geographic restrictions by allowing individuals and businesses to exchange payments digitally across secure networks. Through digital wallets, mobile payments, or credit cards, EPS makes sure that your money transfers safely and effectively from your account to the seller's account.

An example of an Electronic Payment System (EPS) is PayPal. PayPal is an internet payment system which enables individuals to send and receive money securely on the internet. PayPal accommodates bank transfers, credit/debit card payments, and digital wallets, which are very convenient for e-commerce, freelancers, and businesses across the globe. It allows consumers to associate their bank cards or accounts with PayPal and make payments without having to provide sensitive financial information to merchants. It is used most frequently for online purchases, subscription services, and cross-border money transfers.

2.1.5 Types of EPS

There are several types of electronic payment systems (EPS), each designed to satisfy demands from customers and enterprises. Every kind of electronic payment system has a distinct function and meets the demands of various clients and companies. EPS has improved the speed, security, and convenience of financial transactions, from credit cards for simple internet purchases to cryptocurrencies for decentralized transactions.

By being aware of these possibilities, businesses and consumers can select the best solutions for their unique requirements, resulting in more seamless financial transactions in the digital age. The main EPS types are listed here, along with appropriate illustrations to help you understand them.

i. Internet Banking

Let us say you have a monthly electricity bill to pay. You use your mobile to easily make the payment by logging into your bank's Net Banking interface, entering the bill details, and avoiding the need to physically visit the electricity department. Internet banking is a digital service that allows customers to access and manage their bank accounts, conduct transactions, and use financial services online without visiting a physical branch. The official website or app of a bank is used to conduct transactions directly. The main advantages are that it is safe, available around-the-clock, and eliminates the need to visit actual bank branches.

ii. Mobile Banking and Payments

Suppose you are at a farmer's market and the merchant takes payments through mobile applications like PhonePay or Gpay. The payment is made instantaneously from your phone when you launch the app and scan the QR code. Using smartphone applications or services to conduct transactions is known as mobile payments. These applications accept payments through direct transfers using mobile phones, NFC (Near Field Communication), or QR codes.

Quite like this, you can also have mobile applications developed by commercial banks for availing all your banking services. Mobile banking also has become popular in this tech savvy era.

iii. Debit and Credit Cards

Among the most often used electronic payment options are credit and debit cards. With a credit card, customers can borrow money from the bank to make purchases that they will have to pay back later, but with a debit card, they can spend money straight from their bank account. Both cards provide easy and safe methods to shop in-store or online.

Let us say you wish to purchase a new phone online. Your debit card information is entered at checkout, and the payment is processed in a matter of seconds. As an alternative, if you are short on cash, you might purchase the phone with your credit card and settle the balance later.

iv. Electronic Fund Transfer (EFT)

EFT refers to electronic transfer of money between bank accounts without the need for cash or paper cheques. RTGS (Real-Time Gross Settlement) and NEFT (National Electronic Funds Transfer) are two examples. NEFT is appropriate for smaller and less urgent transactions since it uses a batch processing method, in which payments are processed in batches at predetermined intervals. RTGS, on the other hand, is usually utilized for high-value transfers and handles each transaction separately in real-time, guaranteeing immediate settlement. While RTGS provides speed and immediacy, making it more appropriate for urgent or significant money transfers, NEFT is more affordable and perfect for daily transactions. When combined, these technologies offer dependable, safe, and effective means for people and companies to transfer money between bank accounts, making a substantial contribution to a cashless and technologically advanced economy.

For instance, you might wish to transfer funds to a friend who is studying overseas. You start an RTGS transfer after logging in to your bank's website and entering their bank information. In real time, the funds are transmitted safely.

v. E-Cash

E-cash is digital currency used for online payments. You purchase a ₹100 prepaid digital gift card. Your personal financial information is kept private when you use it to make purchases from an online retailer without connecting your credit card or bank

account. This is how E-Cash works. The term "E-cash" describes electronic or digital currency that can be used for transactions conducted online. Usually, it is pre-paid and kept in a safe digital wallet or card. E-cash functions similarly to actual cash but is available online, providing security and anonymity.

vi. Digital Wallets

Digital wallets are online or mobile services that let users keep their credit card information and easily make purchases. These wallets offer a speedy checkout process and do away with the need to continually enter payment information.

2.1.6 Emerging Trends in E-Business

As technology advances, the e-business landscape is changing quickly, changing how companies engage with their customers, run their operations, and spur expansion. The following are some significant new developments that are changing the e-business scene.

a. AI and Chatbots

A chatbot appears when you go to an online clothes retailer and asks if you need help. Without human assistance, it checks the status of your order, suggests popular outfits, and assists you in finding the correct size.

Chatbots and artificial intelligence (AI) are transforming e-business sales and customer support. Chatbots may respond to consumer inquiries around-the-clock, fix problems right away, and even make product recommendations based on user preferences. AI examines consumer information to offer tailored suggestions and enhance the overall purchasing experience.

One of the excellent examples of Business Chatbots and AI is customer support on an e-commerce Shopify platform via ChatGPT. Most online retail businesses utilize chatbots based on AI to solve customer problems on product information, order status, and problem resolutions in real-time. The AI chatbots take advantage of NLP to determine customer requests and reply in split seconds and precise responses with zero or negligible manual intervention. For example, H&M's chatbot on the website helps users decide outfits based on their preference, enhancing user experience and sales. AI chatbots make operations more efficient, reduce response time, and operate 24/7, hence of immense benefit to businesses.

b. Blockchain

Blockchain technology is perfect for e-business supply chain management, data sharing, and payments since it provides safe, transparent, and impenetrable transactions. By ensuring that each transaction is validated and documented in a decentralized ledger, it reduces errors and fraud.

For example, most luxury goods online retailers track a product from production to delivery using blockchain technology. Consumers can monitor the path of their purchases and confirm their validity by scanning a QR code on them.

c. Voice Commerce

Let us say you run out of coffee pods. Rather than inputting data into your phone, you say something like, "Alexa, order coffee pods from my favourite store." Order placement and confirmation go smoothly.

Customers may use voice commands on smart devices like Google Home or Amazon Alexa to search for things, add them to a cart, and make purchases thanks to voice commerce. Because of its hands-free capability and ease of use, this trend is becoming more and more popular.

d. Augmented Reality (AR)

Sometimes you may find it difficult choose products for your home without knowing whether it would suit your home or how it will look. For instance, when you are purchasing a sofa online, but you are not sure if your living room will accommodate it. You can use your smartphone's camera to place a virtual sofa in your room and see how it appears thanks to the store's app's augmented reality feature.

Customers may virtually engage with things before making a purchase thanks to AR, which blends digital and physical aspects. In sectors where consumers prefer to "try before they buy," such as fashion, furniture, and cosmetics, this is especially helpful. Benefits of this feature include a decrease in product returns, an increase in client confidence, and improved online shopping.

Recap

- E-business: - It refers to conducting all aspects of business operations online, including supply chain management, customer relationship management, and e-commerce activities.
- E-commerce: - It specifically focuses on the buying and selling of goods and services over the internet, encompassing a variety of online transactions and business models.
- Steps in building an e-business: Identify your business model, create a detailed business plan, develop a user-friendly website, establish a strong online presence, and implement secure payment and logistics systems.
- E-Commerce Models: The main e-commerce models are B2B (Business-to-Business), B2C (Business-to-Consumer), C2C (Consumer-to-Consumer), and B2G (Business- to- Government).
- Internet Marketing: Internet marketing involves promoting products and services online through various digital channels like social media, email, search engines, and content marketing.

- ◊ Electronic Payment System (EPS): EPS enables electronic transactions through secure methods such as credit cards, digital wallets, and online banking.
- ◊ Internet Banking: Internet banking allows customers to perform financial transactions and manage their bank accounts online.
- ◊ Mobile Banking: Mobile banking provides banking services through mobile devices, allowing users to conduct transactions and access account information on-the-go.

Objective Questions

1. What is the first step in building an e-business?
2. What does B2C stand for in e-commerce models?
3. Which e-commerce model involves transactions between consumers?
4. Which digital channel is commonly used in internet marketing for promoting products?
5. Which E-marketing technique uses paid advertisements to appear at the top of search engine results pages?
6. What is an example of an electronic payment system?
7. What service does internet banking primarily provide?
8. How do users typically access mobile banking services?

Answers

1. Identify your business model.
2. Business-to-Consumer
3. C2C (Consumer-to-Consumer)
4. Social media
5. Pay-Per-Click (PPC) advertising

6. Digital wallets
7. Online financial transactions and account management
8. Through mobile devices

Assignments

1. What are the key steps involved in building an e-business from scratch?
2. Define e-commerce and explain its significance in the modern business landscape.
3. Describe the four main e-commerce models and provide examples for each.
4. Explain the key components of Internet Banking.
5. What are electronic payment systems and why are they crucial for e-commerce?
6. Define internet banking and explain its main features and services.
7. What is mobile banking and how does it differ from internet banking?
8. Identify and discuss emerging trends in the use of ICT in business.
9. Discuss the importance of selecting the right business model when establishing an e-business.
10. Discuss the advantages and challenges of operating an e-commerce business.
11. Analyze the impact of the B2B e-commerce model on global supply chain management.
12. How can social media marketing enhance a company's online presence and brand awareness?
13. Discuss the advantages and potential drawbacks of using digital wallets for online transactions.
14. Analyze the impact of internet banking on traditional banking models and customer expectations.
15. Discuss the advantages and challenges of using mobile banking services.

Reference

1. Nehete, P. U., & Dongre, N. G. (2024). *Information Technology For Business*. Nirali Prakashan.
2. Dawn, S., & Banerjee, P. (2020). *Information Technology & Its Application in Business*. Tee Dee Publications.
3. AV, S., Lakshmi, L., & Mohan, H. M. (2022). *Information Technology for Business*. Eka Publishers.
4. Chaffey, D., & Ellis-Chadwick, F. (2022). *Digital Marketing: Strategy, Implementation, and Practice*. Pearson Education.
5. Laudon, K. C., & Traver, C. G. (2021). *E-commerce 2021: Business, Technology, Society*. Pearson Education.
6. Turban, E., et al. (2021). *Electronic Commerce 2021: A Managerial and Social Networks Perspective*. Springer.
7. Kotler, P., & Armstrong, G. (2021). *Principles of Marketing*. Pearson Education.

Suggested Reading

1. Srivastava, A. K. (2019). *Information Technology and Its Application in Business*. Sahitya Bhawan Publications.
2. Dhunna, M., & Dixit, J. B. (2015). *Information Technology In Business Management*. Laxmi Publications.
3. Thareja, R. (2017). *Information Technology and its Applications in Business*. Oxford University Press.
4. Turban, E., Volonino, L., Wood, G., & Wali, O. P. (2015). *Information Technology for Management: Advancing Sustainable, Profitable Business Growth*. Wiley.

Unit - 2
Application of ICT in Office Administration

Learning Outcomes

After completing this Unit, the learner will be able to:

- ◊ know the use of office automation in the enterprises
- ◊ comprehend the need and importance of a virtual office in business
- ◊ understand the applicability and benefits of ERP inside an organisation

Prerequisite

Asian Paints Limited is an Indian multinational paint company headquartered in Mumbai. It is the largest paint company in India and one of the top five decorative coatings companies in the world.

Asian Paints has implemented various office automation tools to streamline its administrative and operational processes. These tools include automated inventory management systems, digital document management, and automated customer relationship management (CRM) systems. By automating routine tasks, the company has significantly reduced manual errors and improved efficiency.

During the COVID-19 pandemic, Asian Paints adopted virtual office solutions to ensure business continuity. The company utilized video conferencing tools, cloud-based collaboration platforms, and remote access solutions to enable employees to work from home. This transition to a virtual office environment allowed Asian Paints to maintain productivity and communication despite the physical distance.

Asian Paints has been using ERP solutions to integrate and manage its core business processes. The company initially implemented ERP systems to improve raw materials procurement and automate production processes. Over the years, Asian Paints has upgraded its ERP systems to include advanced features such as SAP's enterprise applications, SAP HANA platform-based software, and o9

Solutions' cloud-based AI platform for effective stock and dealer management. These ERP solutions have helped Asian Paints optimize its supply chain, enhance inventory management, and improve customer service.

The implementation of office automation, virtual office, and ERP systems has had a significant positive impact on Asian Paints. The company has reported increased operational efficiency, reduced costs, and improved customer satisfaction. The use of advanced technologies has also enabled Asian Paints to stay competitive in the market and adapt to changing business environments.

Asian Paints' successful adoption of office automation, virtual office, and ERP systems serves as an excellent example of how technology can be leveraged to enhance business operations. By continuously investing in and upgrading its IT infrastructure, Asian Paints has been able to maintain its leadership position in the industry and achieve sustainable growth.

Keywords

Office Automation, Virtual Office, Enterprise Resource Planning

Discussion

The way modern workplaces operate has been completely transformed by the incorporation of Information and Communication Technology (ICT) into office administration. ICT technologies help firms function more effectively and efficiently by improving data management, automating repetitive operations, and enabling smooth communication. ICT has become a crucial part of administrative procedures, from word processing software and digital calendars to sophisticated collaborative platforms and cloud-based storage. By giving users instant access to vital information, its use not only saves time and minimizes errors but also enhances decision-making.

2.2.1 Office Automation

Consider your workplace a busy factory, where employees are always on the go, handling papers and attempting to stay updated with the steady stream of information. Imagine that many of those chores are managed by a group of productive robots and digital technologies. Office automation has that kind of power.

Office automation is similar to having an individual assistant who supports you with all tasks, including email management and document creation. It is an assortment of technologies designed to simplify, expedite, and improve the effectiveness of your work.

Office automation involves using computer systems and software to digitally create, collect, store, manipulate, and relay office information needed for accomplishing basic tasks. It enhances the efficiency and productivity of office tasks by automating routine processes such as data entry, document management, communication, and scheduling. By reducing the need for manual intervention, office automation enables employees to focus on more strategic and high-value activities.

2.2.1.1 What makes workplace automation important?

- ◊ **Enhanced productivity:** You can concentrate on more crucial work by automating repetitive chores.
- ◊ **Better efficiency:** Automating your office can help you cut down on errors and simplify your routine.
- ◊ **Savings:** Using technology, you may cut costs on paper, printing, and numerous other office supplies.
- ◊ **Improved communication:** Using office automation solutions, you may interact with clients and coworkers more successfully.

2.2.1.2 Types of Office Automation Tools

Office automation technologies reduce human error and streamline procedures by using technology to automate routine tasks. Some of the several kinds of office tools for automation are listed below.

a. Workflow Management Systems

With the aid of this kind of office automation solution, you may send important reminders, set new deadlines, and keep important stakeholders updated.

A workflow automation system minimizes manual labour, mistakes, and delays by streamlining repetitive procedures with digital technologies. For instance, when an employee files a request for leave online, it is automatically forwarded to their management for consideration. With a single click, the manager can approve or reject it, and the system promptly updates HR records and alerts the employee. Everyone benefits from time savings, real-time tracking, and the elimination of paperwork. Workflow automation improves office operations' accuracy, efficiency, and transparency by automating repetitive procedures.

b. Process Automation System

You may increase productivity and efficiency by digitizing routine office tasks with the aid of process automation solutions.

End-to-end workflows are streamlined and optimized via process automation systems, which manage repetitive operations with little assistance from humans. For example, suppliers input invoices to an online portal for automated invoice processing, where software collects information, compares it to purchase orders, and schedules

payments after approval. Additionally, the system alerts suppliers when a payment is completed. By lowering errors, saving time, guaranteeing consistency, and increasing efficiency, this method frees up staff members to concentrate on higher-value work.

c. Document Management System

These tools assist organizations in maintaining the organization of all their documents. In order to save time and effort, it guarantees convenient accessibility.

A Document Management System (DMS) eliminates the need for physical storage and manual filing by automating the digital organization, retrieval, and storage of documents. For instance, staff members can scan and submit reports, contracts, and invoices into a company's central digital repository. The documents are automatically tagged and categorized by the DMS, which facilitates easy searching by dates, keywords, and other characteristics. Secure real-time access, editing, and sharing of documents by authorized users enhances teamwork and lowers the possibility of missing or lost information. By keeping an orderly, immediately available digital record, this approach guarantees compliance, increases efficiency, and improves document security.

d. Task Management System

Task management systems make it easier for different team members to collaborate, measure progress, and arrange all of your tasks based on priority.

Within an organization, a task management system simplifies task planning, tracking, and completion. Employees can utilize the system, for instance, to create, allocate, and prioritize tasks according to project needs and deadlines. In addition to tracking work in real time and sending reminders as deadlines draw near, the system automatically alerts team members of new assignments or changes. Managers are able to keep an eye on the progress of every assignment, distribute resources efficiently, and guarantee that everything is finished on time. By giving a clear picture of duties, lowering the possibility of tasks being missed, and improving teamwork, this method boosts productivity.

e. Data Analytics System

A vast quantity of complex data can be represented visually using data analytics tools, such as pie charts and bar graphs.

Large amounts of data are gathered, processed, and analyzed by a data analytics system to produce useful insights for decision-making. To discover purchase habits, forecast demand, and optimize stock levels, for instance, a retail company's system collects consumer data, sales trends, and inventory levels. The technology helps managers make data-driven decisions to increase sales, customer satisfaction, and operational efficiency by producing comprehensive reports and visual dashboards. Businesses can gain a competitive edge, optimize tactics, and identify hidden trends by utilizing real-time data.

In addition to this, any business can implement a variety of systems based on its requirements. Financial automation, electronic publishing, picture processing, and more are a few additional examples of office automation systems.

2.2.1.3 Office Automation Technologies

The term "office automation technologies" describes the range of electronic devices and programs that are used to optimise office workflows. Automation, improved communication, and higher output are all possible with these technologies.

Office automation solutions can boost productivity, facilitate collaboration and communication, and save businesses money and time. Additionally, they can help companies become more adaptable and change-responsive.

Some of the important categories of automation tools used by corporations are listed below;

a. Typing and Copying Machines

Typewriters

Consider typing a document in the absence of a computer. In the past, typewriters were the main instrument used to produce written material. These were mechanical apparatuses that struck ink onto paper with keys. For a long time, typewriters were necessary for office work, even though they are largely obsolete now.

Photocopiers

Do you recall the thrill of using a photocopier to make several copies of your coursework? Photocopiers transformed the reproduction of documents by enabling users to swiftly produce accurate duplicates of papers. With their ability to duplicate documents quickly and easily, photocopiers have long been a common sight in businesses. They are still a vital tool for many firms, even though their use has slightly decreased with the advent of digital document exchange.

Printers

Compared to earlier models, modern printers have greatly improved. These days, they have been coupled with computers to enable smooth document generation and output, and they can print in excellent resolution, frequently in colour.

b. Communication Devices

Telephone Systems

Both landlines and cell phones are now essential for both internal and external communication in offices. We use our phones for everything these days, from scheduling appointments to finalizing transactions.

Fax Machines

Fax machines used to be necessary for sending papers, but they are less frequent now because of email and scanning. In the past, fax machines were a common sight in offices since they made it possible to send papers quickly across phone lines.

Computers and Networks

Computers serve as a platform for a number of communication tools, such as video conferencing, instant messaging, and email.

Social media and the internet have further changed communication by enabling real-time connections with individuals all over the world.

Internet and Social Media

Social media platforms are used for networking and marketing, and the internet has completely changed communication by enabling worldwide connectedness. Consider attempting to manage a company without internet access. We use it for everything these days, from customer service to research.

c. Accounting Equipment

Calculators

Although they are less frequent now, they were historically necessary for calculations that required human labor. Do you recall those large calculators that were used in workplaces and classrooms? These days, computers and cellphones frequently come with built-in calculators.

Accounting software

Programs that automate computations, create financial reports, and expedite accounting procedures include Tally and QuickBooks. Accounting is now far more accurate and efficient thanks to these instruments.

Computers and Spreadsheet Software

For data management and financial analysis, computers and spreadsheet programs like Excel are essential. With spreadsheets, we may arrange, examine, and present data in ways that are not feasible with manual techniques.

2.2.2 Virtual Office

A virtual office is a service that allows businesses to operate remotely while still maintaining a physical presence. This innovative solution provides companies with a professional business address, mail handling services, and access to meeting rooms or office space when needed. Employees can work from various locations, leveraging digital communication tools like email, video conferencing, and cloud-based collaboration platforms to stay connected and productive. Virtual offices are particularly beneficial for startups, small businesses, and remote workers, as they offer a cost-effective alternative to traditional office spaces without compromising on professionalism.

The rise of virtual offices has been fueled by advances in technology and the increasing demand for flexible work arrangements. By utilizing a virtual office, businesses can reduce overhead costs, improve work-life balance for employees, and tap into a global talent pool. Additionally, virtual offices promote environmental sustainability by reducing the need for daily commuting and physical office infrastructure. As the future of work continues to evolve, virtual offices are becoming an essential component of modern business strategies, enabling companies to adapt to changing market conditions and thrive in an increasingly digital world.

2.2.2.1 Features of a Virtual Office

A virtual office offers various services that help businesses function remotely while projecting a corporate image:

1. **Business Address:** Provides a prestigious mailing address for companies, often in prime locations, to enhance credibility.
2. **Mail Handling & Forwarding:** Receives and manages postal mail and packages, forwarding them to the business owner as needed.
3. **Phone Answering & Virtual Receptionist:** Offers professional call answering services, voicemail management, and call forwarding.
4. **Meeting Room Access:** Allows businesses to book conference rooms or coworking spaces as needed for client meetings.
5. **Live Chat & Customer Support:** Some virtual offices provide chatbot or human customer service support to manage client inquiries.
6. **Fax & Scanning Services:** Digital document handling solutions for businesses requiring fax or scanned document processing.

2.2.2.2 Benefits of Virtual Offices

Virtual offices offer several key benefits that make them an attractive option for modern businesses. Here are some of the most notable advantages:

1. **Cost Savings:** Virtual offices eliminate the need for physical office space, reducing overhead costs such as rent, utilities, and office maintenance. This allows businesses to allocate resources more efficiently and invest in other areas of growth.
2. **Flexibility:** Employees can work from anywhere, providing them with greater flexibility and work-life balance. This can lead to increased job satisfaction, productivity, and retention rates.
3. **Professional Image:** A virtual office provides a prestigious business address, mail handling services, and access to meeting rooms, which can enhance a company's professional image and credibility without the need for a physical office.

Additionally, virtual offices allow businesses to tap into a global talent pool, expand their market reach, and promote environmental sustainability by reducing the need for commuting and physical office infrastructure. These benefits make virtual offices a valuable asset for companies looking to adapt to the changing landscape of work.

2.2.2.3 Types of Virtual Offices

There are several types of virtual offices, each catering to different business needs and preferences. Here are some common types:

1. **Business Address Service:** This virtual office provides a professional business address for mail handling and receiving packages. It helps businesses establish a presence in a prestigious location without the need for a physical office.
2. **Virtual Receptionist Service:** A virtual receptionist can handle phone calls, take messages, and provide customer support. This service ensures that businesses maintain a professional image and can effectively manage customer inquiries.
3. **Mail Forwarding Service:** This service involves receiving mail at a virtual office address and forwarding it to the business owner's preferred location. It is particularly useful for businesses that operate remotely or internationally.
4. **On-Demand Meeting Rooms:** Some virtual office providers offer access to meeting rooms and office spaces on an as-needed basis. This allows businesses to hold meetings or work in a professional environment when required.
5. **Coworking Spaces:** Coworking spaces offer shared office environments where individuals from different companies can work together. These spaces often come with amenities like high-speed internet, printing services, and communal areas for networking and collaboration.
6. **Virtual Office Suite:** This comprehensive package combines various virtual office services, such as a business address, mail handling, phone answering, and access to meeting rooms, into one convenient offering. It provides businesses with all the essential tools to operate efficiently without a physical office.

By choosing the right type of virtual office, businesses can enjoy the benefits of a professional presence, cost savings, and increased flexibility.

2.2.2.4 Examples of companies that have successfully implemented virtual offices:

a. **Automattic:** The company behind WordPress.com and WooCommerce, Automattic has been a remote-first company since its inception in 2005. With over 1,200 employees working from all over the world, Automattic leverages a variety of tools and technologies like Slack, Zoom, and GitHub to maintain open communication and collaboration.

b. **Buffer:** A social media management platform, Buffer has been a remote-first company since 2010. With a team of over 100 employees working globally,

Buffer ensures success by maintaining open communication, using tools like Slack and Zoom, and providing access to company information, including finances, strategy, and goals.

c. **Zapier:** A workflow automation platform, Zapier has been a remote-first company since its inception in 2011. With a team of over 300 employees spread across several continents, Zapier uses virtual offices to hire talent from around the world and maintain a flexible work environment.

These companies demonstrate how virtual offices can be effectively utilized to create a productive, flexible, and inclusive work environment.

2.2.3 Enterprise Resource Planning (ERP)

Consider your company to be a restaurant. The money, the supplies, the wait staff, and the kitchen are just a few of the many tasks you must oversee. ERP keeps everything operating smoothly and orderly, much like a digital kitchen hand. It's a software program that links every aspect of your business, including order processing and inventory control.

Businesses may manage and integrate all of their essential business activities with the use of enterprise resource planning (ERP) software. It functions as a sort of central hub that links every department inside a business, including supply chain management, human resources, accounting, and finance.

Example: SAP ERP at Coca-Cola

Coca-Cola, one of the world's leading beverage companies, implemented SAP ERP to streamline its operations and improve efficiency across its global supply chain. The company faced challenges in managing its vast network of suppliers, distributors, and retailers, which required a unified and integrated system to ensure smooth operations.

By adopting SAP ERP, Coca-Cola was able to:

- ◊ **Standardized Processes:** The ERP system standardized and automated various business processes, including procurement, production planning, inventory management, and financial reporting. This led to increased efficiency and reduced operational costs.
- ◊ **Improve Data Visibility:** The centralized ERP system provided real-time data visibility across the entire organization, enabling better decision-making and faster response to market changes.
- ◊ **Enhance Collaboration:** The ERP system facilitated improved collaboration between different departments and business units, ensuring a more cohesive and coordinated approach to managing the supply chain.

As a result, Coca-Cola experienced significant improvements in operational efficiency, cost savings, and overall business performance. The successful implementation of SAP ERP allowed the company to maintain its competitive edge in the highly dynamic beverage industry.

This example demonstrates how ERP systems can help large enterprises streamline their operations, improve data management, and enhance collaboration to achieve better business outcomes.

2.2.3.1 Types of ERP Implementations

The needs of various firms are met by different ERP deployment models, and in order to choose the finest one for your company, it's critical to comprehend the distinctive features of each. ERP systems come in a variety of forms, including hybrid, multi-cloud, on-premise, and cloud-based options.

On- Permise ERP

When using an on-premises system, the company is in charge of security, upkeep, upgrades, and other adjustments and operates the software on its servers. In-house IT personnel with the necessary skills are typically needed for maintenance. On-premises ERP was the sole choice for a long time. However, this deployment model's usage has drastically decreased in recent years, and market researcher IDC anticipates further drops.

Cloud Based ERP

Remote servers under third-party management power cloud-based ERP. Users can access reports and data from any location with a connection to the internet by using a web browser, which gives them more freedom. Cloud ERP can be deployed in a variety of ways, such as hosted cloud or true cloud.

Hybrid ERP

Cloud and on-premises deployment components are combined in hybrid ERP. Two-tier ERP is one hybrid strategy in which a company uses cloud systems for subsidiaries or specific regional offices while maintaining its on-premises ERP at headquarters.

The on-premises system is then integrated with these cloud solutions. Different businesses might use their on-premises systems for different purposes and use cloud solutions for certain business needs. In any case, to guarantee a constant flow of information, the cloud systems must be connected to the on-premises platform. This is frequently easier said than done.

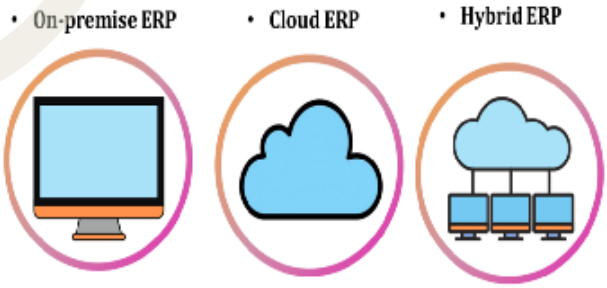

Fig. 2.2.1 Types of ERP

ERP helps businesses in the following ways;

- ◊ **Streamline processes:** ERP systems can increase productivity and efficiency by automating procedures and minimizing manual labor.
- ◊ **Boost decision-making:** ERP gives organizations access to real-time data and insights, enabling them to make well-informed choices.
- ◊ **Boost collaboration:** ERP systems encourage improved communication and teamwork by dismantling departmental silos.
- ◊ **Cut costs:** By streamlining processes, getting rid of duplication, and allocating resources optimally, ERP can help companies cut costs.
- ◊ **Boost visibility:** ERP gives everyone a clear picture of the operation of the firm by serving as only one source of fact for company data.

Companies can effectively adopt ERP in different areas of business as follows;

a. E-Procurement

Assume you own a bakery and must purchase flour, sugar, and baking supplies on a monthly basis. Rather than calling vendors or going to various stores think about carrying out that activity the following way;

- ◊ Go Online: You access a business-oriented app or website.
- ◊ Browse Suppliers: A list of vendors who are selling the goods you require is displayed, along with their costs.
- ◊ Compare & Purchase: You look at prices, place an online order, and pay electronically.
- ◊ Track Delivery: Similar to tracking a package from an internet retailer, you receive updates on when your goods will arrive.
- ◊ Records Saved: Orders, payments, and supplier information are all automatically saved.

This is exactly e-procurement: utilizing digital tools and the internet to streamline, expedite, and organize your company's purchasing process!

The process of purchasing products and services for a company via online channels and digital devices is known as electronic procurement, or e-procurement. Businesses now manage everything from locating vendors to making orders and keeping track of deliveries using internet platforms rather than more conventional methods like documents, telephone discussions, or personal interactions.

For example: - General Electric (GE) implemented an e-procurement system to streamline its purchasing processes and improve efficiency. By automating procurement tasks, such as purchase order creation, approval workflows, and invoice processing, GE significantly reduced manual effort and minimized errors. The system also enhanced

supplier management, provided real-time visibility into procurement activities, and ensured better tracking of spending and compliance. As a result, GE experienced improvements in procurement efficiency, cost savings, and overall operational performance, optimizing its supply chain and maintaining a competitive edge.

b. E- Marketing

Suppose for the same bakery you wish to increase the number of people who purchase your products. You choose to advertise your bakery online rather than through local posters or word-of-mouth. Similar to traditional marketing methods, the objective here is to increase the visibility and image of the product in the minds of consumers and to pass on necessary information from time to time, which keeps the consumers engaged and connected with your business. You may have to do the following activities to achieve your objective;

You create social media profiles and a website for your bakery.

To reach individuals in your area, you make advertisements on social media and Google.

For instance, display an advertisement that reads, "Have a sweet tooth? Get 20% off your first order and enjoy freshly baked cupcakes when you visit Sweet Spot Bakery!"

When someone searches for "best bakery near me" or browses Instagram while organizing a party, the advertisements are displayed.

Example: When a local mother clicks on your advertisement, she learns that you also create personalized birthday cakes.

People may leave comments on your postings, inquiring about ordering or your menu. You communicate with them and react fast.

Example: "Do you make gluten-free muffins?" is a message someone sends you. and you respond, "Yes! Come test them out!"

To find out how many individuals clicked on your advertisement or went to your website, you need analytics software.

Example: You see an increase in cupcake sales after your campaign launches as more customers come in to take advantage of the 20% discount.

All these put together is called as E- Marketing. Utilizing digital tools and the internet to advertise your bakery, expand your clientele, and build your company while communicating with the people you serve online.

Using digital tools and the internet to promote goods and services is known as electronic marketing, or e-marketing. It is similar to traditional marketing, but it takes place online via emails, digital ads, social media, and websites.

There can be many ways by which you can market your products online. Let us look into some of the prominent ones.

- ◊ Search Engine Optimization (SEO): Enhances the content of websites to increase their organic search engine ranking.
- ◊ Pay Per Click Advertising: Uses search engine sponsored advertisements to generate rapid traffic.
- ◊ Content marketing: Produces informative content, such as blogs or videos, to draw in and hold on to clients.
- ◊ Social media marketing: Engages audiences by promoting businesses on Facebook and Instagram.
- ◊ Email marketing: Distributes tailored emails to advertise goods, provide news, or provide special offers.
- ◊ Affiliate marketing: Collaborates with affiliates to market goods in exchange for a cut of sales.
- ◊ Influencer marketing: Works with influencers to promote products by utilizing their audience.
- ◊ Mobile marketing: Uses mobile-optimized websites, mobile apps, or SMS to reach consumers.
- ◊ Video marketing: Uses YouTube or Instagram to interact with consumers through video content.

Fig. 2.2.2 Elements of E-Marketing

Depending on the nature of each and every business, according to the target groug of consumers and the marketing objectives of the businesses, the decision of choosing one among the above-mentioned E-Marketing techniques becomes crucial for businesses.

c. E- Auction

Let us say your bakery has additional machinery that you no longer need, such as a commercial oven. You choose to use an e-auction site to receive the best price rather than selling it at a set price.

Now let us look how you can work this out.

Primarily you make a post on an e-auction website, revealing the oven's details, including pictures, condition, opening price, and bid guidelines. Then other bakers or local coffeehouse operators who are interested in purchasing the oven sign up on the marketplace and place a bid. Buyers may try to raise their bids as the auction date draws closer. The site alerts you and the buyer when the auction concludes and the highest bidder wins and you sell your oven to the winner for the bidded price.

Simply put, an e-auction is a contemporary, digital method of buying or selling through competitive bidding. It has several advantages, including the ability to attract more bidders, the potential for price increases, and the time and effort savings that come with engaging remotely for both buyers and sellers.

An example of a successful e-auction is the procurement process used by the UK Ministry of Defence (MOD) for purchasing goods and services. The MOD implemented an e-auction platform to increase competition among suppliers and achieve better pricing. By conducting online auctions, the MOD was able to streamline the bidding process, increase transparency, and obtain significant cost savings. Suppliers could submit bids in real-time, fostering a competitive environment that led to more favourable contract terms for the MOD. The e-auction platform improved efficiency, reduced procurement costs, and enhanced the overall effectiveness of the MOD's purchasing process.

d. E- Retailing

Imagine now that you would like to sell homemade bread, cakes, and cookies both online and in your store. You can utilise an e-commerce platform such as Amazon, Etsy, or a personalised bakery app, or you can make your website. When customers need something from your online store, they can put it in their shopping cart. A secure payment gateway such as a digital wallet, PayPal, or credit card can be used by the client to make the purchase. Then, you package the product and schedule delivery to the customer's residence as soon as the money is paid. The customer helps other fellow consumers trust your bakery by posting feedback on your website after obtaining the cake.

E-retailing is similar to starting a 24-hour online bakery where clients can place orders for their preferred sweets from the convenience of their homes. It is up to date, effective, and broadens your clientele beyond your neighborhood store.

The process of selling goods directly to consumers online is known as electronic retailing, or e-retailing. It is similar to operating a store, only that clients shop online rather than in person.

Online platforms are used in electronic retailing, where companies sell goods and services to customers directly. It includes a number of essential elements. First, companies create online stores, usually via websites or mobile applications, where they list their goods along with thorough descriptions, photos, and costs. Consumers peruse these online catalogs, put the things they want in virtual shopping carts, and then check out.

Customers have a variety of payment alternatives at checkout, such as digital wallets, credit/debit cards, and other payment options via the internet. Encrypted transactions are used to process the payment securely. Following confirmation of the transaction, the company packages the goods and makes arrangements for shipment to deliver them. Businesses may offer customer service assistance at any point to respond to questions, handle returns, and guarantee client happiness. Here is a simple demonstration of the E-Retailing model for you to check out how it works.

Fig. 2.2.3 E-Retailing model

An example of successful e-retailing is Amazon, which has revolutionized the retail industry by providing an extensive online marketplace. By offering a wide range of products, competitive pricing, and convenient delivery options, Amazon has created an exceptional shopping experience for customers worldwide. The company's sophisticated logistics network, personalized recommendations, and user-friendly platform have enabled it to dominate the e-retailing sector, attracting millions of customers and generating significant revenue. Amazon's success demonstrates the potential of e-retailing to transform traditional retail practices and meet the evolving needs of consumers.

e. Electronic Supply Chain Management (E-SCM)

When operating a bakery, you might need to rely on a supply chain to obtain supplies like butter, sugar, and flour. You handle the entire process online using e-SCM. An

online system can be used to communicate with raw material suppliers. You can place orders to replenish your ingredients and keep an eye on their levels in real time with an e-SCM tool. To make sure you're prepared to accept it, you can get notifications about when the delivery van with the items will arrive. The technology can plan the production line for your bakery based on real-time supply updates. This is exactly how E-SCM can help you manage a business's supply chain needs.

Using technology and internet-based systems to manage the flow of products, information, and funds between manufacturers, distributors, retailers, and suppliers is known as electronic supply chain management or e-SCM. It improves supply chain visibility, efficiency, and coordination.

An example of successful electronic supply chain management (e-SCM) is Cisco Systems, a global leader in networking and technology. Cisco implemented an advanced e-SCM system to enhance visibility, collaboration, and efficiency across its supply chain. By leveraging digital tools and technologies, Cisco was able to streamline its procurement, production, and distribution processes. The e-SCM system provided real-time data on inventory levels, demand forecasts, and supplier performance, enabling Cisco to make informed decisions and respond quickly to market changes. As a result, Cisco achieved improved operational efficiency, reduced costs, and greater agility in meeting customer demands.

2.2.4 Legal and Ethical Issues in Cyber World

Businesses and individuals are depending more and more on digital platforms for communication, transactions, and data sharing in the quickly growing cyber world. But to preserve accountability, security, and confidence, several ethical and legal issues are raised by this digital revolution.

◊ **Privacy Concerns**

One of the main issues in the cyber world is making sure that client data is protected. Strong data protection procedures are becoming more and more necessary as companies gather enormous volumes of personal information, including names, addresses, and financial information. Misuse of personal information, data breaches, or unauthorized access can result in serious legal repercussions as well as a decline in trust. An e-commerce platform, for instance, needs to protect consumer payment information and guarantee the safe preservation of private information to stop hackers from taking advantage of it.

◊ **Fraud**

Cyber fraud, which includes identity theft, phishing, and online scams, is still a constant menace in the digital world. In order to obtain sensitive information, scammers frequently use phony websites, emails, or texts to pose as reliable organizations. To lessen vulnerabilities, businesses must use encryption technologies, secure payment channels, and customer authentication procedures. Preventing money losses and data breaches also requires educating users on how to spot bogus communications.

◊ **Intellectual Property Rights**

In the cyber world, where unlawful distribution, piracy, and illicit copying are prevalent, protecting digital content, software, and creative assets is a major concern. Laws pertaining to intellectual property protect authors and companies by prohibiting the unapproved use or duplication of their works. Digital Rights Management (DRM) solutions are another tool that businesses may use to manage who can access and distribute their intellectual property. DRM systems, for example, are used by streaming services like Netflix and Spotify to prevent unauthorized sharing of protected content.

◊ **Compliance**

Businesses that operate online must abide by data protection legislation including the General Data Protection Regulation (GDPR) and comparable local ordinances. These rules guarantee openness in the gathering, storing, and use of personal information. Heavy fines, legal ramifications, and harm to one's reputation might arise from noncompliance. To stay in compliance, organizations need to designate data protection officers, create explicit privacy policies, and conduct routine audits of their data management systems.

To preserve trust, security, and integrity in the digital age, it is important to handle legal and ethical issues such as privacy concerns, fraud prevention, intellectual property protection, and regulatory compliance. To maintain long-term viability and customer trust, businesses need to implement safe systems, encourage moral behaviour, and keep up with changing laws.

Recap

- ◊ Office Automation: Office automation involves using software and technology to streamline administrative tasks, improve productivity, and enhance communication.
- ◊ Virtual Office: A virtual office provides remote working solutions with a professional business address, mail handling services, and access to meeting rooms.
- ◊ Enterprise Resource Planning (ERP): ERP systems integrate various business processes and functions into a unified system to improve efficiency and data management.
- ◊ E-procurement: Using digital and automated platforms to purchase goods and services online in order to increase corporate efficiency.
- ◊ E-marketing:- is the practice of reaching consumers by promoting goods and services online, through social media, and other digital tools.
- ◊ E-auction: Holding virtual marketplaces where buyers and sellers compete for products or services.

- ◊ E-retailing: It involves selling products and services directly to consumers over the internet through online stores and marketplaces.
- ◊ Electronic Supply Chain Management (e-SCM): It integrates digital tools and technologies to enhance visibility, collaboration, and efficiency across the entire supply chain, from procurement to distribution.
- ◊ Legal and Ethical Issues in the Cyber World: Legal and ethical issues include data privacy, cybersecurity, intellectual property rights, and ethical considerations in the use of technology.

Objective Questions

1. What is the main benefit of office automation?
2. What service does a virtual office typically provide?
3. What is the primary function of ERP systems?
4. What is a major concern regarding data privacy in the cyber world?
5. What is a key benefit of e-procurement for businesses?
6. What is a significant advantage of e-retailing for consumers?
7. What is a key benefit of e-SCM for businesses?
8. Describe office automation and name one tool used for the purpose.
9. What is the main advantage of having a virtual office for staff members?
10. Name two business functions integrated by an ERP system.
11. What is the main objective of e-procurement in companies?
12. Provide one example of an e-marketing tool
13. Mention one benefit of e-retailing for customers.
14. How is inventory management improved by e-SCM?
15. Write one advantage of using digital tools like ERP, e-marketing, and e-SCM in business operations.

Answers

1. Improved productivity and communication
2. A professional business address and mail handling services
3. Integrate various business processes and functions into a unified system
4. Protecting personal information from unauthorized access
5. Increased transparency and control over the procurement process
6. Convenience of shopping from anywhere with internet access
7. Improved operational efficiency and reduced costs
8. The practice of automating repetitive office processes using digital tools and software. Eg: Microsoft Office Suite
9. Utilize digital technologies to work remotely, giving flexibility and cutting down on commute time
10. Finance and Inventory management
11. Facilitate digital purchases for businesses in order to speed up the purchasing process
12. Instagram Marketing
13. Convenience of shopping from anywhere at any time
14. It lowers the possibility of stockouts or overstocking by providing real-time updates
15. Improved efficiency and cost savings

Assignments

1. What is office automation, and what are its key components?
2. Define a virtual office and explain its main features and services.
3. What is Enterprise Resource Planning (ERP), and what are its main functions?
4. Identify and discuss common legal and ethical issues in the cyber world.

5. List three office-related duties that can be automated with digital tools. For every assignment, conduct research and suggest a certain type of software or technology. Write a brief report outlining how these tools increase productivity and efficiency.

6. Consider that you are establishing a virtual office for a small company that employs ten people. Create a strategy that consists of:Communication tools (like instant messaging and video conferencing).Collaboration and task management tools.Techniques for making remote work secure.

7. Construct an actual case study situation in which a business sells excess inventory using an online auction platform. Describe how the business would organize the auction, draw bidders, and complete the transaction. Write a 400-word paper outlining the advantages and difficulties of using e-auction in this way.

8. Discuss the benefits and potential challenges of implementing office automation systems.

9. How can a virtual office benefit small businesses and startups?

10. Discuss the benefits and challenges of implementing an ERP system in a large organization.

11. How do data privacy laws protect individuals' personal information online?

Reference

1. Nehete, P. U., & Dongre, N. G. (2024). *Information Technology For Business*. Nirali Prakashan.

2. Dawn, S., & Banerjee, P. (2020). *Information Technology & Its Application in Business*. Tee Dee Publications.

3. AV, S., Lakshmi, L., & Mohan, H. M. (2022). *Information Technology for Business*. Eka Publishers.

Suggested Reading

1. Srivastava, A. K. (2019). *Information Technology and Its Application in Business.* Sahitya Bhawan Publications.
2. Dhunna, M., & Dixit, J. B. (2015). *Information Technology In Business Management.* Laxmi Publications.
3. Thareja, R. (2017). *Information Technology and its Applications in Business*. Oxford University Press.
4. Turban, E., Volonino, L., Wood, G., & Wali, O. P. (2015). *Information Technology for Management: Advancing Sustainable, Profitable Business Growth*. Wiley.
5. Kotler, P., Kartajaya, H., & Setiawan, I. (2021). *Marketing 5.0: Technology for humanity. Wiley.Klemperer, P. (2004). Auctions: Theory and practice.* Princeton University Press.
6. Monk, E., & Wagner, B. (2020). *Concepts in enterprise resource planning* (5th ed.). Cengage Learning.
7. Turban, E., Outland, J., King, D., Lee, J. K., Liang, T.-P., & Turban, D. C. (2021). *Electronic commerce 2021: A managerial and social networks perspective* (9th ed.). Springer.
8. Weele, A. J. V. (2018). *Purchasing and supply chain management* (7th ed.). Cengage Learning.

MODEL QUESTION PAPER SETS

SREENARAYANAGURU OPEN UNIVERSITY

Model Question Paper (SET- 1)

QP CODE: ……

Reg. No:.....

Name: ……

FOURTH SEMESTER BACHELOR OF BUSINESS ADMINISTRATION (BBA) EXAMINATION

SKILL ENHANCEMENT COURSE

B21BB02SE – IT FOR BUSINESS

CBCS – UG Regulations 2023 - 2024 – Admission Onwards

Time: 3 Hours Max Marks: 70

Section A

(Answer any 10, each carry 1 mark)

(10×1= 10)

1. What does ICT stand for?
2. What is the Internet?
3. Define computer network.
4. Mention one type of network topology.
5. What is an e-business?
6. Name a popular search engine.
7. What is electronic mail?
8. Identify one type of wireless communication technology.
9. What does ERP stand for?
10. Name one emerging trend in ICT for business.
11. What is a web browser?
12. Name any two components of ICT.
13. What is Bus Topology?
14. What is a virtual office?
15. Define Internet Protocol.

Section B

(Answer any 5, each carry 2 marks)

(5×2=10)

16. Explain the importance of ICT in modern business.
17. List the components of ICT.
18. Describe the evolution of the Internet.
19. What is E-SCM?
20. What is Network topology?
21. Describe the role of search engines in the Internet.
22. What is electronic payment system?
23. Explain how cloud computing benefits businesses.
24. Discuss the legal issues associated with ICT use in business.
25. Briefly explain the types of internet Protocols.

Section C

(Answer any 4, each carry 5 marks)

(4×5=20)

26. Discuss the functions of ICT in the context of business management.
27. Explain the steps involved in building an e-business.
28. Explain the different types of wireless Communication technology?
29. Describe the different e-commerce models and their advantages.
30. Explain the concept of office automation and its significance.
31. Evaluate the role of enterprise resource planning in streamlining business processes.
32. Discuss the ethical issues that may arise in cyber world activities.
33. Explain how wireless communication technology enhances business operations.

Section D

(Answer any 2, each carry 15 marks)

(2X15=30)

34. Discuss the various functions and key components of Information and Communication Technology.

35. Evaluate the impact of ICT on global business Operations.

36. Discuss the concept of office automation and elaborate on the various tools commonly used in office automation systems.

37. Critically evaluate the significance of cloud computing in today's digital environment. Discuss the various types of cloud services.

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Model Question Paper (SET- 2)

QP CODE: ……

Reg. No:.....

Name: ……

FOURTH SEMESTER BACHELOR OF BUSINESS ADMINISTRATION (BBA) EXAMINATION

SKILL ENHANCEMENT COURSE

B21BB02SE – IT FOR BUSINESS

CBCS – UG Regulations 2023 - 2024 – Admission Onwards

Time: 3 Hours

Max Marks: 70

Section A

(Answer any 10, each carry 1 mark)

(10×1= 10)

1. Define ICT.
2. What is Network Toplogy?
3. What is NFC?
4. Identify one importance of the Internet in business.
5. What does the term e-commerce mean?
6. List one example of a wireless communication technology.
7. What is a Search Engine?
8. Name one component of an electronic payment system.
9. Define Ring Topology.
10. What does the ERP stand for?
11. Name one legal issue in cyber world.
12. What is cloud computing?
13. What is Internet protocol?
14. What is virtual office?
15. Identify one benefit of office automation.

Section B

(Answer any 5, each carry 2 marks)

(5×2=10)

16. Describe the role of computer networks in business.
17. What is E- Procurement?
18. What is Workflow Management System
19. Explain electronic payment system?
20. What is Augmented Reality?
21. Explain the significance of internet protocols.
22. Explain the benefits of cloud computing in business.
23. What is Affiliate Marketing?
24. Discuss the advantages of mobile banking over traditional banking.
25. Identify two emerging trends in ICT applications for business.

Section C

(Answer any 4, each carry 5 marks)

(4×5=20)

26. Discuss the impact of internet evolution on business communication.
27. Explain Enterprise Resource Planning?
28. Explain the types of virtual offices.
29. Discuss the legal and ethical considerations when using ICT in business.
30. Describe the benefits of Virtual Offices?
31. Explain the different types of Cloud Services?
32. Examine the role of search engines in digital marketing strategies.
33. Assess the importance of electronic payment systems in global trade.

Section D

(Answer any 2, each carry 15 marks)

(2X15=30)

34. Discuss the concept of Electronic Payment Systems and explain the various types of electronic payment methods used in modern financial transactions

35. Explain in detail the different E- Commerce Models?

36. Explain the key steps involved in establishing an e-business?

37. Explain in detail the role of ICT in the contemporary Business World?

സർവ്വകലാശാലാഗീതം

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Govt. Arts and Science College
Meenchantha, Kozhikode,
Kerala, Pin: 673002
Ph: 04952920228
email: rckdirector@sgou.ac.in

Thalassery
Govt. Brennen College
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Kannur, Pin: 670106
Ph: 04902990494
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Kerala, Pin: 682301
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email: rcedirector@sgou.ac.in

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Sreenarayanaguru Open University
Kollam, Kerala Pin- 691601, email: info@sgou.ac.in, www.sgou.ac.in Ph: +91 474 2966841

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