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PUBLICATION

E-COMMERCE & CYBER SECURITY

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Ms. Sonal B. Shah | Mrs. Krupali P. Patel | Mr. Nitesh G. Patel

1.1 What is e-Commerce?

The term commerce is define as trading of good & services or if e' for electronic' is added to this, the definition of e – commerce is defined as trading of goods, services, information or anything else of value between two entities over the internet.

Following are some definitions of e – commerce:-

1. It is the ability to conduct business electronically over the internet.

2. It means managing transactions using networking and electronic means.

3. It is a platform for selling products & services via internet.

Characteristics of e – commerce:-

1. Establishment of B to B relationship.
2. Electronic payment.
3. e – distribution of products & services.
4. Exchange of information.
5. Pre and post – sales support.
6. Customer relationship management.

1.2 Aims of e-Commerce

1. **Facilitates the globalization of business**:-e – commerce facilitates the globalization of business by providing some economical access to distant markets and by supporting new opportunities for firms to increase economies by distributing their products internationally.
2. **Provides increased purchasing opportunities for the buyer**:-As e – commerce increases sales opportunities for the seller, it also increases purchasing opportunities for buyer.
3. **Lowering staffing cost**:- As in e – commerce, the selling & purchasing process is outline, the amount of interaction with staff is minimized.
4. **Market based expansion**:- An e – commerce is open to entirely new group of users, which include employees, customers, suppliers & business partners.
5. **Increased profits:-**With e – commerce, companies reach more & more customers where physical commerce cannot reach, thus increasing profits.
6. **Increased customer service & loyalty**:- e – commerce enables a company to be open for business wherever a customer needs it.
7. **Increase speed & accuracy:-** E – commerce see the speed and accuracy with which business can exchange information, which reduces cost on both sides of transactions. It is available 24 hours a day & 7 days a week.
8. **Reduction of paper storage.**

9. **Increased response times:-** In e – commerce, the interaction with the system take place in real time & therefore allows customer or bidder to respond more Quickly & thus reduces the time of discussion between then as in traditional commerce.

Limitations of e – commerce:-

1. **Security:** - the security risk in e – commerce can be
   - client / server risk
   - data transfer and transaction risk
   - virus risk

2. **High startup cost:-**
   The various components of cost involved with e – commerce are:-
   - connection:- connection cost to the internet
   - Hardware / software: - this includes cost of sophisticated computer, modem, routers, etc.
   - Maintenance:- this include cost involve in training of employees and maintenance of web-pages.

3. **Legal issues**:- these issues arises when the customer data is fall in the hands of strangers.
4. **Lack of skilled personnel: -** there is difficulty in finding skilled www developers and knowledgeable professionals to manage and a maintain customer on line.
5. **Loss of contact with customers**:-Sometimes customers feel that they do not have received sufficient personal attention.
6. **Uncertainty and lack of information**:- most of the companies has never used any electronic means of communication with its customers as the internet is an unknown mode for them.
7. **Some business process may never be available to e – commerce:-**Some items such as foods, high cost items such as jewelry may be impossible to be available on the internet.

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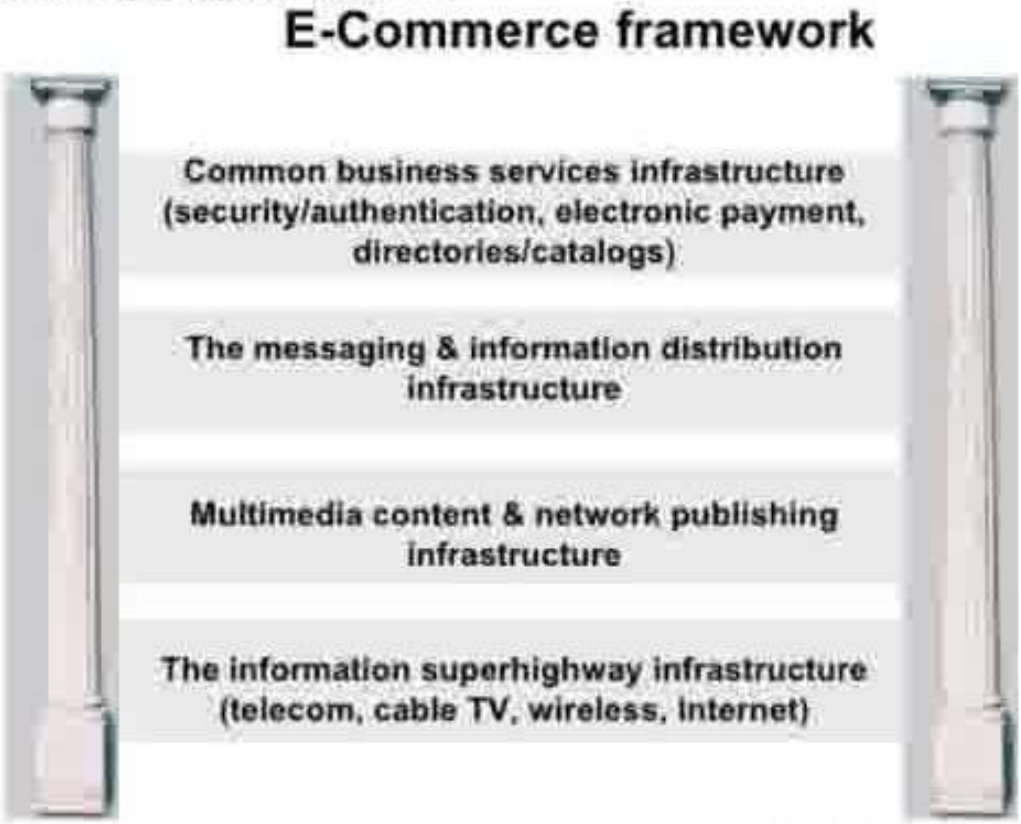
1.3 e-Commerce Framework:

Architectural Framework of E-Commerce



Architectural framework of e-commerce means the synthesizing of various existing resources like DBMS, data repository, computer languages, software agent-based transactions, monitors or communication protocols to facilitate the integration of data and software for better applications.

The architectural framework for e-commerce consists of six layers of functionality or services as follows:

1. Application services.
2. Brokerage services, data or transaction management.
3. Interface and support layers.
4. Secure messaging, security and electronic document interchange.
5. Middleware and structured document interchange, and
6. Network infrastructure and the basic communication services.

1. **Application services**
   In the application layer services of e-commerce, it is decided that what type of e-commerce application is going to be implemented. There are three types of distinguished e-commerce applications i.e., consumer to business application, business-to-business application and intra-organizational application.
2. **Information Brokerage and Management Layer**
   This layer is rapidly becoming necessary in dealing with the voluminous amounts of information on the networks. This layer works as an intermediary who provides service integration between customers and information providers, given some constraint such as low price, fast services or profit maximization for a client. For example, a person wants to go to USA from Bangladesh. The person checks the sites of various airlines for the low-price ticket with the best available service. For this he must know the URLs of all the sites. Secondly, to search the services and the best prices, he also has to feed the details of the journey again and again on different sites. If there is a site that can work as information broker and can arrange the ticket as per the need of the person, it will save the lot of time and efforts of the person. This is just one example of how information brokerages can add value. Another aspect of the brokerage function is the support for data management and traditional transaction services. Brokerages may provide tools to accomplish more sophisticated, time-delayed updates or future-compensating transactions.
3. **Interface and Support Services**
   The third layer of the architectural framework is interface layer. This layer provides interface for e-commerce applications. Interactive catalogs and directory support services are the examples of this layer. Interactive catalogs are the customized interface to customer applications such as home shopping. Interactive catalogs are very similar to the paper-based catalog. The only difference between the interactive catalog and paper-based catalog is that the first one has the additional features such as use of graphics and video to make the advertising more attractive.
   Directory services have the functions necessary for information search and access. The directories attempt to organize the enormous amount of information and transactions generated to facilitate e-commerce.
   The main difference between the interactive catalogs and directory services is that the interactive catalogs deal with people while directory support services interact directly with software applications.

4. **Secure Messaging Layer**
   In any business, electronic messaging is an important issue. The commonly used messaging systems like phone, fax and courier services have certain problems like in the case of phone if the phone line is dead or somehow the number is wrong, you are not able to deliver the urgent messages. In the case of courier service, if you want to deliver the messages instantly, it is not possible as it will take some time depending on the distance between the source and destination places. The solution for such type of problems is electronic messaging services like e-mail, enhanced fax and EDI. The

electronic messaging has changed the way the business operates. The major advantage of the electronic messaging is the ability to access the right information at the right time across diverse work groups. The main constraints of the electronic messaging are security, privacy, and confidentiality through data encryption and authentication techniques.

5. **Middleware services**
   The enormous growth of networks, client server technology and all other forms of communicating between/among unlike platforms is the reason for the invention of middleware services. The middleware services are used to integrate the diversified software programs and make them talk to one another.

6. **Network Infrastructure**
   We know that the effective and efficient linkage between the customer and the supplier is a precondition for e-commerce. For this a network infrastructure is required. The early models for networked computers were the local and long distance telephone companies. The telephone company lines were used for the connection among the computers. As soon as the computer connection was established, the data traveled along that single path. Telephone company switching equipment (both mechanical and computerized) selected specific telephone lines, or circuits, that were connected to create the single path between the caller and the receiver. This centrally-controlled, single-connection model is known as circuit switching.

1.4 e-Commerce Consumer Applications

By virtue of its similarities, the scope of operations for E-Commerce is nearly as broad as traditional commerce. E-Commerce includes both traditional activities (e.g. providing product information) and new activities (e.g. conducting online retail in virtual malls, publishing digital information). Some of the common operations that define E-Commerce are specific business-to-business and business-to-customer interactions, such as:

- Information exchange
- Goods or services trading
- Sales promotion and advertising
- Online digital content delivery
- Electronic funds transfers and transaction processing
- Electronic share trading
- Electronic bills of lading processing
- Collaborative work interaction
- Manufacturing management E-Commerce
- Accounts settlement
- Online sourcing
- Public procurement
- Direct consumer marketing

- Inventory management
- Post-sales service
- Commercial auctions.

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).

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)

1.5 e-Commerce Organizational Applications

The wide range of applications for the consumer marketplace can be broadly classified into:

- Entertainment: Movies on demand, video cataloging, interactive ads, multiuser games, on-line discussions.
- Financial services and information: Home baking, financial services, and financial news.
- Essential services: Home shopping, electronic catalogs, tele-medicine, remote diagnostics.
- Educational and training: Interactive education, video conferencing, online databases.

1.6 Introduction to m-Commerce:

The phrase **mobile commerce** was originally coined in 1997 by Kevin Duffey at the launch of the Global Mobile Commerce Forum, to mean "the delivery of electronic commerce capabilities directly into the consumer's hand, anywhere, via wireless technology.
M-commerce (mobile commerce) is the buying and selling of goods and services through wireless handheld devices such as cellular telephone and personal digital assistants (PDAs)

Advantages of mobile commerce
Mobile commerce offers a range of advantages to businesses both large and small. The number of people owning and regularly using mobile devices continues to grow, providing a large – and growing – marketplace for a variety of goods and services.

Advantages

1. Wide reach

Mobile commerce allows consumers to buy, and be marketed to, wherever they can get an internet connection. This offers considerable advantages over ecommerce, which must rely on a traditional internet connection such as over Ethernet. Improvements to infrastructure are increasing the speed and reliability of mobile internet access, making mobile commerce a sure-fire growth industry in the short and medium term future.

2. The personal touch

Selling over mobile devices can yield a very personal encounter for the consumer, especially if the services and products you offer are individually tailored. Mobile devices are often kept very close and so by providing the right kind of service retailers can capture the attention of consumers more easily. This form of commerce can bring the consumer and the company together and bring about greater profits for the company and allow the customer to have a closer relationship with the company.

3. Reduced need for skilled consumers

Mobile commerce reduces the need for the consumer to have certain skills (e.g. be able to use search engines or online checkout processes)

4. **Easy to use**

There is no need of skilled consumer. Buyers can have look thousands of items on their cell phones and there is no need of online checkout process.

5. Time Efficient

Doing M-Commerce transactions do not require the users to plug anything like personal computer or wait for the laptop to load.

Disadvantages

Mobile commerce is a growing sector and analysts expect significant growth in the next few years. At the current time there are some disadvantages from a retailer's point of view. As with any new investment, consideration must be given as to whether the disadvantages outweigh (be more important) the potential gains.

1. Smaller screens

The smaller and less vivid screens of mobile devices give less of an opportunity for retailers to sell products with eye-catching images and graphic design. In fact, the amount of marketing collateral (guarantee) that can be delivered is reduced.

2. Investment in growing market

Business investment in mobile commerce can be risky due to the rapid-fire pace of the market and its ability to shift quickly.

3. Speed of delivery

Mobile devices are less powerful than personal computers which mean mobile websites must be optimized for the technology. This means a potentially reduced appeal, in addition to the man-hour costs of removing inappropriate content such as flash videos and plug-ins.

4. Security

Although mobile security is improving regularly, there is still reluctance among some consumers to conduct transactions over a mobile device. Likewise, wireless networks – particularly those

with widespread access such as mobile phone networks – will generally provide greater opportunities for hackers than the standard 'internet'.

5. Difficult user interface

There is often a learning curve when it comes to handheld devices. Mobile websites and commerce gateways must be built with usability in mind, to reduce the number of customers who abandon [dump] the purchase due to frustration, and this can add significantly to the cost.

6. Smart phone limitation

Mobile has no big screen like desktop or laptops, so sometimes users tried to navigate more and more to choose just one item from thousands. It affects shopping rates.

7. Connectivity

Mobile commerce needs high speed connectivity of 3G. Otherwise it is become hectic for user to go through entire product purchase process.

Just in Time Inventory Definition [JIT]

Just in time (JIT) inventory is a strategy to increase efficiency and decrease waste by receiving goods only as they are needed in the production process, thereby reducing inventory costs. In other words, JIT inventory refers to an inventory management system with objectives of having inventory readily available to meet demand, but not to a point of excess where you must stockpile extra products.

Just-in-time manufacturing was a concept introduced to the United States by the Ford motor company. It works on a demand-pull basis, contrary to hitherto used techniques, which worked on a production-push basis.

To elaborate further, under just-in-time manufacturing (colloquially referred to as JIT production systems), actual orders dictate what should be manufactured, so that the exact quantity is produced at the exact time that is required.

Just-in-time manufacturing goes hand in hand with concepts such as Kanban, continuous improvement and total quality management (TQM).

Just-in-time production requires intricate planning in terms of procurement policies and the manufacturing process if its implementation is to be a success.

Highly advanced technological support systems provide the necessary back-up that Just-in-time manufacturing demands with production scheduling software and electronic data interchange being the most sought after.

The advantages and disadvantages of just-in-time inventory:

A just-in-time inventory system keeps inventory levels low by only producing for specific customer orders. The result is a large reduction in the inventory investment and scrap costs, though a high level of coordination is required. This approach differs from the more common alternative of producing to a forecast of what customer orders might be. By using just-in-time concepts, there is a greatly reduced need for raw materials and work-in-process, while finished goods inventories should be close to non-existent. The use of just-in-time inventory has the following advantages:

- There should be minimal amounts of inventory obsolescence, since the high rate of inventory turnover keeps any items from remaining in stock and becoming obsolete.

- Since production runs are very short, it is easier to halt production of one product type and switch to a different product to meet changes in customer demand.
- The very low inventory levels mean that inventory holding costs (such as warehouse space) are minimized.
- The company is investing far less cash in its inventory, since less inventory is needed.
- Less inventory can be damaged within the company, since it is not held long enough for storage-related accidents to arise. Also, having less inventory gives materials handlers more room to maneuver, so they are less likely to run into any inventory and cause damage.
- Production mistakes can be spotted more quickly and corrected, which results in fewer products being produced that contain defects.

Despite the magnitude of the preceding advantages, there are also some disadvantages associated with just-in-time inventory, which are:

- A supplier that does not deliver goods to the company exactly on time and in the correct amounts could seriously impact the production process.
- A natural disaster could interfere with the flow of goods to the company from suppliers, which could halt production almost at once.
- An investment should be made in information technology to link the computer systems of the company and its suppliers, so that they can coordinate the delivery of parts and materials.
- A company may not be able to immediately meet the requirements of a massive and unexpected order, since it has few or no stocks of finished goods.

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