Unit 1: Introduction to E-Commerce and E-Business

Objectives

After studying this unit, you will be able to:

- Define e-commerce and e-Business

- Compare e-commerce with traditional commerce

- Understand media convergence

- Explain the business applications of e-commerce

- Discuss the need for e-commerce and e-Business

- Describe the basics of e-commerce: network and electronic transaction today

Introduction

Commerce includes purchase, sale, and exchange of commodities. Therefore, it can be defined as an exchange of commodities or all activities involved in transferring goods from producers to consumers. Commerce has been a major part of human lives since the beginning of history. The implementation of the Internet has created a paradigm shift in the way businesses are conducted today. The past decade has witnessed the emergence of a new kind of commerce known as e-commerce.

According to the European Union's Web site, e-commerce is a concept dealing with any form of business transaction or information exchange executed using Information and Communication Technology (ICT), between companies, companies and their customers, or companies and public administrations.

According to IBM's Web site, e-Business is defined as the concept of transforming key business activities through the use of internet technologies.

1.1 E-Commerce and E-Business

Let us first understand the terms e-commerce and e-Business. Electronic commerce, also termed as e-commerce, is a process of buying and selling of goods or services using electronic systems. These electronic systems can either be the Internet or other computer networks. The World Wide Web plays a major role in the implementation of e-commerce in most of the organizations.

Did you know?   J.P. Morgan annual forecast report estimates the value of global e-commerce in 2010 at $680 billion worldwide and up to 18.9% in the form of revenue. E-Commerce in the U.S. is expected to increase to $187 billion at 13.2%. J.P. Morgan predicts that global e-commerce revenue will increase to $963 billion by 2013.

Some use the terms e-commerce and e-Business in an interchangeable manner, but these terms refer to different concepts. The concept where ICT is used in buying and selling of goods or services between organizations and in Business-to-Consumer (B2C) transactions is known as e-commerce. On the other hand, the concept where ICT is used to enhance the key business processes through the facilities available on the Internet is known as e-Business. It comprises of any process by which an organization conducts business over a computer network.

The three main processes enhanced in e-Business are:

1. Production processes, which include:

    (a) Procurement

    (b) Ordering and replenishment of stocks

    (c) Processing of payments

    (d) Electronic links with suppliers

    (e) Production control processes

2. Customer-focused processes, which include:

    (a) Promotional and marketing efforts

    (b) Selling over the Internet

    (c) Processing of customers' purchase orders and payments

    (d) Customer support

3. Internal management processes, which include:

    (a) Employee services

    (b) Employee training

    (c) Internal information-sharing

    (d) Video conferencing

    (e) Recruiting

E-Commerce generally meets the needs of an organization, retailers and consumers to reduce the costs. It also considers the quality of service and delivery of goods.

1.1.1 Evolution of E-Commerce

A combination of technological innovation and regulatory reform has helped in the evolution of e-commerce. In the early 1970s, e-commerce applications were first developed with innovations like Electronic Funds Transfer (EFT) to electronically transfer funds from one organization to another. However, these applications were used in only a few corporations, financial institutions and other

businesses. Later, Electronic Data Interchange (EDI) was introduced to electronically transfer documents which extended electronic transfers from financial transactions to other types of transaction processing.

E-Commerce of today started with the launch of the World Wide Web (WWW) and browsers in the early 1990s. The relaxation of government restrictions in the telecommunications sector and innovations have helped in the rapid growth of e-commerce. As a result, the barriers to enter and engage in e-commerce have fallen rapidly. The important milestones in the evolution of e-commerce are:

1.   Internet/APRAnet emerged in 1969

2.   WWW and HTML were invented at CERN in 1989

3.   NSF increased the restrictions on commercial use of the Internet in 1991

4.   Mosaic browser was invented at the University of Illinois and released to the public in 1993

5.   Netscape released the Navigator browser in 1994

6.   Dell, Cisco, Amazon.com and others began to use the Internet aggressively for commercial transactions in 1995

Task   Search on Web and prepare a report on the latest developments in e-commerce and e-Business which occurred after the year 2000.

1.1.2 Factors Fueling E-Commerce

The three major factors fueling e-commerce are economic factors, marketing and customer interaction factors, and technology factors particularly multimedia convergence.

1.   *Economic Factors:* Economic efficiency is one of the most apparent benefits of e-commerce. It can be achieved by decreasing communications costs, faster and more economic electronic transactions with suppliers, lower global information sharing and advertising costs, and cheaper customer service alternatives.

    Economic integration can be either internal or external:

    (a)   Internal integration pertains to the electronic communication between various departments, and the networking of business operations and processes within an organization. It helps to store critical business information in digital form that can be recovered immediately and transmitted electronically. A corporate intranet is the best example of internal integration.

    (b)   External integration is the electronic communication between corporations, suppliers, customers or clients, and contractors in a virtual networking environment with the Internet as medium.

Did you know?   Procter and Gamble, IBM, Nestlé, and Intel are some of the companies with corporate intranets.

2.   *Market and Customer Interaction Factors:* Organizations are encouraged to use e-commerce in product promotion and marketing to capture international markets. Similarly, the Internet is used as a medium for improving customer service and support. The Internet also helps companies to provide their target consumers with more detailed product and service information.

Example: The best example of successful use of the Internet for enhanced customer service and support is Brazil's Submarino. It is the first largest company to sell books, CDs, video cassettes, DVDs, toys, electronic and computer products in Argentina, Mexico, Spain, and Portugal despite being a local Sao Paulo B2C e-commerce company in Brazil. Submarino has enhanced its customer service to offer logistical and technological infrastructure to other retailers including experience and expertise in credit analysis, tracking orders and product comparison systems.

3. *Technology Factors:* The key factor in the growth of e-commerce is the development of ICT. Technology has played a very important role in digitizing content, compression and promotion of open systems for the convergence of communication services into one single platform. This has led to the setup of separate networks for cable television, television broadcast, telephone services, and eliminated the need for Internet access. From the perspective of organizations, having only one information provider implies lower communications costs.

In addition, technology convergence has helped to achieve the principles of universal access. At present, the costs involved in installing telephone landlines in rural areas has a negative impact on telecommunication companies. Revenues from installing landlines can be more attractive if the landlines include cable TV and the Internet charges, instead of limiting to local and long distance telephone charges. This implementation will help the government in minimizing the cost of installing expensive landlines and providing access to information at a low cost to those in rural areas.

1.2 Comparison of E-Commerce with Traditional Commerce

In spite of the fact that the goals and objectives of both e-commerce and traditional commerce are the same, they can be differentiated based on their business processes. The Web and telecommunication technologies play a major role in e-commerce. In e-commerce there may be no physical store, and in most cases the buyer and seller do not see each other.

In most of the cases, traditional commerce activities are used in business processes very efficiently and these processes do not need improvement with the help of technology. It is very difficult to sell using e-commerce when buyers wish to touch, smell, or examine the products.

Example: Customers might be unwilling to buy high fashion clothing or food products if they cannot examine the products closely before agreeing to purchase them.

On the other hand, retail merchants engaged in traditional commerce have years of experience in creating a store environment that helps to convince a customer to buy. Sales people can develop skills that allow them to identify customer needs, and find products and services that meet those needs. Therefore, the art of personal selling and merchandizing is difficult to practice over electronic medium. Branded products like books or CDs can be effortlessly sold through e-commerce as one copy of a new book or CD is identical to other copies. The advantage of e-commerce over traditional commerce is the ability of a Web site to offer a wider selection of products and services and the facility to browse.

Table 1.1 depicts some examples of business processes that suit e-commerce and traditional commerce respectively.

Table 1.1: Comparison of E-Commerce and Traditional Commerce Based on Business Processes	
Electronic commerce	**Traditional commerce**
Sale/purchase of books or CDs	Sale/purchase of high fashion clothing
Online delivery of software	Sale/purchase of perishable food products
Advertising and promotion of travel services	Small denomination transactions
Online tracking of shipments	Sale of expensive jewelry and antiques

Table 1.2 compares and contrasts traditional commerce and e-commerce. However, it is essential to know that currently many companies are functioning with a mix of traditional commerce and e-commerce.

Example: Gap, Toys-R-Us, Walmart, and Sears are some of the companies that are operating with a mix of traditional commerce and e-commerce.

Table 1.2: Comparison of Traditional Commerce and E-Commerce Based on Activity		
Activity	**Traditional commerce**	**E- commerce**
Product information	Magazines, flyers	Web sites, online catalogs
Business communications	Regular mail, phone	E-mail
Check product availability	Phone, fax and letter	E-mail, Web sites, and extranets
Order generation	Printed forms	E-mail, Web sites
Product acknowledgements	Phone, fax	E-mail, Web sites, and EDI
Invoice generation	Printed forms	Web sites

1.3 Media Convergence

The electronic marketplace is turning into a reality as many companies are using their resources and talents through mergers with other companies. The term E-Commerce is now irreversibly linked with the idea of convergence of companies centered on information like content, storage, networks, business applications, and consumer devices.

Convergence means merging of consumer electronics, publishing, television, computers, and telecommunications for the purpose of enabling new forms of information-based commerce. The concept may be confusing for the public as the popular press uses the terms multimedia and cross-media interchangeably. Multimedia convergence refers to the conversion of data, voice, text, image, graphics, and full-motion video into digital content. Cross-media convergence applies to the integration of various industries, such as, entertainment, publication, and communication media based on multimedia content. The two types of convergence are closely related to each other.

⊡ *Example:* In the new era of interactive television, the lines between advertisements, entertainment, education, and services often become blurred. While watching a World Cup cricket match between India and Australia, you may develop an urge to know more about Australia. Instead of running to the local bookstore and purchasing a book, you can connect to an online database and search while not missing any part of the match. The information in these online databases is not limited to text but also provides photographs and digital videos (multimedia).

In other words, convergence requires removing the barriers between telecommunications, broadcasting, computing, movies, electronic games, and publishing industries to facilitate interoperability.

Simple technological improvements driving the phenomenon of convergence are as follows:

1. *Convergence of Content:* This helps to translate all types of information content, such as, books, business documents, videos, movies, and music into digital information. Once the content is converted into digital form, that information can easily be searched, encrypted, duplicated, and transmitted which suits today's information processing systems.

2. *Convergence of Transmission:* This helps to compress and store digitized information so that it can be transmitted through existing phone and cable wiring. New techniques and other technological discoveries modify all types of information. Here, we can notice the convergence of communication systems that provide a medium to transmit voice, data image, and video without rewiring the neighborhood.

3. *Convergence of Information:* Some of the information access devices can function as both computers and televisions. For example, a telephone with internal fax machine, modem, and video monitor is capable of receiving fax, e-mail, and video.

Convergence is also being driven by certain market conditions including the following:

1. The availability of low-cost, high-performance enabling component technologies, such as, semiconductors, storage and display devices, communications systems, and operating systems.

2. Entrepreneurs' expectation of end-user demand for new applications—both products and services that rely on the above mentioned enabling technologies.

3. The regulatory actions that are creating competition in monopoly markets, such as, local and long-distance communications, telecommunication and cable equipment, and facilitating the rapid deployment of the new applications.

1.4 Business Application of E-Commerce

There are a variety of e-commerce applications that are constantly affecting the trends and prospects of a business. The primary applications of e-commerce are Business-to-Consumer (B2C), Business-to-Business (B2B), Consumer-to-Consumer (C2C), and Consumer-to-Business (C2B).

Notes

Other Applications of E-Commerce

1. Business-to-Employee (B2E)

2. Government-to-Government (G2G)

3. Government-to-Employee (G2E)

4. Government-to-Business (G2B)

5. Business-to- Government (B2G)

6. Government-to-Citizen (G2C)

7. Citizen-to-Government (C2G)

1.4.1 Anatomy of E-Commerce Applications

Nowadays, effective interactions are happening between businessmen and customers with the help of the Internet. People are comfortable with online buying and selling of products because of the ease with which things get done. The Web sites pertaining to online buying and selling are gaining popularity because of rapidly advancing technology.

E-Commerce applications mainly comprise of multimedia content and multimedia storage servers. It also includes information delivery system, a device that functions as an interface for various e-commerce applications and network service providers that serve as access points.

Multimedia Content for E-Commerce Applications

Multimedia content is believed to be the backbone of electronic commerce applications. Multimedia is defined as the use of digital data in more than one format, such as, the combination of text, audio, video, and graphics in a computer file or document.

Multimedia reflects the natural communication of people. It aims to combine the interactivity of a user-friendly interface with multiple forms of content. Multimedia is linked with hardware convergence happening in the telecommunication, computer, and cable industry. This is because the next generation of digital, interactive home entertainment is approaching technical completion. From this perspective, multimedia refers to the combination of computers, television, and telephone technology in a single device.

Multimedia systems are oriented towards numeric processing; hence they are considered much more accurate than conventional database systems. Business professionals agree that more than 90% of the information that companies use for business operations and decision making exists outside the traditional database systems. This external information is crucial for smooth organizational functioning. External information is in the form of technical manuals, memos, e-mail, problem reports, sales brochures, and product design.

Most business systems use only a portion of the information and communication found in the workplace. Therefore, the aim of multimedia is to increase the usefulness of all information through the processing and distribution of new forms like images, audio, and video.

The traditional, separate business divisions no longer function in the world of multimedia. In other words, every form of information is interrelated to other forms. However, the access to multimedia information relies on the hardware capabilities of the customer. For many years, capability of the computer hardware was well ahead of the requirements of software applications available to run on it.

Example: An electronic book includes photographs, animation, voice, video clips, and a host of other things.

The key elements for the success of e-commerce applications are innovativeness and diversity of multimedia packaging and content. The current providers of multimedia information are profited by broadcasting television productions, traditional print publications, and software and information services. These information providers are supported by a group of small companies or individuals producing content, such as, developing software programs, creating videos, writing articles, and other entrepreneurial activities. However, there are plenty of opportunities for new providers who can offer innovative content that meets consumer requirements which are not being fulfilled by existing providers.

Find the latest technology available for e-commerce and e-Business.

Task

Multimedia Storage Servers

The latest advancement that has happened in the field of communication and technology has made it possible and economical to access a variety of information sources such as, books, magazines, pictures, video clips, and scientific data on the Internet. In order to give such services, multimedia storage servers that are connected to customer sites should be provided with high-speed networks.

Due to some features of digital audio and video, considerable variation has been implemented to the design of multimedia services. The features are:

1. *Instantaneous Storage and Retrieval:* Audio and video media are also referred to as "Continuous" Media (CM), since they consist of a string of media quanta. Media quanta like video frames or audio samples communicate the meaning only when accessed continuously in time. Moreover, some media constituents whose playback is temporally coordinated are usually included in a multimedia object.

2. *Large Data Transfer Rate and Storage Space Necessity:* The playback of digital video and audio transfer data is at a very high speed. Hence, a useful mechanism has to be provided by multimedia service for storing, recovering, and controlling data in vast quantities at high rates.

The design phase of such multimedia services includes some critical components. They are:

1. Multimedia storage servers that help in supporting constant revival of media information from the storage subsystem.

2. Network subsystems that assure synchronous and proper delivery of media information to the display sites.

3. Images, text, audio, and video are some of the multimedia objects. These multimedia objects can be accessed with the help of multimedia storage servers. There is a difference in the design of such servers as compared to the usual servers. This is because of:

    (a) Real-time storage and retrieval needs.

    (b) Huge storage space and data transfer rate requirements of digital multimedia.

Advancement in the field of communication and technology results in the growth of various multimedia applications.

Example: Interactive multiplayer games, distance education and online virtual worlds are some of the kinds of multimedia applications.

The two main differences when compared to the usual applications are:

1. Multimedia applications provide storage, transmission, and processing of heterogeneous data types, such as, text, image, audio, and video. The size, data rate, real-time requirements of these heterogeneous data can be varied.

2. These applications require diverse performance requirements than conventional applications. For instance, requirements concerning timeliness on the networks and operating systems.

E-Commerce Applications

It is a must for e-commerce applications to have certain capabilities to handle the activities involved in a business. Accepting and managing payments, managing the checkout pipeline, and choosing, collecting and distributing products to customers are some of the capabilities required. E-Commerce applications are also used by companies to improve the online experience of customers and hence boost customer traffic.

Did you know? IBM does business with more than 12,000 suppliers over the Web around the world. IBM uses the Internet and Web technologies as its transaction-processing network, such as, sending purchase orders, receiving invoices, and paying suppliers.

Electronic Payment Systems (EPS)

The method of financial exchange that takes place between buyers and sellers in an online transaction with the aid of digital financial instruments is termed as EPS. These digital financial instruments can be encrypted credit card numbers, electronic checks, or digital cash backed by a bank, an intermediary, or by legal tender.

EPS has a lot to do with billing and payment which are considered as the final activities in any sales transactions. It is a key element in the closure of an e-commerce cycle. The growth of e-commerce in developing countries is affected adversely because of the weak electronic payment systems. Due to the several legal and business issues that exist in these countries, entrepreneurs are not able to receive credit card payments over the Internet. Transaction security is the major concern here.

Notes

Factors to be Considered for an E-Commerce Web site

There are four factors to be considered before having a Web presence for your business.

They are:

1. Content development

2. Research analysis

3. Strategy planning

4. Branding

Task

Search the Internet and discuss how the four factors, such as, content development, research analysis, branding, and strategy planning affect the development of an e-commerce Web site.

Anatomy of an E-Commerce Web Site

E-Commerce Web sites help considerably to foster online business. The main aim of such Web sites is to convert the user to a potential customer. Your Web site must be attractive enough with lots of useful content and products in order to be noticed by various search engines and customers.

An e-commerce site must have some important elements, they are:

1. *Online Product Catalog:* This is the place where information about the products is stored and handled.

2. *Shopping Cart:* This is an interface that customers apply to pick the products of their choice. It provides necessary information about the product that customers want to buy. It also supports the customers with the checkout process.

3. *Checkout System:* This is a method which collects required payment details from the customer. These payment details include shipping and billing addresses, credit card details, or other payment mechanism details. It also presents shipping rates, taxes, vouchers, or estimates other variations to reach at the final cost.

4. *Payment Gateway:* This is a service with the help of which payment and credit card details can be sent from the Web site to a merchant account. The account needs to be assigned by a bank or financial organization that deals with online transactions. Payment gateway is a highly protected service. It is also responsible to handle and resolve any feedback or complaints received from the

bank. For example, payment gateway service should handle issues like inadequate funds for customer or the usage of invalid credit card.

5. *Merchant Account:* This is considered to be a special bank account. With the help of merchant account, online payments can be done by the Web sites using credit or debit cards. The banks that provide merchant account facility charge fees per transaction and also for transaction types.

1.4.2 E-Commerce Consumer Applications

The global consumer marketplace is spreading at a fast rate, but with its own problems. Consumer applications such as, online stores and electronic shopping malls are fast emerging but access is still inadequate in many cases. Many of the systems are not consumer friendly or well integrated. For example, it may be feasible to browse the site of an e-store via the Web, but there may be no directories or catalogs to search for the specific address of the store. Such lack of integration forces the consumer to spend more time searching for stores and online information. There is no standardization of electronic payment methods on the Web and the security of online payment still remains a major concern. These basic issues need to be resolved.

Some fundamental business issues must be addressed before consumer-oriented e-commerce can become widespread. These are:

1. Establishment of standard business processes for buying and selling products and services in electronic markets

2. Standardization of protocols for order-taking, online payments and service delivery

3. Development of privacy and security methods for secure transactions

In other words, to make consumer-oriented e-commerce more effective, we need to understand the components of the business process, the technology and the integration of the two.

Table 1.3 shows the classification of consumer-oriented e-commerce applications.

Table 1.3: Classification of Consumer-Oriented E-Commerce Applications

Consumer services	Complementary multimedia services
Entertainment	Movies on Demand, video cataloging, interactive ads, multi user games
Financial services	Home banking, financial services, financial news
Essential services	Home shopping, electronic cataloging, telemedicine
Education and training	Interactive education, distance learning
Information	Online databases, directories.

1.4.3 E-Commerce Organization Applications

Organizations implement technology to save money and improve their profit margins. Organizations do not buy information and communications technology simply because it is new or because it is interesting to the employees.

Following are the various organizational applications of e-commerce:

1. *Adapting to a Changing Business Environment:* As there is a rapid change in the business environment, the consumers and businesses are looking for flexibility to change trading partners,

carriers, platforms, and networks. Many firms are considering both internal and external factors of an organization when shaping their business strategies. The main focus of an organization is to set up private electronic connections with consumer, suppliers, competitors, distributors, and industry groups. This in turn helps to increase the efficiency of business communications, to expand market share, and to maintain long-term position in today's business environment.

2. *Marketing and E-Commerce:* Electronic commerce is forcing companies to rethink their existing ways of doing target marketing (isolating and focusing on a segment of the population), relationship marketing (building and sustaining a long-term relationship with existing and potential customers), and even event marketing (setting up a virtual booth where interested people come and visit).

    Interactive marketing is accomplished in electronic markets via interactive multimedia catalogs. Users find moving images more appealing than still images and listening more appealing than, reading text on a screen.

3. *Inventory Management and Organizational Applications:* Inventory management solutions are referred in the manufacturing industry as *Just-In-Time (JIT)* inventory systems. In the retail industry, they are referred as quick response programs.

    (a) *JIT Manufacturing:* JIT purchasing, which is considered as an integral part of JIT, has received considerable attention in electronic commerce. It allows a manufacturer to incorporate its suppliers' efforts towards eliminating waste in the upstream portion of the manufacturing cycle. JIT purchasing focuses on the reduction of inventories throughout the systems of the manufacturing firms and provides a careful audit of the production process. Basically, it optimizes supplier and customer relations.

    (b) *Quick Response (QR) Retailing:* The process is quite complex, given that a single retailer may purchase merchandise from thousands of vendors in a global market. The failure to stock merchandise that matches customer demand can be extremely costly. To reduce the risk of being out of stock, retailers are implementing QR systems. QR provides for a flexible response to product ordering and lowers costly inventory levels. QR retailing focuses on market responsiveness while maintaining low levels of stocks. It creates a closed loop encompassing the retailer, vendor, and consumer. As consumers make purchases, the vendor automatically orders new deliveries from the retailer through its computer network.

4. *Supply Chain Management (SCM):* The SCM process increasingly depends on electronic markets because of global sourcing of products and services. The process helps to reduce costs and product manufacturing life cycles, and provides flexible manufacturing systems resulting in a variety of customizable products.

Task Discuss the importance of supply chain management in electronic markets.

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5. *Work Group Collaboration Applications:* Work group applications of e-commerce enable easy and inexpensive connection of various organizational segments to improve communication and information sharing among employees and to gather and analyze competitive data in real-time. E-Commerce also facilitates sales force automation by enabling salespeople to carry product and reference information in one portable device. Other applications such as, video conferencing, document sharing, and multimedia e-mail, are expected to reduce travel and encourage telecommuting.

Southampton Supplies Goes Online

Caselet

Southampton Supplies Ltd. was established as a business in September 2001. Steve Campbell, a member of the United Air Force Reserve, identified an opportunity in the US market for mail-order supplies of garments to the cadets in the military reserve. Steve started running a mail-order business out of a shop in the village at Trunk Bay.

The Web store has been online since January 2003. Search engines take several months to index a Web site, so Southampton Supplies Ltd. used Pay Per Click (PPC) advertising as a method of increasing the Web sites presence in the major search engines. This marketing method proved successful. The partners were surprised as they had previously been doubtful about the prospect of the Internet generating sales in this sector. Within six months of running the Web site, the company had increased its turnover by two-fold, but further advances would result in high advertising cost. Hence, the company implemented search engine optimization and Web site re-design to tackle this issue.

Source: Chaffey Dave, E-Business and E-Commerce Management.

1.5 Need for E-Commerce and E-Business

The following benefits clearly explain the need for e-commerce and e-Business:

Benefits to Organization

1. *Global Reach:* E-Commerce extends the market place to local and international markets. Internet and Web-based e-commerce helps to reach a more geographically dispersed customer base and more business partners as compared to the traditional business methods.

2. *Reduction in Paper Costs:* E-Commerce decreases the cost of creating, processing, distributing, storing and retrieving information through the use of EDI (Electronic Data Interchange) systems. This decreases the cost of paperwork in terms of the time taken and the manpower required. Also, the data is more secure from theft and destruction. E-payments have also considerably reduced the overhead cost in financial transactions.

3. *Reduction in Inventories:* A reduction in inventory is desirable to enable reductions in storage, handling, insurance and administrative costs. Internet commerce can help firms to reduce inventories by electronically linking the suppliers and buyers. The process starts from the customer orders and uses JIT manufacturing. Information on inventory levels and production rate is shared between the manufacturers and their suppliers. Such information keeps the delivery schedules "fine-tuned" for JIT manufacturing, rather than maintaining large inventories.

4. *Customization of Products or Services:* The Web-based interactive e-commerce enables the customization of products or services as per the customer needs. This provides a great competitive advantage to business.

Example: An online travel agency may customize the itinerary for customers who wish to travel abroad, or a computer manufacturer may be able to supply a customized computer to a user when compared to traditional commerce.

5. *Reduced Production Cycle Time:* The production cycle time is the time taken by a business to build a product, beginning with the design phase and ending with the completed product. The production teams electronically share design specifications and refinement processes over the Internet to reduce the production cycle time.

    The reduction in the production cycle time helps to reduce the fixed overheads associated with each unit produced. This saving in the cost of production can be passed onto the customer or may be used to achieve higher profits.

6. *Improved Customer Service:* Customer service can be enhanced using Internet based e-commerce as it helps the customer to access information before, during, and after a sale. Customers may need to retrieve information on product specifications and pricing, on the status of an order, or may need online help in the installation or use of a product that they have purchased. A prompt customer support service can help businesses to earn the goodwill of customers in the long run.

7. *Lower Sales and Marketing Costs:* The Internet allows businesses to reach many customers globally at lower costs. Thus, organizations can bring down the marketing overheads by shifting the sales and marketing functions to the electronic processes.

Example: Advertisements on the Internet can cut down the cost of printing and mailing pamphlets or brochures. Any change in product specifications in the case of paper-based advertisements may mean re-printing. However in Web-based advertisements, it may mean changes only in the Web site.

8. *Lower Telecommunication Costs:* Before the emergence of the Internet, only a few organizations were using private networks and Value-Added Networks (VANs) for their EDI. The cost of installation and running these systems was very high and beneficial only to the larger firms that had enough business volumes to justify the cost. But now, because of the low cost of connecting to the Internet, small and medium businesses can easily afford to do business on the Internet.

9. *New Business Partners:* The Internet based e-commerce enables businesses to find new business partners globally on the Web, thus not restricting themselves to a limited choice of suppliers.

10. *Faster Access to Information:* The Internet expedites access to remote information, thus adding speed to transactions and processes.

Benefits to Consumers

1. *Increased Choice of Vendors and Products:* Customers can have an increased choice of vendors or products because they are no longer geographically constrained to reach a vendor or a product. A large number of vendors or manufacturers are using the Internet for marketing and selling their products or services.

Example: An NRI settled in the UK may subscribe to an electronic newspaper of India and receive the electronic newspaper on a daily basis.

2. *Convenience of Shopping at Home:* E-Commerce allows the consumers to shop when it is convenient for them and not strictly during store hours. Also, for physically challenged or elderly consumers, home shopping on the Internet provides a lot of opportunity and convenience.

3. *More Competitive Prices and Increased Price Comparison Capabilities:* The large amount of information available on the Internet is giving more and more power to the consumers. Consumers can make product or service comparisons and price comparisons to enable them to get the best deal on a product or service. This comparison of price and product has increased the competition among the vendors.

4. *Variety in Products and Services:* The online retailers have quickly learnt that reliable products and services are also important. Businesses have understood the importance of associated products and services and e-commerce helps in the realization of offering variety of products and services.

Example: Amazon.com does not just sell books and music CDs or DVDs, but also provides books and music reviews, suggests other books that may be of interest based on the books being examined.

5. *Greater Customization in the Delivery of Services:* Internet commerce also gives customers a chance to customize many of the products or services offered by the merchants.

Example: The morning paper (www.nytimes.com) allows online users to pre-specify their favorite Web sites. Each morning a morning paper is delivered electronically to the user with updates that have occurred on their favorite Web sites. Customers buying computer over the Internet have the opportunity to "configure" their own computer easily and compare prices of alternative configurations.

6. *Access to Greater Amounts of Information on Demand:* Consumers can have access to a large amount of information online on products and services, their features and prices. This further translates into more choice for customers in shopping and greater price comparison opportunities.

Example: The Mobile Store offers a wide range of mobile phones and their accessories, mobile connections, online recharging, Direct-to-Home (DTH) connections, and many more features. On their Web site, a customer can select a particular product to view its features and specifications. This helps the customer to compare a product with other products.

7. *Quick Delivery of Digitized Products or Services:* E-Commerce allows quick delivery in the case of digitized products, such as, music, software, etc.

8. *Virtual Auctions:* E-Commerce has made it possible for customers to participate in virtual auctions for buying and selling.

Example: On the eBay Web site, bidding is same as an auction. A customer places a bid and can continue bidding against others until the end of the auction, hoping to win the bid.

1.6 Basics of E-Commerce: Network and Electronic Transactions Today

Electronic transaction such as payment for the goods and services purchased online is an important step in the e-commerce transaction process. The main business concerns of electronic payments and security include:

1. The unknown networked computer systems used in electronic transactions are sometimes unreliable.

2. The wide range of debit and credit options, financial institutions and intermediaries make electronic transactions a difficult process.

Figure 1.1 shows the network of electronic transaction process taking place between buyers and sellers.

Figure 1.1: Electronic Transaction Process
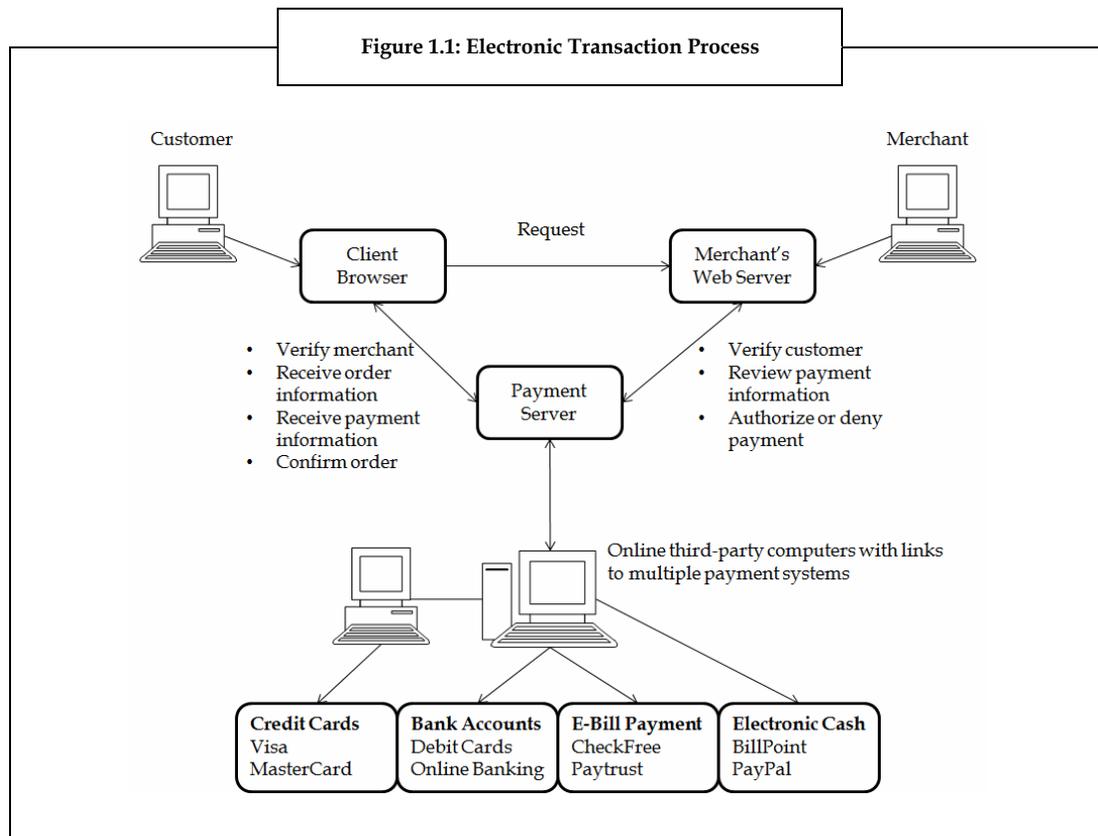
B2C e-commerce systems on the Web depend on credit card transaction processes. But many B2B e-commerce systems depend on more complex transaction processes based on the use of purchase orders. B2C and B2B e-commerce systems generally use an electronic shopping cart process. This process allows consumers to select various products from a Web site catalog and place them temporarily in a virtual shopping basket. These selected products can later be checked out and processed for payment.

Electronic Funds Transfer

Electronic Funds Transfer (EFT) is the main method of e-commerce transaction systems in banking and retailing industries. Various information technologies are used in EFT systems to process money and credit transfers between banks and businesses and their customers.

Secure Electronic Payments

Network sniffers, software that easily recognize credit card number formats, may capture your credit card information when you make a purchase online. Various basic security measures are being implemented to solve this problem. They include:

1. Encryption of data passing between the customer and merchant

2. Encryption of data passing between the customer and the company to authorize the credit card transaction

3. Taking sensitive information offline

The security methods developed for secure electronic transactions include:

1. *Secure Socket Layer (SSL):* It helps to automatically encrypt the data passing between your Web browser and a merchant's server.

2. *Digital Wallet:* It is the security software for your Web browser. Digital wallet helps your browser to encrypt credit card data so that only the bank that authorizes credit card transactions for the merchant can see it.

3. *Secure Electronic Transaction (SET):* It helps to encrypt a digital envelope of certificates specifying the payment details for each transaction. SET is expected to become the dominant standard for secure electronic transactions over the Internet.

1.7 Summary

*   Commerce is defined as an exchange of commodities or all activities involved in transferring goods from producers to consumers.

*   E-Commerce is defined as a process of buying and selling of goods or services using electronic systems. E-Business is defined as the use of Internet technologies to enhance the key business processes.

*   In the early 1990s, e-commerce emerged with the launch of World Wide Web and Web browsers.

*   The three major factors fueling e-commerce are:

    (a) Economic factors

    (b) Market and customer interaction factors

    (c) Technology factors

*   The ability of a Web site to offer a wider selection of products and the facility to browse are the major advantages of e-commerce over traditional commerce.

*   Convergence is defined as the merging of consumer electronics, publishing, television, computers, and telecommunications for the purpose of enabling new forms of information-based commerce.

*   The two types of convergence are multimedia convergence and cross-media convergence. Multimedia convergence refers to the conversion of data, voice, text, image, graphics, and full-motion video into digital content.

*   Cross-media convergence refers to the integration of various industries, such as, entertainment, publication, and communication media based on multimedia content.

*   Multimedia content is considered to be the backbone of electronic commerce applications.

*   Some of the commonly used applications of e-commerce are:

    (a) E-mail

    (b) Online shopping and order tracking

    (c) Online banking

    (d) Electronic tickets

*   Some of the benefits of e-commerce are:

    (a) Organizational benefits:

        (i)   Global reach

        (ii) Reduction in paper costs

        (iii) Customization of products or services

        (iv) Improved customer service

    (b) Consumer benefits:

        (i)   Increased choice of vendors and products

        (ii) Convenience of shopping at home

     (iii)   More competitive prices and increased price comparison capabilities

     (iv)   Quick delivery of digitized products or services

1.8 Keywords

Electronic Data Interchange (EDI): It is defined as the exchange of business information between organizations by electronic means.

HTML: It stands for Hyper Text Markup Language. HTML is a combination of words and symbols which provide instructions on how a Web page should appear.

Inventory Systems: It is a process for managing the list of items available in stock.

Just-In-Time (JIT): It is a strategy for inventory management in which raw materials are delivered from the vendor or supplier just before they are required in the manufacturing process.

Supply Chain Management: It is the management of material and information flow in a supply chain to provide customer satisfaction at the lowest possible cost.

Secure Socket Layer (SSL): It is a protocol for managing the security of a message transmission on the Internet.

VAN: It stands for Value-Added Network. VAN is a private network provider which is hired by an organization to facilitate EDI or provide other network services.

1.9 Self Assessment

1.   State whether the following statements are true or false:

    (a)   E-Commerce enhances key business processes through the use of internet technologies.

    (b)   External integration pertains to the electronic communication between various departments and networking of business operations and processes within an organization.

    (c)   E-Commerce and traditional commerce can be differentiated based on their business processes and activities.

    (d)   The advantage of e-commerce over traditional commerce is the ability of a Web site to offer a wider selection of products and the facility to browse.

    (e)   Cross-media convergence refers to the conversion of data, voice, text, image, graphics, and full-motion video into digital content.

    (f)   Online product catalog is the place where information about the products is stored and handled.

    (g)   Payment gateway is a service with the help of which payment and credit card details can be sent from the Web site to a merchant account.

    (h)   Internet based e-commerce enables businesses to find and restrict themselves to a specific choice of suppliers.

2.   Fill in the blanks:

    (a)   The _____ plays a major role in the implementation of e-commerce in most of the organizations.

    (b)   Netscape released the _____ browser in 1994.

    (c)   The key factor in the growth of e-commerce is the development of _____.

    (d)   _____ means merging of consumer electronics, publishing, television, computers, and telecommunications for the purpose of enabling new forms of information-based commerce.

    (e)   Multimedia is linked with _____ convergence happening in the telecommunications, computer, and cable industry.

    (f)   Audio and video media are also referred to as _____ media.

(g)   The method of financial exchange that takes place between buyers and sellers in an online transaction with the aid of digital financial instruments is termed as _____.

(h)   Software that easily recognizes credit card number formats is called a _____.

1.10   Review Questions

1.   "E-Commerce and e-Business are different concepts." Discuss.

2.   "E-Commerce applications were first developed with innovations like Electronic Funds Transfer (EFT)." Discuss.

3.   How does Just-In-Time (JIT) help in inventory management? Discuss how JIT has received importance in e-commerce.

4.   "E-Commerce and traditional commerce are differentiated based on their business processes and activity." Discuss with examples.

5.   "E-Commerce is irreversibly linked with the idea of convergence." Explain the concept of media convergence with suitable examples.

6.   Suppose you are running an online retail store. Analyze how to make consumer-oriented e-commerce more effective. What are the different components of consumer-oriented e-commerce that need to be considered?

7.   "Multimedia content is believed to be the backbone of electronic commerce applications." Comment.

8.   Suppose you notice that the payment gateway on your business Web site is facing some security issues. What are the different types of security methods you would develop to secure electronic transactions?

9.   Suppose you want to extend your business online. How will you convince the business partners to go online? Explain with suitable examples.

10.   How will you make the e-commerce Web site user-friendly? What are the important elements that you will keep in mind while developing an e-commerce Web site?

11.   "Economic factors, marketing and customer interaction factors, and technology factors are some of the stimulating factors of e-commerce." Discuss.

Answers: Self Assessment

1.   (a) F   (b) F   (c) T   (d) T   (e) F

     (f) T   (g) T   (h) F

2.   (a)World Wide Web (b) Navigator   (c) ICT   (d) Convergence   (e) Hardware

     (f) Continuous   (g) EPS   (h) Network sniffer

1.11   Further Readings

Books

Chan. H., Lee. R., Dillon. T., and Chang. E. (2008). E-Commerce: Fundamentals And Applications, Student ed. New Delhi: Willey India (P.) Ltd.

Bajaj. K. K., and Nag. D. (2009). E-Commerce: The Cutting Edge of Business, 2nd ed. New Delhi: Tata McGraw-Hill.

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