CHAPTER 3
LITERATURE REVIEW

3.1 Introduction

Internet has brought a lot of change in working of the business. Internet provides free exchange of information. There are 400 millions of computers in different networks worldwide which communicate with each other. Hence internet is major media for marketing and communication. It has brought in to force new business opportunities such as e-business and e-commerce today. [1] By providing better presentation of their product and services small business organizations can be in race with large organizations. Customers can have better choice of product and services worldwide. With the use of electronic data interchange (EDI) buyers and sellers can exchange standard business transactions invoices and purchase orders easily.

Today, the use of e-commerce is done widely in business. In every industry like payment, marketing and advertising or implementation e-commerce is needed. E-commerce use is more in online services. ECCRM literature makes use of a wide range of research methods which tell us how e-commerce is useful in health care industry as compared with other sectors. A Typology and D-commerce Customer Relationships Model assert the need for an interdisciplinary typology of trust to compare and communicate research results more clearly. Computer software programs and automation technology is resulting in improved productivity, better patient education, man and woman power, efficient use of man power and disease management strategies, tighter inventory control and fewer medication errors.

This new pharmacy technology is divided into business customer (B2C) and business to business buying and selling (B2B or e-marketing) automation/robotics; and healthcare over the Internet. Online networks connect buyers with sellers, distributors with retailers and retailers with manufacturers to carry out the distribution process effectively. Internet has created a growing and complex healthcare network which connects suppliers with distributors, pharmacists to reach out to suppliers, healthcare provider’s information resources
business data sources and the patient/consumer. Americans are using internet to get health care information. A survey conducted by Harris Interactive concludes that more than half of U.S. adults or 114 million people are using the Internet and of that number 86% are surfing for health information. This number has doubled in two years. Most consumers search on regular basis. A survey by Media Cross a marketing consulting firm found that 87% pharmacists have computers and 94% pharmacists use the internet at home. Half of the pharmacists have internet access at work and 63% visited at least one pharmaceutical company’s website. More than 60% have completed one CE course online. It was forecasted that 10% of prescriptions will be sent electronically by 2001. For effective transfer of products data sharing between parties in the supply chain is necessary. Research and development in information and communication technology has made it possible to create easy communication links between suppliers, producers, third parties and customers. The common technology to establish electronic link for transferring messages is electronic data interchange. Electronic data interchange is defined as transmission of trade documents electronically using standardized formatting. E-commerce help in high value drug innovation clinical development and trial project and people management marketing and sales. E-commerce and corporate strategy together has created a sound value for the industry. “Pharmaceutical e-Marketing” is a term divided into three categories including doctors and hospitals (the end users). It helps in providing reports and scientific data to the specialists in order to launch a new drug. It is mostly based on providing reports scientific data etc. to the specialists in order to start the promotion of a new drug. Bulk drugs is a new e-marketing strategy used which involves established drugs like antibiotics antipyretic etc. which is not visible to the end user. Second type of the e-marketing used is for anything from a catalogue on the web to the chemical portals/API, a new and exciting area of e-marketing. API’s are purely B2B as they are distributed between pharmaceutical companies only. E-business has altered the supply chains to benefit all concerned in supply chain. To acquire a good position on the internet a company needs to have a website running live on World
Wide Web. Also the website should have a website account from any good web hosting company for publishing your site.

Internet gives basic knowledge of the medicines which gives decision making knowledge even if this knowledge can not replace doctors. E-commerce helps in marketing, selling and manufacturing. In addition it helps in education and library and reduces processing time and cost which will be useful in future for the industry.

3.1.1 ROLE OF E-MARKETING IN PHARMACEUTICAL BUSINESS

Pharmaceutical marketing is different than other businesses due to the sales of drugs which can not be sold directly to the patients but instead they are targeted to the health care professionals or the doctors who prescribe the drug to the patient. Internet and different technologies has brought new opportunities and can expand company’s reach. For example a popular video on U tube may be seen by thousands of people. Internet also brings new styles of communication Interactive and customer responsive campaign can be created with the help of internet. For the promotion of drug, **detailing** is the method in which sales representative directly contact the doctors. Drug companies from Europe and North America are increasingly adopting **electronic detailing** as the process to market their products. It includes diverse strategies, such as videoconferencing, the provision of electronic education modules, and the use of email and related technologies as prompts and to promote two-way communications. But it is not very popular with all doctors but it is cheaper than traditional sales representatives. Top companies are providing financial incentives for doctors to participate in e-detailing, such as honoraria, product samples, practice tools, and patient education resources. In the USA, Pfizer runs such a program ([www.get-quit.com](http://www.get-quit.com)) for providing regular e-mails and personalized web pages to support their product use. Wyeth Consumer Health Care website ([www.caltrate.com.au](http://www.caltrate.com.au)) helps in the disease osteoporosis and encourages people to see a doctor if they answer yes to any questions on a one minute risk test’. Use of e-detailing can make the companies work in a timely and effective manner. The use of it can make Australians and all other country people can access blogs and websites promoting prescription, medicines and other
products, and even selling them. Safety concerns have been raised about the purchase of prescription, non-prescription and complementary medicines over the internet. Pharmaceutical companies also are seeking to capitalize on medical social networking sites. For example Pfizer is collaborating with Sermo Inc a web company where thousands of doctors are discussing diagnostic and treatment issues in anonymous postings. Search engine marketing can be one of the methods for online client achievement. It has unbelievable return on investment and is faster. But it has limitations like cyber crime and problems like – you can not touch or smell the product due to security problems customer can not purchase what he has ordered etc. Pharmaceutical E-marketing has many problems such as –

- E-marketing requires customers to use newer technologies.
- Low speed internet connections
- Big websites connected to dial up networks
- Inability of shoppers to touch, smell, taste or try on tangible goods before making an online purchase.
- Cyber crime – customers are unable to get what they had ordered.
- Some online companies sell information about their customers.
- Low e-marketing education

E-marketing Uses: 1) one to one approach with the customer can be made using internet. 2) Appeal to special interests 3) Geo- targeting – method of determining the physical location such as country, state and city etc.4) Availability of cheap production inputs 5) Growing affluence.

3.1.2 E-commerce in European Pharmaceutical Industry [1] – The pharmaceutical sector of European Community comprises of wide range of products such as pharmaceutical products, medicinal and botanical chemicals and the manufacture of soaps, detergents and other cleaning and polishing products. In 2005 the cost of the global pharmaceutical sector was €454.87 billion ($565.90 billion) at factory prices. The North American market (USA and Canada) is the largest in the world with the 47% market share. But in the year 2005 the European market overcame the American market. Its share was 7.1% in Europe in comparison with 5.2% in
North America. The European pharmaceutical industry gives vital contribution to EU economically at the same time provides with high quality employment and investment in scientific capability and public health. It is a leading industry and a driving force for the whole world. It is research focused and one of the high tech sectors and a key asset to the European economy. These sectors are listed as under

### The European pharmaceutical market (2003)

<table>
<thead>
<tr>
<th>Market Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pharmaceutical at factory prices</td>
<td>Approx. €110 billion</td>
</tr>
<tr>
<td>Pharmaceutical at retail prices</td>
<td>Approx. €170 billion</td>
</tr>
</tbody>
</table>

### Statistics on the EU pharmaceutical sector (2004)

<table>
<thead>
<tr>
<th>Statistic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value of production</td>
<td>Approx. €160 billion</td>
</tr>
<tr>
<td>Value of exports</td>
<td>Approx. €95 billion</td>
</tr>
<tr>
<td>Trade balance</td>
<td>&gt; €30 billion (surplus)</td>
</tr>
<tr>
<td>Employment</td>
<td>580,000-600,000</td>
</tr>
</tbody>
</table>

Europe is a major exporter of medicines. In 2004, the European pharmaceutical sector’s production was €32.2 billion. In last 15 years it has increased from €7.1 billion in 1990 to €32.2 billion in 2004. Three leading trade members performed 87.6% of its imports in 2004 and acquired 55.8% of its exports.

But from the figures of recent years, there is slowdown in the sector. Out of the five big European pharmaceutical markets, four have recorded equal or lower growth than the previous year (UK, Italy, Spain and France). Only Germany is growing faster after the frozen price period which began in 2004.

**Graph 3.1 Evolution of pharmaceutical market in leading European Countries (2005/04) Variation (%)**
Even if the sector’s strength is best, Europe’s leadership position is lowered. In 1992 six out of every 10 best selling medicines came from Europe in comparison with four out of ten from the USA. But from 2002 80% came from USA and only 20% came from Europe. In order to acquire number one position On 1 June 2005, Günter Verheugen, Vice-president of the Commission declared a new industrial strategy for the sector based on three key elements competitiveness, innovation and patients. Within three years new programs will be launched for these areas which will make progress in growth and employment and will implement European public health strategy.

These sector’s statistics are as follows:

**Table 3.1: Research and development in the EU pharmaceutical sector**

| Number of people employed in pharmaceutical R&D | More than 100,000 |
| Contribution to the EU’s R&D expenditure | Approx. 10% |
| R&D expenditure | Approx. €20 billion |

In European Union there are total 1,815 laboratories in pharmaceutical sector which had sales in excess of €109 billion in 2004. The sector is having 530,000 employees and there production exceeds €144 billion. Germany is the major market for employment as well as imports and exports.

**Table 3.2: General data for the EU pharmaceutical sector (2004)**

<table>
<thead>
<tr>
<th>Country</th>
<th>N° Labs (*)</th>
<th>Production (€ millions) (**)</th>
<th>Employ</th>
<th>Int. sales (€ millions)</th>
<th>Imports (€millions)</th>
<th>Exports (€millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>310</td>
<td>20,893</td>
<td>114,20</td>
<td>21,551</td>
<td>21,991</td>
<td>27,333</td>
</tr>
<tr>
<td>Austria</td>
<td>105</td>
<td>1597</td>
<td>9523</td>
<td>2312</td>
<td>2996</td>
<td>2,875</td>
</tr>
<tr>
<td>Belgium</td>
<td>140</td>
<td>4,799</td>
<td>27,185</td>
<td>3,539</td>
<td>23,316</td>
<td>24,599</td>
</tr>
<tr>
<td>Denmark</td>
<td>41</td>
<td>4,593</td>
<td>16,759</td>
<td>1,410</td>
<td>1,734</td>
<td>4,525</td>
</tr>
<tr>
<td>Spain</td>
<td>239</td>
<td>90,656</td>
<td>39,000</td>
<td>10671</td>
<td>6,716</td>
<td>3,999</td>
</tr>
<tr>
<td>Finland</td>
<td>64</td>
<td>724</td>
<td>6,648</td>
<td>1,689</td>
<td>1,283</td>
<td>490</td>
</tr>
<tr>
<td>France</td>
<td>257</td>
<td>33,141</td>
<td>99,400</td>
<td>22,760</td>
<td>12,963</td>
<td>17,196</td>
</tr>
<tr>
<td>Greece</td>
<td>65</td>
<td>449</td>
<td>11,300</td>
<td>3,468</td>
<td>2,254</td>
<td>677</td>
</tr>
<tr>
<td>Holland</td>
<td>48</td>
<td>5,660</td>
<td>16,000</td>
<td>3,579</td>
<td>8,241</td>
<td>8,989</td>
</tr>
<tr>
<td>Ireland</td>
<td>56</td>
<td>15,866</td>
<td>22,500</td>
<td>1,306</td>
<td>1,988</td>
<td>15,156</td>
</tr>
<tr>
<td>Italy</td>
<td>213</td>
<td>17,742</td>
<td>73,266</td>
<td>15,195</td>
<td>10,448</td>
<td>9,060</td>
</tr>
<tr>
<td>Portugal</td>
<td>141</td>
<td>1,590</td>
<td>10,717</td>
<td>2,879</td>
<td>1,597</td>
<td>308</td>
</tr>
<tr>
<td>United</td>
<td>74</td>
<td>22,555</td>
<td>73,000</td>
<td>16,110</td>
<td>12,742</td>
<td>18,207</td>
</tr>
<tr>
<td>Sweden</td>
<td>62</td>
<td>5,565</td>
<td>20,100</td>
<td>2,608</td>
<td>1,999</td>
<td>5,791</td>
</tr>
<tr>
<td>Total</td>
<td>1,81</td>
<td>144,830</td>
<td>539,59</td>
<td>109,077</td>
<td>113,448</td>
<td>139,205</td>
</tr>
</tbody>
</table>
There is improvement in the productivity with the use of advanced computer programs and automation technology. With the help of this man and woman can use pharmacy more efficiently by improvement in the patient education, more effective disease management strategies, improved inventory control and less medication errors which have also improved the relationship between the pharmacists, physicians and patients. The technology has moved from logistics (distribution of drug products) to management of patient’s drug needs. This technology is divided into e-commerce B2C business to customer and business to business (B2B or e-marketing) buying and selling, automation/robotics; and healthcare Over the Internet.

### 3.1.3 B2C e-commerce in pharmacy

As given by the United States Pharmacopeia Drug Information Volume I for off-label uses, a website named Wikipeda which is used by user for the drug information and MDR traditionally edited website for pharmacy practice. Wikipidia provided literally accurate information which was not complete and contained errors of omission and hence was with limited scope than MDR.

These websites help in changing the attitude of the customer towards the use of the medicines and in turn help in consumer management for their own help. Healthcare professionals should take active part in Wikipedia and should invest time for such websites which are also supported by the fellow practitioners such as RxWiki (www.rxwiki.com) and PubDrug() and MediPedia (www.medipedia.com). Online programs are provided by Microsoft at the San Jose Children’s Musical Theatre and University of Washington’s Do-IT project for helping children with illness and disabilities which help them to remain connected with their counsellors and the world. Internet helps these children to reach out beyond their isolated environments.

### 3.1.4 e-commerce/B2B

Online networks help in connecting buyers with sellers, distributors with retailers and retailers with manufacturers and also speed up the distribution process. It was forecasted that U.S. B2B sales will reach $2.7 trillion by 2004, while 80% of
businesses will be buying online and there will be 30% sellers online. B2B changes the infrastructure by making change in the supply chains organization and the way of exchange of goods and services. For example one company names RxBazaar.com is open for business for all the 24 hours and offers one stop shopping for short dated troubled products. It relates buyers and sellers of health related items overstocks over a secured site. **Internet has generated a growing and complex healthcare network providing connectivity which enables communication between pharmacists and suppliers, other healthcare information resources, business data resources and patient /consumer.** Schering Report XXII forecasted that in 2004 the online pharmacy sales will reach $20 to $25 billion in 2004 up from $1.9 billion in 1999. According to NCPA report for internet retailers it has signed more than 1000 pharmacies. Schering Report XXII predicted that in 2004, online pharmacy sales will reach $20 to $25 billion from $1.9 billion in 1999. According to NCPA reports that 1000 pharmacies have signed as a internal retailers for this organization for example, cornerDrugstore.com

The pharmaceutical sector is able to use electronic business tools because of certain properties which support B2B relations (business to business) for buyers and sellers. Many products which are sold are highly standardized and have simple description. The specific challenge faced by pharmaceutical sector is managing product recall is supportive association along the whole value chain which increases the use of commercial and communication platforms in these sectors. Pharmaceutical sector is global as the companies have to either manufacture or sell in the various international markets.

The buying and selling of pharmaceutical companies is online. Nearly 40% companies use internet or other IT networks for purchasing goods or services. This figure is slightly lower than other subjective sectors. Not only the large companies but also the small companies prefer online purchase. There are 30% companies with 1-9 employees which are doing online purchases. Online purchasing is still limited. Only 7% of the pharmaceutical companies in the EU-7
purchase more than 25% of their supplies online which is equal to the ten sectors which were surveyed.

Table 3.3: Online purchases and use of specific IT solutions in e-procurement

<table>
<thead>
<tr>
<th>Weighting:</th>
<th>Online purchases</th>
<th>Purchase &gt; 5% of their supplies online</th>
<th>Purchase &gt; 25% of their supplies online</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pharmaceutical firms (EU-7)</td>
<td>38</td>
<td>19</td>
<td>7</td>
</tr>
<tr>
<td>1-9 employees</td>
<td>34</td>
<td>19</td>
<td>9</td>
</tr>
<tr>
<td>10-49 employees</td>
<td>44</td>
<td>19</td>
<td>3</td>
</tr>
<tr>
<td>50-249 employees</td>
<td>47</td>
<td>19</td>
<td>5</td>
</tr>
<tr>
<td>250+ employees</td>
<td>49</td>
<td>31</td>
<td>8</td>
</tr>
<tr>
<td>Germany</td>
<td>41</td>
<td>29</td>
<td>5</td>
</tr>
<tr>
<td>Spain</td>
<td>35</td>
<td>19</td>
<td>0</td>
</tr>
<tr>
<td>France</td>
<td>37</td>
<td>12</td>
<td>7</td>
</tr>
<tr>
<td>Italy</td>
<td>27</td>
<td>9</td>
<td>4</td>
</tr>
<tr>
<td>United kingdom</td>
<td>64</td>
<td>40</td>
<td>21</td>
</tr>
<tr>
<td>Czechoslovakia</td>
<td>62</td>
<td>27</td>
<td>12</td>
</tr>
<tr>
<td>Poland</td>
<td>34</td>
<td>17</td>
<td>10</td>
</tr>
<tr>
<td>Total (10 sectors, EU-7)</td>
<td>45</td>
<td>25</td>
<td>10</td>
</tr>
<tr>
<td>Base (100%)</td>
<td>All</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The following table shows revealing data about the specific tasks that the sector uses IT applications for. Finding suppliers, managing requests for quotes or prices (RFQs / RFPs) and making orders are the principal uses when purchasing via internet (e-procurement).

SME’s are having advantage of their size. They are more flexible because of this they remain ahead in the competition. Due to this it becomes easy for them to refocus the business such as producing natural cosmetic products or drugs of special kind. These activities are easy on internet and have the advantage of low cost and global coverage. Client relations are developed by SME’s using electronic business tools like corporate website. Fundamental information is used
for client relations. Client relations are usually focused on the problems and budgets of large companies. Client relationships can also be managed using client database. Hence it is concluded that SME’s can use IT and internet based solutions for communicating with the business partners which helps them in sharing capacity and improving their competitive positions against the compotators. Internet can be used as a base for supplier services and electronic business tools. Cost of implementation can be shared and purchasing power is increased.

**Table 3.4: IT Applications in Business**

<table>
<thead>
<tr>
<th>Weighting:</th>
<th>Finding suppliers</th>
<th>Managing RFQs/RFPs</th>
<th>Product orders</th>
<th>Manage online auctions</th>
<th>Invoicing suppliers</th>
<th>Expenditure analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>% of companies</td>
<td>% of companies</td>
<td>% of companies</td>
<td>% of companies</td>
<td>% of companies</td>
<td>% of companies</td>
</tr>
<tr>
<td>Pharmaceutical firms (EU-7)</td>
<td>10</td>
<td>9</td>
<td>10</td>
<td>2</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>1-9 employees</td>
<td>9</td>
<td>8</td>
<td>7</td>
<td>1</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>1049 employees</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>1</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>50-249 employees</td>
<td>12</td>
<td>11</td>
<td>15</td>
<td>3</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>250+ employees</td>
<td>19</td>
<td>17</td>
<td>27</td>
<td>10</td>
<td>23</td>
<td>26</td>
</tr>
<tr>
<td>Total (10 Sectors, EU-7)</td>
<td>8</td>
<td>7</td>
<td>9</td>
<td>3</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Base (100%)</td>
<td>All companies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Where “% of companies” = % of companies as legal entities independent of size.

RfQ = Request for Quote; RfP = Request for Price

Insufficient use of electronic business tools is the biggest problem in some small pharmaceutical companies. These tools may be installed but the company may be lacking the knowledge to use them. As the software suppliers only design the ERP or CRM systems for large companies if the small companies use the software of big companies they have the have a problem of using complex and improper IT systems in terms of size and deal with problems that are not relevant to their companies. The technological advances like development of ICT and e-business can be useful to large companies and may not fulfill the needs of small companies. Such advances are only carried out for large companies.
3.1.5 The pharmaceutical E-marketplaces[^4]

B2B portals of pharmaceutical sector contain the directories of suppliers and products. This list is used by pharmaceutical companies to know manufacturers and distributors for the products such as laboratory equipment and materials, packaging and software created for specialized sector. Also manufacturing subcontractors and research project companies that carry out clinical surveys also use these directories on the B2B portals and offer their services. In addition pharmaceutical companies advertise their products using B2B portals. Portals offer large coverage to small companies and distribution network for specialist suppliers. For pharmaceutical and health care sector there are 29 active markets in the e-Market services directory of electronic market. From the following graph it is clear that North America has more B2B markets (15) and Spain is having 4 B2B markets.

**Graph 3.2: Geographical Scope of electronic B2B markets in Pharmaceutical Sector**

![Graph 3.2: Geographical Scope of electronic B2B markets in Pharmaceutical Sector](image)

<table>
<thead>
<tr>
<th>Electronic Market</th>
<th>Geographical scope</th>
<th>URL</th>
<th>Available languages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auctionmart.com</td>
<td>USA</td>
<td>auctionmart.com</td>
<td>English</td>
</tr>
<tr>
<td>Biolab Direct</td>
<td>New Zealand</td>
<td>biolabdirect.co.nz</td>
<td>English</td>
</tr>
<tr>
<td>Bioresearch Online</td>
<td>Global, focused on North America</td>
<td>bioresearchonline.com</td>
<td>English</td>
</tr>
<tr>
<td>BioSupplyNet</td>
<td>North America</td>
<td>biosupplynet.com</td>
<td>English</td>
</tr>
<tr>
<td>Broadlane</td>
<td>USA</td>
<td>broadlane.com</td>
<td>English</td>
</tr>
<tr>
<td>Comfort Online</td>
<td>Global</td>
<td>comfortonline.it</td>
<td>English, Italian</td>
</tr>
<tr>
<td>Drug Discovery Online</td>
<td>Global, focused on North America</td>
<td>drugdiscoveryonline.com</td>
<td>English</td>
</tr>
<tr>
<td>E-Dental.com</td>
<td>Global, focused on</td>
<td>e-dental.com</td>
<td>English</td>
</tr>
<tr>
<td>Website</td>
<td>Region</td>
<td>Language</td>
<td></td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>-------------------------</td>
<td>-------------------</td>
<td></td>
</tr>
<tr>
<td>e-opti</td>
<td>Italy</td>
<td>e-opti.com</td>
<td></td>
</tr>
<tr>
<td>Global Healthcare Exchange</td>
<td>Global</td>
<td>ghx.com</td>
<td></td>
</tr>
<tr>
<td>Home Health provider.com</td>
<td>North America</td>
<td>Homehealthprovider.com</td>
<td></td>
</tr>
<tr>
<td>Labx</td>
<td>85% users from North America, the global user base includes Europe, Asia, central and South America and Australia</td>
<td>labx.com</td>
<td></td>
</tr>
<tr>
<td>Long Term Care Provider.com</td>
<td>Global, focused on North America</td>
<td>longtermcareprovider.com</td>
<td></td>
</tr>
<tr>
<td>MaterialSanitario.com</td>
<td>Spain and the Spanish speaking South American countries</td>
<td>materialsanitario.com</td>
<td></td>
</tr>
<tr>
<td>Med2Med</td>
<td>Global, focused on Germany</td>
<td>med2med.net</td>
<td></td>
</tr>
<tr>
<td>Medbuy</td>
<td>Canada</td>
<td>medbuy.com</td>
<td></td>
</tr>
<tr>
<td>MedequipB2B.com</td>
<td>Asian supplies, but global purchases</td>
<td>medequipb2b.com</td>
<td></td>
</tr>
<tr>
<td>Medical Design Online</td>
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<td>Medical Virtual Market</td>
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<td>Nurses.com</td>
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<td>Optical Auctions</td>
<td>Global, focused on North America</td>
<td>opticalauctions.com</td>
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<td>Pharmaceutical Online</td>
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<td>Quiminet</td>
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<td>Solumed.com</td>
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<td>UKprocure</td>
<td>United Kingdom</td>
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Source: Emarketservices.com
Most of the e-market places are used by companies which sell or distribute the products for hospitals and clinics. Health centers can be the clients of such type of markets. The products like medical and pharmacy related items such as surgical instruments, laboratory equipment, healthcare and pharmaceutical materials, and all types of related products and services may be sold using e-market.

**Summary**

Computer software programs and automation technology is resulting in improved productivity, better patient education, man and woman power, efficient use of man power and disease management strategies, tighter inventory control and fewer medication errors.

Internet has created a growing and complex healthcare network which connects suppliers with distributors, pharmacists to reach out to suppliers, healthcare provider’s information resources business data sources and the patient/consumer. E-business has altered the supply chains to benefit all concerned in supply chain. To acquire a good position on the internet a company needs to have a website running live on World Wide Web. Also the website should have a website account from any good web hosting company for publishing your site. The European pharmaceutical industry gives vital contribution to EU economically at the same time provides with high quality employment and investment in scientific capability and public health. The technology has moved from logistics (distribution of drug products) to management of patient’s drug needs. The buying and selling of pharmaceutical companies is online. Nearly 40% companies use internet or other IT networks for purchasing goods or services. Insufficient use of electronic business tools is the biggest problem in some small pharmaceutical companies. The technological advances like development of ICT and e-business can be useful to large companies but may not fulfill the needs of small companies.

### 3.2 E-commerce in Telecom Developments: [5]

Telecom sector liberalization has improved in last five years. Telecom services were first controlled by government till 1994 but they were also opened for the private sector. According to the National Telecom Policy announced in 1994 policy making functions of the government were separated from those of service
providers which in turn provided telecom services to the private sector. Independent Telecom Regulator was established for the same. As a result many private companies were given licenses for providing mobile telephone services and in recent years for fixed line telephone services licenses were given. Private operators were allowed to set up international gateways.

The policy was further liberalized in 1999. The Department of Telecommunications which was providing telecom services as a sole monopoly was corporatized in the year 2000 and was made to compete with the private sector on a level playing field. The National Long Distance Services on the domestic routes, that were the sole monopoly of the government, were also opened to the private sector. The public and private companies like Power grid, railways and gas authorities which are the backbone networks are permitted to set up national long distance carriers for data transmission. A large data communication backbone with extremely high bandwidth is under construction.

In January 2001, the government covered unrestricted competition in basic phone services. This helped in finding the telecom companies which can offer services like basic, cellular, Internet, national long distance and broadband to the customers with flexible rate and single billing. In local loop (WLL) services, the basic telecom players are also allowed to offer wireless mobile.

The telecom policy also combines different media and allows direct interconnectivity among service providers. For voice, data and information services two ways communication is allowed. A cable service provider can get a license as a fixed service provider. The convergence Bill is introduced in the Parliament which is making the union. This helps in increasing union between telecom, IT and broadcasting services. The Communications Convergence Bill, sets up Communications Commission of India (CCI) which promotes the plurality of different media, forms and structure. It also provides access to different competing view points and information resources. It also regulates new activities in the era of convergence.

These telecom policies have had a positive effect in the incoming years. The density of telecom industry grew to 5 percent in September 2002 and will
grow to 7 percent by the year 2005 and to 15% by 2010. In rural area it is expected to grow from the current level to 0.8 percent to 4 percent by 2010. The use of mobile phone is increasing and the number of mobile phones has reached 8.5 million. During last two years the telecom sector had an investment in the range of $ 4.5 to 5 billion by the government and its agencies. By 2005, there will be the requirement of US$ 37 billion investment which will rise up to US$ 69 billion in the year 2010 (Department of Telecommunication, India, 2001; and Indian Express [Bombay], 7 June 2001). Many private companies have set up fiber optic networks at the national level to connect the major cities and also have provided trunk routes for providing all kinds of services. Numbers of companies have also created international gateways for providing bandwidth to ISPs. Private sector companies like Reliance Telecom, Powergrid Corporation, Railways, Bharti Telecom, BPL and GAIL are setting cross-country optical fiber networks for broadband services. Non telecom players like Enron, Zee TV, and Spectranet are also investing a large amount in the broadband sector. A huge investment of about 318 billion is made in the year 2001. Also there is vast investment in international connectivity. Videsh Sanchar Nigam Ltd. (VSNL) which was owned by government invested Rs 109 billion for a bandwidth of 59 gigabits per second (Gbps).

In 2002, VSNL and Hindustan Teleprinters are privatized. To set up a bandwidth of 16.08 tera-bits per second (Tbps) Bharti Telecom, Dishnet DSL has invested US$ 1.4 billion which will connect India with the world through Singapore, Jakarta, Guam, Portland, Los Angels, Hawaii and Japan. Reliance Telecom and Tata Access have plans to provide international connectivity in the future. Broadband access is provided is provided by many companies over cable. TV can be used as a internet device with the use of set top box and cable modems. All the major cities are having fiber optic networks to provide cable TV services, and broadband Internet. The existing 98 million TV sets can be used for accessing Internet.

Internet connectivity has grown due to the number of ISP’s which have come into existence due to the above policies. Over 175 ISP’s are working in the country
which are responsible for half a million three years ago to 3.5 million by September 2002. Each internet connection is used by number of users. Total numbers of internet users are 17 million. By 2005, internet connections will grow up to 25 million and number of users would grow above 100 million.

The NASSCOM survey estimates that there are total 400 cities which are having 2000 internet connections. This figure would double in the next one year. This rate shows that internet is used from metros to small cities and towns in the country. In India the bandwidth of internet is 10 Gbps. By 2004 it was expected to reach 100 Gbps. In the year 2005 it was expected that the data transfer rate would account from 5 percent to 50 percent and further it would increase to 65 percent. Wireless, broadband and convergence of media are the types of networks are used in order to fulfill the internet need of the people.

**Summary**

With the advances in the telecomm technologies broadband access is provided by many companies over cable. TV can be used as a internet device with the use of set top box and cable modems. All the major cities are having fiber optic networks to provide cable TV services, and broadband Internet. TV sets can be used for accessing Internet. Internet connectivity has grown due to the number of ISP’s which have come into existence due to the above policies. Wireless, broadband and convergence of media are the types of networks are used in order to fulfill the internet need of the people. Increase in the internet speed will result in increased use of e-commerce in all the fields throughout the world.

3.3 **E-commerce in Insurance Industry:** [6]

Insurance industry is also using e-commerce at a high rate. Also there are web brokers like insweb.com, quotesmith.com, quicken.com etc. which offer quotation and simple products in life and non life segments.

In 1996 International Intelligence unit, New York carried out a survey and released the research paper titled ‘Global insurance in the 21st century’. A survey was done of 3500 senior executives in 9 countries over North America, Europe, Australia, New Zealand and Japan. The paper predicts that by the beginning of the millennium over 40% consumers will use e-channel for...
purchasing instruments which are not very complex. Keeping in mind online customer’s choice, the insurers have made big agreements on following services.

- Acceptance of quotation over web (70% concurrence)
- Payment of premium online using secured lines (65%)
- Get product information (63%)
- Comparison of products and offerings across providers (61%)
- Enquiry about policy information and updating the information (58%)
- Getting financial service experts advice regarding human insurance (55%)
- Claim status of query (54%)

3.3.1 Indian Context

In India insurance companies lack infrastructure and legal framework for computerization which strengthen the business by adding value added services. E-distribution will not work due to the lack of infrastructure in India. GIC and LIC will also have the same problem. Insurance contracts have their area of expertise and they follow the principles of life insurance and are having good faith which gives responsibility of material fact on the proposer. E-distribution of insurance is complex just like online retailing of goods because of the non flexibility of procedures and application of the industry. Insurance industry may have following benefits with the use of Information Technology -

- Brochureware- Company information its services and offerings and views which are presented over the web.
- Enquiry over web- It is more effective and fast than brochure ware. By this answers to the queries of the customers can be given.
- Transaction using dedicated lines- Using these channels field staff and insurer’s agents communicate with the company and customers.
- Product Sale on the web- It includes placing an order and buy insurance over the web. Shopping cart and online payment are the additional facilities provided on the web. For product sale e-commerce helps in cost reduction, fast connection to markets, best service and customer convenience.
- Customized product sale over the web - The product can be configured depending upon the user’s choice and convenience. Customer profile and demographics will be the added advantages.
- One online request could generate series of actions which would be differing in their comfort integration of the web with their host system. In addition sale of simple product does not have any problem but complex product sale may create problems legally, technically and in regulatory framework.

3.3.2 Security in Insurance

Security is a major problem when e-commerce is applied to the insurance field. The main areas where the problem is prevalent are -

1) Electronic documents as well are paper based orders can be modified easily without leaving any trace. It is necessary to have manual as well as technical control over the documents to make e-commerce successful.

2) Buying online is not preferred by people because of its security and privacy problems. 43% Indians buy online. Credit card is not preferred instead of that VPP and fax is preferred because of its number.

3) Electronic transfer requires giving transaction details, utilization and storage information. It is needed to keep Insurance information is kept private which is not possible with electronic transfer.

4) Payment on Web: Under the existing Insurance act, Sec 64 VB, it is a rule to give cash before cover. It is not possible with e-distribution as transactions can not be settled and payment in installments can not be done on internet.

5) To make online payment technology is present but there is no infrastructure for financial intermediaries. For the success of e-cash, cyber cash, digital cash proper technology and infrastructure should be present. New methods such as automatic clearance house should be adapted for e-commerce to be successful in insurance industry.

In the developing field like electronic commerce the regulations are not properly applied due to that whether self regulation is sufficient or needs further extension with the state authority will be decided in future. Use of internet has crossed the
national boundaries and should clear issues such as tariff regime, jurisdiction, Intellectual property rights etc.

For this physical, legal and financial structure should be changed. Risks and new challenges should not be bothered. Regulation of e-distribution of insurance should be carried out carefully. Organization for Economic co-operation and Development (OECD) and Consumer International are trying to offer the required protection. The future of e-commerce is bright.

3.3.3 E-business trends in insurance

1. Online distribution of insurance policies will grow

It is difficult to sell the insurance product online because they are less standardised quite complex and purchased infrequently. Also there is a need for explanation to sell the product. In spite of the above problems, insurance industry is expected to get one fourth of the market shares.

Graph 3.3: Determinants of suitability for online distribution: transaction vs. Complexity

2. The internet –is not just a distribution channel but a lot more than it

Internet use in the insurance industry is not only distribution but its effect is also seen on the all other production areas.

• Internet can be used for marketing
• Online support benefits Policy management or resolution of claims.
• Brokers can contact many clients and then can forward the information to the insurer.

3.3.4 E-business models

Several new business models and insurance distribution models as well as new business models for the complete value chain have emerged with the changes in the technology. Nearly all insurers have a website for company information its products and contact details.

**Different business models for Internet distribution are being developed**

<table>
<thead>
<tr>
<th>Table 3.6: Business models for Internet distribution</th>
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<tr>
<td><strong>Model category</strong></td>
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<tr>
<td>Insurance company websites</td>
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<tr>
<td>Financial portals</td>
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<tr>
<td>Point-of-sale portals</td>
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<td>Aggregators</td>
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<td>Online risk markets</td>
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<td>Reverse auctions</td>
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**E-business leads to computerization and leads to the break-up of the value chain**

Due to the change in the technology stages of insurance have reduced. Insurers can outsource individual functions to the expert providers.

In the B2B segment, in particular, business models that simplify the administration of insurance policies have emerged. Winterthur-Columna, for example, has developed a system that allows medium-sized companies to administer their own pension scheme contracts, with the insurer automatically adjusting the premiums and benefits. In addition to allowing flexible and easier administration of policies the Internet also allows insurance companies to
consider outsourcing the complete administration process. The US Company Mynd, for example, provides various back office functions for insurers. **Figure 3.1 Specialised providers exist in virtually all steps of the value chain**

Insurers also use internet for reporting of claims. Clients can keep a watch on the progress of claims settlement online. Not only the insurance websites but also several specialised companies offer such possibilities. A german company Decra, in the field of examining the technical security of cars, offers insurers to manage their motor claims online. On this website, insurers, lawyers, clients and garages also can access the information of their claims settlement and can manage their claims. Another example is Cybersettle, A company from US which deals with liability claims, tries to settle disputes between lawyers and insurance companies regarding the same. Lawyers and loss adjusters submit their proposals keeping the confidentiality of it on internet. Company then checks for the proposals of both the sides and tries to do the settlement. It is a binding on the participants to accept the negotiation in the settlement.

Another interesting development has started by some companies like east in Europe or Genera Life in the US. They sale traditional insurance using internet and carry out outsourcing using e-business technology. Remaining work is given to expertise companies. The goal is efficiency and providing additional service to
the customers. Even if such companies have not acquired major market share they have established connection with many insurers.

3.3.5 How does e-business affect competition?

1) *E-business lowers market entry barriers*

As big investment is not needed, internet can be accessed fast and required product and price information can be obtained easily.

2) *The Internet provides saving potential in all fields of the business process*

Internet providers save the cost of – 1) expenses on the insurers 2) distribution of insurance 3) paying claims 4) Policy advisers and claims settlement 5) save commission of brokers and agents by selling policies online. Risk selection is improved due to better data analysis and also claim settlement cost is reduced due to the detection of insurance fraud and tighter control by partner companies.

3) *Considerable margin pressure on traditional insurers*

Online insurers can provide insurance for the lower price this makes traditional insurers also to reduce their premiums.

The insurance industry is more developed in Western than in Central and Eastern European countries. The proportion of income spent on nonlife insurance is 55% where as life business expenditure is 15%, less than 1% of income on an average in these countries. Insurance industry is at the primitive stage in the CIS states and most of the southeastern European countries.

Insurance industry is recovering from the crisis of the transformation crisis at the beginning of the 1990s and enjoying the dynamic growth. Insurance sector growth is increasing in the ten countries in the EU and these are- Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, Slovenia. Recreation of the Reform of the administrative framework is being taken up in these countries amongst them Hungary and Poland are the most advanced countries. Development of efficient insurance sector in the CIS and few southeastern European countries is very difficult. Considerable improvement should be made in controlling conditions and the investment environment. Improvement should be done in the areas like compulsory motor third party...
liability insurance, reduction in the capital requirements, effective control on insurance companies and minimization of market entry restrictions for foreign investors.

With this better quality global insurance plays an important role in establishing an effective insurance sector. Even if the market conditions are liberalized opening an insurance market is a controversial issue. The countries which have opted for EU membership is mostly liberalized still restrictions still exist for the foreign insurers in CIS. With the development in the opportunities such as liberalized market entry and the privatization of previous state control foreign insurers have rapidly increased their activities in Central and Eastern Europe. More than half of the insurance market has been controlled by foreign insurers in some Eastern and Central European countries (e.g. Poland and Hungary) as well as in the Baltic States. Where as local insurers dominate the market in the CIS states and in most southeastern European countries. This is because of the market entry restrictions and the higher risk of investing in these markets.

The structural change in the insurance industry totally depends upon the factors such as globalization, IT progress to increase risk transfer efficiency. E-business reduces costs and market entry barriers and breaks up traditional insurance value chain which results in greater transparency, lower prices and improved services in sales and claims management.

Alert and positioned providers and also other sectors will be the providers of new business prospect. E-business activities have already started in central and eastern Europe. Indian insurance companies are in a position to compare themselves with the western insurance companies because of the better management quality and sophistication of IT systems in last 10 years. In Western Europe traditional insurers will face competition with the insurers using new technologies to offer lower priced online insurance. Considerable improvement should be made in controlling conditions and the investment environment. Improvement should be done in the areas like compulsory motor third party liability insurance, reduction in the capital requirements, effective control on
insurance companies and minimization of market entry restrictions for foreign investors.

**Summary:**
As less investment is needed for the use of internet, e-business reduces market entry barriers. Due to change in technology insurance stages are reduced. Insurers can outsource individual functions to the expert providers. New business and insurance models have emerged with the use of e-commerce. Nearly all the insurers are having website. The development in the insurance industry depends upon the factors such as globalization and progress in IT. E-business reduces cost and market entry barriers and breaks up traditional insurance value chain resulting in greater transparency, lower prices and improved services in sales and claims management. Internet providers save the cost of – 1) expenses on the insurers 2) distribution of insurance 3) paying claims 4) Policy advisers and claims settlement 5) save commission of brokers and agents by selling policies online. Online insurers can provide insurance for the lower price this makes traditional insurers also to reduce their premiums. Due to less investment e-business lowers market entry barriers. Improvement should be done in the areas like compulsory motor third party liability insurance, reduction in the capital requirements, effective control on insurance companies and minimization of market entry restrictions for foreign investors.

### 3.4 Hotel and hospitality industry

On line travel booking system is a quiet successful industry online and is a hottest Internet-based professional field, even if many dot-com industries have faded up during last few years. *Travelocity* is a company which is continuously developing new online travel booking services and thus has acquired number one position in the industry. Firm’s business and operational strategies are well matched with the business model and the future is also bright with the use of internet. To remain number one company should expand its e-business globally. It should expand its business in Asia and Eastern Europe. The key advantages of the travel industry are -

a) Online reservation is faster and easy.
b) Use of internet increases the customer-business relationship.

c) Savings in time due to direct viewing of the price list instead of doing a phone call.

d) Just by clicking a button customer can have a look at wide range of products.

e) E-commerce makes it is possible to cover the market widely. International hotels can expand the business due to the global coverage of the internet across the world.

f) E-commerce technology is quite effective for promotion of product and services as it saves cost and time to do advertising and creates a brand image worldwide. For example Hilton Hotel[^8] implemented electronic ticketing schemes for booking rooms and meeting facilities. Another example is of Adlon Hotel which has utilized a website that can take care of specific international languages such as German, French and Italian. In addition it supports Spanish Portuguese and Scandinavian languages and English. In addition this type of multilingual website has reduced the amount of advertising using the mainstream media.

3.4.1 E-BOOKING IN THE HOSPITALITY INDUSTRY[^9]

Online booking of tickets of hotel/motel, airlines, travel packages, etc. is increasing these days at a high speed. From 1999 to 2002 online hotel room booking has increased six times. It has been increased from $1.1 billions in 1999 to $6.3 billions in 2002. i.e. it has increased from about 2% in 1999 to 9% in 2002. In the year it has reached $15.8 billions in 2005 and account for 20% of total annual bookings. Online bookings are done mostly by business travelers and vacationers who are travelling more than other publics. These online bookers claim that they save money by doing online booking than traditional phone booking and old style travel agents. For e.g. booking of a high end hotel room in New York City under $200/night. The hotel industry is fully aware of these trends and wants to expand its efforts in this field. Even if pressure of selling the rooms online will be there, to make a success industry has developed its new strategy in the emerging market channel.

All the hotels are using online ticket booking system by using a website which bargains hunters other than though an Internet travel agency. In the year 2002,
51% of the total annual online bookings of $6.3 billions were done through the use of hotel’s own website. 49% remaining bookings were done through online travel agencies. This has increased the control of hotels over the room booking. In addition there is no need of taking help of travel agencies which make a profit of 15% to 30%. Therefore hotels can offer more competitive rates on their own websites to compete with online travel agencies and can give more priority to their own websites rather than travel agencies websites.

In the year 2002, e-booking of airline tickets done was 26% of the total annual sales but only 13% of the hotel room booking was done online out of the total annual hotel room bookings. Currently two out of three rooms are booked using traditional telephone reservation systems.

3.4.2 Summary:

All the hotels are using online ticket booking system by using a website which bargains hunters other than though an Internet travel agency. Online booking of tickets of hotel/motel, airlines, travel packages, etc. is increasing these days at a high speed. From 1999 to 2002 online hotel room booking has increased six times. Multilingual website of the hotels has reduced the amount of advertising using the mainstream media. E-commerce technology is quiet effective for promotion of product and services as it saves cost and time to do advertising and creates a brand image worldwide. On line travel booking system is a quiet successful industry online and is a hottest Internet-based professional field. Advantages of the travel industry are – 1) faster and easy reservation 2) increase in the customer business relationships due to internet 3) global coverage.

3.5 Travel & Tourism

3.5.1 E-commerce in travel and Tourism

Internet provides tourism industry businesses of all sizes and opportunities for tourism and enhances the relationship with the customers. Regional economy is supported by small and medium sized tourism firms which make up the majority of the tourism industry. We now have a global economy, in which information and communication technology and e-commerce is used, the impact of which is seen on the different industries, regions and firms. Economic agents operate in
global networks of interaction. E-commerce is used for connection, electronic data interchange and transaction capacity with the use of internet and network technologies and it is related to the size and nature of the firm. It also depends upon the firm’s awareness of affordability and opportunity for their business. If the number of parties involved are more, there will be greater chance of forming relationships, greater no of transactions and more benefits. Addition of ICT and internet, which are the new communication technologies, has improved regional development and also global forces. Australian tourism SMEs have less awareness of the network technologies usage and effectiveness and hence they lag behind in adaption of e-commerce. Hence they can not cope with the new ICT driven sector due to the shortage of requirements and preparedness.

Introduction of the network technologies in the business has put a pressure on the tourism industry to make use of internet for marketing and transaction purpose. Once the person gets the through knowledge of the internet, his expectations about internet are increased in terms of viewing and purchasing tourism and travel products online. Consumers having knowledge of ICT expect more from internet and search for information, books local and regional travel, tours and accommodation via the Internet. Consumers also can purchase tourism and travel products online. For completion of this demands traditional marketing channels such as brochures, billboards and stands at trade shows and their conventional tourism product distribution channels such as the use of travel agents, destination marketing organizations and travel wholesalers should be expanded to use internet for business to consumer.

To satisfy that demand, tourism firms of all sizes may need to expand their traditional marketing channels (for example brochures, billboards and stands at trade shows) and their conventional tourism product distribution channels (such as the use of travel agents, destination marketing organizations and travel wholesalers) to include the Internet for business-to-consumer.

The internet gives the tourism industry B2C opportunities and helps to develop and enhance the relationships with their customers. There is a lot of scope for commercial travel and tourism on the internet which gives rise to new market. For
example the big websites such as Expedia and Travelocity are mainly the booking systems for air, hotel, car and vacation packages. This websites offer web based sales and provide customer services and fulfill all the requirements of a traveler. These web sites are run by large operators which exclude small tourism product providers. Also they restrict access to small tourism firms and customer to customer access. Tourism industry all over the world is made up of small and medium sized tourism firms (tourism SMEs). Small and medium size tourism enterprises which belong to local industrialists run most of the accommodation establishments worldwide. Regional economy is mostly supported by tourism SMEs and micro tourism enterprises in many regions. As a result there is a increase in the interest in regional economies and online technologies for development, marketing and distribution of regional tourism products. Regional policy makers think that ICT and online technology implementation should be motivated in order to improve the effectiveness of the small tourism firm. There is a tremendous change in the way people book their vacations and do bookings for air, bus and cars for travelling because of the internet or ‘e-age’. Considering this the Scottish Tourist Board has increased budget by 25% in order to speed up Scottish tourism in the year 2000/01. Connectivity is the major hurdle in using ICT and e-commerce for small tourism enterprises. The small firms are not giving priority to uptake the technology. Even if many of the customers of the micro and small tourism enterprises are tourists, they still consider themselves outside the tourist’s value chain. Small tourism firms often lack the time, skills, financial resources and manpower which is needed for the implementation of ICT and e-commerce. Therefore they lag behind in the competition with the large firms. Small enterprises are individual and need to concentrate on the operational running of their business because of that they fail to concentrate on marketing planning and online business transaction and approach market from direct contact with their guests. Owners of tourism SME’s depend upon the ICT expertise and hence they are afraid of losing control and therefore resist for the new technological change. In addition, SME’s are located in the area where ICT
infrastructure, mainly broadband can be poor and more expensive and due to limited demand. There is a fear of tourism SMEs getting isolated and out of touch with changing marketing and e-commerce dynamics due to the lack of the expertise and the resources for e-business. Even if use of ICT for small regional tourism firms finds difficult, still there is a little hope. Apart from their sizes or locations there are many competent entrepreneurs who will be making use of opportunities of the internet. An English study surveyed that there are independent micro firms were among the most creative users of ICT. In addition, the level of ICT usage was found higher than expected even though the problems in adoption of ICT. Even if this is encouraging a recent survey of tourism SMEs in the European hotel sector reveals that small tourism firms are not using information technology for e-commerce purposes (Collins, Buhalis, & Peters, 2003). It is clear that e-commerce uses need a lot of support and encouragement for the e-commerce growth (CRC Tourism, 1999). Australian research points out that regional tourism firms need support and training for e-commerce utilization. Tourism SMEs will be facing different levels of digital literacy and will have to understand strength of interactive communication tools. For understanding e-business three important properties needed are awareness, confidence and competence. E-business adoption in tourism SME’s is possible only when SMEs consider e-business as a part of their daily business routines. Many small tourism firms e-commerce is new to operate and ICT is also unknown to them. Training should be given for the barriers and challenges for online adoption for the small tourism business owner – operators. Initial efforts for small tourism firms lies in the exposing of ICT language, lowering connectivity cost increasing online visibility and gaining trust in and recognizing the value of new technology tools. Capacity improvement will create awareness among individual operators and will reduce isolation and maintain core market reach in rapidly changing market. By adopting e-markets and training will give support towards regional partnership building.
Capacity of SME individually can be built to help create e-business awareness among individual operators and will reduce isolation. It will also change core market economy rapidly. Destination and Regional partnership building can be generated by training and by increase in the access of the market (Braun, 2004).

New emerging technologies and their regional development models will increase competition and regional improvements by linking stake holders in networks (OECD, 2001). Destinations which join together ICT based networking and cooperative marketing strategies which create tourism SME networks will also reduce SME isolation and bring tourism. Cyber customers and SMEs make cyber customers to buy products from smaller suppliers. By increasing skills and by making partnership between small tourism firms and regional e-business experts issues like regional product development and global customer can be resolved.

Many regional tourism SMEs have already started using network technologies and strategies partners to take advantage of the technology and avoid loss due to competition on the network. Survey conducted in England states that the respondents from both the macro (destination) level and individual SME level indicated that there are lot of benefits in web technologies for joint marketing and saving new business (Main, 1999).

One British study explained that local tourism operators find the shared destination website attractive (Evans et al., 2001). There are examples of creation of destination website in tourism on the global network. As networking is at its peak, the new opportunities exist to cultivate new culture of connectivity between tourism but it is not possible in every region. Systematically implanted culture of competition and independence will not allow the building of the network (Buhalis & Cooper, 1998). It is seen that tourism SMEs show unwillingness for joining a network. There fore an attempt should be made to promote network formation where SMEs are not interested in using internet and in the areas which are geographically dispersed. Firm to firm relationships can be developed by attending seminars, association meetings and participating in online chats.

Once the tourism SMEs are adopting online local and regional relationships the new incremental and more formal levels communication can be adopted like web
portals. Web portals and introduction of new network for communication can be generated. Portal platform will help to improve e-business. Cost offers also should be checked. Proper training and strategic planning will improve the tourism business on the network. Information should be exchanged by different SMEs to save time and money and improve market visibility and regional strategic power. It shows that structure of network and the connections between different SME’s are not in good condition.

Importance of Electronic commerce is well known to all the businesses, for successful business operations other businesses also should adopt the same technology and should use the trends in it and maintain their business success. Search engines on the internet are of great help in the hotel and the hospitality sectors. For example search engine RezTrip provides a booking solution for hotel websites. Its market oriented design gives better conversation ratios (5%) than other booking engines (2%). RezTrip shows that it continues to pitch the hotel rooms and ancillary products after the visitor has left the room. It also counts the number of pages viewed or the amount of time spend on the website. Virtual Social Networking is the one in which individuals and organizations are linked by one or more specific types of interdependency like values, vision, friendship, business ideals religion etc. Virtual social websites help in this type of networking.

3.5.2 Summary:

Internet provides tourism industry businesses of all sizes and opportunities for tourism and enhances the relationship with the customers. Addition of ICT and internet, which are the new communication technologies, has improved regional development and also global forces. The internet gives the tourism industry B2C opportunities and helps to develop and enhance the relationships with their customers. ICT and online technology implementation should be motivated in order to improve the effectiveness of the small tourism firm. It is clear that e-commerce uses need a lot of support and encouragement for the e-commerce growth (CRC Tourism, 1999). Australian research points out that regional tourism firms need support and training for e-commerce utilization. An attempt should be
made to promote network formation where SMEs are not interested in using internet and in the areas which are geographically dispersed. Proper training and strategic planning will improve the tourism business on the network.

3.6 Marketing

3.6.1 E-commerce in marketing

Electronic commerce can be used for marketing of any industry on the internet. For example, hotel industry uses e-commerce technology to fulfil its primary and support marketing management operations by using the new technologies in the value chain. Electronic commerce helps in reduction of cost, quality improvement and faster delivery which leads to customer satisfaction, efficient buying and selling, production, and for making decisions at all levels of management. For example a website classmates.com worked on bringing together former school mates and friends. But later by 2005 social networking was used for marketing by different business organizations. Social networks operate under an autonomous business model where members are both suppliers and consumers of information and knowledge. Advertising is the only means of income but when membership and content levels are exclusive and of high order subscription based income is also possible. Many groups and forums are working as functional and subject related bodies of knowledge which help millions of subscribers. For example, Wikipedia, yahoo groups etc. Social networking sites also help patients to solve their problems. For the people with the diseases like AIDS sites like PatientLikeMe make possible the communication between the similar patients suffering from the same diseases. Shopping and classified sites like eBay, Amazon, Gateway Wal-Mart and Craigslist are the most visited sites benefited from the visits of the customers. Marketers use these sites for social networking and sale directly creating brand awareness through direct purchasing. According to the 2007 survey of online publishers Association 43% people get videos from the email messages obtained from their known people.

According to the Business Today Synovate survey 2008, more than 94% people are ware of virtual social networking and 79% are actually aware of it. “Jupiter Research Online Population Forecast 2006 to 2011: emerging Economies
Catalyze Further Growth” report forecasts that the world’s online population would grow to 1.5 billion in 2006.[5]

E-commerce is found quite useful in sharing of information online and is also an enabler of supply Chain Management Activities. Nearly all the organizations are trying to use e-business technology to streamline ACM activities like joint forecasting, purchasing and collaborative planning with the use of web. Auto industries are using internet for sending e-mails and for discussion forums for knowing the details of the automaker’s requirements not completely fixed in formal documentation. Retailers use attractive websites for communicating with customers and increase sales by listing the offered products easily with the use of the website. Suppliers use e-commerce technology for planning and prefer sales in bulk by making purchasing agreement. Suppliers use EDI, Fax or telephone contact the manufacturer.[11]

3.6.2 E-commerce benefits along supply chain–Product/Service Development [12]

Customer input is obtained fast resulting in faster product development. Sourcing cost is reduced along with the increased price transparency and competition. Transaction cost is reduced by double handling of information. Customer relationships and cost effectiveness are improved. Sales and distribution cost is reduced due to automation. For example sales and printed material cost. Customer service is also improved. Helps in e-tailing where an online sale of retailing is done. Use of internet by Small businesses has increased from 10 percent in 1996 to about 75%, this use will increase further up to 85% in future. Currently, only 28% companies sale goods and services online. E-tailing is a B2C activity which uses internet, create a new website to start or enhance an online business or provide hardware, software or services which allows other businesses to integrate internet into their business model. Some confidential information of the organization (bank or financial institution) like some policy strategic decisions, change in interest rates, leading norms can be send on the enterprise portal to convey it to the geographically scattered stake holders. Traditional legacy system will be time consuming, delay and inconvenience affecting the overall efficiency of the system. Enterprise portal is a single point of communication between firms
and all stakeholders. Information is organized by it using visual presentations. Enterprise portal fulfills the requirements of the customers to meet unique demands placed on an organization. It is site run by the organization which creates a pool of information between stakeholders and organization through the click of the mouse. Enterprise portal helps in following areas - 1) improved employee productivity 2) less cost 3) sound decision making 4) faster decision making 5) increase in job satisfaction 6) improved customer service and enhanced customer relationship and loyalty 7) increased sales 8) improved collaboration with business partners 9) reduction in customer service costs. \[12\]

3.6.3 Summary: Electronic commerce can be used for marketing of any industry on the internet. Electronic commerce helps in reduction of cost, quality improvement and faster delivery which leads to customer satisfaction, efficient buying and selling, production, and for making decisions at all levels of management. E-commerce is found quite useful in sharing of information online and is also an enabler of supply chain management activities. Nearly all the organizations are trying to use e-business technology to streamline ACM activities like joint forecasting, purchasing and collaborative planning with the use of web. Customer input is obtained fast resulting in faster product development. Sourcing cost is reduced along with the increased price transparency and competition. Transaction cost is reduced by double handling of information. Customer relationships and cost effectiveness are improved. Sales and distribution cost is reduced due to automation.

3.7 E-sourcing \[13\]

3.7.1 Definition of E-sourcing

It is act of buying and ordering material on the web. It provides information about what to buy from whom to buy and at what price. E-sourcing means purchasing from global suppliers. Because of fast answering rate the sourcing cost is lowered up to 10%. For example TELCO making a deal of 1500 Crore with free markets the largest sourcing deal in India. TELCO’s pilot project generated savings Rs. 22 Crores last year. Pune based seven firms have set up India’s first private sourcing network. Reverse auctions costing 50 Crores saved Rs. 7 Crores.
3.7.2 **Effect on Facility management practices**\(^{[14]}\)

*E-commerce is emerged as a tool to handle the facilities.* The most common use of it today is to purchase supplies and materials on the web from a specific vendor. 2 out of 10 respondents purchase a lot of material on the web. E-commerce can also be used for using facilities manuals, static project report publishing on the internet purchasing supplies and materials from internet service which connects buyers and sellers and conducting interactive courses on the internet. According to the respondents view e-commerce growth will be considerable in next two years in the area of facility management practices. Also e-commerce use will increase in every application in next two years. 25% respondents expected that e-commerce growth will be high in the area of business-to-business e-commerce which will bring a change in the facility management department. Only 2% respondents were having negative answer for the growth of e-commerce.

E-commerce can reduce the cost to the large extent of purchasing supplies and materials. Survey report clears that almost 1 out of 5 respondents purchase material on the web which indicates that e-commerce is in the early stages of adoption.

Graph 3.4: **Use of Business to business e-commerce in managing facilities.**
Table 3.7: Use of e-commerce in the following areas

<table>
<thead>
<tr>
<th>Activity</th>
<th>22%</th>
<th>23%</th>
<th>37%</th>
<th>18%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purchasing supplies and materials on the web from a specified vendor(N=560)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accessing facilities materials (maintenance of training) using the internet(N=561)</td>
<td>23%</td>
<td>27%</td>
<td>41%</td>
<td>9%</td>
</tr>
<tr>
<td>Publishing static project information on the internet(N=530)</td>
<td>53%</td>
<td>18%</td>
<td>22%</td>
<td>7%</td>
</tr>
<tr>
<td>Purchasing supplies and materials through an internet service that connects buyers and sellers (N=543)</td>
<td>54%</td>
<td>24%</td>
<td>17%</td>
<td>5%</td>
</tr>
<tr>
<td>Taking interactive training courses via internet(N=544)</td>
<td>38%</td>
<td>28%</td>
<td>29%</td>
<td>5%</td>
</tr>
<tr>
<td>Purchasing furniture on the internet (N = 536)</td>
<td>68%</td>
<td>17%</td>
<td>13%</td>
<td>3%</td>
</tr>
<tr>
<td>Managing projects using commercial, third party websites (N=540)</td>
<td>73%</td>
<td>12%</td>
<td>12%</td>
<td>2%</td>
</tr>
<tr>
<td>Purchasing facility services internet(N=499)</td>
<td>75%</td>
<td>16%</td>
<td>8%</td>
<td></td>
</tr>
<tr>
<td>Purchasing energy via the internet</td>
<td></td>
<td></td>
<td></td>
<td>90%</td>
</tr>
<tr>
<td>Leasing commercial floor space via the internet</td>
<td>89%</td>
<td></td>
<td></td>
<td>9%</td>
</tr>
</tbody>
</table>

Use of e-commerce by industry group

E-commerce growth in next two years and the department would change “a lot.”

Graph 3.5: Business to business E-commerce use in next 2 years in the facility management practices

Not at all (2%)  A lot (24%)  Some (52%)  Not very much (22%)
Table 3.8: E-commerce growth in next two years

<table>
<thead>
<tr>
<th>Purchasing supplies and material from the specific vendor (N=553)</th>
<th>4%</th>
<th>12%</th>
<th>45%</th>
<th>40%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessing facilities manuals (e.g. maintenance and training) (N=544)</td>
<td>8%</td>
<td>12%</td>
<td>48%</td>
<td>27%</td>
</tr>
<tr>
<td>Taking interactive training courses via internet (N=539)</td>
<td>7%</td>
<td>18%</td>
<td>29%</td>
<td>7%</td>
</tr>
<tr>
<td>Publishing static project information on the web (N=517)</td>
<td>27%</td>
<td>18%</td>
<td>36%</td>
<td>19%</td>
</tr>
<tr>
<td>Purchasing furniture on the internet (N = 521)</td>
<td>27%</td>
<td>24%</td>
<td>34%</td>
<td>15%</td>
</tr>
<tr>
<td>Managing projects using commercial third party websites (N=508)</td>
<td>37%</td>
<td>24%</td>
<td>26%</td>
<td>12%</td>
</tr>
<tr>
<td>Purchasing facility services on the web sites (N=511)</td>
<td>32%</td>
<td>28%</td>
<td>31%</td>
<td>9%</td>
</tr>
<tr>
<td>Purchasing energy via the internet (N=452)</td>
<td>52%</td>
<td>20%</td>
<td>22%</td>
<td>7%</td>
</tr>
<tr>
<td>Leasing commercial floor space via the internet (N=487)</td>
<td>58%</td>
<td>27%</td>
<td>12%</td>
<td>3%</td>
</tr>
<tr>
<td>Health and safety management(N=478)</td>
<td>35%</td>
<td>31%</td>
<td>28%</td>
<td>6%</td>
</tr>
<tr>
<td>New construction and renovation(N=538)</td>
<td>41%</td>
<td>32%</td>
<td>23%</td>
<td>5%</td>
</tr>
<tr>
<td>Facility Planning (N = 547)</td>
<td>44%</td>
<td>30%</td>
<td>22%</td>
<td>4%</td>
</tr>
<tr>
<td>Space management (N=536)</td>
<td>49%</td>
<td>27%</td>
<td>2%</td>
<td>0%</td>
</tr>
<tr>
<td>Real Estate management(N=483)</td>
<td>55%</td>
<td>27%</td>
<td>1%</td>
<td>5%</td>
</tr>
<tr>
<td>Energy management(N=496)</td>
<td>53%</td>
<td>25%</td>
<td>1%</td>
<td>3%</td>
</tr>
<tr>
<td>Leasing commercial floor space via the internet</td>
<td>89%</td>
<td>9%</td>
<td>1%</td>
<td>1%</td>
</tr>
</tbody>
</table>

Use of Business to business e-commerce in following FM functions:

E-commerce is used mostly in the areas like customer service, administrative service, and maintenance and operations. But e-commerce is also used in all the functional areas.
Table 3.9: E-commerce use in all the functional areas

<table>
<thead>
<tr>
<th>Functional Area</th>
<th>Now</th>
<th>2 Yrs</th>
<th>% Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer Service (N=512)</td>
<td>32%</td>
<td>24%</td>
<td>32%</td>
</tr>
<tr>
<td>Administrative service (N=540)</td>
<td>27%</td>
<td>29%</td>
<td>35%</td>
</tr>
<tr>
<td>Maintaining and operations (N=534)</td>
<td>30%</td>
<td>34%</td>
<td>29%</td>
</tr>
<tr>
<td>Health and safety management (N=478)</td>
<td>35%</td>
<td>31%</td>
<td>28%</td>
</tr>
<tr>
<td>New construction and renovation (N=538)</td>
<td>41%</td>
<td>32%</td>
<td>23%</td>
</tr>
<tr>
<td>Facility planning (N=547)</td>
<td>44%</td>
<td>30%</td>
<td>22%</td>
</tr>
<tr>
<td>Space management (N=536)</td>
<td>49%</td>
<td>27%</td>
<td>15%</td>
</tr>
<tr>
<td>Real estate management (N=483)</td>
<td>55%</td>
<td>25%</td>
<td>18%</td>
</tr>
<tr>
<td>Energy management (N=496)</td>
<td>53%</td>
<td>25%</td>
<td>18%</td>
</tr>
</tbody>
</table>

Above table gives the use of e-commerce in the nine facility management functional areas for each industry group. According to this table, e-commerce use is highest in the customer service for the electronics industry group. For telecommunications, the greatest use is for administration.

The respondent’s use of e-commerce will increase in all the functional areas in next two years. Following table lists the departments which are expected to be heavy users of e-commerce and there use will double in the next two years.

3.10 Heavy Users of E-commerce

<table>
<thead>
<tr>
<th>FM Functions</th>
<th>Now</th>
<th>In 2 Yrs</th>
<th>% Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer service</td>
<td>11.5%</td>
<td>29.3%</td>
<td>255%</td>
</tr>
<tr>
<td>Administrative services</td>
<td>8.9%</td>
<td>23.5%</td>
<td>264%</td>
</tr>
<tr>
<td>Maintenance and operations</td>
<td>6.9%</td>
<td>21.4%</td>
<td>310%</td>
</tr>
<tr>
<td>Health and safety management</td>
<td>6.1%</td>
<td>20.3%</td>
<td>333%</td>
</tr>
<tr>
<td>New construction and renovation</td>
<td>4.6%</td>
<td>14.7%</td>
<td>320%</td>
</tr>
<tr>
<td>Facility planning</td>
<td>4.4%</td>
<td>15.7%</td>
<td>357%</td>
</tr>
<tr>
<td>Space management</td>
<td>4.3%</td>
<td>14.7%</td>
<td>342%</td>
</tr>
<tr>
<td>Real estate management</td>
<td>2.9%</td>
<td>10.2%</td>
<td>352%</td>
</tr>
<tr>
<td>Energy management</td>
<td>2.8%</td>
<td>12.4%</td>
<td>443%</td>
</tr>
</tbody>
</table>

One of the objectives of this project is to identify the characteristics of departments associated with the use of e-commerce. Figure below shows the use
of three work process approaches (ISO 9000 certification, work processes modeled using charts and customer satisfaction surveys) which are associated with firms that use e-commerce.

**Graph 3.6: List of work processes wise current use of e-commerce**

**Graph 3.7 A graph showing problem of implementing B2B for facility management practices**

E-commerce is not as successful as it would have been because of its ability to more effectively manage cost or time issues but this situation will change in the next two years. Usefulness of e-commerce is still questioned and respondents do not fully agree that e-commerce has decreased the cost of facility maintenance and operations (51%), or decreased the total annual cost of facilities (53%), decreased the cost of new construction projects (71%), or decreased the cost of space management (70%). But some agree or strongly agree that e-commerce has lowered the time to complete the projects (55%) and lowered the cost of purchasing supplies and materials (67%). But this situation will change within
two years where majority will be with the opinion that e-commerce saves cost and
time.

3.7.3 Summary: Electronic commerce can be used for marketing of any industry on the
internet. Electronic commerce helps in reduction of cost, quality improvement and
faster delivery which leads to customer satisfaction, efficient buying and selling,
production, and for making decisions at all levels of management. E-commerce is
found quite useful in sharing of information online and is also an enabler of
supply Chain Management Activities. Nearly all the organizations are trying to
use e-business technology to streamline ACM activities like joint forecasting,
purchasing and collaborative planning with the use of web. Customer input is
obtained fast resulting in faster product development. Sourcing cost is reduced
along with the increased price transparency and competition. Transaction cost is
reduced by double handling of information. Customer relationships and cost
effectiveness are improved. Sales and distribution cost is reduced due to
automation.

3.8 Banking & Finance[15]

3.8.1 E-Commerce in Banking and Finance

E-commerce has the ability to renovate the banking and the financial systems.
Banking and finance can be updated using e-commerce in three major features –
1) Banking and financial systems can market their products to the customers using
the technology and business practice. 2) To serve the needs of e-commerce, e-
commerce serves banks with the business opportunity to offer new products and
services. 3) International financial system can be formed with the new business
environment and it also serves prospect for institutional modernization.

Some branches have faded due to e-brokerage and internet banking.
Internet banking has three main properties -1) low cost 2) convenience 3) availability. It offers 24 hour and seven days a week service. In addition it also
offers convenience and fast delivery along with customer focus and personal
service. It also helps in mortgaging the property; it reduces the time required for
such applications from weeks to hours. Secure online transactions are possible
due to commercial use of the 128–bit encryption. This facility is offered by City
Bank, ICICI, HDFC, Global Trust, Bank HSBC, Union Bank of India, State Bank of India and Industrial Bank. City bank was the first online bank. HSBC provides full net capability to the customer in view of internet banking. The private banks like HDFC, ICICI and global trust are on its way of online banking.

E-commerce gives a business opportunity for banks and in turn offers new products and services. For micro payments, low cost feature has been created by e-commerce. Bank services can be applied in the areas of protection for e-commerce like -1) fraud electronic billing 2) It acts as an information intermediary for small businesses for the protection of online customers. It also acts as a rating agency for e-commerce. 3) It restructures the banking and financial system.

As the capital market is financing business ventures; importance of banks has lowered as an intermediate between savers and investors. This results in governments withdrawing safety support from banks and to set up an independent agency for secure payment and transaction systems. Because of this central bank may find it difficult to set interest rates by giving up their important function in financial policy.\[16\]

Venice was the efficient commercial centre for changing money which stopped banks to do this work. Banks were used then for depositing money and acting as protecting money of the customers. Traders started using banks and started believing them. Traders started accepting book entry transfers as payment for their products; and banks started acting as a payment intermediary between buyers and sellers. Bankers realized that the money of the depositors was lying idle which can be utilized to hold some reserves against deposits and remaining money can be invested in promising business ventures. This was the new role of banks as a financial intermediary between savers and investors and borrowers or becoming investors themselves. Banks also offered liquidity in the economy which allowed economic benefits and risks.

ATM is a electronic delivery channel used for bank financial transactions. It is self working device which does not need operators. It works 24 hours a day. Plastic currency and debit cards are used for withdrawal from this machine.
Customers account number and credit limit is read by the machine which is magnetically embedded on a strip of tape on the back side of the card. As soon as the card is inserted into the ATM machine processor reads the strip and transmits the tape data to a processor which activates the accounts and account information is displayed on the screen and the user carries out financial transactions using keyboard.

### 3.8.2 Electronic Fund Transfer (EFT) \(^{15}\)

**Electronic data interchange (EDI)** is used for this electronic fund transfer. But minimum amount of data can be transferred. Three major fund transfer networks are known – 1) Clearing house interbank payment system (CHIPS) 2) Fed wire 3) Society for world wide interbank financial telecommunication (SWIFT).

These networks transfer million of dollars in each banking day and are capable of handling millions of messages per day. EDI services are widely used by banks financial institutions and insurance brokers to send messages to various partners. Electronic fund transfer facility is introduced for Indian bank customers by the Reserve Bank of India. The customer provides the details of the recipient account to other centres using this facility. Local clearing centre gets this details which processes the details and passes this details to local bank using bank network and bank credits the account of the respective recipients.

**Computerization in Clearing Houses** – Cheques are handled using computers in clearing houses. The work in clearing operations is huge, complex and repetitive in nature to clear exchange and settle the transactions between several banks. Computers help in speeding the process of clearing and increase the efficiency of the work. Computerization has been done in many centres like Mumbai, Calcutta, Chennai, Bangalore and New Delhi of Reserve Bank of India. Clearing houses of Reserve Bank of India has utilized new technology for managing inward and outward clearing cheques. Computers are also used for scroll preparations which deal with receipts and payment transactions for government departments. A specially designed IT reader sorter system is a powerful system which is used for cheque sorting and which decreases delays in the operation.
Banking on Home Computers [15] – A new bank at home system has been developed to connect the customer to the bank using telecommunications networks. The interaction between the bank and the customer takes place using these lines. TV banking is possible now which was difficult few years ago.

Electronic Money Transfer (EMT) [15] – Here money is transferred to distant stations electronically using computerized telegraphic network. The stations are connected to the EMT networks stations. Speedy money order delivery is possible to the Indian postal department by adding more stations to the existing ones. In remote areas the department is able to give fast delivery of data text and money order with the help of EMT technology.

Union’s Electronic Money Transfer (EMT) [15] –
Using this new electronic technology money is transferred fast in few minutes from abroad. Money can be transferred from abroad to India, from seventy five countries including United States, Canada to India. One has to just pay the required amount to be transferred along with the service charges in any western union agent office. The company’s network transfers the instructions to the specified western union agent office in India in the given locality to pay the amount of money to the said recipient. Money is transferred in cash in Rupees within shorter period of time.

Financial Transactions Terminals (FTT) [15] - In addition to cashless shopping and cyber laundering there are other types of financial transactions Terminals (FTT) in general use. The best instance of the device used is the electronic fund transfer (EFT). Automated teller machine is one of the examples of electronic fund transfer. In banks and other financial institutions financial transactions terminals have been designed to facilitate bank transactions and online terminals are used to handle both deposits and withdrawals of the customers. [15]

E-Cheque [15] - With the development in the field of the information technological techniques the issue of e-cheque is greatly facilitating and has revolutionized the banking business and financial transactions. E-cheque is created on the computer and is processed through the net. In other words it is the electronic version of the paper cheque. The process of issue of and the nature of workflow in the issue of
e-cheque is the same as the conventional paper cheque. An original e-cheque was developed by the Financial Services Technology Consortium (FSTC) in the US. It is an alliance of 65 financial service providers universities government and IT companies. E-cheque is now established as the main medium of payment. It has legal support and recognition.

3.8.3 Problems of Security in E-commerce[^15]

- **Authentication**: Banks use the personal identification number (PIN) and a distinct customer identity number which enables customers to access their accounts which should not be disclosed to anyone.

- **Privacy**: Internet based banking must ensure that only the right person can access all the financial information in order to ensure online privacy state of the art 1024 bit RSA SSL and RCS techniques as well as triple data encryption and standard encryption are used while connecting and communication with bank.

- **Integrity**: It involves the quality of being honest and appreciating positive work ethics and sincerity in electronic transactions.

- **Transaction Confirmation / Monitoring**: This technique involves a list of instructions to be sent to the bank before it goes online and provide a record of all the completed transactions.

- **Identification and password**: Assigning a correct password ensures the only authorization for data access.

- **Authorization**: Only the valid users will be allowed to access the data.[^15]

9. Organizational/Attitudinal Barriers **Disparate User Community**: In order to purchase materials libraries must interact with a very diverse group of partners that includes publisher’s wholesaler’s subscription agents and automated library system vendors. As each of these groups has different interests and objectives bringing these groups together to work toward a common goal represents a significant organizational challenge. Without the cooperative efforts of this community it is difficult to attain the support necessary to move toward EDI. Implementation **Acquisitions** *is sometimes less a priority than other areas of library operations*. Acquisition is often considered a 'housekeeping' function that may be less a priority than patron-oriented services such as reference and
circulation. When decisions are made to fund automation projects the acquisitions function has traditionally been given a low priority. This situation may improve has many of the other library processes are now supported by well-developed automated systems. This could help to shift the priority towards automating the acquisitions process. **Lack of Education** - Education is required on the part of both librarians and members of the book and serial industry. They require a basic understanding of the existing EDI standards and the benefits which can be accrued through EDI implementation. While progress has been made in this area these efforts must continue.

**3.8.4 Summary:** In banking and finance e-commerce helps in – 1) marketing of products 2) offers new product and services 3) International financial system can be formed 4) helps in institutional modernization. Internet banking has three main properties -1) low cost 2) convenience 3) availability. In addition it offers 24 hour and seven days a week service and also offers convenience and fast delivery along with customer focus and personal service. It also helps in mortgaging the property; it reduces the time required for such applications from weeks to hours. ATM is used for financial transactions of the bank. EDI is used for electronic fund transfer. Electronic money is transferred to different stations even abroad electronically using EMT. E-cheque established as the main medium of payment. But there are problems of security in e-commerce like authentication, privacy, integrity, authorization and organizational barriers such as lack of education, lack of support necessary to move towards EDI

**3.9 E-commerce in retailing**

**3.9.1 E-tailing**

An online sale of retail style goods is known as e-tailing. Internet use for small businesses has increased from 10 percent in 1996 to about 75% percent today. This use will still grow to 85% within few years. But currently, only 28 % of the companies sell goods online. E-tailing is a B2C activity. They can create their own website to start new business or retailing service with the use of internet. They can enhance an online business. They also can provide hardware, software
and services to other businesses to make them online. Benefits of E-retailing for the customers are as follows –

- **Convenience** – Customer does not need to move from shop to shop physically in order to examine goods.
- Customer gets better information at the fast speed.
- Customer gets competitive pricing due to global market.
- Customer can shop anywhere, anytime and gets better customization.
- New kind of specialization has emerged due to internet. Specialization has emerged in particular classes of customers and sellers. For e.g. lastMinute.com allows last minute purchase of e-tickets, gifts and entertainment to be matched against last minute sellers of the same item. Here we see specialization not in the product line but in class of purchases and a class of sellers.
- In addition to the specialized stores we also get generalized e-store where a store sells several product lines under a single management. Examples of this are Walmart and JC Penny.
- E-malls provide a web hosting service for individual store similar to malls. For e.g. Yahoo!Store, Geoshops and CNET store.
- E-broking is the rapidly growing area on the internet. For e.g. if a customer wants to find goods, e-broker finds the suppliers which can provide you these goods.\[18\]

**3.9.2 Internet Portals:** Organizations need to send some confidential business information like policy, strategic decisions etc. on the regular basis to different geographical areas without any problem. Enterprise portal is a solution to this problem. It is a single point of contact of community between firms and all stakeholders. Information on these portals is organized using indexes and also using visual presentations. Enterprise portal is designed to meet the demands placed on an organization. This site is operated and owned by the organization to support its operation. It makes information available to the concerned staff centrally just by clicking the mouse. Uses of the enterprise portal are as follows – increase in employee’s productivity 2) less support cost of employees 3) sound decision making 4) decision making cycles are faster 5) increase in job satisfaction of the employees 6) increased customer service and customer relationship and loyalty 7)
reduction in customer service costs 8) increase in sales 9) collaboration with business partners is improved.

For most retail businesses growth e-commerce is a solution. It is forecasted that e-commerce will cover $174.5B in 2007, will reach 19% from 2006 and will be holding 6% of all retail sales. Many shoppers are turning to internet and you should have a web presence in order to be successful. For many retailers to be successful they need their fully integrated retailer software integrated with the e-commerce system. Addition of retailing system on the web reduces the efforts of separately operating it and also it reduces the expenses needed. You can save a lot with the use of retail software to manage your retail stores, your warehouse, and your ecommerce site. Integrated e-commerce system has the benefits such as – 1) time and money saving 2) report generation 3) stock checking 4) total inventory management 5) customer can obtain information easily 6) in house experience.

For virtual items such as access to premium content on the website is carried out using website, but e-commerce also helps in transportation of physical items. Sometimes online retailers are known as e-tailers and online retail is known as e-tail. Most of the retailers are present online on the World Wide Web. B2B, B2C and online shopping are the type of e-commerce. Examples of B2C sites are eBay.com and Amazon.com.

3.9.3 Summary: E-tailing is a B2C activity. New website can be created for a new business. Various uses of e-tailing are convenience, better information, fast speed, competitive pricing, customer can shop anywhere, anytime etc. E-malls provide a web hosting service similar to malls. E-broking is the area on the internet which allows customers to find suppliers which can provide you these goods. For most retail businesses growth e-commerce is a solution. E-commerce retailing system can save cost and money, report generation, stock checking, total inventory management, easy information access, in house experience etc.
3.10 Education [17]

3.10.1 E-commerce in Education

With the beginning of the 21st century, the Internet was made a central component of learning by educators and administrators. It was expected by private corporations and educational institutions to modernize higher education and generate a source of income. In the e-learning market, International Data Corp. (IDC) generated 33 percent growth of $12 billion from the year 1999 to 2004. However, the economic recession of the year 2000 stirred the online education industry, which resulted in shutting down of many e-learning activities.

Annually, the U.S. is investing $600 billion on education to make it the second largest industry after healthcare. E-education or e-learning involved one of the education's higher growing trends. According to the market retrieval service, in the year 1998 online courses were only 48 percent. In the year 2000, they got increased up to 75%. 4000 America’s colleges and universities offered online courses. E-education’s promoters persist that it’s unlimited worldwide use provides efficient and cost-effective medium for online education. In the 20th century, distance education was connected with new communication technologies. In 1921, new educational radio station was started, and in 1945, the first such television station was started. Year 1990, saw the growth of online education because of World Wide Web. First school created its own software for the course delivery.

The World Wide Web's dramatic expansion in the 1990s led to the growth of online education. The first schools to adopt it as a teaching vehicle generated their own software platforms for course delivery, since user-ready products weren't commercially available. By 2000, many software products appeared that allowed instructors to tailor online courses to their individual needs. These applications also featured electronic grade delivery and course assessment options.

As a part of Higher Education Act, in 2000, the DOE (U.S. Department of education) has approved Distance Education Demonstration Program. IT has connected all the sixteen Amity University campus. Any centre can be easily updated by making use of other centre. New techniques such as ‘Live classroom
transmission’ to carry out multiple live telecast and ‘live telecast over internet’ have minimized the cost of physical communication and has made possible new ways in the use of new technology. Gautam Buddha University is trying to make its website more user friendly and interactive for online admissions of various courses conducted by the university and also is using online payment option. University is also using ERP solutions for its administrative process. ERP can be used for carrying out different works like enrollment process, day to day attendance maintaining, time table and course management. It can also be used for library and laboratory management. Different modules of ERP solutions reduce the need of manual entry and register maintaining. They are also using Google Apps and video conferencing for communicating with the students. IT infrastructure has made it possible at IIM, Lucknow to automate the processes like admissions, placements and accounting systems. According to Prof. Bhaskar from IT dept, IIM Lucknow, the increase in PGP intake and training and launch of several programs, will increase support staff strength.

Apart from this a number of e-universities are being spawned around the world. They are of three types – 1) Pure cyber universities like Jones International University (http://www.jonesinternational.edu) 2) Traditional universities setting up new cyber vehicle for providing university education with other business partners. E.g. Hong Kong CyberU (www.hkcyberu.com.hk) 3) Traditional Universities offering courses themselves on the internet. Many web based technology tools are available. E.g. WebCT[18]

3.10.2 Summary: Number of e-universities have started. E-education or e-learning involved one of the educations higher growing trends. The World Wide Web's dramatic expansion in the 1990s led to the growth of online education. E-education’s unlimited worldwide use provides efficient and cost effective medium for online Education University is also using ERP solutions for its administrative process. ERP can be used for carrying out different works like enrollment process, day to day attendance maintaining, time table and course management. It can also be used for library and laboratory management. Different modules of ERP
solutions reduce the need of manual entry and register maintaining. They are also using Google Apps and video conferencing for communicating with the students.

3.11 Agriculture: [19]

3.11.1 E-commerce in Agriculture

Advanced IT implementation for global agriculture integration and also for export promotions is a right choice. There exist a lot of information in different databases regarding global trade in agriculture and can be obtained using a small machine which can be of great help in agriculture. Commercial databases from United States and Europe can provide the necessary data on time sharing basis by authorized users from any part of the world.

For export promotions Decision support systems are used which are based on modeling techniques. A computerized model can be generated for finding out the target market for the products which can get maximum gross returns. The constraints such as domestic production, consumption norms, demand in target markets and trade agreements can be considered while considering the products for export.

For Order Processing also computerized system can be of great help. For example, when the enquiries are received from the foreign buyers, seller can take a decision on whether he can supply the desired products. Then the seller can search for the suppliers and can ask for the rates. If the suppliers rate are negotiable then an invoice can be generated and be mailed to the foreign buyer for order confirmations. The foreign buyer if satisfied if agrees with the rates and delivery schedules, terms and conditions, issues a purchase order and the letter of credit to the trader in India. Once the purchase order is received execution of exports is started. Order processing can be totally assisted by the computerized system. The system can generate the application papers for the bank for preshipment credit and can assist in interest calculations and can maintain a track of transactions. It also can print in different languages depending upon the target market to avoid misunderstanding. There is another area of application of IT and that is Electronic Data Interchange where data is exchanged electronically. It is a paperless communication for the documents such as purchase orders, invoices etc.
Vertically integrated EDI services have been developed by United States in the areas like large manufacturers, tiers of suppliers, stores and warehouses, dealer and retailer chains which help in smooth communication and effective information management.

### 3.11.2 Use for international Trade [19]

International trade logistics requires more planning and conceiving compared to domestic trade. The following are the uses of E-commerce in agriculture and trade.

- **International market research through global computerized databases.** A lot of information about the export / import trade is available in some global databases to which a tiny machine can be plugged to fetch a small but required piece of information. Large commercial databases located in the United States and Europe can be accessed for retrieving necessary data on a time sharing basis by authorized users from any corner of the world. Using this information growth rates and sales potential overseas over a period with the growth of the total imports can be compared by country and commodity. This is not possible without the use of trade intelligence. PSTN network can be used for accessing such databases.

- **Planning analyses and policy making**
  E–commerce can enhance the effectiveness of planning and policy making with the implementation of the following areas –
  - Forecasting and other quantitative techniques
  - Stimulation modeling and decision support systems
  - Comprehensive database of trade specific information

- **Export order entry and processing**
  In this case if enquires are received from foreign buyers the potential buyers can find out whether he can supply the desired commodities. In turn the foreign buyer if satisfied with the rates, delivery schedule terms and conditions etc. can issue the purchase order. Letters to insurance companies as well as the letter of credit to the coordinating bodies can be issued.
Electronic data interchange

For effective management and communications vertically integrated EDI services are used for effective communication between suppliers, large manufacturers, stores, warehouses, dealers and retailers chains for effective information management and communication. By providing the electronic interchange of the same information the efficiency of the whole process can be increased by several folds.

3.11.3 Summary: For export promotions Decision support systems are used which are based on modeling techniques. A computerized model can be generated for finding out the target market for the products which can get maximum gross returns. The constraints such as domestic production, consumption norms, demand in target markets and trade agreements can be considered while considering the products for export. For international trade e-commerce can be used for -1) Use of EDI for effective communication business mans. 2) Export order entry and processing 3) Planning analyses and policy making 4) international market research can be done using global computerized databases.

3.12 Manufacturing

3.12.1 E-commerce use in manufacturing [20]

E-commerce helps in various processes of manufacturing and makes the process fast and easy. How e-commerce helps in different processes is described below.

Use in Product Development

The Internet enables manufacturers to mass-customize products and offer complete solutions to satisfy customer needs. Mass-customization provides manufacturers with a major advantage over intermediaries who mainly offer standardized products.

Use in sales

The internet is a business platform requiring different processes. The valuable online information and online communication will encourage recurrent visits of the customers to the website. The website can consist of continuously updated information of the company. The website also may consist of products/services, answers to frequently asked questions (FAQs), special offers, industry and
corporate news, etc. Furthermore, online customers may be informed about inventory status, delivery options and timeframe, and payment conditions. Apart from providing information manufacturers can also collect information about the customer’s requirements throughout the whole online sales process. The information can be demographic, historical, behavioral and even psychological data using cookies or simply asking customers for information. This information helps manufacturers to target customers, find their needs and respond quickly to the customers. In addition manufacturers can improve the accuracy of capacity requirements and return rate forecasts. E-commerce transactions can be commercial as well as financial transactions. Manufacturers can offer online and simple and risk free transactions and fulfill them quickly reliably and rewardingly.

**Use in Order fulfillment and delivery**

Competitive order fulfillment can be done using e-commerce very effectively. To fulfill orders cost effectively and at the right time and right place at the right time. The need of accurate and available data, fast supply chain speed and inventory planning can be achieved using e-commerce.

**Use in Financial Transactions**

Online financial transactions should be provided by the manufacturers in a simple, universally accepted and secure way. For e-payment customers can use their credit card or digital cash. For this customers can enter credit card number in the website. A software program at the customer’s end encrypts the number, which is then transferred to the manufacturer’s server and decrypted. Another way for financial transactions is to exchange traditional currency (cash, checks or employ a credit card authorization) for digital currency (called e-money or e-cash). For this method of transaction one should have a software-based electronic wallet to hold the currency and an account to be set up between the currency provider and participating merchants. For expensive products credit cards can be used while e-cash can be used for micro transactions. (e.g. a payper-advice online service).

**Use in after sales service**

Only good quality product is not enough for the customers but they also are needed to be provided online and offline after-sales service which may include
financing and maintenance, training users and supplying spare parts and consumables. Bulletin boards, user groups and virtual communities can also help customers to solve customer problems online, reducing the manufacturer’s time and effort while strengthening the manufacturer’s virtual community.

E-commerce has been proved useful for many manufacturing companies. The benefits obtained are as follows –

1) According to Kenn Fischburg, president, Consumers Interstate Corp., Norwich, CT, and CEO of ToiletPaperWorld.com, a national, wholesale distribution E-commerce has been the most successful service they have offered our customer base in 15 years. The companies E-commerce website ToiletpaperWorld.com is open to markets ranging from households to large corporations. Also company’s transactional website SuperSupplies.com is customized to every authorized customer. A purchaser has his or her password protected home page with the product list which company has finalized for him and his or her order form. The customers are picked every month instead of for every transaction which further reduces activity for the customer and makes ordering easy for them also help is given for consolidate suppliers and reduce their activity. Customers are signing up fast.

But the cost of maintaining the website is high. Also the time spent in creating the website was high. Also eight months training time given to managers was time consuming, which took them 60% of the day. Company also had to bear additional cost of hiring ten employees.

2) Dr. Sam Bayer, Chief Executive Officer and Founder of b2b2dot0 (www.b2b2dot0.com) announced that the EFD division of Nordson Corporation (NASDAQ: NDSN) has strengthened its customer service capabilities through implementation of an SAP Integrated B2B e-commerce pilot program developed by his company. EFD is the world’s leading manufacturer of precision dispensing systems for applying controlled amounts of the adhesives, sealants, lubricants, and other assembly fluids used in almost every manufacturing process. Products include air-powered benchtop dispensers, low-maintenance dispense valves for automated production lines, precision dispense tips, and dispensing robots.
Nordson CIO Shelly Peet adds: “Nordson was a pioneer in the area of SAP integrated B2B eCommerce back in 2001, and by 2008 we faced the challenge of identifying a new eCommerce solution that could transition with us as we consolidate and upgrade our SAP landscape through 2010.” [21]

3.12.2 **Rapid prototyping (RP)** is an automated manufacturing process that quickly builds physical models from CAD files of 3D prototypes. This process develops Web-based automated RP system, which provides consumers the convenience of distance manufacturing without having an expensive RP machine. The Internet technology is used to combine product quotation interface and on-line remote monitoring system into a Web-based automated RP system. This e-business application framework of Web-based thermal extrusion RP system mainly included four parts- (1) Open .STL file using Open GL software technology, (2) product quotation system, (3) selection RP system, and (4) customers to joint an alliance. The customer can transfer .STL file via the Internet to the RP Web server. The Open GL software technology can be used to show the 3D models with different color on rotation direction. The product quotation system supplies an on-line automated cost estimation related to the option of materials, manufacturing time and RP machines before RP part being manufactured. In the RP selection system we can use some conditions (material, cost, and manufactured time) to select the RP machine. This Web-based RP selection system can help user select an appropriate RP system. After evaluating, the system shows the manufacturing time and cost. Then the RP part can be manufactured in our RP machine. During manufacturing, the customer can watch a live image of RP part via WEB, and monitor the RP machine to build up a physical part through CCD camera during the manufacturing process. If customers or companies want to joint an alliance, they can joint the companies RP selection system as a member of an association and upload their RP machine data (introduction and specification of the RP machine, and the manufactured parts) to the RP WEB server. [22]

3.12.3 **Summary:** E-commerce helps in various processes of manufacturing and makes the process fast and easy. E-commerce helps in different processes of manufacturing
like product development, sales, order fulfillment and delivery, financial transactions and after sales service. The companies like ToiletPaperWorld.com, b2b2dot0, EFD etc have benefited with the use of e-commerce. Rapid prototyping (RP) is an automated manufacturing process which develops web based automated RP systems. RP selection system helps user select an appropriate RP system.

3.13 Library

3.13.1 Application of EDI in the library

Libraries are not directly working as commercial business, but they work in the commercial environment. Libraries order books from various suppliers and invoicing and payment is made for these materials. Libraries also are having commercial document delivery and also deal commercially with their supporters. For example, payment of photocopies, searching for interlibrary loans which is just like other businesses and hence they process purchase orders, invoices and delivery notifications.

The main function of the library is purchasing library material, area of library functions where EDI can be applied. EDI can also be used in the works such as purchasing and interlibrary loan and document delivery.

Many organizations and groups have utilized messaging using EDI in purchasing material. The advantages associated with EDI based messaging are as follows:

- Reduction in paper use and manual work
- In time delivery and shipment of orders and books etc.
- Price information is available easily for periodicals
- Computerized and error free invoicing and payment
- Number of claims required are lowered as in case of periodicals

Even if EDI standard format is made by libraries which support EDI transactions for the purchase of books and serials, EDI systems are slower than expected. The following are the hurdles listed in the use of EDI for libraries –
3.13.2 Organizational and mind set Barriers

1. For material purchasing the library has to communicate with different groups of partners like wholesalers, publishers, subscription agents and automated library system vendors. As all these groups are having different objectives and goals, working for implementation of EDI for the library becomes difficult because of the less support by these groups.

2. Purchasing is given less priority than other functions. Purchasing is treated as a house keeping work in case of patron oriented services like reference and circulation. Especially in case of automated processes purchasing is treated with less importance. This situation can improve as many of the library services are using automated services.

3. Implementation of EDI for purchasing needs train staff in new procedures and acquire staff with system training to maintain the new system. This needs proper planning and coordination for the library management.

4. The library staff and the members of the book and serial industry should be trained. They should be given basic understanding of the EDI standards and benefits with the implementation of EDI. Since there is a progress in this area, these efforts must continue.

3.13.3 Technical Barriers

1. Libraries do not have their own team of expertise to develop software for is own operations. So they depend on the software vendors to develop the supporting software. While the software vendors are not interested in developing a software which has uncertain market.

2. EDI can not be applied easily to the library system as it is based on proprietary architectures which are difficult to covert with EDI interfaces such as translation software without taking help of system vendor. Hence library again becomes dependent on system vendors and time scales.

3. Integrated library system has a single database which takes care of all the operations of the library and users have different views of the database. It can be difficult to integrate the EDI data with existing database.
3.13.4 Interlibrary Loan/Document Delivery

According to the recent ILL and document delivery literature purpose and scope of interlibrary loan services are changing. The document delivery concept is not just delivery of returnable and non-returnable items but also can be converted into electronic form to transfer it to patrons, libraries and information brokers.

Document delivery is similar to purchasing, as an order is placed and the order is delivered. In addition demands for document delivery have increased these years because of the increase in the costs of the periodical subscriptions and lowering of the library budgets. For the delivery of individual journal articles potential market is fixed by commercial information providers, at the same time have started document delivery services to meet these demands. When the libraries use these services they become business partners with commercial suppliers.

Also other services like information and storage and retrieval, copying and communication technology are used to find the document and transfer the copy quickly. Many such services are used by serials publishers and subscription agencies which were leading in the support and implementation of the ASC X12 within the serials industry, it can be predicted that EDI will be used in future for the document delivery. Other library functions include invoicing and payment activities which communicate with external systems. Libraries get invoices and confirm their payment if it is actually received. Library is not making the payment but the centralized finance function within the library or within the large organization such as university, college or municipal government makes the payment. These complex transactions are between invoice, purchaser and payer which are not synchronized to be integrated into EDI.

3.13.5 Using EDI in Law Library

As library is non profit organizations they are likely to be more conservative in their EDI business dealings. If survival and profitability are excluded, for the implementation of EDI, it is necessary to find advantages and disadvantages of implementing EDI in law library.
Advantages of implementing EDI in law library

- Routine operations such as ordering and claiming, acknowledging and responding to orders and claims, and processing invoice information are quite time-consuming in the traditional library processing. EDI can improve the efficiency of these tasks.
- As their will be time saving due to EDI employees can spend time in handling complex problems which require more attention.
- Errors will be reduced as the information once typed need not be retyped.
- Response time is improved due to quick EDI transactions.
- Changes in the order status can be traced and confirmed easily which result in budgetary adjustments. Up to date status information can be obtained which is important for the volatile and under close and frequent inspection.
- EDI transactions are clear cut and eliminate the need of multiple messages, verbal and written explanation and clarification.
- Staff is liberated due to fast EDI transactions and is capable of giving time for providing value added services.

Disadvantages of implementing EDI in law library

- EDI requires considerable investment which includes cost of hardware software, programming and testing.
- EDI is a back room function is ignored as compared to the functions that are visible to the users.
- Publishers are not interested in implementing EDI as most of the enhancements are customer driven.
- For EDI to be successful and to obtain the maximum benefit for all the trading partners EDI cycle should be completed. Each constituent should be aware of the needs of the other constituent in developing and maintaining a successful EDI relationship. Efforts should be made in order to promote the use of EDI.

3.13.6 Summary: Implementation of EDI for library system is having organizational as well as technical barriers. For law library also there are many advantages and disadvantages in implementation of EDI like investment for hardware and software. Lack of interest for EDI implementation is the biggest problem in implementing EDI. Reduced errors, accuracy and efficiency are the main advantages of using EDI for law library. Libraries do not have their own team of
expertise hence they are dependent on software vendors for development of software.

3.14 ERP systems:

3.14.1 E-commerce for ERP systems \cite{24}

Without the proper information Technology infrastructure, using ERP systems are not possible. It is a known fact that ERP is a combination inseparability of business and information technology. The improvement in the information technology and reduced computer prizes has made it possible for the use of ERP systems. In past, ERP systems were only used for main frame computers. Use of client server technology and Relational Database Management System has made it possible to use ERP for the personal computers and they increase the power of three tier client server technology. In client server technology, the server stores data maintaining its consistency and integrity and then from the clients desktop processes the request. The server and the client share the load of data processing and logic of the application. The three tier technology creates a middle level represents all business rules and application logic which are not the part of the application and uses appropriate validation checks. Companies which have implemented ERP have different locations of operation and control and online data transfer has to be done from these locations. To make these transactions possible for ERP systems are Electronic Data Interchange (EDI), internet, intranet, Data Warehousing, Workflow, Workgroup and Groupware etc.

ERP systems are used by many businesses and have become important in carrying out business operations and planning inside companies. Due to e-commerce development and requirements ERP vendors should continuously make changes their products. Classical ERP system characteristics are inappropriate for a future in which e-commerce is common practice. ERP systems face a number of challenges in order to remain suitable candidates for use in an e-commerce environment. Classical ERP systems are solely aimed at planning and managing a single company’s internal processes.

1) Classical ERP systems only look after company-internal planning and management of business functions. A company’s customers and other partners
have no direct interaction with the system. Classical ERP systems do not support front-office functions for interaction with the business environment. Also, they lack, for instance, functions for negotiating with clients and suppliers. In short, classical ERP is incomplete.

2) Modules in classical ERP are strongly interdependent, which makes it difficult to reconfigure or extend them, or to couple them to other systems, in case of changing requirements or contexts. Hence, classical ERP is monolithic.

3) Classical ERP systems do not support multiple companies at a time. They support a single company’s planning and management, without interacting with ERP systems of customers, suppliers, and other partners. However, this is not true in case of many ERP systems which also support supply-chain management functions, and most of them enable EDI messaging.

4) Fourth, classical ERP systems are focused on the planning of individual companies, rather than on cross-company planning or sharing ERP functions. Of course, in some cases, cross-company functions may reside at a single company, typically a powerful company in a chain or network. Still, whether distributed or centralized, ERP functions are support single company’s basis. In short, classical ERP is single-company.

5) Fifth and finally, classical ERP systems impose rigid structures onto data and processes. A considerable degree of configurability is offered, but in many cases the business process has to be tuned to the system to some extent. Once in use, changes in environment or requirements, and does not support flexibility, non freer forms of interaction. In short, classical ERP is restrictive.

These problems can be overcome by making the following changes in the business processes for the use of e-commerce as follows. -

**From incomplete to extended ERP** - As E-commerce helps in business interactions with business partners, ERP functions should be extended to the border functions of the company which may include functions such as front-office functions, such as electronic shops, electronic catalogues, client-initiated order tracking, electronic payment, and customer-relationship management. These types of functions are called as extended ERP or XRP. At the back end of the company
functions such as electronic procurement and supply-chain management functions may be added. ERP vendors have started providing sell side e-commerce modules. Companies like ERP, Netscape, Broadvision already provide these functions. To take the full benefit of XRP they should be combined with original internal ERP system. At the same time client initiated order tracking should not be done with human involvement. Combining of e-commerce applications with ERP is carried out manually by re entering data by hand and coupling is done electronically this will be implemented by means of hand written patches. But if e-commerce and ERP modules are from the same vendor this problem will not arise. They will perfectly fitting each other. The inclusion of negotiating functions in extended ERP will help ERP systems to do business with electronic commercial brokers or negotiating agents.

**From monolithic to component-based ERP**

It systems should be flexible enough to companies changing business environment and customers. This flexibility is not possible with classical ERP. Therefore ERP vendors are reengineering their product into series of subsystems and components. Bann is the company who has already started this type of work. These components are then supplied on a component by component basis and assembled and configured to fulfill the needs of the specific users. For the components to be interoperable they should follow component-based architecture. These components run on a component framework like DCOM, CORBA, or Enterprise Java Beans.

**Non-coupled to coupled ERP**

To change ERP from non-coupled to coupled ERP should be extended with e-commerce functions. XRP functions should be combined company border functions. Traditionally this is done by EDI messaging Technology. But this technology is very costly and time consuming for standardization and implementation. Also EDI only provides data coupling and not process coupling.

**Single-company to multi-company ERP**

Classical ERP systems work for business processes of individual companies. In network economy companies not only conduct e-commerce on electronic basis but they also co-operate in design,
planning and other activities in order to effectively or efficiently conduct business. For e.g. tracking and tracing products will be done in collaboration with network of companies. Similarly logistics planning, forecasting, and replenishment can be done in co-operation,

**Restrictive to flexible ERP**

Rigidity of ERP systems can be overcome using e-commerce. Similarities between business processes and their adhering to the reference models can be checked. While some find the differences between the companies and undertake a custom made approach. In any case the systems should be configurable to fulfill its specific requirements. In past the companies had long term relationship due to rigidity of data formats used but now a days companies are having short duration ties sometimes even for the duration of a single order. ERP systems should be able to follow this volatility by means of flexible, preferably on-the-fly reconfiguration.

**Multimedia**

In e-commerce, multimedia data is also needed along with text or record oriented data. This type of graphical product information is provided to end customers.

**CSCW**

For communication and co-operation, ERP and many e-commerce applications with ICT applications are combined to form CSCW (Computer-Supported Co-operative Work) applications.

**ERP as a product or as a service**

When ERP is offered on a component basis, ERP components may even be outsourced one by one, or ERP modules from different vendors may be used. It is also possible to have one (typically large or powerful) member of the chain or network to provide these services.

3.14.2 Summary

ERP systems face a number of challenges in order to remain suitable candidates for use in an e-commerce environment. Classical ERP system characteristics are inappropriate for a future in which e-commerce is common practice. ERP systems
face a number of challenges in order to remain suitable candidates for use in an e-commerce environment.

Classical ERP systems are monolithic, incomplete, support single company management, impose rigid support on data and processes (restrictive) use of extended ERP or XRP. ERP when used with e-commerce is changed into series of subsystems and components. To change ERP from non-coupled to coupled ERP should be extended with e-commerce functions. It also changes from restrictive to flexible ERP and also changes from single company to multi-company ERP.

3.15 Airline Business

3.15.1 E-commerce in Airline Business\[25\]

Airlines adopted e-commerce first for the sale of air tickets but now all airline product sales is made online. Airline industry is the highest benefited industry for online sales than any other industry. Still, internet is sometimes beneficial and sometimes reduces income. To obtain the benefits of the internet and avoid its damages airlines should use tools such as computerized revenue management system and e-distribution system. E-commerce brings lot of benefits it has many risks which need to be considered and controlled so that they need not turn destructive or to obtain the advantages of high technology.

Airlines are the most successful business without the involvement of a government because of the nature and cost structure of the business. There are two types of costs in the airline business viz. direct and indirect operating costs. Direct operating cost includes aircraft, fuel, and salaries make about 60% of the total cost and indirect operating cost includes distribution costs which is 40% of the total cost. Direct operating costs are fixed and they can not be changed. Due to this many airlines reduce the indirect cost which is distribution cost which includes 1) Reservation system cost 2) Ticketing fees 3) Sales offices (stations) cost 4) Advertising and sales promotion cost 5) Agent fees and commissions. 3 to 25% of the commissions are paid to the travel agents to sale tickets by the airlines. Airlines also spent a lot of money and resources on selling of their tickets by themselves. In order to decrease the distribution costs, e-commerce should be used and will have to reduce number of distribution channels and will have to
reduce Computer Reservation Systems (CRS) and sales agents. Big airlines have already started this practice. They have set up online sales network and every website has online booking facility. Some of the websites are having B2B and B2C and travel related services. Online bookings are also possible due to travel websites like Priceline and internet booking engines such as Expedia.

The following chart gives internet booking figures of the US airline industry in the past five years and the estimated costs of the coming two years.

**Table 3.11 internet booking figures of US airline industry (Year1996 to 2000)**

<table>
<thead>
<tr>
<th>Year</th>
<th>Total # of online air tickets buyers</th>
<th>Total # of on-line travel market revenue</th>
<th>% of total US airline bookings</th>
</tr>
</thead>
<tbody>
<tr>
<td>1996</td>
<td>25.3 m</td>
<td>US$276 m</td>
<td>1.3%</td>
</tr>
<tr>
<td>1997</td>
<td>32.2 m</td>
<td>US$827 m</td>
<td>2.9%</td>
</tr>
<tr>
<td>1998</td>
<td>41.0 m</td>
<td>US$1.9 b</td>
<td>4.3%</td>
</tr>
<tr>
<td>1999</td>
<td>48.1 m</td>
<td>US$ 3.2 b</td>
<td>5.9%</td>
</tr>
<tr>
<td>2000</td>
<td>54.2 m</td>
<td>US$ 4.7 b</td>
<td>7.4%</td>
</tr>
<tr>
<td>2001 (estimated)</td>
<td>60.5 m</td>
<td>US$ 6.5 b</td>
<td>9.2%</td>
</tr>
<tr>
<td>2002 (estimated)</td>
<td>71.9 m</td>
<td>US$ 8.9 b</td>
<td>11.1%</td>
</tr>
</tbody>
</table>

For purchasing airline ticket on the internet we need -1) a computer 2) fast internet access 3) a credit card 4) e-tickets for some of the airlines

Because of the nature of airline business e-commerce bookings are increasing even if all the regular travelers from USA are having necessary means to do online bookings. Airline ticket is sold at different prices depending upon when and where it is sold whether it has been sold late or earlier. Also number of factors is considered such as duration of stay for the person staying Saturday night. Discount is given for regular travelers and for the tickets purchased before fourteen days. Discount is also given for the group purchase of the tickets. Also many airlines are sharing inventory over certain routes to avoid competition. Price also depends on the place where it is sold. Travel agents also offer some discount on prices. Due to the lack of technology changing demands of the customers are not sorted fast which results in less revenue. Airline inventory is time sensitive and with limited quantity. Air tickets sold early generate less revenue and if sold
at high price people will not buy it. If it is not decided when, where and under what conditions to sell the tickets, airline cannot price the tickets online correctly.

To obtain the benefits of e-commerce and to avoid less income, airlines are using new tools such as revenue management systems and Internet distribution systems. Revenue management is also known as revenue optimization or yield management which uses computerized system for analyzing historical booking trends and current booking to find out demand of the passenger traffic for each market segment. It means it calculates the passenger prize levels. Depending upon the prediction and given fares of the booking class, it can be found out the number of seats to be allocated in each booking class in order to maximize the revenue. Such revenue management systems are used by many airlines and an automatic distribution mechanism is used to transmit the recommendations of the revenue management online. Such a mechanism fixes all the scheduled flights, journeys, prices and number of seats which are displayed on the web. It also monitors market competitive activities. Only under these circumstances the prizes of all seats can be found out for each response to the request. In this way only airlines can minimize revenue dilution and can save distribution costs with increase in the custom satisfaction.

E-commerce is capable of changing consumer behavior or customer culture and can bring commercial revolution. But e-commerce is more beneficial to consumers and is less beneficial to the airline industry, which makes airline industry reluctant to take their business online. But it can be predicted that any industry will have its own problems and internet use will depend upon the associated risks. Hence it is quite clear that fast e-commerce growth is not possible in this internet age. E-commerce will grow only 8% of GDP by 2003 in USA, the largest E-commerce country in the world.

Decision making increases with the use of e-commerce and if some body makes the mistakes then the damage will be very high. At the same time it is not known what impact on the organizations and business patterns. It will have after the implementation of the e-commerce airline will have to change organizational structure and business procedures. These changes will be difficult. Airline
industry in U.S.A had taken up certain adventures which show that to get the benefits of e-commerce careful planning and huge investment is needed. Not only the infrastructure but also the tools such as computerized revenue management system and distribution system are need for avoiding income losses. One should know the risks on any high technology and should know what needs to be done. One should not be hasty and should be careful while implementing new technology like commercial use of internet. The government moving online will be an added advantage for the businesses.

Figure 3.2: Airline Profitability Model

Data collected and stored using the e-commerce infrastructure drive the airline scheduling and yield management. Airlines use the sales and the marketing data to build the optimal schedules. They also use the data to set optimal prices and yield management controls.
3.15.2 Future of Airline Business \textsuperscript{[26]}

In spite of the risks in use of e-commerce it is observed that e-commerce use would increase in future in airline business. Google analysis shows that any traveller uses 22 websites to research a trip in multiple shopping sessions before booking. There are more than 200 million tweets per day on Twitter. Apple Company sold 2 million iphone, 5 smart phones in the first 24 hours. Nine in ten UK online free time airline passengers have high speed internet access in their homes. Similarly 94% online free time passengers in France, Germany and china as well as 95% Brazilian and 98% US free time passengers are having high speed internet access in their homes. Passengers spend a lot of time for travel planning, booking and servicing and expect more facilities from airlines. By 2017 it is expected that 50% of the online direct bookings will be done with the use of mobile. World wide e-commerce sales will reach US$1.4 trillion in 2013 with double digit CAGR. The following graphs show the growth in future of the use of smart phone and tablet PCs which are needed to do bookings online.

\textbf{Graph 3.8: Near universal smart phone adoption of passengers 2012-17}
3.9 Anticipate sharp growth in passengers Tablet Device Adoption By 2017

![Chart showing tablet adoption growth by country from 2012 to 2017.]

According to The chief marketing officer of an Asia/Pacific based network/flag airline, airlines websites will produce 59% booking volume by 2017 up from 35% in 2012.

3.15.3 Summary:

All airline product sales are made online. Airline industry is the highest benefited industry for online sales than any other industry. Still, internet is sometimes beneficial and sometimes reduces income. To obtain the benefits of the internet and avoid its damages airlines should use tools such as computerized revenue management system and e-distribution system. E-commerce brings lot of benefits it has many risks which need to be considered and controlled so that they need not turn destructive or to obtain the advantages of high technology. To obtain the benefits of e-commerce and to avoid less income, airlines are using new tools such as revenue management systems and Internet distribution systems. To obtain the benefits of e-commerce and to avoid less income, airlines are using new tools such as revenue management systems and Internet distribution systems. In spite the risks in using e-commerce for airline reservation system the use of e-commerce is growing. Airlines websites will produce 59% booking volume by 2017 up from 35% in 2012.
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