



The appearance of e-commerce is shifting in a present scenario towards the necessity and requisite. Educational Institutions like Indira Gandhi National Open University which is pioneer in self paced learning and technology enabled learning. The distinguish corporate houses are trying to educate and train learners, students and employees in e-commerce applications and technology, so that it becomes part and parcel in their day-to-day learning and usages. Since e-commerce is in a nascent stage and varying so rapidly, organizations face numerous challenges, and there are prospects in developing curricula for e-commerce in a big way.

The world is experiencing speedy changes in the knowledge landscape. With various dramatic scientific and technological advances, such as the rise of big data, machine learning, and artificial intelligence, many unskilled jobs worldwide may be taken over by machine and robots and in present scenario collaborative effort of Robots and Human known as Cobots. Keeping in mind framework of National Education Policy (NEP), School of Management Studies had initiated a Skill Enhancement course to look closely into the development of curricula and teaching methods for E-commerce processes, practices, and technologies with an intention to imbibe skills among its students and youth, with a greater emphasis on the development of employment opportunities and research activities.

BCOS-184 is one of the Skill Enhancement (4 credits) elective courses that falls under 4th Semester of B.Com (G) programme offered under CBCS scheme. The main objective of this course is to familiarize the learners with the knowledge and understanding of E-commerce. This course by and large makes learners acquainted with the contemporary ways of doing business and emphasizes more on internet based business and their set-up. The entire 15 units have been bifurcated into 5 blocks.

This Self Learning Material (SLM) has the noteworthy features which further bifurcated into different blocks

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# **BLOCK 1**

## **BASICS OF E-COMMERCE**

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## BLOCK 1 BASICS OF E-COMMERCE

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This is the first block of the course “E-Commerce”. This block will familiarise you about the basic introduction to E-commerce, various models used in E-commerce, technology used in E-commerce and E-governance. This block is structured to cover the fundamentals and preliminary aspects of E-commerce. The block on the theme “Basics of E-Commerce” comprises of four units, the detail of which is mentioned below:

- **Unit-1:** This unit gives the basic introduction of E-commerce and its evolution, types, importance on one hand as well as advantages and disadvantages on the other hand. The unit also makes us familiar, how the concept of E-commerce has evolved over time and thus helping us in enormous ways.
- **Unit-2:** This unit discusses the various models of E-commerce along with their key elements and major categorization. Apart from that the unit also explains the role of emerging technologies such as Mobility, cloud, AI and IoT of E-commerce.
- **Unit-3:** This unit makes the learners familiar with the various building blocks and technology used in E-commerce. The unit briefs about the various technologies emerging these days. The later part of the unit focuses on the various website designing models as well as the distinctions between app based and a web-based business.
- **Unit-4:** This unit familiarizes the learners with the electronic governance framework in India by emphasising on its meaning, planning, evolution, growth and importance. The unit throws light on the various popular e-governance schemes such as E-Granthalya, Mygov.in, Digital India, Passport Seva Project etc.

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# UNIT 1 INTRODUCTION TO E-COMMERCE

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## Structure

- 1.0 Objectives
- 1.1 Introduction
- 1.2 Meaning of E-Commerce
  - 1.2.1 E-Commerce Web Portal
  - 1.2.2 E-Commerce Software
  - 1.2.3 E-Commerce APIs
  - 1.2.4 M-Commerce and Multi-channel Commerce
  - 1.2.5 Use of Emerging Technologies in E-Commerce
- 1.3 Why E-Commerce
- 1.4 Evolution of E-Commerce
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  - 1.5.1 B2B: Business-to-Business Model of E-Commerce
  - 1.5.2 B2C: Business-to-Consumer Model of E-Commerce
  - 1.5.3 C2C: Consumer-to-Consumer Model of E-Commerce
  - 1.5.4 C2B: Consumer-to-Business Model of E-Commerce
  - 1.5.5 B2G: Business-to-Government Model of E-Commerce
  - 1.5.6 C2A: Consumer-to-Administration Model of E-Commerce
  - 1.5.7 P2P: Peer-to-Peer Model of E-Commerce
  - 1.5.8 D2C: Direct to Consumer Model of E-Commerce
- 1.6 Advantages and Disadvantages of E-Commerce
  - 1.6.1 Advantages of E-Commerce
  - 1.6.2 Disadvantages of E-Commerce
- 1.7 Let Us Sum Up
- 1.8 Key Words
- 1.9 Answers to Check Your Progress
- 1.10 Terminal Questions

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## 1.0 OBJECTIVES

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After studying this unit, you should be able to:

- understand the concept of e-commerce;
- describe the evolution of e-commerce;
- classify e-commerce; and
- list the various advantages and disadvantages of e-commerce.



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## 1.1 INTRODUCTION

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Internet has revolutionised all aspects of our existence. If one has access to an internet enabled digital device such as a desktop, laptop, tablet or a smart-phone, then world seems to be such a small place. This easy access to various kinds of information, services, and product, which is now just a click away, has particularly influenced the way the businesses are transacted using Internet.

Businesses, also called ‘commerce’, is fundamentally a cost-effective movement involving buying and selling of goods between a buyer and a seller. For example, in a traditional format, a buyer would enter a shop, examine the product, select a particular product and pay for it. To complete this business transaction, the seller too, at his/her end would carry out several business transactions like issuing an invoice, delivering the product and so on. The seller would also undertake several other business functions including management of inventory, financial records, logistics, and so on. Now, with advent and proliferation of Internet, all such business functions, undertaken both by the buyer and the seller, could be smoothly undertaken electronically using Internet by creating a website or a web portal. Buyers and the sellers come together on this specially designed website or web-portal and their transactions cross physical boundaries of the firm.

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## 1.2 MEANING OF E-COMMERCE

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As is obvious, the term e-commerce is an abbreviated term for ‘electronic commerce’, which refers to the process of undertaking business transactions over internet. Almost anything - ranging from basic items such as breads or soaps, to high end expensive products such as computers or cars and even highly specialised services such as sale of second-hand products to purchase of property, are all available on the related e-commerce web-portals.

Depending on the products and services available, e-commerce web-portals could be understood to be ‘Generic’ and ‘Specific’. Examples of generic e-commerce portals are ‘FlipCart’, ‘Amazon’, where one could buy any product, ranging from furniture to flowers. On the other hand ‘Big Basket’ could be termed as a specific e-commerce web portal as the customer can order for only grocery related products on this web portal.

As we have understood earlier, e-commerce enables buyers to undertake all steps of a purchase decision with the support of various features provided by an e-commerce software. Majority of the business steps are undertaken electronically and not physically. No (or negligible) paperwork is required, nor is any physical contact necessary. Such revolutionary characteristics of e-commerce have made it extremely popular, particularly in present pandemic times.

### 1.2.1 E-Commerce Web Portal

A web portal, also referred only as a ‘portal’, is an integrated collection of webpages on a particular theme and serves as a single-stop window for that theme. Unlike a website, a portal provides not just the desired information at a single point but also provides other facilities such as an internal search-engine, personalised logins and emails to its regular visitors, online forums and much more. All these features are accessible to the visitor in a user-friendly manner. In several ways, a web-portal could be considered as a collection of several interrelated websites to provide users a more cohesive experience on that theme, for which it is designated.

A web-portal that is specially designed to host the products and services details is called an ‘e-commerce web-portal’. It is only through a well-designed web-portal that sellers can provide its buyers with a wide set of option of products, price-choices, and related services that they offer, using it as an online shopping arena. Therefore, an e-commerce web portal provides a range of online activities related to selling of services as well as products. All these activities are undertaken and managed using specially designed ‘e-commerce software’ that serves as its ‘driving force’.

### 1.2.2 E-Commerce Software

An e-commerce software typically ensures that the entire commercial cycle of buying and selling over the Internet is conducted smoothly, both for the buyer as well as the seller. For instance, a typical e-commerce software provides several features including a dedicated engine for searching various products, vendors and/or price preferences for a buyer. It further helps a buyer to select and choose the items to purchase. It enables secure monetary transactions to complete the purchase. While helping a buyer to undertake these steps, an e-commerce software also helps the buyer to collate multiple orders in a dedicated basket, additions/deletions/modifications are permitted to be undertaken anytime on this basket. This software even manages address details and order history for each of its buyers, provides multi-channel product booking/delivery and much more.

By and large, it is the role of the e-commerce software to not just help to conduct the entire business smoothly but also to provide various facilities and utilities to both the buyer and the seller that would evoke trust in them to continue their transactions on these portals.

### 1.2.3 E-Commerce APIs

All e-commerce related technologies and features are connected to each other using Application Programming Interfaces (APIs). APIs are ready-to-use, computing interfaces/software intermediaries that help to exchange information from one feature to another, from one software to another, from one platform to another. For example, using a pre-designed e-commerce API, an e-commerce seller can smoothly integrate the portal with a shipping portal and easily ‘import’ data of the shipments and orders lying on that shipping

portal (called Shipping APIs) and so on. Similarly, there are scores of e-commerce APIs available for getting product details (Product Information APIs), for tracking the inventory management (Inventory APIs), for creating buyer baskets (Order APIs). Similarly, there are Authentication APIs, Catalog APIs, Marketing APIs, Payment APIs and so on. All data exchanges are, therefore, smoothly undertaken by ready-to-use APIs without the explicit need of programming.

#### **1.2.4 M-Commerce and Multi-channel Commerce**

All software features, that are available on an e-commerce web-portal are popularly accessible through mobile-friendly application interfaces, called *apps* (a common abbreviation for Applications). Apart from a web-portal or a mobile phone, several other channels, such as social-media accounts and even physical outlets, too are configured to provide ease-of-access to the buyers. Buyers can select or specify their choices of all the channels that are already provided on the online shopping account. Multichannel commerce extensively employs e-mails and social media as their digital marketing channels. Similarly, sales could be carried out by a seller using either a web-portal alone or coupled with a physical, brick-and-mortar store outlets too. The whole purpose of multichannel commerce is to interact in multiple ways with the buyers, which has led to several kinds of e-commerce models (to be covered in the subsequent section).

#### **1.2.5 Use of Emerging Technologies in e-Commerce**

These online accounts are not just routinely programmed but are mostly personalised and contextualised for each individual, using advance programming features provided by Artificial Intelligence (AI) / Machine Learning (ML) techniques. Further with gradual advent, e-commerce web portals now also employ other emerging technologies like Augmented reality (AR), Virtual reality (VR), Block chain and many more. The purpose of employing emerging technologies in an e-commerce web portal is to provide its customers with an enhanced user experience (UX) and comfortable user interface (UI).

Overall, such kind of Internet based business ecosystem that comprises of an e-commerce web-portal, e-commerce software, e-commerce 'app' and e-commerce APIs permit various buyers and sellers to undertake a business transaction comfortably and securely, is referred as 'e-commerce'.

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### **1.3 WHY E-COMMERCE**

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At present, if we look around us, the books we read, the dresses we wear, the grocery we consume, the new furniture additions we have at our homes / offices, have been primarily bought from e-commerce web portals.

Undoubtedly, e-commerce is emerging as a key field for business expansion as it is economical, accessible, and easy to use. It provides choices and

improved service delivery options to the buyers. Buyers do not have to invest in travelling to various shops to compare and buy the 'best' product. Similarly, a seller does not have to establish a 'brick and mortar'- physical infrastructure for selling any product/ service and can also access more buyers at a much lesser cost. In fact, both buyers and sellers can transact on e-commerce portal, inconsequential of their location or size of the transaction ( Fig 1.1).



**Fig 1.1 : E-Commerce**

More particularly, e-commerce portals provide buyers an added advantage of comparing varied prices and features of products available on any e-marketplace. Competition has tremendously increased, and business models used by companies in conducting their businesses have been completely redefined. This has led to reengineering and digital transformation of all the related business processes such as inventory management, marketing, and customer management and so on. It offers opportunities on a universal basis to give a push to and expand business processes, while developing new models and markets for business organizations across the board.

It is a comparatively new and emerging concept, and hence can transform conventional forms of economic activities, not just at an organisation level but also at the national level. Its impact is already visible in large scale sectors such as finance, retail trade and even in public service delivery including education, health, transportation etc. Indeed e-commerce has made business more competitive, more-fun and surely more easy and diverse.

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## **1.4 EVOLUTION OF E-COMMERCE**

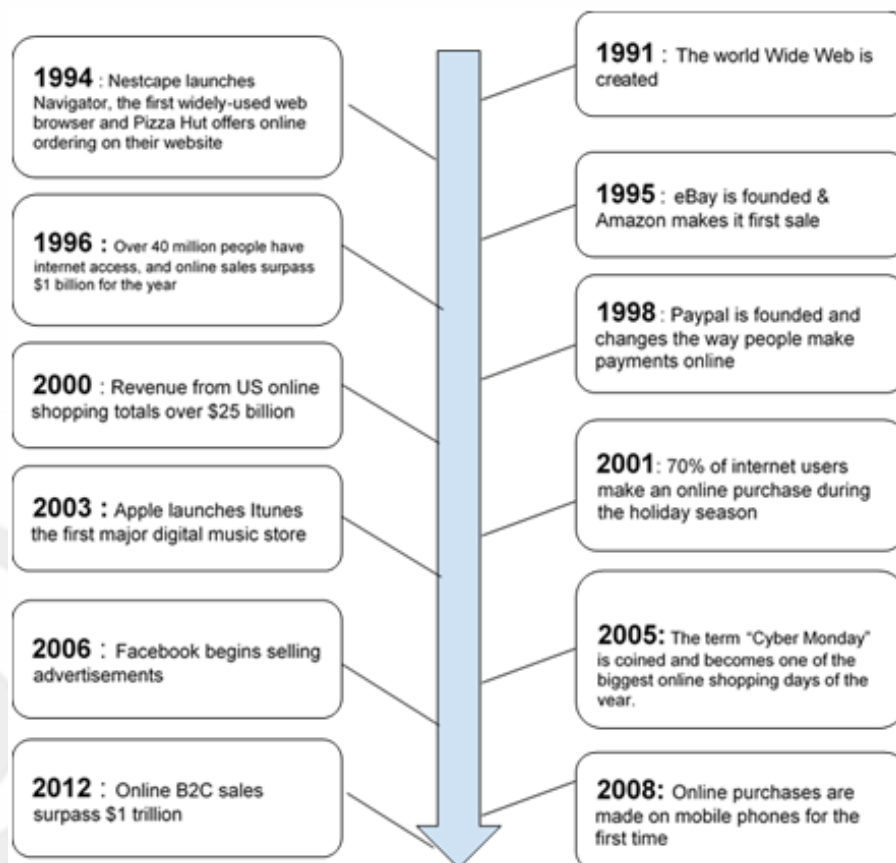
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It was in the year 1991 that the ease of use of Internet was established by the design of World Wide Web. In the year 1994, Pizza Hut was the first company to offer its Pizza online on its own site (Fig 1.2) and almost after a gap of a year eBay is was found. Initially it was considered only as the process of online submission of supporting documents when a transaction was undertaken.

From the year 1995 onwards, rise of e-commerce, earlier known as “web-commerce” became more prominent. This primarily happened due to the global use and adoption of Internet. This was the time when several retail

websites had been planned and launched for sale/purchase of goods and services over internet.

However, this was not only to bounce back in next five years consistent success. In the late 1990s (1999), the dot.com bubble burst thereafter. More particularly, by the year 2005, the increase in online purchases on certain days became so much that the term “Cyber Mondays” was coined ( Fig1.2) . Based on review of literature, the initial milestones in e-commerce evolution are detailed herewith ( Fig1.2)



Source : Ferrera, Cécile; Kessedjian, Eowyn (2019) : Evolution of E-commerce and Global Marketing, International Journal of Technology for Business (IJTB), ISSN 2644-5085, Springwish Publisher, Bratislava, Vol. 1, Iss. 1, pp. 33-38, <http://dx.doi.org/10.5281/zenodo.2591544>

Fig 1.2 : Evolution of e-Commerce (1994-2012)

The growth of social media over the past few years too has ensured that the relationship between the sellers and the buyers is more engaging and more extensive.

**The Present :** At present, in the year 2021, Internet and digital devices such as smart phones and tablets have expanded the application of e-commerce to include global buyers and sellers. Most businesses, now have an online presence intensifying the price competition. Newer channels of distribution have been created leading to development of alternative business models for conducting transactions. The structure and nature of business firms have also changed. Promotions and online advertising have also become direct and targeted at the buyer.



As a result of all these changes, there is marked transformation in the prevalent trade practices, trade techniques, and standards having direct impact on the marketplace.

Indeed, e-commerce brings out the possibility of better organized conduct of businesses, which offers not only the replacement of existing business strategies, but also the viability of complimentary business models to the existing ones. We shall study that in the subsequent section.

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## 1.5 TYPES OF E-COMMERCE

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Many different models of electronic transactions exist in the world of e-commerce today. Generally, these are classified as- B2B (Business-to-Business), B2C (Business-to-Consumer), C2C (Consumer-to-Consumer), C2B (Consumer-to-Business), B2G (Business-to-Government/Administration), C2A (Consumer-to-Administration) and P2P (Peer-to-Peer), Direct to consumer (D2C) (Fig 1.3).

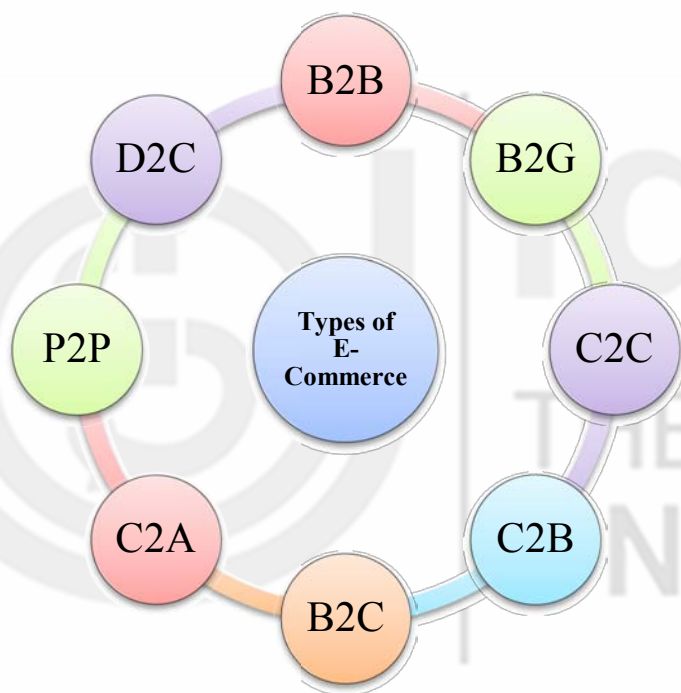


Fig 1.3: Different types of e-Commerce

This classification is based on the nature of their transactions and are elaborated upon below:

### 1.5.1 B2B: Business-to-Business Model of E-Commerce

In business-to-business (B2B) type of e-commerce system, companies that are involved in the supply chain, such as a manufacturer selling a product to a wholesaler, the wholesaler selling the product to a retailer, all come together to conduct business with each other using a common portal. In such an instance, the manufacturer could have a website / web portal that could also be used by the wholesaler to place orders for the product; this order could then be processed and sent to the wholesaler. The wholesaler could further

use the same portal to advertise the product or take orders from a retailer for the same. This kind of business is called B2B type of e-commerce (Fig 1.4).

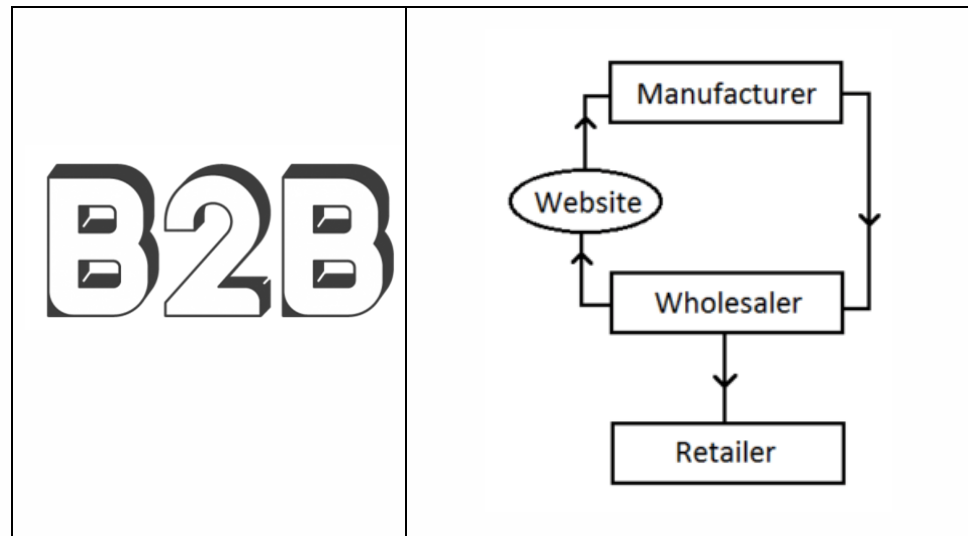


Fig 1.4: B2B model

### 1.5.2 B2C: Business-to-Consumer Model of E-Commerce

This model of e-commerce is understood to be the process where a company or business sells their goods, services and products directly to the buyer using Internet. The buyer has the liberty of browsing through the Internet to filter, check and view products and then order them. After receiving an order, the company proceeds to process and send the order directly to the buyer.

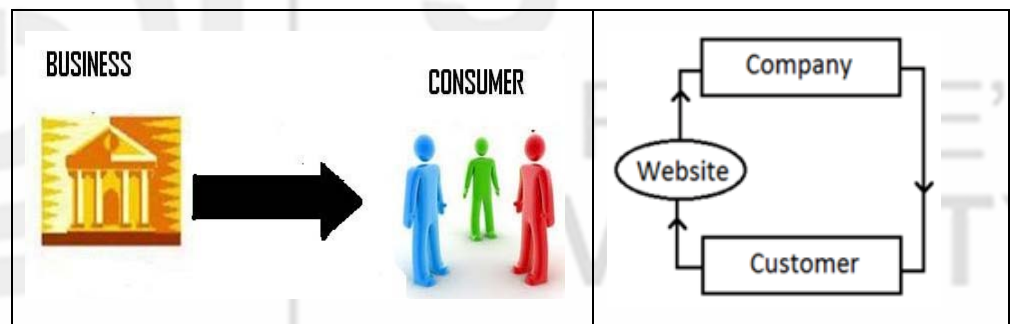


Fig 1.5: B2C Model

The above figure (Fig 1.5) shows the process followed in this model, the buyer can surf the web portals or mobile applications of the seller companies and directly order the products. After receiving the order, the seller company processes the same before sending it to the buyer. Hence, in this 'B2C' model of e-commerce, the company tries to sell a product directly to the buyer.

Popular examples of B2C are 'Amazon', and 'Flipkart'. It is important to note that majority of the e-commerce companies do not manufacture products or produce these services, but rather list them on their website/ web portal for payments.

### 1.5.3 C2C: Consumer-to-Consumer Model of E-Commerce

This form of e-commerce is understood to be a model where consumers sell goods, services and products to another consumer using web technologies and the internet. This model comprises the selling of a wide range of products including movable assets and properties.

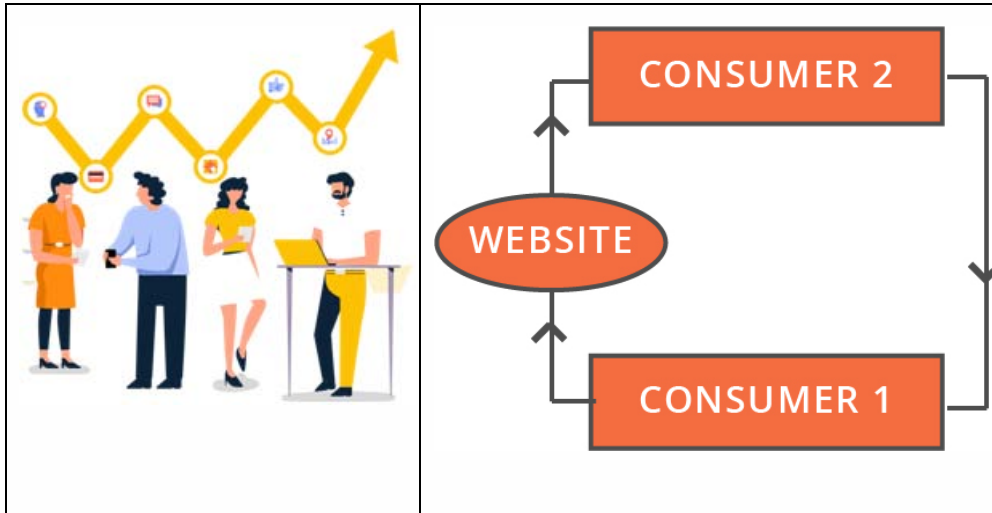


Fig 1.6: C2C Business Model

Companies such as ‘Quicker’, ‘OLX’ and so on are some examples of this model of C2C e-commerce.

### 1.5.4 C2B: Consumer-to-Business Model of E-Commerce

Unlike ‘B2C’ model, it is a type of commerce where consumers themselves provide goods, services and products to an organization (or business) as illustrated below.

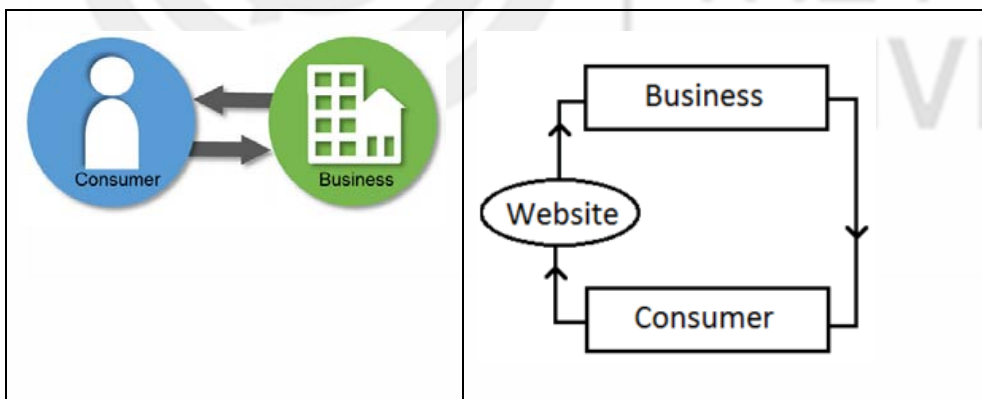


Fig 1.7: C2B Business Model

There is another version of this model; in this version, the consumer create and utilize their own social media profiles (blogs etc) to link back to the product sold on the company's ecommerce website / web portal, thereby consumers facilitates the sale of company's products and are usually rewarded by these companies for doing so.



### 1.5.5 B2G: Business-to-Government Model of E-Commerce

Business-to-government, also known as business-to-administration, refers to trade between the business sector as a supplier and a government body as a customer. This kind of e-commerce refers to the situation where businesses conduct commerce with the government; it is essentially a part of the ‘B2B’ model.

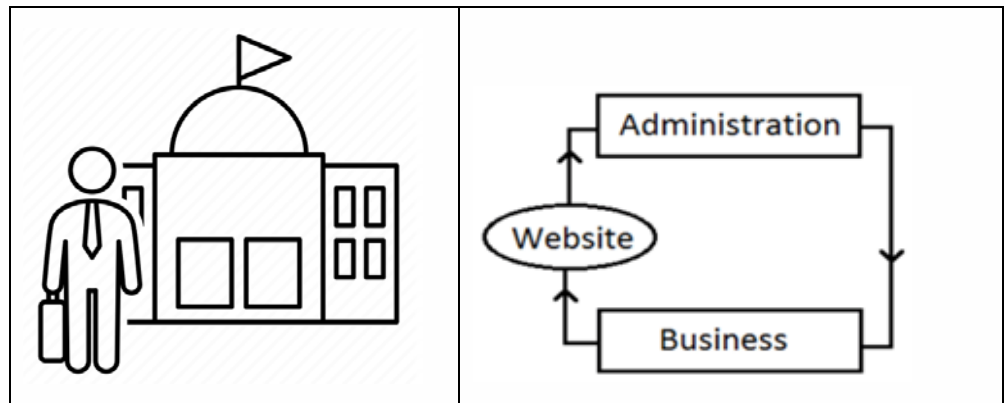


Fig 1.8: B2G Business Model

B2G business, as illustrated above ( Fig1.8 ) , is generally also referred to as public sector marketing, which indicates the marketing of products and services to various government agencies and various levels. The business network provides a platform to businesses to bid on government opportunities such as auctions, tenders and application submission and so on for various services etc. These activities are increasingly being conducted through the internet using real time bidding. “ Government e-MarketPlace - GEM” portal by Government of India, is an example of the same.

### 1.5.6 C2A: Consumer-to-Administration Model of E-Commerce

The model refers to the e-commerce process followed by the consumers when interacting directly with the government agencies. This may be in the form of payments, information access requests or feedback to various agencies among other things. Consumer to government/administration model for e-commerce is the ideal answer for establishing communication between the consumers and the government.

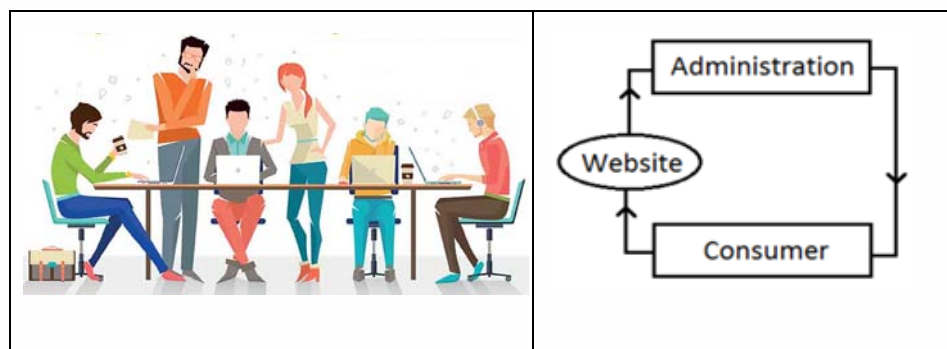


Fig 1.9: C2A Business Model

Examples of 'C2A' models include e-government applications such as payment of utility bills including electricity and water, tax payments, health insurance payments made using web and mobile applications. A simplified representation of the model is illustrated ( Fig1.9).

### 1.5.7 P2P: Peer-to-Peer Model of E-Commerce

P2P model is essentially a networked model of commerce without any intermediary. It is therefore a distributed platform enabling different individuals to partake in transactions with each other without an in-between third party. This model of network arrangement is different from the client server model where communication takes place from the central server.

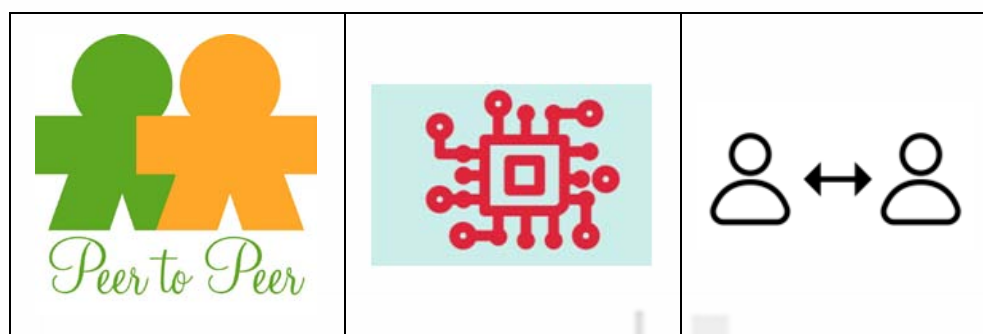


Fig 1.10: P2P Business Model

The absence of a 'third party' may increase the risk of service not being delivered, service being of poor quality, delay or refusal of payment as well as exploitation of asymmetric information. This added risk generally results in increased transaction costs for the parties involved. Another variation of 'P2P' models could be without any economic transactions for buying and selling, but simply provide a platform or individuals to interact for various ends. These services may be operated as free non-profit services or generate revenue by advertising to users or by selling users data. Some examples of 'P2P' services are open-source software, online marketplaces, crypto currency and Blockchain, ridesharing and so on.

### 10.5.8 D2C: Direct-to-Consumer Model of E-Commerce

Direct-to-consumer refers to selling products in a straight line to customers, bypassing any third-party retailers, wholesalers, or any other middlemen.

Direct-to-consumer companies are transforming how people shop. In the progression, these brands, spanning everything from detergent to sneakers, are radically changing consumer preferences and expectations. In addition to establish a direct relationship with customers, these brands are building a community of ambassadors on social media.

D2C brands are usually sold online only and specialize in a specific product category: Casper, Warby Parker, Everlane, Harry's, Outdoor Voices, AWAY, and Dollar Shave Club.



Fig 1.11: D2C Business Model

**Check Your Progress A**

- 1) State the type of E-Commerce system:
  - i) The companies involved come together to conduct business with each other.
  - ii) It is a type of commerce where a consumer provides goods, services and products to an organization or business.
  - iii) Business sells their goods, services and products directly to the consumer via the internet.
  - iv) E-commerce process followed by the consumers when interacting directly with the government agencies.

2) What do you mean by e-Commerce?

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**1.6 ADVANTAGES AND DISADVANTAGES OF E-COMMERCE**

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There are no doubts in the minds of the stakeholders of e-Commerce about its ability to make businesses more profitable due to its capacity to sell goods, services online. At the same time, there are multiple factors to keep in mind too.

**Table 1.1: Comparative view of Advantages & Disadvantages**

Advantages	Disadvantages
The e-shop is open 24 hours a day, 7 days a week.	When ordering a product online, it often takes longer delivery time and more shipping charges.
Customers don't need to stand in queues of stores.	Repaying your online purchase may be more difficult than buying a traditional store.
Larger product selection.	Online shopping will not be able to measure goods.
Possibility to shop from anywhere.	Money security of the customers depend on their own vigilance.
Attractive discounts are offered.	Lack of privacy.

It is necessary to look upon its advantages and disadvantages to be able to rationally decide and make strategic decisions.

### 1.6.1 Advantages of E-Commerce

The various advantages of E-Commerce are discussed below:

- 1. Accelerated buying process for saving time:** One of the problems conventional stores face is the delay in buying by a consumer during the problem of accessing a physical store which may or may not be available. E-Commerce overcomes this hurdle by aiding the consumer avail the specific product at their own pace and with ease. It helps the consumer choose from a wide range of products by making available goods from other chained stores as well, widening the net of available goods as well fast forward the process to process payments. With the availability of a wide range of options from a spectrum of vendors, e-Commerce not only aids in diversification of the marketplace, but also helps access the online global market. All these processes also aid in reducing travel and delivery time of the products.
- 2. Personalised store as per Consumer preference:** A major asset of conducting online business is the enhanced shopping experience. As each user is introduced to a different first page based on their location and advanced search for conducting a purchase. The consumer's history of purchases also reflects in the personalized experience of online commerce. This allows consumers to avail special services like benefits and discounts due to their loyalty, order history and so on, hence fulfilling customer expectations.
- 3. Reduce recurring cost while hiring virtual support resources:** One of the key factors that aids in reducing cost when it comes to e-commerce is the outsourcing of tasks to even different countries or employees for use to many other e-commerce businesses. This makes the presence of a company possible in multiple locations possible at a fraction of the cost of physical presence.

4. **Customers retargeting is easier:** Retargeting a customer is a key part of retaining a customer base. Below are some of the techniques which can be used to retarget customers:-
  - It is a good strategy to share a coupon when customers leave the checkout page.
  - By sending emails which are pitching upsell and cross-sell.
  - By redirecting the consumer to the desired web page or targeted advertisement based on Consumer data.
5. **Easier to encourage an impulse buy:** Impulse buying is an important tool in the arsenal of the sellers where it works as a path for consumers to act as per their choices towards particular products. It plays on the psychological behaviour of humans where some of us have personality traits that encourage impulse buying. It is often because of the urge to feel good, and at the same time the attempt at deriving emotional value from certain products makes them feel good; or things that have an emotional value.
6. **Reviews Available:** The review system allows the consumer to make decisions as well as pass judgement on a wide range of variables. The presence of positive comments or a higher rating of one's business not only adds value, it also builds trust of the consumer on the product as well as the business. This not only projects the business as transparent, it helps the consumer to voice their opinion about their choices in products.
7. **Detailed information available for the consumer:** The availability of detailed information is one of the key strengths of e-commerce. All consumers are always seeking detailed insights into the product they are interested in as it aids them in making an informed decision. The availability of information allows the consumer to gauge the relevance and value of the product or service according to their needs. It is the detailed description of the product that helps the consumer to make a confident choice according to their requirements.
8. **Quality service at reasonably low operation cost:** Operational costs are a major expenditure when it comes to asserting the physical presence of any businesses. Usually for a business to maintain a physical presence, they have to pay a lot of money in the form of rent, salaries for employees, maintenance and other expenses. E-Commerce plays an important role in reducing the cost of operations significantly by eliminating a significant part of that expense as the business does not have to rely on a physical presence to provide quality service.
9. **Quick and affordable marketing:** E-commerce provides a cost effective way to businesses for marketing anything effectively. This is in contrast to the expensive and time consuming processes used in physical marketing practices. Some pointers for understanding marketing techniques are listed below:

- Availability of quality content for attracting the customers, it is an important factor for being more visible or noticeable in the market.
- Creative marketing videos explaining the product and services for better understanding.
- Social networking is important for asserting one's presence everywhere and helps in the development of popularity for a product.
- Employing different tricks to reach the customers, which is easy through digital marketing techniques.

**10. E-Commerce has flexibility with 24/7 service capability:** Flexibility in terms of both accessibility and affordability are major areas where Ecommerce is powerful than conventional stores and retail spaces as it allows the service to consumer 24/7. It is not only the capability of providing a shopping option round the clock, E-Commerce also helps consumers with chat support, provide recommendations and identify products being sought by the consumer at any time and place.

## 1.6.2 Disadvantages of E-Commerce

The various disadvantages of E-Commerce are discussed below:

1. **Lack of personal touch:** One of the thing that play a huge role in consumer satisfaction is the ability to personally view and touch any product. It is an important factor when it comes to customer satisfaction as even the best detailed, expressed and explained products can fail to convince and attract the consumer.
2. **Unsure about the quality:** When it comes to purchasing products online, it is difficult for the consumer to determine its quality. It is also common knowledge that there has been malpractice when it comes to fake reviews to artificially boost sales and of a low quality or faulty product.
3. **Late Delivery:** One of the assurances of businesses practicing E-Commerce is the delivery time of the product. There are a whole range of issues that can arise when it comes to the delivery of the purchased product; hence businesses avoid giving exact delivery dates and try providing windows for the same. Many times, this results in the consumer waiting for the product for more than the assured period of time.
4. **Difficulty in purchasing some products:** Some precious products such as gold and customised products like made-to-order furniture (because of measurement issues) are difficult to be purchased online . Trust is an important factor when it comes to these products, and the lack of ability to verify them physically could serve as a hindrance in purchasing such products online.



5. **Site crash issues:** There is still some uncertainty when it comes to the functioning of servers and the availability of round the clock and quality internet service. This can create a lot of hindrance from sales perspective, and can result in loss of consumers as they might have to wait for an unspecified period of time to proceed with transactions.
6. **Cybercrime and Data privacy issues:** Last but not the least, e-commerce is prone to cyber security threats as well as data breaches typical to the cyber world. E-commerce web portals than any other online information, as these sites/portals store users' data including financial and other personal details of the buyers and the sellers. Hence there is a constant challenge of securing this data from a wide range of security challenges including malware, hacking, ransom ware as well as misuse of personal sensitive information / preferences for targeted marketing / campaigning etc.

**Check Your Progress B**

- 1) What are the techniques which can be used to retarget customers?

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- 2) How does the E-Commerce ensure flexibility?

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- 3) "E-Commerce has flexibility with 24/7 service capability." Comment.

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- 4) How does using E- Commerce lead to saving of cost and time?

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## 1.7 LET US SUM UP

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E-commerce is a concept that explains and elaborates upon the idea of buying and selling of products, goods, services and information using computer including Internet.

There are various advantages of e-commerce for the buyers such as it provides detailed information, accelerates buying process, personalises store as per their preferences, reduces recurring cost, while hiring virtual support resources for the consumer, etc.

For the sellers, it offers opportunities to expand business processes, reach new customers, and reduce costs while developing new models and markets for business organizations across the board.

Generally, there are eight different types of e-commerce models namely; B2B (Business-to-Business), B2C (Business-to-Consumer), C2C (Consumer-to-Consumer), C2B (Consumer-to-Business), B2G (Business-to-Government/Administration), C2A (Consumer-to-Administration) and P2P (Peer-to-Peer) and D2C (Direct-to-Consumer).

There are various disadvantages of e-commerce such as it lacks personal touch, when it comes to purchasing products online, it is difficult for the consumer to determine its quality. E-commerce is prone to cybercrime and unauthorised data access typical to the cyber world.

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## 1.8 KEYWORDS

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- **B2B (Business-to-Business):** This form of E-Commerce is understood to be of the kind that takes place between companies. In the Business-to-Business type of E-Commerce system, the companies involved come together to conduct business with each other.
- **B2C (Business-to-Consumer):** This model of E-Commerce is understood to be the process where a company or business sells their goods, services and products directly to the consumer via the internet.
- **C2A (Consumer-to-Administration):** The model refers to the E-Commerce process followed by the consumers when interacting directly with the government agencies.
- **C2B (Consumer-to-Business):** It is a type of commerce where a consumer provides goods, services and products to an organization or business.
- **C2C (Consumer-to-Consumer):** This form of E-Commerce is understood to be a model where consumers sell goods, services and products to another consumer via web technologies and the internet.
- **D2C (Direct-to-Consumer):** The D2C e-commerce model quite literally “cuts out” the middleman. D2C e-commerce is when the manufacturer/



producer sells its products/produce directly to consumers from their web store.

- **P2P (Peer-to-Peer):** This model of E-governance refers to a distributed platform enabling different individuals to partake in transactions with each other without an intermediary third party via a P2P service.

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## 1.9 ANSWERS TO CHECK YOUR PROGRESS

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A 1)

- i) B2B (Business-to-Business)
- ii) C2B (Consumer-to-Business)
- iii) B2C (Business-to- Consumer)
- iv) C2A (Consumer-to-Administration)

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## 1.10 TERMINAL QUESTIONS

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- 1) Explain the evaluation of E-Commerce.
- 2) What are the advantages of E-Commerce?
- 3) What are the disadvantages of E-Commerce?
- 4) Explain any 5 different types of E-Commerce systems.



### Note

These questions are helpful to understand this unit. Do efforts for writing the answer of these questions but do not send your answer to university. It is only for your practice.

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## **UNIT 2 E-COMMERCE BUSINESS MODELS**

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### **Structure**

- 2.0 Objectives
- 2.1 Introduction
- 2.2 What is a Business Model?
- 2.3 Key Elements of a Business Model
- 2.4 e-Commerce Business Models to Understand Target Customer
- 2.5 e-Commerce Design Models
- 2.6 Implementing e-Commerce Models
- 2.7 e-Commerce Revenue Models
- 2.8 Impact of COVID on e-Commerce
- 2.9 Let Us Sum Up
- 2.10 Keywords
- 2.11 Answers to Check Your Progress
- 2.12 Terminal Questions

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### **2.0 OBJECTIVES**

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After studying this unit, you should be able to:

- understand the meaning and concept of the term ‘business model’;
- understand the key elements of a business model;
- understand how e-commerce is designed;
- understand how e-Commerce is implemented;
- understand how e-Commerce generates revenue; and
- understand how pandemic had a direct impact on e-commerce business.

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### **2.1 INTRODUCTION**

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We understood in the previous unit on “Basics of e-Commerce”, that how our digital devices like computers, tablets, or smart phones could be considered akin to digital version of mail-order catalogue shopping. Ranging from mundane products like grocery items, stationary items, cosmetics to aeroplane tickets, buy and sell services, to financial and government services, everything is now available on online stores. There is hardly any imaginable product or service that is not available through e-commerce websites/ stores/ platforms/ apps.

Indeed, e-commerce is a newer format of conducting businesses that permits consumers to buy products/services over Internet and empowers business entities (retailers, wholesalers or suppliers etc.) to sell things over Internet.

In the present unit, we would try to understand how e-commerce works with special reference to its business model and its key elements. We also try to understand other models that support the design and implementation of e-commerce. In continuation we would also study what are the various possibilities of generating revenue by these online shopping stores. All subsequent models (design models, implementation models and revenue models) are important constituents of the bigger concept of defining the business model of e-commerce. In general, Government of India identified two categories of e-commerce business models one is related to 'Informational/Communicational Design Strategy' and the other category is related to 'On-line Transactional Design Strategy'.

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## 2.2 WHAT IS A BUSINESS MODEL?

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A business model is like a business plan conceived by a company so that the company has an edge over its competitors and can make profits but it is over and above a business plan too. It is also about specifying exact strategies and approaches of initiating and sustaining the proposed business plan.

Its key focus stays on sustaining the proposed business by specifying ways and means to create on-going value for the desired customers.

Some key questions that need to have answers include:

- Who are going to be the target beneficiaries of the business?
- What is the key unique proposition of the business?
- How will the business idea be implemented?
- How will it generate revenues?
- How will it interact with customers to deliver products/services?

First and foremost, a business plan must clearly delineate who the target customer is, then highlight the differentiating product or a service that the identified customer would seek, also called the USP – Unique Selling Proposition, that would be unique to this business and would give an edge over its competitors.

After that, a business model should move on to describe all the elements that are required to demonstrate the feasibility and success of a prospective business.

Therefore, business plan should ideally include several details including target customer, description of the goods, details of the services that the company has to offer, marketing strategy, revenues and expenses, start-up costs, sources of financing and so on. To address such and related concerns, a business model must be a detailed description related to following components:

- i. Core business focus (why are we doing the business, who is our target customer)
- ii. Design priorities (why are we going online – to improve our brand positioning, to promote the business across various geographies, to eliminate intermediaries or all)

- iii. Implementation strategies (how would this business go online, directly or through existing online aggregators etc.)
- iv. Revenue mechanisms (how the money flows – directly through sales or advertisements etc.) driving that business.

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## 2.3 KEY ELEMENTS OF A BUSINESS MODEL

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To ensure that all these basic questions are adequately addressed, following are some simple steps to create a strong business model.

1. **Identify your specific audience:** Targeting a wide audience won't allow a business to identify the right customers, who truly need and want the product or service. Instead, when creating a business model, narrow down the audience (expected buyers) number to two or three and do detailed study of the buyer personas. Outline each persona's demographics, common challenges and the solutions of the company that it will offer.
2. **Establish business processes:** Before the business can go live, make a clear understanding of the activities required to make the business model work. It is important to determine the key business activities to establish a proper business process. The first step is to identify the core aspects of the business's offering.
3. **Record key business resources:** What does a company need to carry out during daily processes, find new customers and reach business goals? Document essential business resources to ensure the business model is adequately prepared to sustain the needs of the business. Common example that a business may need includes a website, capital for the business to start running, warehouses, intellectual property and the customer lists.
4. **Develop a strong, preferably a unique value proposition:** For standing among other competitors a company needs to provide some additional value proposition to the customers in the form of an innovative service, or a revolutionary product. Value proposition is about giving the value to the business and how it stands out from other businesses in the market. Once the business has got a few value propositions, then it is important to link each of them to a service or product delivery system to determine how the business would remain valuable to the customers over time.
5. **Determine key business partners:** No business can function properly (let alone reach established goals) without key partners that donate to the business's ability to serve customers. While building a business model it is significant to choose the key partners like for example suppliers, strategic alliances, or advertising partners.

Keeping these five elements in mind, will lead to the creation of a solid business model capable of fuelling the success of a new business entity.

Once we are clear about what a business model is and how it is created, we shall move on to apply this basic knowledge in understanding this from the perspective of an e-commerce business.

Typically for an e-commerce business, a clearly defined business plan usually must include following four subtypes of related models:

- a. **Customer Based Business Model** - Model that would help decide who is the ultimate target beneficiary of the proposed e-commerce initiative.
- b. **Design Model** –Model that would help to decide the priority for designing the proposed e-commerce website.
- c. **Implementation Model**–Model that would decide how we implement the proposed e-commerce initiative including how we reach our customers, how we sale them, how we transact a sale, how the products/ services are distributed, how we deliver the products/ services.
- d. **Revenue Model**–Model that would help us to generate revenue for the e-commerce initiative as well as for the organisation/enterprise responsible for launching the E-Commerce portal.

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## 2.4 E-COMMERCE BUSINESS MODELS TO UNDERSTAND TARGET CUSTOMER

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Choosing and applying the right e-commerce business model is complicated- especially if it is a new product / service not been launched by anybody else. These models vary depending on the target customer (or ‘buyer’), available resources, and capabilities of both the seller and the customer.

For an easy revision, the general e-commerce business models, based on the category of the customers are summarised herewith.

1. **Business-to-Business (B2B):** Business-to-business (B2B) e-commerce portal is the one where the business is conducted between two business entities using this portal, such as between a wholesaler and retailer. The retailer could connect to the customer separately, using another online store or using a physical store.

As is evident, B2B transactions happen, where one business entity, say an automobile company purchases its varied accessories from various suppliers using a dedicated web portal/website/app. For example, Toyota motors have their own B2B web portal to connect to all its business partners which is not accessible to the individual buyers.

Drop Box is a service based B2B e-commerce model where all the team members have access to the work account created in Drop Box to store, share, and collaborate on files.

2. **Business - to - Consumer (B2C):** B2C model of e-commerce is primarily for those business entities (retailers, whole sellers and manufacturers) who want to sell their products(or services) directly to their consumers using online stores. For example, Laxme India is a product based B2C FMCG company that has its online presence too in India to connect to its customers.
3. **Consumer - to –Consumer(C2C) :**When individuals want to sell their own services , or a product ( usually the used / second hand/ pre-owned products) using Internet then they use C2C e-commerce web sites/ portals such as OLX, eBay, Craigslist and so on. These C2C online

stores often use classified advertisements or may use online bidding / auction systems to attract the buyer-customers.

4. **Consumer- to - Business (C2B):** In the C2B model, individuals (customers) sell their products or services to a business. Using this model, a business entity can typically extract values from the customers by taking their business suggestions or by getting their feedback or reviews on the existing products.

Apart from gathering feedback or reviews or press releases written by consumers for consumers, there are dedicated freelancer C2B platforms like 'Up work online transaction platform' and 'Fiverr' who 'crowd source' freelancing services from individuals and pass it on to the businesses who need it, obviously on contract and short-term basis.

Also, C2B concept is also used to monetise the 'influencing' quotient of a popular individual to 'sell' or 'brand' a business. Influencers with high social media following, encourages their fans and followers to buy a particular product/service or to take an action. With present social media hype, influencer-matching marketplaces like 'Ifluenz' are on the rise as new, innovative forms of C2B. In India, 'Influencer.in', 'Plixxo' and 'Chat box' are some of the popular influencer marketing platforms.

On the similar lines, there are other possibilities of an e-commerce business such as Business - to - Government (B2G), Government - to - Business (G2B), Government - to - Citizen (G2C) and so on.

Once the customer has been identified and a suitable model picked up, we move on to define the design and implementation models of e-commerce.

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## 2.5 E-COMMERCE DESIGN MODELS

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The four models that are associated with the informational/communicational design are:

- a. Brand awareness and image building model
  - b. Promotion model
  - c. Info-mediary model
  - d. Customisation model
- a. **Brand awareness and image building model:** Web sites that are using this model provide detailed and rational information about the firm and its offerings. The model reaches motivated and desperate customers with an information/image-rich communications message. In this type of model, the entry barriers are low, so, smaller firms can set up this kind of site as well. The website of Ford ([www.ford.com](http://www.ford.com)) and Reebok ([www.reebok.com](http://www.reebok.com)) are examples of brand awareness and image-building models. As the website of 'Ford', not only lists all the models of its seven famous automotive brands, but also posts about its environmental policy, cleaner manufacturing, community involvement, and corporate citizenship report.



Similarly, the website of Reebok lets its visitors read about sports and fitness, hear from Reebok-sponsored athletes, and learn more about Reebok's human-rights activities, among other things.

- b. Promotion model:** This website model is based on lucrative 'advertisements', which are attracting a potential customer to a site. Sometimes, this model tries to provide free digital gifts such as discount coupons, cash backs, gift cards, photography tools, etc. The website of 'Kodak' ([www.kodak.com](http://www.kodak.com)) is an example of the promotion model because it provides technical help and tutorials for its digital cameras and offers a library of colourful, high-quality digital images that are made downloadable.
- c. Info-me-diary model:** The term 'Info-me-diary' is a composite of two terms – 'information' and 'intermediary'. This website model aggregates information from multiple electronic commerce retailers (intermediaries) and provides services of searching and comparison for Internet customers. This model sometimes offers free Internet access or free hardware in exchange for detailed information about customer's surfing and purchase habits. The collected customer data is valuable and is used for designing customized products and for target marketing campaigns.

Some firms even work as info-me-diaries by collecting and selling information to other businesses.

This model also provides consumers with useful information about the Web sites in the market segment. 'Just dial' ([www.justdial.com](http://www.justdial.com)) is an example of the info-me-diary model, this company provides local search for different services in India over the phone and online. The user just needs to register on the website. By tracking the users' surfing pattern info-mediary model provides the useful information to the user

- d. Customisation model:** This model provides customers with content that is customised to meet their preferences by employing AI/ML algorithms. By completely customising information needs, an e-commerce website built on this model becomes highly attractive to its visitors.

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## 2.6 IMPLEMENTING E-COMMERCE MODELS

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Once the end customer of e-commerce has been identified, the next important thing is to understand how e-commerce models are implemented. These e-commerce implementation strategies constitute a part of the business model and to know that how activities like inventory management and sourcing of products are undertaken at the back-end of an e-commerce implementation.

There are many possibilities to this too, such as manufacturing and storing products by the same business entity or may be finding another business partner to do the manufacturing, stocking and so on. Based on such possibilities, there are several-commerce implementation strategies such as Retail Model, Brokerage Model, Mall Model, Drop Shipping Model, Warehousing and Whole selling Model, Private Labelling, and White Labelling Models and so on.

1. **Retail Model:** When retailers directly use Internet to sell products/services using Internet, it is also called '*e-tailing*' (electronic-retailing) and such a retailer is also called an '*e-tailer*'. e-Tailing stores could either be a complete substitute for brick-and-mortar (the physical) retail stores. However, some companies choose to maintain both- the physical (brick and mortar) stores as well as its online marketplace too.
2. **Brokerage model:** Brokers are mediators; they bring buyers and sellers together and facilitate transactions between buyers and sellers vary with the type of e-commerce *viz* business-to-business (B2B), business-to-consumer (B2C), or consumer-to-consumer (C2C) markets. A broker makes its money by charging a fee for each transaction it enables.
3. **Mall model:** An e-mall hosts many on-line merchants. The mall typically charges setup, monthly listing, and/or per-transaction fees.
4. **Manufacturer model:** This model is based on the power of the Web to allow manufacturers to reach buyers/customers directly and thereby compress the distribution channel.
5. **Drop Shipping Model:** Drop shipping is probably the most popular form of e-commerce implementation strategy where the items are dispatched straight to customers by the supplier. A simplified life cycle of drop shipping (Fig 2.1) includes following steps:
  - i. An online storefront could be opened by a drop-shipping company, where a catalogue of products and services of different suppliers is displayed for the customer, product-wise, category-wise, pricewise and so on. For example, in India we have several drop shopping companies like *Indiamart*, *Trade India* and *Baapstore*, where a supplier could upload their items.
  - ii. A supplier (or even the retailer or a manufacturer) could collaborate with any of the existing drop shipping companies to upload their own products on this online storefront.
  - iii. Customer places the order on online storefront.
  - iii. The drop shipping company transacts with the customers through digital payment options such as credit cards and so on.
  - iv. These order details are passed on to the supplier.
  - v. The supplier packs and ships the ordered product directly to the customer.

As is obvious from these lifecycle steps, supplier has the main responsibility in Drop-Shipping. It is the supplier who must discharge prime business activities including inventory management, warehousing, packaging and so on.

There are also several limitations of this model as well, such as the drop shipping platform must keep track of supplier-wise customer orders and financial transactions and each supplier too must maintain exact shipping information of the customer.



This e-commerce model is best suited for those suppliers, retailers and manufacturers who have perfect products or services, but do not have enormous cash to create a separate e-commerce portal. Similarly, it is good for those business entities who have vision, digital know how and resources to create an online store but no inclination to manufacture their own products, or maintain their own warehouses and factories.



Source: <https://www.ecommerceceo.com/types-of-ecommerce-business-models>

**Fig 2.1: Drop Shipping**

**6. Wholesaling And Warehousing Models:** is one such model, where a variety of products (and services) are available on the online store. Obviously, to maintain these huge volumes, investment in massive physical warehouse spaces is required but the principle of ‘economy of sales’ assures profits, especially since both retailers and consumers could approach such an online store. Keeping track of orders received could be tough in this model, unless well supported by the related software.

**7. Private Labelling and White Labelling:** There is another possibility of an e-commerce online store where individuals / designers / cottage industries could ‘seek’ reputed brand labels for their products. This is called ‘private labelling’. Such kind of private labelling e-commerce portal brings together designers - who can’t afford to manufacture products themselves and ‘manufacturers or ‘well-established’ brands who want to diversify using innovative designs/ ideas.

*Indiamart.in* provides this facility for a range of products. For example, products / formula of a small, herbal cosmetic product manufacturer could be ‘private labelled’ by a reputed brand through *Indiamart.in*.

White labelling is just the reverse of private labelling. In this model, the product of an existing brand could be re-packaged and labelled and sold by another business entity.

It is relevant to point out that these are just some of the popular implementation strategies of e-commerce and that in wake of emerging technology trends and also because of excessive digitilisation popularised

during COVID times, several variations to these basic implementation strategies have been adopted by the e-commerce business entities.

**Check Your Progress A:**

1) What is a business model?

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2) Differentiate between Private Labelling and White Labelling.

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3) Fill in the blanks with appropriate words:

- i) A ..... is an idea conceived by a company for making profits.
- ii) ..... is about giving the value to the business and how it stands out from other businesses in the market.
- iii) ..... is the one that would help to decide the priority for designing the proposed e-commerce website.
- iv) ..... that are using this model provide detailed and rational information about the firm and its offerings.
- v) The term ‘Info-me-diary’ is a composite of two terms ..... and .....

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## **2.7 E-COMMERCE REVENUE MODELS**

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E-commerce not only involves doing business over the internet, it is also about designing new profitable business models. After we have understood some of the important implementation strategies for e-commerce businesses, we would move on to understand possible modes of income generation in e-commerce implementation. This is best explained by the revenue model defining the e-commerce implementation.

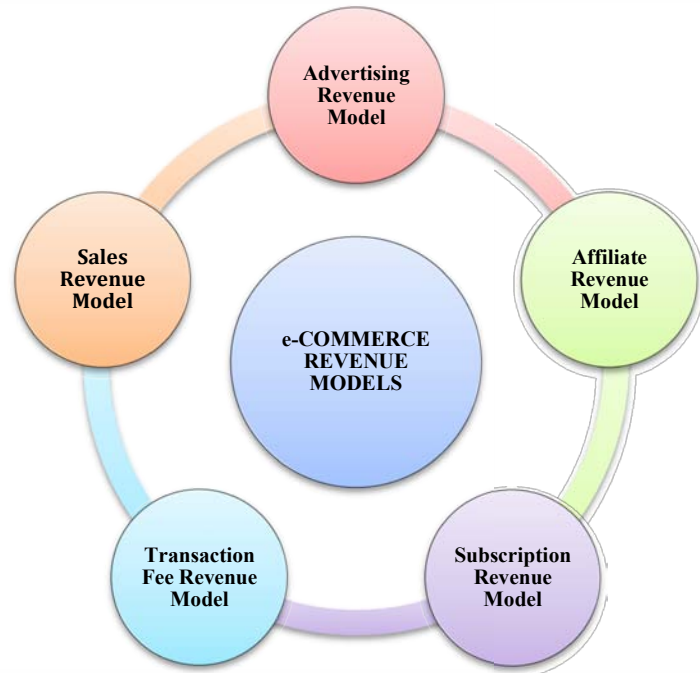


Fig 2.2: E-commerce revenue models

A revenue model is a part of the business model that essentially explains different mechanisms of income generation and its sources.

1. **Advertising Revenue Model:** Revenue in e-commerce businesses could be primarily generated by hosting advertisements of other products/ services on online stores; this is the most basic model of revenue generation referred as Advertising Revenue Model.

This model provides content and services like email, chat, etc mixed with advertising messages in the form of banner ads. The advertising model only works when the volume of viewer traffic is large or high. The banner ads may be the major or sole source of revenue for the broadcaster.

There could be several variations of this revenue model such as display-marketing, affiliate-marketing (advertising on many websites), search-engine-marketing (also called 'cost per click' or CPC model), e-mail marketing and social-media-marketing. Google and Facebook primarily operate using this revenue model.

2. **Affiliate Revenue Model:** It is a very popular variation to the advertising revenue model that is based on pay-for-performance concept. In this concept the sellers put advertisement of their products as 'links' on websites of their partners, also called affiliates. Payments are made to the sellers when the links are clicked, and orders are placed and in return the partners/ affiliates get some part of the revenue.

3. **Subscription Revenue Model:** Another very popular concept of generating revenue is to offer some basic free services but store has a subscription amount, payable either monthly, or quarterly or annually.

That means that premium services of the e-commerce portal are available only to the subscribers (also called members) . Users pay for access to the site. High value-added content is essential. Eg Over-The-Top (OTT) video streaming platforms like Netflix operate using subscription revenue model.

- 4. **Transaction Fee Revenue Model:** There are certain e-commerce sites, such as OLX, e-bay who charge a transaction fee from its users. This transaction could be either fixed or could be in terms of percentages of the volume of transactions undertaken.
- 5. **Sales Revenue Model:** Sale of products/ services itself generates revenues for the sellers (who could be a retailer or wholesaler) who sell their products online.

There could be several more variations of the aforementioned revenue models by combining and improving these basic models. Since the e-commerce world is evolving very rapidly, newer variations of revenue models are expected such as group-buying, target campaigning, content - syndication, monetisation of personal sensitive data etc and so on. Understandably not all could be considered as pleasant variations and it would need more strict legal enforcements at national and global levels.

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## 2.8 IMPACT OF COVID ON e-COMMERCE

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The corona virus pandemic has considerably changed the shopping behaviour of consumers for two valid reasons- firstly the shopping sprees got reduced due to lockdowns and secondly the downward spiral of economy curtailed the expenditures.

However, in this transition, online stores became more popular. Even those who had not gone online to shop now realised that they could buy essential commodities from the safe confines of their homes. These FTUs (First Time Users) on e-commerce sites also suddenly became aware of massive discounts/ bargain deals available online, which probably would have never come their notice earlier. As a result, quite a lot of consumers have switched from shops, supermarkets, and shopping malls to online portals for the purchase of products, ranging from basic commodities to branded goods, even when the covid-imposed lockdowns have been lifted.

However, this is just the tip of the ice-berg- COVID and Digitilisation have more to unfold in e-commerce sector than what we can see now. Only future would tell.

### Check Your Progress B:

- 1) What is a revenue model?

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2) How has the corona virus pandemic considerably changed the shopping behaviour of consumers?

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3) State whether the following statements are True or False:

- i. Advertising Revenue Model is based on pay-for-performance concept.
- ii. Business model is developed keeping in mind the revenue earned over the previous years.
- iii. A revenue model is a part of the business model that essentially explains different mechanisms of income generation and its sources.
- iv. The shopping behaviour of consumers has remained constant the corona virus pandemic.
- v. The advertising model only works when the volume of viewer traffic is large or high.

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## 2.9 LET US SUM UP

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A business model is like a business plan conceived by a company so that the company has an edge over its competitors and can make profits but it is over and above a business plan too. It is also about specifying exact strategies and approaches of initiating and sustaining the proposed business plan. Its key focus stays on sustaining the proposed business by specifying ways and means to create on-going value for the desired customers.

There are some simple steps to create a strong business model namely; Identify your specific audience, Establish business processes, Record key business resources, Develop a strong, preferably a unique value proposition, and Determine key business partners. Keeping these five elements in mind, will lead to the creation of a solid business model capable of fuelling the success of a new business entity.

Typically for an e-commerce business, a clearly defined business plan usually must include following four subtypes of related models Customer Based Business, Design Model, Implementation Model and Revenue Model.

There are four models that are associated with the informational/communicational design namely; Brand awareness and image building model, Promotion model, Info-mediary model and Customisation model.

Once the end customer of e-commerce has been identified, the next important thing is to understand how e-commerce models are implemented. These e-commerce implementation strategies constitute a part of the business model and to know that how activities like inventory management and sourcing of products are undertaken at the back-end of an e-commerce implementation.

There are many possibilities to this too, such as manufacturing and storing products by the same business entity or may be finding another business partner to do the manufacturing, stocking and so on. Based on such possibilities, there are several e-commerce implementation strategies such as Retail Model, Brokerage Model, Mall Model, Drop Shipping Model, Warehousing and Whole selling Model, Private Labelling, White Labelling Models and so on.

A **revenue model** is a part of the business model that essentially explains different mechanisms of income generation and its sources. It has various types namely; Advertising Revenue Model, Affiliate Revenue Model, Subscription Revenue Model, Transaction Fee Revenue Model and Sales Revenue Model.

The corona virus pandemic has considerably changed the shopping behaviour of consumers for two valid reasons- firstly the shopping sprees got reduced due to lockdowns and secondly the downward spiral of economy curtailed the expenditures.

However, in this transition, online stores became more popular. Even those who had not gone online to shop now realised that they could buy essential commodities from the safe confines of their homes. These FTUs (First Time Users) on e-commerce sites also suddenly became aware of massive discounts/ bargain deals available online, which probably would have never come their notice earlier. As a result, quite a lot of consumers have switched from shops, supermarkets, and shopping malls to online portals for the purchase of products, ranging from basic commodities to branded goods, even when the covid-imposed lockdowns have been lifted.

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## 2.10 KEYWORDS

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**Business Models:** A business model is an idea conceived by a company for making profits. The business model is developed keeping in mind the idea of differentiating the product or service from its competitors.

**Customer Based Business Model:** Model that would help decide who is the ultimate target beneficiary of the proposed e-commerce initiative.

**Customisation model:** This model provides customers with content that is customised to meet their preferences by employing AI/ML algorithms.

**Design Model:** Model that would help to decide the priority for designing the proposed e-commerce website.

**Drop Shipping Model:** Drop shipping model is probably the most popular form of e-commerce implementation strategy where the items are dispatched straight to customers by the supplier.

**E-commerce:** E-commerce is a concept that explains and elaborates upon the idea of buying and selling of products, goods, services and information via computer including the internet.

**Implementation Model:** Model that would decide how we implement the proposed e-commerce initiative including how we reach our customers, how



we sale them, how we transact a sale, how the products/ services are distributed, how we deliver the products/ services.

**Info-me-diary model:** This website model aggregates information from multiple electronic commerce retailers (intermediaries) and provides services of searching and comparison for Internet customers.

**Manufacturer model:** This model is based on the power of the Web to allow manufacturers to reach buyers/customers directly and thereby compress the distribution channel.

**Pandemic:** A disease that is prevalent over a whole country or the world.

**Promotion model:** This website model is based on lucrative ‘advertisements’, which are attracting a potential customer to a site.

**Revenue Model:** Model that would help us to generate revenue for the e-commerce initiative.

## 2.11 ANSWERS TO CHECK YOUR PROGRESS

### Check Your Progress A

3. i. Business model    ii. Value proposition    iii. Design model  
 iv. Websites    v. Information; Intermediary

### Check Your Progress B

3. i. False    ii. True    iii. True  
 iv. False    v. True

## 2.12 TERMINAL QUESTIONS

- 1) State the various key elements of a business model.
- 2) What are steps to create a strong business model?
- 3) Explain Drop Shipping Model? Would emerging technologies have any impact on implementation strategies of e-commerce? Justify
- 4) State the impact of a pandemic on E-commerce businesses.
- 5) Explain the four models that are associated with the informational/ communicational design.
- 6) Who are Digital Influencers and under which category of e-commerce business model they could be considered?
- 7) What are e-Commerce revenue models? Explain their various types.



### Note

These questions are helpful to understand this unit. Do efforts for writing the answer of these questions but do not send your answer to university. It is only for your practice.

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## UNIT 3 TECHNOLOGY USED IN E-COMMERCE

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### Structure

- 3.0 Objectives
- 3.1 Introduction
- 3.2 Design Considerations of E-commerce
  - 3.2.1 Design of E-commerce Website
  - 3.2.2 Easy Navigation
  - 3.2.3 Simple Checkout
  - 3.2.4 Logistics
  - 3.2.5 Good Product Pages
- 3.3 Essential Technology Features Required
- 3.4 Difference between App based and web-based business
- 3.5 Building, Designing and Launching E-Commerce Website
- 3.6 SDLC cycle for designing e-commerce solutions
  - 3.6.1 Hardware
  - 3.6.2 Software
  - 3.6.3 Outsourcing vs In-house Development of Application
- 3.7 Architectural Framework and Network Infrastructure
  - 3.7.1 Architectural Framework of E-Commerce
  - 3.7.2 Domain Name System
  - 3.7.3 Web Servers Implementation
- 3.8 Impact of Emerging technologies on E-commerce
- 3.9 Digital Platforms and E-commerce
- 3.10 Digitalisation and Digital Transformation in Businesses
- 3.11 Let Us Sum Up
- 3.12 Key Words
- 3.13 Terminal Questions

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### 3.0 OBJECTIVES

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After studying this unit, you should be able to:

- list the building blocks of e-Commerce;
- understand the difference between app based and web based business;
- know the features of technologies used in e-Commerce;
- understand how to build, design & launch e-Commerce website;
- differentiate between app based and web based business;
- understand the impact of emerging technologies of e-commerce with special reference to Platform Economy.; and



- Understand the concept of Digital Transformation with special reference to Commerce.

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## 3.1 INTRODUCTION

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In the last decade, the way of doing business has totally revolutionized. The reason for drastic change is the emergence of new technologies and the merging of Internet facilities with these new technologies. The Internet has produced a number of innovations in the business between commercial organizations, between individuals and commercial organizations, and between individuals and individuals. These transactions are usually known as business-to-business (B2B), business-to-customer (B2C), and customer-to-customer (C2C) e-commerce.

The advancement in technologies impacted the e-commerce industry drastically; it has transformed the way consumers connect with brands. Now the customers feel more empowered as they can buy anything just with a click of a mouse, can shop more cost-effectively, track orders, find the best deal by comparing different portals and get the convenience of getting products delivered to their doorstep. All this is possible because of the emergence of new technologies, as a result now e-commerce companies are getting nearly global adoption because customers can buy products from anywhere and at any time as per their ease.

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## 3.2 DESIGN CONSIDERATIONS FOR E-COMMERCE

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None of the e-commerce applications would be possible without some basic design considerations. Attracting visitors and making them convert into customers is the real challenge. The basic design considerations, which, when set up right, will pave the way to a prosperous online business. Five important design considerations of e-commerce are discussed below:

### 3.2.1 Design of e-commerce Website

The design of the portal is most important, never underestimate it. The customers who visit the site should be able to find exactly what they're looking for as soon as they arrive. E-commerce portal should be such that it is fast and responsive to customers' needs, web pages should load quickly and provide smooth, intuitive navigation across all electronic devices (desktops, tablets, and smartphones).

### 3.2.2 Easy navigation

Easy-to-use navigation is essential for any website and even more so for online shopping. Customers prefer e-commerce portals that are spontaneous to their queries and give quick responses to what they are looking for. If the product descriptions are not properly provided on the shopping menu of an e-commerce portal, then there are high chances of losing the customers.

### 3.2.3 Simple checkout

Like navigation, the checkout process should be smooth, if it involves too many steps and clicks, the risk is that the customer just gets frustrated and gives up before completing the purchase. There should be the facility for payment through different payment options such as through net banking, digital wallets, debit/credit cards, and COD (Cash on Delivery). The payment process should be transparent and clearly state the shipping charges, taxes, and any other fee if applicable; there should not be any hidden fee at the time of product delivery.

### 3.2.4 Logistics

Logistics management is one of the key consideration points for doing business either locally or around the globe. Proper logistics should be in place to receive and fulfill orders.

### 3.2.5 Good Product Pages

The product page is the crucial element of any e-commerce portal, it has the power to convert a 'visitor' into 'prospective buyer'.

- The pictures uploaded on website pages should be of good quality, language used for product description must be simple and crisp.
- Feedback of the customers in form of 'product review' should also be there on e-commerce website, as the product review option increases the chances of a product purchase, nowadays customers prefer to buy a product after reading about its review.

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## 3.3 ESSENTIAL TECHNOLOGY FEATURES REQUIRED

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Essential features of technology required while designing e-Commerce are explained as follows:

1. **Ubiquity:** E-commerce is ubiquitous i.e. it can be accessed from everywhere and at anytime. It is not restricted to any physical space and makes it possible to shop anytime, anywhere using any electronic device (laptop/desktop/mobile phone/tablet) having internet connectivity.
2. **Global Reach:** The technology has eliminated the national boundaries. In e-commerce businesses, potential market size is almost equivalent to the global population.
3. **Universal Standards:** Another obvious unusual feature of e-commerce technologies is there is one set of technical standards of the internet that is universal standards. The Internet is shared at the global level by all nations, it enables any computer to link with any other computer regardless of the technology platform used by each one of them. Using the universal standards files can be easily exchanged with any remote device across globe.

4. **Richness:** Advertising and branding are an important part of commerce. E-commerce can deliver video, audio, animation, billboards, signs and etc like traditional commerce. Information and the contents are rich can be delivered without sacrificing the reach.
5. **Interactivity:** E-commerce technologies allow for interactivity, meaning they enable two-way communication between the merchant and the consumer.
6. **Information Density:** Ecommerce technology reduces the information collection, storage, communication, and processing cost. At the same time, it has increased the accuracy of quality information, making information more useful and important than ever.
7. **Personalization:** E-commerce technology allows for personalization. On the basis of name, interests, and past purchase behavior products can be customized and personalized, further, this collected information could be used for sending marketing and promotional messages to the targeted customers.

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### 3.4 DIFFERENCE BETWEEN APP BASED AND WEB-BASED BUSINESS

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Businesses that generate their revenue directly from their website fall into the **web based business** category, these types of websites are typically informational in nature, they are made to provide the desired information typically a user demands whereas, a **mobile app** is a software application designed for use on mobile devices, such as smartphones and tablets, rather than desktop or laptop computers.

Nowadays, every individual has mobile phones, so almost everyone has switched from website to mobile application as it is convenient to use, can be carried everywhere and anytime. That is why most retailers are investing in e-Commerce app development to attract maximum customers to their online business (e-commerce).

**Table 3.1: Difference between App based and web based business**

Parameters	App based business	Web based business
Devices Used	Handheld devices such as Smart phones and tablets	Computers, Laptops
Internet Connectivity Requirement	Mandatory	Mandatory
Reachability	With push messages (notifications), app based business reach large number of customers, even when they are on the go	In web based business reach is limited.
Platform	Web store and native Apps (Play store in Android and App store in Apple )	Web stores

Payment Gateway	Mobile banking, net banking , Credit/Debit card, Wallets, COD.	Net banking, Credit/Debit card, Wallets, COD
Mobility	Mobility is high, as customers can buy and make transactions from anywhere, anytime as long as internet connectivity is there.	Mobility is low, as customers can buy and make transactions on their computers and laptops
Privacy and Security	There are lot many privacy and security issues related with app based business. Installation of malware on mobile is one of the major concern while shopping online using mobile app	Web based business is more secure than App based business

App-based business is the future of shopping as changing time requires changing solutions, and mobile app has proven it by providing customers the convenience and flexibility of shopping on the go.

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### **3.5 BUILDING, DESIGNING AND LAUNCHING E-COMMERCE WEBSITE**

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Building an E-commerce website will strengthen the reputation of the business; it helps in the expansion of the brand nationally and internationally. The World Wide Web is all about the technologies that change the business environment and have an impact on the future of electronic commerce. The wide popularity of the internet in recent years has been fuelled largely by the prospect of performing business on-line, i.e. buying and selling of the product, services, or information via computer networks, mainly by the Internet. There are a lot many benefits of doing business through e-commerce that no company can afford to ignore. It is no longer an alternative but is chosen as the first choice for the new players in the market. Businesses are of various types, so the e-commerce model also changes accordingly. Even companies in the same industry, but different either with the size or customer base are finding that one same e-commerce models do not work. Therefore, one e-commerce model does not fit all.

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### **3.6 SDLC CYCLE FOR DESIGNING E-COMMERCE SOLUTIONS**

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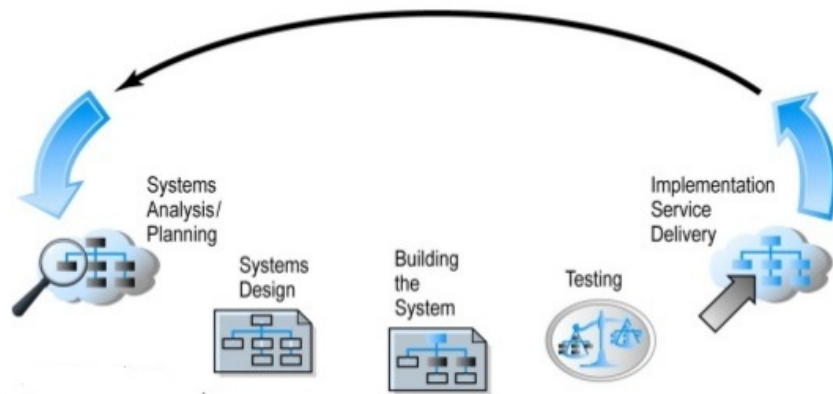
In the Systematic Approach of developing successful e-commerce two most important management challenges are involved, first challenge is to develop a clear understanding of the business objectives and the second challenge is to choose the right technologies to achieve identified business objectives.

Effective plan and knowledge base of the above factors will help in making sound management decisions that will help to generate consistent, optimum results in terms of increased growth of the online business (e-commerce)

For understanding the business objective Systems Development Life Cycle (SDLC) methodology is used, which helps in designing an appropriate solution. It includes the creation of documents that communicate to senior

management for achieving important milestones and the uses of resources. The five major steps of SDLC involved are:

- a. **System Analysis/ Planning:** In this phase objectives of website to be developed are identified and defined, system requirements are also gathered and on the basis of that System Requirement Specifications (SRS) document is prepared.
- b. **Systems Design:** In this phase the system model is designed like graphical user interface and database.
- c. **Building the System (Development):** In this phase the design is executed into actual e-commerce website.
- d. **Testing:** In this phase a thorough testing is done on actual e-commerce website of various parameters such as speed of website, connectivity between various pages, money transactions (if applicable).
- e. **Publish /Implementation:** A hosting company is chosen in this phase. Once it is finalised then payment for hosting charges are done, Hosting company provides a password that is used for uploading the website on the internet server.



**Source\*:** <https://designsystemexamples.blogspot.com/2018/08/e-commerce-system-analysis-and-design.html>

**Fig 3.1: SDLC approach for E-Commerce website development**

Nowadays, Agile method is becoming an integral part for the development of E-Commerce websites, apps and software, as it accounts for unpredictability by allowing for changes to be constantly implemented. In this method client is provided access to multiple versions ( after iterations) of the website. Agile methods gained prominence from last one decade and in early personalized era, because agile method improves website quality by injecting client’s feedback into a working website version.

**Advantages of Agile Methodology:** There are following advantages:

- a. **High Speed:** This method gives a much higher speed than conventional web development programs, due to its well-planned streamlining development.

- b. Better product quality:** The website undergoes regular and rigorous quality checks to improve the quality, during the development process.
- c. Flexibility:** It is difficult to work nowadays using different methodology (such as Waterfall etc) because of today's fast-on-the-move environment. Agile methodology works for projects with ever-changing requirements and goals, and adapts to any environment.
- d. Regular and rigorous testing:** Quality checkups are done regularly till the final website is launched.

### 3.6.1 Hardware

Hardware is the basic technical requirement of an e-commerce website that can support e-commerce operations. Choosing the right kind of hardware for an e-commerce site is very important, for this consider the size, purpose, and traffic on the site to determine the use of server hardware. An E-commerce website is made up of HTML, PHP, Javascript, database, media files. The entire website is stored on a web server. Hardware for setting up a web server completely depends on the e-commerce website requirements. There are lot many that decide the hardware for hosting, such as what app you will be running on the web server. How many visitors you are expecting, what's the scalability of a site, etc.

### 3.6.2 Software

All e-commerce sites require basic Web server software to answer requests from customers for HTML and XML pages. It thus answers HTTP requests from customers. The choice of Web server software depends on the operating system. Apache, the leading Web server software; only works with UNIX operating system. Microsoft's Internet Information Server (IIS) is the second major Web server software.

### 3.6.3 Outsourcing Vs In-house Development of Application

In-house development of application is the process of developing and building an application on your own. It includes high risk; high skilled set and pre-built templates in this case.

Whereas, Outsourcing is hiring an outside vendor to provide develop the application that cannot be developed with in-house personnel.

This is completely different from in-house app development in terms of risk. It lowers down the risk of app failure because in this case, company hire the top app developers who are experienced and understand the market trends as well as customers/clients requirements.

### Check Your Progress A

- 1) What is an App based business?

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2) “Advancement of technology has impacted the business.” Comment.

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3) What are the advantages of agile methodology?

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4) What do you understand by in house development of an application?

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### **3.7 ARCHITECTURAL FRAMEWORK AND NETWORK INFRASTRUCTURE**

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#### **3.7.1 Architectural Framework of E Commerce**

A framework is intended to define and create tools that integrate the information and allow the development of e-commerce applications. The aim of the architectural framework is on synthesizing the diverse resources already in place to facilitate the integration of data and software for better applications. The e-commerce architectural framework consists of following six layers of functionality, or services:

1. Applications Layer services: It includes all Customer to business, business to business and intra organizational services
2. Brokerage services, data or transaction management: It includes order processing, payment process and mail interactions
3. Interface and support layers: It facilitates Directory support functions, Interactive catalogues



4. Secure messaging, security and electronic document Interchange: It deals with encrypted e-mail, Electronic Data Interchange (EDI)
5. Middle ware and structured document interchange
6. Network infrastructure and basic communications services

All the above mentioned layers are connected and help in integrating information access and exchange within the context of the chosen application. As electronic commerce applications are based on several layers, when they are integrated, then provide uniquely powerful solutions.

### 3.7.2 Domain Name System (DNS)

The DNS is a system for mapping alphabetic names to numeric Internet Protocol (IP) addresses like a phone book maps a person's name to a phone number.

Lets understand the concept with an example, say 'www.abc.com' is an URL. In this 'abc.com' is the domain name and 'www' is the hostname. DNS resolution (the process of translating IP addresses to domain names) maps www.abc.com into an IP address (such as 192.0.2.1). When a user needs to load a webpage, a conversion must occur between what a user types into their web browser (*www.abc.com*) into an IP address required to locate the *www.example.com* site

### 3.7.3 Web Servers Implementation

The server and client speak the standardized, basically the computer language of the World Wide Web. Because of this standard language, The old Mozilla Netscape browser can still talk to a modern Apache or Nginx web server. The basic language of the Web with the request and response cycle from client to the server and then back to client remains the same as it was before. Modern browsers and web servers have simply developed and extended the language of the Web to incorporate new standards and to relate to the new customers.

**Web server:** A web server is server software, or hardware dedicated to run the software, that can satisfy client requests on the World Wide Web.

**Client request:** A client sends a request to a web server by using a browser such as Internet Explorer, Firefox, or Chrome. A Web server's work is to process requests from the clients. The result of the web server's processing is a response code and is commonly a content response.

The web server can be implemented in various ways. The following web server implementations each have changing features, extensions and configurations.

- **Apache HTTP Server:** It is the most usual deployed web server on the Internet for more than 20 years.
- **Nginx:** It is the second most commonly used web server, It can also be used as a reverse proxy, load balancer.

- **Caddy:** It is a new entry and it focuses on serving the HTTP/2 protocol with HTTPS.

The file sits on the file system in a location where the web server is authorized to access and the web server sends the file to the client with a status code. If the client had already requested the file and the file has not changed, the web server will pass back a 304 "Not modified" response indicating that the client already has the latest version of that file.

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### 3.8 IMPACT OF EMERGING TECHNOLOGIES ON E-COMMERCE

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In the preceding sections, we saw how Internet the “platforms of platforms” has tremendously reduced the entry costs of new businesses / entrepreneurs in the market.

Now we would move on understanding the impact of emerging technologies on businesses.

Emerging technologies are simply new technologies that are currently developing or will be developed over the next five to ten years, and which will substantially alter the business and social environment. Broadly, emerging technologies can be understood as ‘science-based innovations with the potential to create a new industry or transform an existing one’, which will “substantially alter the business and social environment”

There is no established definition of Emerging technology. The term Emerging technology is interchangeably used with Disruptive Technologies. These Emerging technologies are broadly divided into three categories viz ‘Artificial Intelligence-AI’, ‘Transparently Immersive Technologies’ and ‘Emerging Digital Platforms’. Emerging technologies such as Internet of Things (IoT), Artificial Intelligence (AI), Robotics, have influenced every sector.

The accelerating pace of adoption of Emerging technologies in e-commerce is going to be impressive, because of dramatic reductions in operating costs, easier access to the consumer as well as because of innovations possible in the design and delivery of products and services due to these newer forms of digital technologies.

Emerging technologies are also often referred to as ‘Disruptive’ – the one that displaces an established technology and shakes up the industry and could be termed as a ground-breaking product capable of creating a completely new industry. In the next few subsections, we shall discover the tremendous impact of Emerging technologies on businesses and that how these technologies have revolutionized the existing e-commerce business models.

Presented herewith are discussions on impact of only a select few Emerging technologies viz Mobile Devices and Mobility, Big Data and Big Data Analytics, AI/ML, IoT /IoE/IIoT/ Digital Twins, Cloud/ Edge/ Fog computing, and convergence of these technologies as Industrial Revolution 4.0, on the realm of e-commerce.

- 1) **Mobile Devices and Mobility and its Impact on e-Commerce:** In present busy lifestyle, every consumer wishes to get services on the go. These services could be as routine as payment of utility bills to ordering of food or apparels or even buying and investing in fixed / movable assets using smartphones and other handheld devices. No one could ignore the significance of mobile devices and the advantage of mobility these devices present in our daily lives.

Growing penetration and popular acceptance of mobile devices has led to the increase, and growth of ever evolving mobile based solutions. It has also revolutionized the way online shopping had been conducted earlier. E-commerce companies are now striving hard towards offering unsurpassed User Interfaces (UI) and User Experience (UX) to their target consumers on their handheld digital devices. Mobility is indeed, becoming a highly significant aspect of e-commerce design considerations.

- 2) **Big Data and Big Data Analytics and its Impact on e-Commerce:** E-Commerce is a sector, in which companies handle a large amount of data on their databases. Data about customers, distributors, retailers, products, processes, prices, logistics, and several other aspects of businesses is growing faster than ever before. In such situation use of Big Data and Big Data analytics become relevant to save, update, use, process and share this ever-growing business details.

The term Big Data is largely characterized by the mix of the 4 V's—volume, velocity, variety, and veracity. Big Data technologies not just process the huge quantity and range of data formats but also lend speed to its processing. Every second, more and more data is being created from heterogeneous components of e-commerce which also needs to be analyzed in an integrated manner in order to extract maximum value out of it.

Big data analytics is a collection of different types of tools, including those based on predictive analytics, data mining, statistics, artificial intelligence, etc. . The complex analysis of Big Data is enabled by the science of big data analytics coupled with intelligent and predictive processing enabled by AI / ML algorithms.

Big data analytics is the process of examining large and varied data sets *i.e.*, big data to uncover hidden patterns, unknown correlations, market trends; customer preferences and other useful information that can help organizations make more-informed business decisions. Powered by AI/ML, big data analytics help organizations to make better business decisions and forecast future trends.

- 3) **Artificial Intelligence (AI), Artificial General Intelligence (AGI ) and Machine Learning (ML) and its Impact on e-Commerce:** Artificial Intelligence (AI) is an important Emerging technology, that has created impact on everything that we do today – right from searching the Internet, to watching series/movies on streaming platforms to what we order online.

Artificial Intelligence is the simulation of human intelligence processes by machines, especially computer systems. These processes include learning, reasoning, and self-correction.

More typically, Artificial General intelligence (AGI) is the representation of generalized human cognitive abilities in software so that, faced with an unfamiliar task, the AI system could find a solution. An AGI system could perform any task that a human is capable of. Machine learning is an application of artificial intelligence (AI) that provides systems the ability to automatically learn and improve from experience without being explicitly programmed.

Machine learning focuses on the development of computer programs that can access data and use it to learn for themselves. Artificial Intelligence (AI) with its core subset of Machine Learning (ML) is rapidly transforming life experiences—ranging from routine mundane chores to critical decision-making. AI/ ML permit rule-based extractions on heterogeneous multidisciplinary data collected over the entire value chain of businesses.

Artificial Intelligence is helping e-commerce businesses get closer to their customers, as with the help of AI e-commerce platforms are able to utilize large datasets regarding customers purchasing behaviour and product search patterns. Artificial intelligence self-learning algorithms can create personalized shopping experiences for online buyers.

Typically, businesses are implementing AI/ML to increase retail standards, customer experience, and profits and fast processing. Following are some facilities that AI is providing to e-commerce:

- **Personalization:** The clients are provided with a personalized experiences and easy to select products/searches based on their earlier searches (machine learning technique).
- **Real-time intent targeting:** It is the next step in personalization. Enabled by AI, it gives the ability to accurately predict ever-changing customer intent.
- **Voice Assistant:** AI is also facilitating voice assistants, by which customers can interact with and resolve their queries.
- **Recommendation engines:** A recommendation engine is a tool that filters the data by using algorithms and suggests popular products for customers. Based on the customers past purchasing behaviour, these engines will suggest items which the customer may probably purchase.
- **Chat box support:** It is a computer program that allows conversational performances, engaging purchasing more highly by text and voice. Nowadays, it is popularly used in mobile phone,

internet browsers, or internet chat rooms. A basic and simple real-time human-like interaction using both text options can also enhance user experiences (UX) and thus nurture good engagement between the customer and the online store.

- 4) **Internet of Things (IoT), Industrial Internet of Things (IIoT), Digital Twins and its Impact on E-Commerce:** The Internet of Things (IoT) is a system of interrelated computing devices, mechanical and digital machines, objects, animals or people that are provided with unique identifiers and the ability to transfer data over a network without requiring human-to-human or human-to-computer interventions

IoT devices keep capturing, sharing, collating, millions of zetta bytes ( $10^{21}$  bytes), which is made available to planners/decision makers for real-time decision making through state-of-art control centres.

Industrial Internet of Things (IIoT) is similar interconnected network particularly in industrial context, where all the instruments have sensors and are interconnected with each other.

Extending the concept of IIoT, is the concept of 'digital twin'- which refers to the digital process of creating a virtual representation of a product. The application of 'digital twin' can be used in product design, simulation, monitoring, optimization, and servicing and is an important concept of Industrial Internet of Things (IIoT)

The impact that IoT and its related technologies have on e-commerce is interesting. For example, IoT sensors and RFID (Radio Frequency Identification) tags have transformed the way inventory is organized at the backend of online stores.

**Warehouse automation:** Most of the organizations are presently concentrating on handling their warehouse operations for decreasing costs and increasing business efficiency. Automated warehouses are progressively effective, adaptable, quick and trustworthy as well. They help online shopping companies to adapt and handle the distribution of warehouse products.

Because of interconnected sensors on the products, a unique online shopping experience is possible, where both the buyers and sellers can 'view' and monitor the availability and movement of inventory in real time. Such IoT based implementations in the back-end factories lead to better 'supply chain management' models. Tracking the status of the product has never been so accurate before the advent of IoT technology. With the help of IoT sensors and RFID tags, customers can easily know what happens to the product they have ordered, where it is, what the arrival time of the product etc is.

- 5) **Cloud Computing, Edge Computing and Fog Computing and its Impact on e-Commerce:** With the increase in storage capabilities and

methods of data collection, huge amounts of data must be stored and managed well in remote data centres, called as 'cloud'.

Cloud assures to deliver on-demand computing resources and services in three basic manner viz. Software as a Service (SaaS), Platform as a Service (PaaS), Infrastructure as a Service (IaaS).

Cloud computing term is often referred to refer to the process of analysing the data lying in these remote data centres. A close variation of the concept of 'cloud computing' is 'edge computing'.

'Edge Computing' moves computing applications, data, and services away from centralized nodes to the logical extremes of a network. It enables analytics and data gathering to occur at the source of the data, instead of remote data centres.

'Fog computing' refers to a collection of co-located edge-computing devices and computations, connected over Internet. Therefore, fog computing is a decentralized computing infrastructure in which data, compute, storage, and applications are located somewhere between the edge and the cloud. Edge and fog computing help to process co-located data closer to where it has been captured from, rather than waiting for it to 'flow' to the remote cloud servers. Fog computing and Edge computing, therefore, reduce the time-gap between data capture, data-processing and data-dissemination.

All these varied possibilities of computing offered by Cloud, Edge and Fog allow business enterprises to launch applications without worrying about the infrastructure. These remote implementations help businesses to have access the information stored in big data storages without delays.

Cloud based e-commerce solutions are cost effective, scalable and could be considered as the best option available to those enterprises who need to access terabytes of e-commerce data, without the botheration of maintaining it on the local premises.

Another important benefit of cloud computing is that it provides security to the data by storing it in a virtual space. Physical servers or on-premises data centres cannot easily combat the risks of disasters/risks which could occur anytime.

Cloud computing, along with its emerging trends like fog computing and edge computing can be utilised in e-commerce realm to provide alternative contact points for the related business processes and to its numerous users.

6. **Block Chain Impact on E-Commerce:** A block chain is a digital record (distributed ledger), which is made to store a list of transactions (called 'blocks'). Each block has a different feature which contains a link to the previous block, a timestamp, and data about the transactions it represents. Blocks cannot be modified once they are created. Since nobody can modify a block after it's been created, all parties (buyer and



seller) can be assured that the data it contains is still valid long and remains unchanged after its creation.

Block-chain technology is a natural fit for E-Commerce since it was designed for storing transactional data. However, this data doesn't need to be financial; it can be any distinct action that requires a fixed record, including actions related to payment and order fulfilment.

There are various advantages (plus points) of block chain technology that make it an approachable technology for the e-commerce industry (and other industries) in the coming future. Some of the plus points are discussed below:

**Transparency:** One of the major reasons block-chain is interesting businesses is that this technology is almost always open source. That means other users or developers will have the opportunity to modify it as they prefer it to be.

**Stability:** Confirmed blocks are very unlikely to be reversed, meaning that once data has been registered into the block chain, it is extremely difficult to remove or change it. This makes block chain a great technology for storing financial records.

**Reduced transaction costs:** Blockchain lets peer-to-peer as well as business-to-business transactions to let them complete without the requirement of a third party, which is usually a 'Bank'. Because there is no inclusion of a middleman which is tied to block chain transactions, which basically means that they can actually reduce costs to the user or businesses over time.

**Decentralization:** Another important reason the block-chain is so exciting is because of its lack of a central data hub. Instead of running a massive data centre and verifying transactions through that hub, block-chain actually lets the individual transactions to able to have their own copy of proof of validity and the authorization to be able to enforce those constraints.

**User-controlled networks:** Finally, crypto currency investors are inclined to be really motivated by the control aspect of the block-chain. Rather than having the third party performs its tasks, users and developers should be the ones who get to call the shots.

From the above discussions, block chain will be the driving force for e-commerce in the future, as indicated herewith:

- a. **Better Supply Chain Tracking & Monitoring:** Supply chain tracking and monitoring is the most crucial aspect of e-commerce. The well-monitored and balanced supply chain is a distant dream for e-Commerce businesses. Tracking the products, managing the stock is very hard for e-commerce. Blockchain implementation in this area will likely solve many problems, this technology could be extensively leveraged to solve supply chain issues like recordkeeping, tracking of products etc.



- b. Provenance Tracking:** The record keeping and provenance tracking becomes easy in a block chain enabled supply chain, as the product information can be accessed with the help of RFID tags and embedded sensors. Tracking could be done from product's inception stage to its present status.
  - c. Payments Get an Efficient Makeover:** The payment industry is obtaining ample benefits from block chain technology. Crypto currency has gained the necessary power and is being used as an alternative to the traditional currency in e-commerce. Nowadays, customers prefer crypto currency because it doesn't expose personally identifiable information such as name, credit/debit card number, etc.
  - d. Secure Platform for e-Commerce:** Security in any form is a cause of concern for e-Commerce businesses. The Blockchain-based e-Commerce platform offers security at all levels including data and wallet security.
7. **Industrial Revolution 4.0 and its Impact on E-Commerce:** These 'smart' digital technologies including AI, IoT, Cloud computing, Big Data Analytics etc. have also led to a paradigm shift in businesses, particularly the manufacturing sector, ushering in, what is popularly referred as 'Industry Revolution 4.0' (IR4.0). Industry 4.0 completely relies on real time data exchange and digital interconnectivity enabled by cyber-physical systems (CPS) and emerging technologies. In IR 4.0, the physical world of manufacturing relates to digital world using cyber-physical systems (CPS), internet of things (IoT), and industrial internet of things (IIOT), cloud computing, and artificial intelligence for better collaboration across departments, partners, vendors, product, and people. IR 4.0 has now been accepted as a more comprehensive, interlinked, and holistic approach to manufacturing than the prevailing one. The underlying concept of IR 4.0 is "interconnectivity using emerging technologies".

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### **3.9 DIGITAL PLATFORMS AND E-COMMERCE**

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As is evident from the previous section, the impact of Emerging technologies on e-commerce has been enormous in the last few years. Convergence of Emerging technologies has led to the emergence of newer cloud-based 'digital platforms', which are more complex in implementation than online stores that we had been talking so far about. Even the implementation strategies and revenue models are different than the basic e-commerce business models we had studied. Let us try to explore the concept of Digital platforms, also referred as only 'Platforms.

**What are Digital Platforms :** Digital platforms can be understood as digital "frameworks of complex web portals and online digital facilities that permit collaborators – users, peers, providers -- to undertake a range of activities, often creating de facto standards, forming entire ecosystems for value creation and capture."

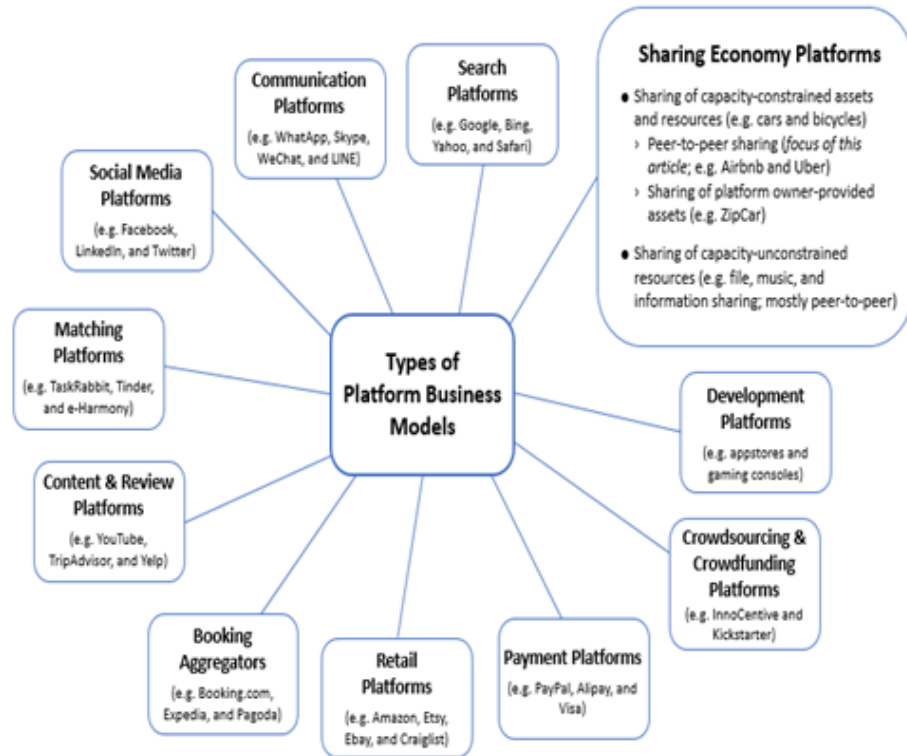
Digital platform is essentially a cloud based implementation; it employs AI/ML to personalise and contextualise each activity undertaken by the visitor to the platform; it relies on Big Data technologies to store varied, real time data and uses APIs to ‘converse’ with this huge , heterogenous Big Data.

**How Platforms Work:** All the past choices and transactions undertaken by the customer are stored in enormous databases running in the cloud. ML algorithms are employed on these huge databases to ‘data-mine’ and ‘guess’ the future choices of the customer. These ‘predicted choices’ are presented using customised APIs, when he/she logs in again. As already explained in the last Unit, APIs – application programming interfaces, deliver a customer’s response to the system and sends the system’s response back to the customer. Therefore, cloud, huge databases, AI/ML and APIs work together in the platforms to predict future choices of the customer that help to ‘target’ them in a more personalised manner. These predictions are not just about the ‘potential product / service choices’ of the customers but are also used for displaying targeted advertisements and campaigns that the customer could be potentially interested in.

Though all the e-commerce online stores use Internet itself as the foundation of designing and launching platforms but in present times, several technology companies (also referred in spoken language as ‘BigTech giants’) are emerging as infrastructure companies who provide Cloud infrastructure and the related AI/ML based tools to the rest of the companies for constructing their own company portals and delivering services/ products. For example, Amazon Web Services (AWS) provides digital infrastructure and tools with which other platforms are built. Similarly, Google Cloud Platform (GCP) which is also emerging as one of the fastest and enormously growing cloud-computing platforms in the market. IBM Cloud and Alibaba cloud are other two interesting players in the field of providing “ Platform for Platforms”.

**Types of Platforms:** Depending on the services offered, various researchers have categorised digital platforms in various types, such as

- Sharing Economy Platforms
- Development Platforms
- Crowd-Sourcing /Crowd-Funding platforms
- Payment Platforms
- Retail Platforms
- Booking Aggregators
- Content and Review Platforms
- Matching and Social Media Platforms
- Communication Platforms
- Search Platforms.



Source\*: [https://www.researchgate.net/publication/331907029\\_Platforms\\_in\\_the\\_Peer-to-Peer\\_Sharing\\_Economy/figures?lo=1](https://www.researchgate.net/publication/331907029_Platforms_in_the_Peer-to-Peer_Sharing_Economy/figures?lo=1)

Fig 3.2: Types of Digital Platforms

**Impact of Digital Platforms on e-Commerce:** Understandably, the development and application of the platform economy has a deep impact on the way business transactions could be undertaken in future.

- a. The first main advantage of digital platform has been that it has initiated *disintermediation* – i.e. removal of local brokers (middlemen) from the supply chain. Using advance tools and algorithms, digital platforms, also referred as third-party marketplace or aggregators, connect sellers (for example, wholesale companies ) with buyers (for example, consumers) by removing intermediaries (for example retailers) from the supply - chain. For example, *Uber* directly connects drivers with riders using basic algorithms, thereby eliminating ‘Taxi stands’ from the supply chain of automobile services. In the same vein, *Kickstarter* or *Indiegogo* for project funding have replaced traditional intermediaries.
- b. Platform economy has also led to the popularising of the word ‘*uberisation*’ which refer to the concept of buyers and sellers, consumers and producers coming together virtually on the ‘digital platform’. For example, digital platforms (such as *Upwork*) now help to facilitate HR (human resource) functions.
- c. Several products / services that had a huge time and cost premium attached to it are now easily available on these platforms. For example, a library of software tools for building other software utilities is available on *Github*. Similarly, there is *App Store* of Apple and *Google Play Store* for Android that provide trusted platforms to facilitate the users to

download other apps by providing inbuilt safeguard mechanisms for privacy, security and trustworthiness of content for the users.

In short, powered by Cloud, AI/ML, Big Data and related Emerging technologies, digital platforms connect all stakeholders of value chain who are involved in a business transaction and help in convergence of processes, places and people involved. They help local products and services to have a global outreach. Platforms, therefore, have a very strong multi-dimensional characteristic that would impact e-commerce business models of future.

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### 3.10 DIGITILISATION AND DIGITAL TRANSFORMATION IN BUSINESSES

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Even the e-commerce designers are reimagining how goods and services could be delivered more creatively by employing Emerging technologies. These trends towards extensive dependence on Emerging technologies made possible through mobile devices and apps, have also led to automation of internal processes of businesses (such as inventory management, HR automation and so on) as well as of customer-facing processes (such as billing, notifications to the customers and so on). This, in return has led to extensive business process reengineering and process automation of internal and external business processes using various Emerging technologies including AI/ML etc. Integrated automation of end-to-end processes of business enterprises using Emerging technologies is also called *digitilisation* (and not digitisation) or *digital transformation in enterprises*.

Digitilisation transforms delivery of services or businesses, by replacing earlier technology implementations and manual processes with redesigned digital processes that use Emerging technologies.

Undoubtedly, Emerging technologies have ushered Digital transformation in the area of trade and commerce. Businesses have become cloud-based and mobile-enabled. Enterprises have become more agile and ‘virtual’ in nature. Newer business models have emerged that are more ‘intelligent’ and responsive to the needs of their customers and customers, have, truly become the ‘kings’ and ‘queens’ getting products/ services – whichever they need and wherever they need.

#### Check Your Progress B

- 1) State the impact of Industrial Revolution 4.0 on e-Commerce.

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2) What are the various types of platform business models?

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3) State the impact of Digital Platforms on e-Commerce?

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4) “Trends towards extensive dependence on Emerging technologies made possible through mobile devices and apps.” Comment.

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### **3.11 LET US SUM UP**

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In the last decade, the way of doing business has totally revolutionized. The advancement in technologies impacted the e-commerce industry drastically; it has transformed the way consumers connect with brands. Now the customers feel more empowered as they can buy anything just with a click of a mouse, can shop more cost-effectively, track orders, find the best deal by comparing different portals and get the convenience of getting products delivered to their doorstep.

None of the e-commerce applications would be possible without some basic design considerations. The basic design considerations, which, when set up right, will pave the way to a prosperous online business. Five important design considerations of e-commerce are design of e-commerce website, easy navigation, simple checkout, logistics and good product pages. Various Essential features of technology required while designing e-Commerce respectively are ubiquity, global reach, universal standards, richness, interactivity, information density, personalization.

Businesses that generate their revenue directly from their website fall into the web based business category, these types of websites are typically informational in nature, they are made to provide the desired information typically a user demands whereas, A mobile app is a software application

designed for use on mobile devices, such as smartphones and tablets, rather than desktop or laptop computers.

Building an E-commerce website will strengthen the reputation of the business; it helps in the expansion of the brand nationally and internationally. The World Wide Web is all about the technologies that change the business environment and have an impact on the future of electronic commerce. The wide popularity of the internet in recent years has been fuelled largely by the prospect of performing business on-line, i.e. buying and selling of the product, services, or information via computer networks, mainly by the Internet.

For understanding the business objective Systems Development Life Cycle (SDLC) methodology is used, which helps in designing an appropriate solution. It includes the creation of documents that communicate to senior management for achieving important milestones and the uses of resources. The five major steps of SDLC involved are System Analysis/ Planning, Systems Design, Building the System (Development), Testing, Publish /Implementation.

A framework is intended to define and create tools that integrate the information and allow the development of e-commerce applications. The aim of the architectural framework is on synthesizing the diverse resources already in place to facilitate the integration of data and software for better applications. The DNS is a system for mapping alphabetic names to numeric Internet Protocol (IP) addresses like a phone book maps a person's name to a phone number.

Emerging technologies are simply new technologies that are currently developing or will be developed over the next five to ten years, and which will substantially alter the business and social environment. Broadly, emerging technologies can be understood as 'science-based innovations with the potential to create a new industry or transform an existing one', which will "substantially alter the business and social environment". Technologies are widely used in e-commerce domain. E-commerce is booming in an unprecedented way with implementation of frontier technologies. For instance, Cloud based/Fog based systems are helping businesses to have access the information stored in big data storages without delays, it's cost effective, offers scalability and is the best option available to the larger organizations and companies who need to hold terabytes of e-commerce data.

The impact of Emerging technologies on e-commerce has been enormous in the last few years. Convergence of Emerging technologies has led to the emergence of newer cloud-based 'digital platforms', which are more complex in implementation than online stores that we had been talking so far about. Undoubtedly, Emerging technologies have ushered Digital transformation in the area of trade and commerce. Businesses have become cloud-based and mobile-enabled. Enterprises have become more agile and 'virtual' in nature.



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## 3.12 KEYWORDS

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**Blockchain:** A block chain is a digital record (distributed ledger), which is made to store a list of transactions (called ‘blocks’). Each block has different feature which contains a link to the previous block, a timestamp, and data about the transactions it represents.

**Brand awareness and image building model:** Web sites that are using this model provide detailed and rational information about the firm and its offerings. The model reaches the motivated and desperate customers with an information/image-rich communications message.

**Chat box:** It is a computer program that allows conversational performances, engaging purchasing more highly by text and voice. It is popularly used in mobile phone, internet browsers, or internet chat rooms.

**Community model:** The existence of the community model is based on user loyalty. The community model may also run on a subscription fee for premium services.

**Customisation model:** This model provides customers with content that is customised to meet their preferences by completely customising information needs. A website built on this model can be highly attractive to visitors.

**Industrial Internet of Things (IIoT):** Industrial Internet of Things (IIoT) is similar interconnected network particularly in industrial context, where all the instruments have sensors and are interconnected with each other.

**Info-me-diary Model:** The term ‘Info-me-diary’ is a composite of information and intermediary. This website model aggregates information from multiple electronic commerce retailers and provide services of searching and comparison for Internet customers.

**Interactivity:** E-commerce technologies allow for interactivity, meaning it enable two-way communication between the merchant and the consumer.

**Manufacturer model:** This model is based on the power of the Web to allow manufacturers to reach buyers directly and thereby compress the distribution channel.

**Personalization-** E-commerce technology allows for personalization. On the basis of name, interests and past purchase behaviour products can be customized and personalized, further this collected information could be used for sending marketing and promotional messages to the targeted customers.

**Recommendation Engines:** A recommendation engine is a tool that filters the data by using algorithms and suggesting popular products for customers. Based on the customers past purchasing behaviour, these engines will suggest items which the customer may probably purchase.

**Ubiquity:** Ubiquity in E-commerce means that it can be everywhere, whereas, the traditional business market is a physical place.



**Web Server:** A web server is server software, or hardware dedicated to running the software, that can satisfy client requests on the World Wide Web.

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### 3.13 TERMINAL QUESTIONS

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1. What are various important design considerations of E-commerce?
2. Explain various features of technology required while designing E-Commerce.
3. What do you understand by App based business? State the differences between app based and web based business.
4. Discuss the five major steps of SDLC life cycle for designing E-commerce solution.
5. State the impact of various emerging technologies such as mobility, cloud, AI and IoT on E-commerce.
6. What are the facilities that Artificial Intelligence is providing to E-commerce?
7. What are digital platforms? How do they work? State various types of platform business models.
8. Write a short note on followings:
  1. Architectural Framework of E-Commerce
  2. Web Server Implementation
  3. Domain Name System
  4. Digital Transformation in Business



**Note**

These questions are helpful to understand this unit. Do efforts for writing the answer of these questions but do not send your answer to university. It is only for your practice.

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## UNIT 4 E-GOVERNANCE

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- 4.0 Objectives
- 4.1 Introduction
- 4.2 Meaning of E-Governance
- 4.3 Differences between E-Government and E-Governance
- 4.4 Differences between E-Governance and E-Commerce
- 4.5 Advantages of Employing Digital Technologies in Governance
- 4.6 Gartner's Evolution Model of E-Governance
- 4.7 E-Governance in India
  - 4.7.1 From 1970s to 1990s - Establishment of IT based Organisations
  - 4.7.2 Growth of E-governance in India from 1990s to till now
- 4.8 Digital India
  - 4.8.1 Nine pillars of Digital India:
  - 4.8.2 Key Initiatives of Digital India
- 4.9 E-Governance initiatives in India
  - 4.9.1 e-NAM
  - 4.9.2 FMS
  - 4.9.3 Soil Health Card
  - 4.9.4 GeM
  - 4.9.5 DigiLocker
  - 4.9.6 PMGDisha
  - 4.9.7 e-Granthalya
  - 4.9.8 UMANG
  - 4.9.9 TDIL
  - 4.9.10 NKN
- 4.10 Let Us Sum Up
- 4.11 Keywords
- 4.12 Terminal Questions

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### 4.0 OBJECTIVES

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After studying this unit, you should be able to:

- understand the fundamentals of e-government and e-governance;
- differentiate between e-government, e-governance and e-commerce;
- appreciate the advantages of employing digital technologies in governance;
- trace the evolution of application of digital technologies in governance by applying Gartner's evolution model of e-governance;

- list the chronological growth of application of digital technologies in governance; and
- appreciate some of the latest digital initiatives by Government of India.

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## 4.1 INTRODUCTION

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The introduction of new information and communication technologies (also called digital technologies) and changing demographics and political requirements are trying to redefine the role of governments and public sector organizations. To better serve the citizens by fulfilling their requirements that they represent, governments and the public sector in general, are looking for more competent and effective ways to respond to newer challenges of public service delivery and governance. The global shifts towards increased positioning of information communication technologies by the government and related public agencies became most visible in early 1990s, especially with the arrival of user-friendly World Wide Web (www) of Internet. This led to the popularity of the terms ‘e-government’ and subsequently ‘e-governance’.

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## 4.2 MEANING OF E-GOVERNANCE

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The term ‘e-Government’ (for electronic government) could formally be defined as “the use of information and communication technologies including Internet, as a tool to be a better government”. For example, applying online for public service such as applying for a passport / *rashan* card / railway ticket (or) payment of public utilities using its website/ respective app, digital payment of public utilities such as water and electricity. E-Government also encompasses the automation of processes in the public sector in general, for example, creation and implementation of digital identity cards that speed up citizens’ identification processes.

All these public services are made available to the citizens by creating a dedicated website as well as a mobile app and could be accessed by citizens using their own digital devices, desktop, laptop, mobile phones and / or using established public kiosks including Common Service Centres (CSCs).

There is another similar word, ‘e-governance’. E-Governance is a bigger concept than e-government. It refers to the digital means of giving power to democracy and supporting development. It is not merely about application of digital technologies to the functioning of government, but it is also about implementation of electronic/digital means the way citizens relate to governments and to each other.

It is important to mention to the reader here that despite this fine conceptual difference between both the terms, ‘e-government’ and ‘e-governance’, majority of the generic references to both the terms has been found to be interchangeable. However, in this unit, we would differentiate this clearly in our next section.

### 4.3 DIFFERENCES BETWEEN E-GOVERNMENT AND E-GOVERNANCE

As already suggested in the previous section, the terms ‘e-governance’ and ‘e-government’ are used interchangeably, but e-governance has a greater scope and connotation than e-government. e-Government mainly refers to the automation of services managed by the government, and delivery of public services and administrative information to the citizens using information and communication technologies (ICTs) including computers, mobile phones, information kiosks, Internet, community radio, digital TVs etc. Examples of e-government include online availability and submission of application forms for various public services such as grievance redressal, passports, ration cards, as well as facilitating electronic utility payments and access to land records.

e-Governance, on the other hand, enables new ways of involving citizens and communities in online debates on issues of public concern. Online polling, digital democracy and e-participation are some other applications of e-governance. Therefore, e-governance, refers to all the digital possibilities of engaging, enabling and empowering the citizens so that ‘good governance’ is achieved. It is an exercise to better and efficiently manage affairs of a country at all levels, with equal emphasis on citizen inclusion.

It is because of these sharp differences (Table-4.1) that the word ‘e-governance’ is considered as a bigger concept than ‘e-government’.

**Table 4.1: Differences between e-Government and e-Governance**

Key Points	e-Government	e-Governance
<b>Objectives</b>	1. e-Government focuses on improving and accelerating administrative efficiency.	1. e-Governance focus on to increase citizens’ interactions within themselves, as well as with government agencies.
<b>Benefits</b>	2.Improving service delivery  3. Increasing Operational Efficiencies by reducing consumer time, efforts and costs.  4. Increasing Outreach of public services	2. Increasing modes of Citizens’ Participation.  3. Improving Public Policy Formulation  4. Redefining Democracy and Communities with citizens’ participation.

### 4.4 DIFFERENCES BETWEEN E-COMMERCE AND E-GOVERNANCE

The term ‘e-commerce’ denotes the process of buying and selling of products, services, or other commodities using information and communication technologies (ICTs)/ digital technologies. The prime

purpose of implementing e-commerce is to ensure ease of conducting and delivery businesses – making any commercial product / services available to the consumers at their doorsteps and for maximising commercial gains. On the other hand, ‘e-government’ and ‘e-governance’ are primarily focussing on application of ICTs for better public service delivery and for ensuring wider participation of citizens in public affairs. The purpose of implementing digital technologies in public domain is to improve governance processes so that public service delivery is easy, inclusive and responsive and governance becomes transparent and participatory. The motivation, objectives and deliverables etc are very different in both the instances. (Table 4.2).

**Table 4.2: Differences between e-Commerce and e-Governance**

Elements of Comparison	E-Commerce	E-Governance
<b>Motivation</b>	Make profit	Maximise social utility, create e-participation
	Cost reduction of service delivery	Cost reduction of service delivery
	Automation of internal processes	Automation of internal processes
<b>Objectives</b>	Sale of products and services	Optimisation of services quality to citizens
	Information provision	Information provision
	Online Customer service	Online service to citizens
<b>Priority</b>	Safe & secure transactions	Minimise digital divide
<b>Technology</b>	Internet, Web Based platforms, Back Office Systems	Internet, Web based platforms, back office systems
<b>Decision Making Authority</b>	Centralised	Dispersion of authority
<b>Target Group</b>	customers, potential customers	Any Citizen
<b>Legislation</b>	Freedom	Laws and regulation restrictions and complexity
<b>Services</b>	Primarily transactional	Primarily informational

Source: [https://www.researchgate.net/figure/Similarities-and-differences-between-e-commerce-and-e-government\\_tbl2\\_265140668](https://www.researchgate.net/figure/Similarities-and-differences-between-e-commerce-and-e-government_tbl2_265140668)

## 4.5 ADVANTAGES OF EMPLOYING DIGITAL TECHNOLOGIES IN GOVERNANCE

By now, we have already understood that there are several advantages of implementing digital technologies in governance, e-government, and e-governance. World over, countries are embracing digital technologies to increase the efficiency of their internal processes, to deliver better and more integrated services to citizens and businesses, invite citizen and stakeholder participation in planning decisions, improve communication, and sometimes even enhance democratic processes and so on.

Some of the advantages of employing digital technologies in governance are summarised herewith: -

- 1. Fast and convenient service to citizens:** Citizens can have easy and quick access to the related information regarding to all the public services by applying for any service online on web portal/ apps developed by the government. Further he/she can get documents easily in electronic form or hard copy as per the requirement, so there is no more waiting in the long queues. In other words, citizens can take advantage of many other online services just on a click of mouse and the public services are available to them at their doorsteps by minimising their transaction costs and travelling costs.
- 2. Reduction in delays, red tapism, and corruption:** Implementation of e-government and e-governance lowers several other related bureaucratic problems such as long processes, personal grudges of the delivery officers and so on. With implementation of digital technologies, there is improvement in transparency in public processes and clear accountability of the government functionary in charge of that process. It not just fastens the processes but also reduces corruption that could come up in manual processes.
- 3. Effective utilization of resources:** Resource utilization is optimised through effective implementation of digital technologies in public domain due to the speed and efficiency provided by digital technologies. This kind of utilization is not possible with manual paperwork and manual processes, otherwise used in government organisations.
- 4. Enhanced citizen participation:** In a democratic system, citizen participation is one of the key components of decision-making process. The use of Internet based technologies raises the possibility for large-scale citizen participation in policy making process of government, despite the distances and diversity of the population.
- 5. Integration of public services of offered by different departments:** By using digital technologies, different departments and different functions could be connected. This integration of public services offered by state and central government provides ease of access of public services to the citizens.

Indeed, the growth of e-governance and e-government has been one of the most striking and noticeable developments in governance and it would be interesting to understand how different public organisations or even a country evolves from the most basic stage of employing digital technologies in governance to the higher stages. This is explained in the next section by referring to the Gartner's evolution model of e-government.

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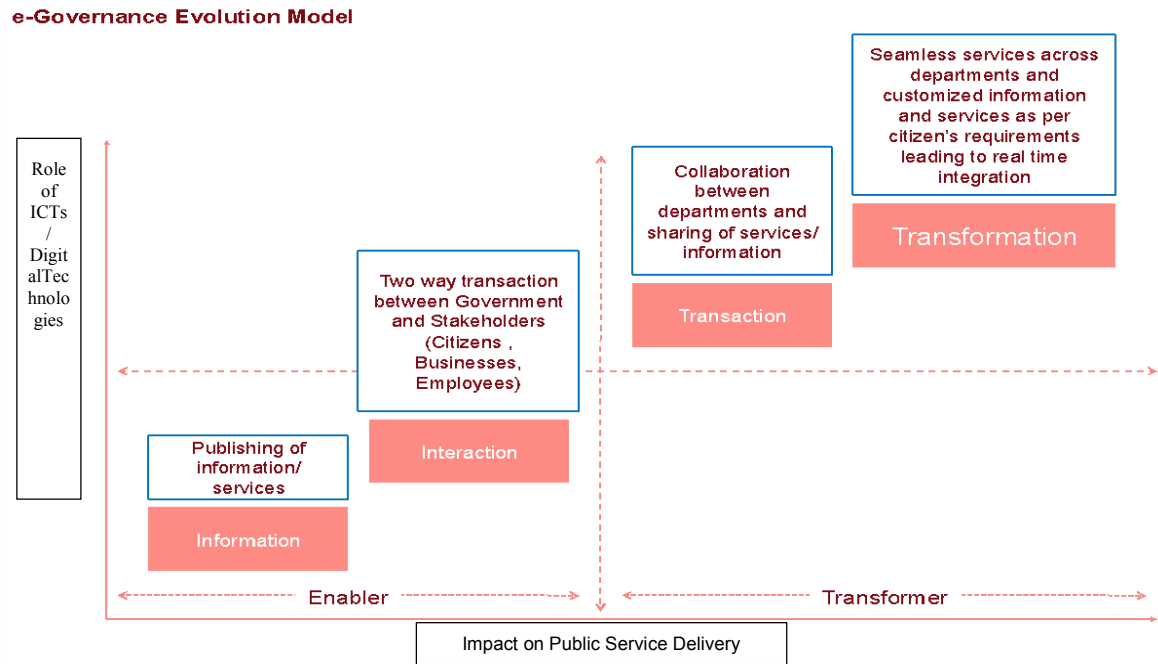
## 4.6 GARTNER'S EVOLUTION MODEL OF E-GOVERNANCE

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In the year 2000, the Gartner Group Inc presented a conceptual framework to measure the progression of e-government in an organisation in four



critical phases of e-government evolution, viz., information, interactions, transaction and transformation (Figure -4.1).



Source: <https://www.gartner.com/en/doc/3713917-the-gartner-business-value-model-a-framework-for-measuring-business-performance>

Fig 4.1: Gartner’s Model on Evolution of e-Government and e-Governance

- **First Phase- Information:** In the first ‘Information’ phase of governance, information pertaining to various aspects of public service delivery are made available to the public through use of websites, portals etc to all the stakeholders, that is, citizens, businesses and government. This information being reflected on the government website could also be related to the functioning of various government entities, roles and responsibilities, thus making government more transparent and also resulting in convenience to citizens and businesses. This phase has been attained by almost all government entities in our country.
- **Second Phase – Interaction:** In the second phase of ‘Interaction’ there could either be a limited one-way engagement between government (agencies) and citizens or there could also be a vibrant and dynamic two-way exchange between the government (agencies) and the citizens using digital interfaces including a website or mobile app.. As an example of one-way exchange, citizens and the government agencies can exchange emails, download all sorts of forms and applications using a website / app, upload and submit forms using this interface, which work essentially on ‘anywhere, anytime’ basis, consequently saving stakeholders’ time and making life easy. In the second variation (two-way exchange), the citizens could engage in dynamic dialogues with the respective government agency, using the digital interfaces, to know about the status of the reserved ticket, seat in a particular train etc. Therefore, in this phase, a significant part of government processes is done online but the citizens still must visit the relevant government offices for the balance processes may be - payment of fees or



submission of support documents, required to complete the rest of the transaction(s).

- **Third Phase - Transaction:** Any transaction constituting public service delivery where money is involved, becomes a complex process. In the third phase of ‘Transaction’, the financial part could also be undertaken online without the need of a physical visit to the respective government agency. Examples of such transactions are paying utility bills online, all online banking and financial transactions, filing of income or property tax, visa/passport related online services, extension/renewal of licenses and so on.
- **Fourth Phase – Transformation:** In the last phase of Gartner’s model, referred as ‘Transformation’, all the related back-end sections of the entire government department are digitally interconnected so that one virtual counter is available on the website / app to the citizens and businesses to avail all public services. This end-to-end digitilisation of public service delivery requires complete change in the current way of functioning of the various government departments and it also insists liberal use of emerging technologies like Artificial Intelligence / Machine Learning, Internet of Things (IoT), Augmented Reality and so on. Therefore, instead of conventional norm of these departments functioning as silos, these departments are reengineered to function in an integrated, coordinated and are digitised in a seamless manner. This obviously leads to more complexity in implementation of digital technologies but also assures enhanced citizen/business satisfaction.

This four phase Gartner’s model is applicable in not just an organisation but could be equally valid in explaining a country’s evolution of e-government and e-governance.

**Check Your Progress A:**

- 1) “E-government and E-governance lowers several other related bureaucratic problems.” Comment..

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- 2) Write a short note on first phase of E-Governance.

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- 3) “E-governance and E-government has been one of the most striking and noticeable developments in governance.” Comment.

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- 4) Discuss how the use of Internet based technologies raises the possibility for large-scale citizen participation in policy making process of government.

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### 4.7 E-GOVERNANCE IN INDIA

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Over the last two decades, there has been continual development and renewal of strategies and practices surrounding e-governance around the world. In every country governments around the world have embraced new information and communication technologies to increase the efficiency of internal processes, deliver better and more integrated services to citizens and businesses, invite citizen and stakeholder participation in planning decisions, improve communication, and sometimes even enhance democratic processes.

As other countries in the world, in India too digital technologies are becoming the main driving force in every sector of Indian economy. The governments at the National, State, and local levels, are increasingly adopting e-government technologies in public service delivery.

Most of the past or ongoing e-governance initiatives have been undertaken as part of the conventional planning and implementation framework. However, owing to the federal structure of governance in the country, leads to the complex interplay of situation, actors and processes influenced by multiple organizations operating at different layers.

In view of this, let us try to understand the journey of the country in e-government and e-governance spaces, by covering various milestones, explained in two parts – firstly from the year 1970s to 1990s when the basic digital infrastructure and the related organisations were established and then 1990s onwards when the country achieved major software and legal steps.

#### 4.7.1 From 1970s to 1990s - Establishment of IT based Organisations

1. **Establishment of DoE in 1970** - First and foremost, the key milestone in this journey has been the establishment of Department of Electronics (DoE); understanding the increasing importance of electronics, the Government of India had established DoE in the year 1970 for better governance of technology implementation in the country.
2. **Establishment of NIC in 1977** - The successive formation of the National Informatics centre (NIC) in the year 1977 on the recommendations of Planning Commission of Government of India was the next major step in India as it brought 'information' into the national priorities.
3. **Use of Office Automation Software in Government Offices from 1977s- 1980s**
  - By the next decade, use of computers had spread to significant number of government offices but primarily for 'word processing'.
  - Slowly and gradually, by early 1980s, with the increasing use of database software used for storage and retrieval of data, and with the development of networking technology, many government departments had started using IT for other government to government related activities such as payroll processing or inventory management.
4. **Establishment of NICNET and VSAT in 1987** : The main thrust for implementation of digital technologies in governance was spurred by the launching of NICNET in 1987 – the national satellite-based computer network. MeitY (erstwhile DeitY; then the Department of Electronics) launched the national satellite-based computer network NICNET and installed V-SAT terminal at almost every district of the country. NICNET supported district information system of the National Informatics Centre programme to computerize all district offices in the country for which free hardware and software was offered to the state governments. For the next few years in 1980s and early 1990s, as the tele-connectivity and Internet connectivity progressed, a large number of e-government initiatives such as maintenance of land records, utility payments etc started mushrooming (but in isolation with each other), both at the central and state levels. (we would cover this aspect in details in the subsequent subsection)
5. **Establishment of DISNIC**: This was continued with the launch of the District Information System of the National Informatics centre (DISNIC) program to computerize and digitalize all the districts and their offices in the country for which free hardware and software was facilitated to make governance in the district easier and it was provided to the State Governments as well.
6. **Extension of NICNET in 1990s** - Also, NICNET was extended through the State capitals to all the district headquarters by 1990.

## 4.7.2 Growth of e-governance in India from 1990s to till Now

- 1990s: Railways & other initiatives:** It was in early 1990s, that the application of information communication technologies had started in government workplaces - both for internal automation as well as for public service delivery. Online railway reservation system (irctc.co.in) became the most prominent initiatives.
- Establishment of NTF :** A National Task Force (NTF) on Information Technology and Software Development was also constituted in May 1998. Information Technology was now being recognized as the frontier area of knowledge and Government of India (GoI) took a conscious decision to utilize ICT as an enabling tool for all concerns confronting government functioning.

After we have traced the genesis of some of the important milestones related to the establishment of digital infrastructure in the country, it is equally relevant to trace the growth of digital initiatives and related software advents of Government of India in public domain, particularly from 1990 onwards, in the subsequent subsection (Fig- 4.2).

- Year 2000- Information Technology Act:** In the year 2000, Indian government announced the 'IT Act 2000' of India that provided a legal framework to the digital initiatives in the country.

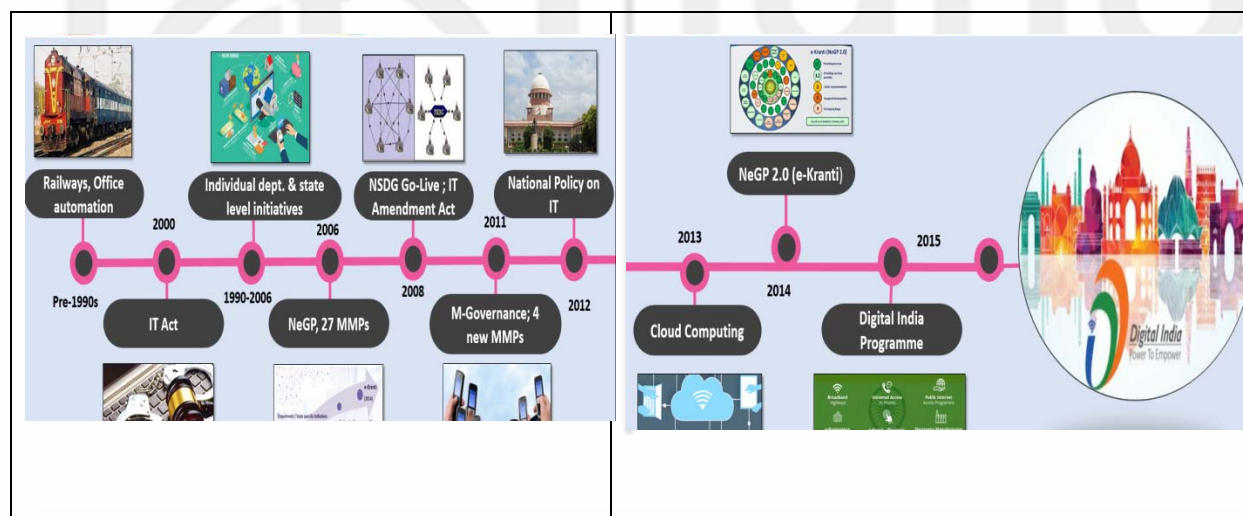


Fig 4.2 : Growth of e-Government & e-Governance in India ( 1990s onwards till now)

- Year 2006- National e-governance Plan (NeGP):** GoI announced National e-governance Plan, referred as NeGP, in the year 2006. It comprised of twenty-seven Mission Mode Projects (MMPs) and eight components to “make all Government services accessible to the common man in his locality, through common service delivery outlets and ensure efficiency, transparency and reliability of such services at affordable costs to realise the basic needs of the common man.”

Some of the mission mode projects, conceived under NeGP have been enhanced and made relevant for present times. One such example is Passport Seva Project.

**Passport Seva Project:** The Passport Seva Project one of best e-governance project of Government of India. It is well known in the world for smooth delivery of passport to Indian Citizens. The project has been implemented by the Ministry of External Affairs in Public-Private-Partnership with Tata Consultancy Services as the Service Partner. The project demonstrates how innovative use of Information and Communication Technology (ICT) can transform the way citizens receive services from government institutions. The entire process of citizen service delivery has been automated. Services are delivered through a country-wide networked environment integrating Passport *Seva Kendras* (PSKs), Passport *Seva Laghu Kendras* (PSLKs), Passport Offices and external stakeholders involved in the process viz. Police, India Security Press and India Post

**5. Year 2008 to 2013 - IT Act Amendments, NSDG, National IT Policy, Implementation of Public Cloud and Mobile Seva Framework:**

- The year 2008 saw amendments in the IT Act 2000. These amendments include enabling central government to issue rules time to time related with electronic signature as per the evolution of technology and penalized sending "offensive messages, pornography, child porn, cyber terrorism and voyeurism. It also gave authorities the power of "interception or monitoring or decryption of any information through any computer resource".
- In the same year, 2008, National Service Delivery Gateway-NSDG was launched as a standards-based messaging switch to provide seamless interoperability and to help in tracking and time stamping all transactions of the Government.
- The National Policy on IT was approved in the year 2012 to encourage adoption of ICTs to create a pool of 10 million additional ICT skilled manpower, to adopt Open standards and with several such IT focused national goals.
- In the year 2013, Government of India announced "GI Cloud" by the name of 'Meghraj'. It was rolled out to utilize and harness the benefits of Cloud Computing in governance domain.
- In the year 2013, Mobile Seva (the national mobile-governance initiative) was also formally launched with the aim of making India a world leader in harnessing the potential of mobile governance for inclusive development. Mobile Seva provides an integrated platform for all Government departments and agencies for delivery of public services to citizens and businesses over mobile devices using SMS, USSD, IVRS, CBS, LBS, and mobile applications. It is easily accessible through Mobile Applications Store (m-App Store) and the Mobile Governance Portal (<https://mgov.gov.in/>).

**6. Year 2014 & 2015- Inception of MyGov and e-Kranti:**

- Indian citizen engagement platform called 'Mygov.in' was established in the year 2014.

MyGov (<https://www.mygov.in/>) is a citizen engagement platform of Government of India that was launch on July 26, 2014. MyGov aims to establish a link between government and citizens to promote the active participation of Indian citizens in country's governance and development.

MyGov initiates dialogue with citizens to provide real contribution and not just sharing of theoretical ideas. The portal has around 70 Groups of various Government Departments and Ministries each designed around three modes of participation namely Do, Discuss and Disseminate. The 'Do' section consists of "Online and On-ground Tasks" that the citizens can undertake based on their interests. The Discuss section helps citizens to express their valued insights and views on theme-based discussions to improve government's policy initiatives. Citizens can participate in "group-centric "online discussions in the form of public consultations, open forums, etc and can share their thoughts and ideas. Any idea shared by a contributor is expected to be discussed on these discussion forums, allowing feedback and interaction among all the stakeholders. The third mode of citizen engagement, i.e., Disseminate, consists of information being categorized and spread through Blogs, Talks, Newsletters and a host of MyGov Microsites. Through Talks, defined on MyGov as "Dialogue with decision makers", citizens get an opportunity to connect and engage with government representatives through live chats. MyGov offers several avenues to the citizens to volunteer for various creative activities such as designing a slogan, participating in related contests, etc.

- In the year, 2015, e-Kranti : National e-governance Plan ver 2.0, was initiated with the vision of "Transforming e-governance for Transforming Governance" and had 44 Mission Mode Projects (MMPs)
- Further , Government of India announced its umbrella programme called Digital India in the year 2014 and formally launched it in the year 2015 with an aim to "transform India into a digitally empowered society and knowledge economy" for deriving economic, social, and environmental benefits from digital technologies.

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## 4.7 DIGITAL INDIA

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Digital India is a flagship programme of the Government of India with a vision to transform India into a digitally empowered society and knowledge economy. It covers multiple Government Ministries and Departments.

Three vision areas of Digital India Programme (DIP) are as below:

1. **Infrastructure as a Utility to Every Citizen:** All the Indian citizens are available with high speed internet and a secure cyberspace as core



utility along with mobile connectivity and bank account to ensure citizens’ participation in digital as well as financial spaces.

2. **Governance and Services On-Demand:** Government is providing all the possible public services as well as all the citizen entitlements (such as documents, certificates) in real time using/cloud and/or mobile platform.
3. **Digital Empowerment of the Citizens:** The third key vision area of DIP is based on the basic principle of “citizen centricity” that insists that the needs and aspirations of the citizens should help to chalk the design of digital interventions and to successfully ensure that citizens must be educated and sensitised about digital technologies.

#### 4.7.1 Nine pillars of Digital India:

These vision areas of Digital India are expected to be achieved by nine pillars of Digital India viz. Broadband Highways; Universal Access to Mobile Connectivity; Public Internet Access Programme, e-governance : Reforming Government through Technology; e-Kranti Electronic Delivery of Services; Information for All; Electronics Manufacturing; IT for Jobs; and Early Harvest Programmes.

#### 4.7.2 Key Initiatives of Digital India

Some of the key initiatives of Digital India are summarised herewith ( Fig 4.3)

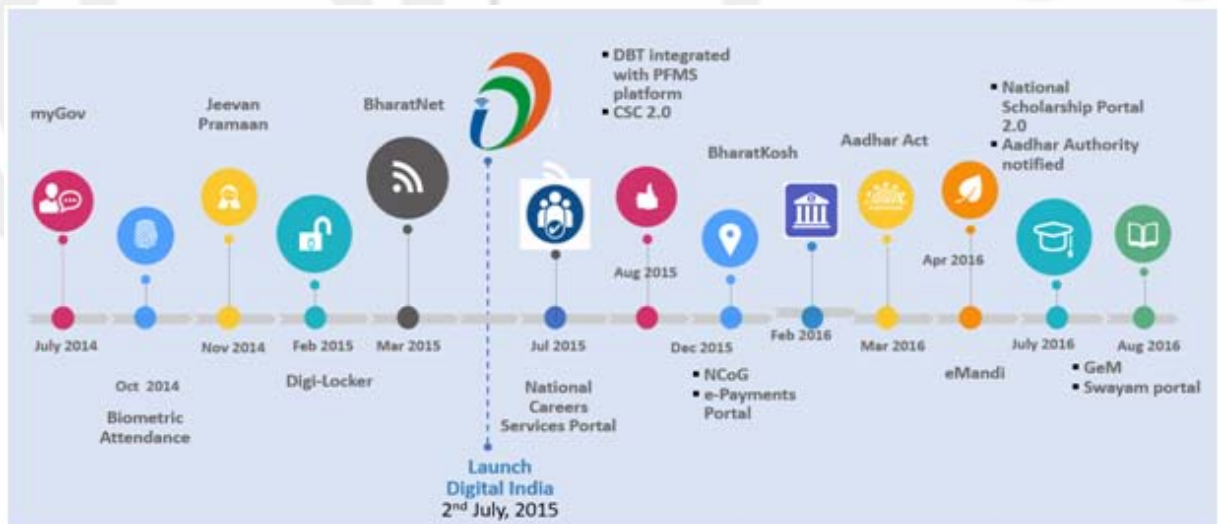


Fig 4.3 : Some Interesting Digital India Initiatives ( 2014-2016) ( Source : MeitY)

Without any specific order or preference, we shall proceed to give you a crisp glimpse into some of the interesting Digital India initiatives.

1. **‘e-National Agriculture Market- e-NAM’:** eNam serves as an electronic trading portal that has aggregated all the existing Agriculture Produce Marketing Committee (APMC) *mandis* (market places) across the country. e-NAM serves as a unified national digital marketplace with a single window access for all the agricultural commodities.

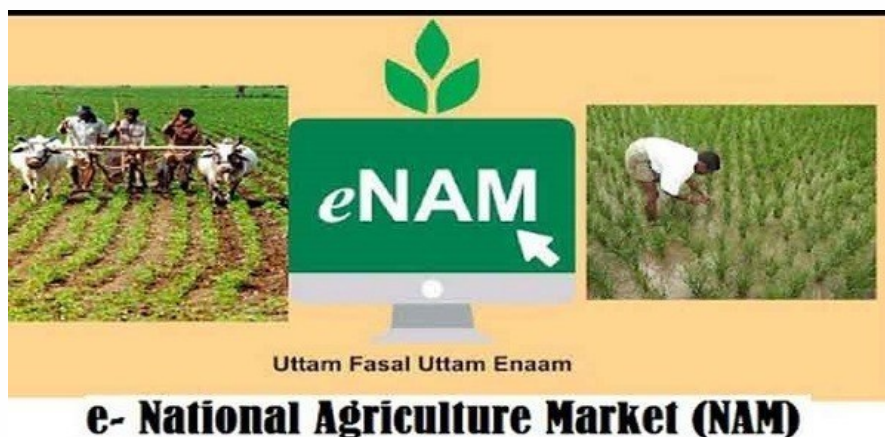


Fig 4.4: e-NAM

It provides information about commodity arrivals and their prices; purchase and selling trade offers; provision to respond to trade offers, etc. Hence, eNAM ensures that farmers are not exploited due to lack of knowledge and are able to make sound economic decisions.

2. **Fertilizer Monitoring System (FMS):** FMS checks for fake claims, pilferages, etc., and thus aims to create an ecosystem where the subsidized fertilizers are delivered to the actual farmers and proposes to generate substantial savings to the tune of several thousand crores every year.
3. **Soil Health Card:** The Soil Health Card Scheme was launched in the year 2015 to promote Integrated Nutrient Management (INM) of the soil through judicious use of chemical fertilizers. It provides tailored information on secondary and micronutrients present in the soil in conjunction with organic manures and bio-fertilizers to help provide customised soil test-based recommendations.
4. **GeM:** GeM is a short form of one stop 'Government e-Marketplace' hosted by Directorate General of Supplies and Disposals (DGS&D) under Ministry of Commerce and Industry, Government of India, where common user goods and services can be procured. GeM is dynamic, self-sustaining and user friendly portal for making procurement by Government officers. Public procurement forms a very important part of Government activity and reform in Public Procurement is one of the top priorities of the present Government. Government e-Marketplace (GeM - gem.gov.in) is a very bold step of the Government with the aim to transform the way in which procurement of goods and services is done by the Government Ministries and Departments, Public Sector Undertakings and other apex autonomous bodies of the Central Government.
5. **DigiLocker:** DigiLocker is a key initiative under Digital India, the Government of India's flagship program aimed at transforming India into a digitally empowered society and knowledge economy. Targeted at the idea of paperless governance, DigiLocker is a platform for issuance and verification of documents & certificates in a digital way, thus eliminating

the use of physical documents. The DigiLocker website can be accessed at <https://digitallocker.gov.in/>.

6. **PMGDisha:** The Pradhan Mantri Gramin Digital Saksharta Abhiyan is a dynamic and integrated platform of digital literacy awareness, education and capacity programmes that will help rural communities fully participate in the global digital economy. Focus is on making technology central to enabling change.
7. **e-Granthalya:** e-Granthalaya is a Digital Platform developed by National Informatics Centre, Ministry of Electronics and Information Technology, Government of India. It is Web-based Integrated Library Management Software for Government Libraries for Automation of in-house activities as well as member services and Networking for resource sharing. On this platform, complete ICT solution with Digital Library Module, Cloud hosting environment and a Library Portal (OPAC) with NICSI empanelled Roll-out Services and support. It is useful to transform traditional libraries to e-Library with Digital Library Services and to provide various online member services using Single Window Access System. Latest version of e-Granthalaya (Ver.4.0) is a 'Cloud Ready Application' and provides a Web-based solution in enterprise mode with a centralized database for cluster of libraries.

e-Granthalaya Ver.4.0 (eG4) will only be available in NIC Data Centre/National Cloud for Ministries and Government Departments libraries, from both Central as well as State Governments, and other Government funded organizations / autonomous bodies. Indian Army / Indian Navy and other Para-military Organizations will host the application and database in their own Network which is generally INTRA with their maintenance and support.

List of organizations eligible to get implementation of e-Granthalaya 4.0 include Government Libraries under Ministries/Departments/Organizations of Central /State Governments, Government Public Libraries, Kendriya Vidyalayas and Jawahar Navodaya Vidyalayas / MHRD, Central /State Government Schools/Colleges/Polytechnics/Universities, Autonomous Bodies / Councils / Research Organizations / National Laboratories/IITs/IIMs/NIITs / PSUs of Centre and States, Other Government Academic Institutions funded by Government, Indian Embassies, Indian Army / Navy / Air Force Libraries

List of Organizations Not Eligible for Software include Private Institute/Colleges/Schools/Universities and aided/autonomous Institute/Colleges/Schools/Universities

8. **UMANG:** UMANG (Unified Mobile Application for New Age Governance)- A single mobile platform for all Indian citizens to access central, local and other government services that provides seamless integration with popular customer-centric services including Aadhaar and Digilocker. It has been made available through mobile application, web, IVR and SMS and is expected to revolutionize the way how an

Indian citizen avails government services today. (<https://web.umang.gov.in/web/#/>).

9. **TDIL:** The Ministry of Electronics and Information Technology initiated the ambitious programme of TDIL (Technology Development for Indian Languages) with the aim of developing Information Processing Tools and Techniques to facilitate human-machine interaction without language barrier; creating and accessing multilingual knowledge resources and integrating them to develop innovative user products and services. The primary objectives include developing and promoting Software Tools and Applications for all 22 officially recognized Indian Languages, contributing to collaborative development of futuristic technologies leading to innovative products and services, acting as a catalyst for proliferating Language Technology products and providing solutions and standardization across all levels.
10. **NKN:** National Knowledge Network (NKN) is a multi-gigabit national research and education network, whose purpose is to provide a unified high speed network backbone for educational institutions in India. The network is managed by the National Informatics Centre.

The initiatives mentioned above, have been primarily undertaken by Central / Union Government of India. At present there are 44 such mission mode projects in e-Kranti pillar of Digital India, some of which are to be exclusively initiated by Centre, some by state and some of them jointly.

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## 4.9 STATE E-GOVERNANCE INITIATIVES

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Majority of the states too have independently ( or with the support of Central government) implemented digital technologies in their respective states. Two of the same have been presented here.

- a. **Akshaya in Kerala:** One of the initial and popular initiative by Government of India is Akshaya in Kerala. Approximately 5000 multipurpose community technology centres called Akshaya e- *Kendras* were set up in the state of Kerala. Managed by private entrepreneurs, each e-Kendra was set up within 2-3 kilo-meters of every other household, to cater to the requirements of around 1000-3000 families to try and make available the power of networking and connectivity which is possible within a group of people and common man. Akshaya had aimed to ensure social and economic equity in the state by providing focus on the various facets of e-learning and e-government.
- b. **Real Time Performance Monitoring in Andhra Pradesh:** Government of Andhra Pradesh launched “Real Time Governance- RTG” (on November 26, 2017) through CM Office Real-time Executive Dashboard (CORE Dashboard- launched in December 2016). CORE is an integrated dashboard to display category-wise key performance indicators- KPIs of various departments/schemes in real time of various departments/schemes/programmes, which are expected to be updated by each department every one hour. The dashboard displays current

situation and department reports (e.g. agricultural land area sown, rainfall status, demand/supply of power, irrigation) to both public and officials alike.

Over the last two decades, there has been continual e-governance development across almost all states of the country. These two initiatives (Akshayain Kerala and RTG in Andra Pradesh) are just examples of e-government/ e-governance initiatives undertaken at the state level in India to give a glimpse into such advents at the state level.

**Check Your Progress B:**

- 1) State the workings of Akshaya E- Kendras around Kerala.

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- 2) List the various organizations eligible to get implementation of E-Granthalaya 4.0.

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- 3) What are the nine pillars of Digital India.

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- 4) What is the National E-governance Plan?

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## 4.10 LET US SUM UP

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The growth of e-governance and e-government has been one of the most striking and noticeable developments of the web world, the global shifts towards increased positioning of information technology by the government came up in the nineties, with the arrival of the world wide web.

Application of digital technologies in public domain propels public services to be fast and convenient service for citizens; it leads to the reduction in delays, red tape and corruption effective utilization of resources, enhanced citizen participation, integration of public services offered by different departments.

Though the terms e-governance and e-government are used interchangeably, the term ‘e-governance’ has a greater scope and connotation than e-government. The term, ‘e-Government’ is defined as the use of information and communication technologies by government in delivering public information, services, and public goods to its citizens. E-governance, on the other hand, enables new ways of involving citizens and communities in online debates on issues of public concern. E-governance is generally considered as a bigger concept than e-government, because it can bring about a difference in the way citizens relate to governments and to each other. Its main concern is to be able to engage, enable and empower the citizens.

Evolution of e-government could be understood by the model given by Gartner that has four phases namely as Information, Interaction, Transaction and Transformation.

The journey of India in e-government and e-governance spaces, could be best understood in two parts – firstly from the year 1970s to 1990s when the basic digital infrastructure and the related organisations were established and then 1990s onwards when the country achieved major software and legal steps. For example, in the year 2000, Indian government announced the ‘IT Act 2000’ of India that provided a legal framework to deal with cybercrimes related to digital initiatives and e-commerce. It was amended in the year 2008 to penalize sending "offensive messages, pornography, child porn, cyber terrorism and voyeurism. It also permitted public authorities to intercept, monitor or decrypt any information “through any computer resource”.

In the year 2006, GoI had announced National e-governance Plan, referred as NeGP that had consisted of twenty-seven Mission Mode Projects. (MMPs) and eight components to “make all Government services accessible to the common man in his locality”.

In the year 2014, Digital India Programme was announced as the flagship programme of the Government of India with a vision to transform India into a digitally empowered society and knowledge economy. It covers multiple Government Ministries and Departments. These three main vision areas are ‘infrastructure as a utility to every citizen’, ‘governance and services on-demand’ and ‘digital empowerment of the citizens. These three vision areas



are to be achieved through nine pillars *viz.* Provision of broadband highways, universal access to mobile connectivity, public internet access programme, e-Governance, *e-Kranti*, information for all, electronics manufacturing, IT for jobs and early harvest programmes. Digital India has led to the establishment of several e-government initiatives including Passport e-Seva, e-NAM, FMS, Soil Health Card, GeM, DigiLocker, PMGDisha, e-Granthalaya, UMANG, TDIL, NKN and many more. At present there are 44 such mission mode projects in e-Kranti pillar of Digital India, some of which are to be exclusively initiated by Centre, some by state and some of them jointly.

MyGov is an impressive e-governance initiative by Government of India that provides a digital platform and an app to the citizens of the country for participating in various public contests such as design of taglines, logos, slogans as well as to contribute their opinions in the public policy formulation process

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## 4.11 KEYWORDS

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**Digital India:** Digital India is a flagship programme of the Government of India with a vision to transform India into a digitally empowered society and knowledge economy. It covers multiple Government Ministries and Departments.

**E-governance:** E-governance is regarded as an ICT-based tool for giving power to democracy and supporting development. It can bring about a difference in the way how citizens relate to governments and to each other. Its main concern is to be able to engage, enable and empower the citizens.

**E-Government:** E-Government is defined as the use of information and communication technologies, particularly the Internet, as a tool to be a better government. It mainly refers to the automation of services managed by the government, and delivery of public services and administrative information to the citizens using ICT.

**Information Technology IT Act, 2000:** In the year 2000, Indian government announced the 'IT Act 2000' of India that provided a legal framework to the digital initiatives in the country. It is the primary law in India dealing with cybercrime and electronic commerce. It was further amended in the year 2008.

**National e-Governance Plan (NeGP):** GoI announced National e-governance Plan, referred as NeGP, in the year 2006. It consisted of twenty-seven Mission Mode Projects. (MMPs) and eight components to "make all Government services accessible to the common man in his locality.

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## 4.12 TERMINAL QUESTIONS

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- 1) What do you understand by E-governance? State its importance.
- 2) State the evolution of E-governance with the help of Gartner's model.

- 3) State the role of E-governance in India.
- 4) What are the three main vision areas of Digital India Programme (DIP)?
- 5) Write a short note on the followings:
  - a) MyGov.in
  - b) E-Granthalaya
  - c) Digital India
- 6) State the difference between E-Commerce and E-governance.

**Note**

These questions are helpful to understand this unit. Do efforts for writing the answer of these questions but do not send your answer to university. It is only for your practice.



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