“Technology is important but not a solution unto itself. It offers different things to different people. Individual users want technology to make their job easier. Managers want technology to make their staff more productive. Corporate officers want technology to make them more competitive and improve their own technology. None of these people want technology for technology’s sake.

-G.A. ‘Andy’ Marken
(American Marketing Consultant)

ECONOMIC AND SOCIAL IMPLICATIONS OF E-COMMERCE
Economic Implications of E-Commerce

Business and economy are inextricably linked with the development and implementation of new technology. While e-commerce clearly has a positive impact on the business sector, doubts have been raised about its impact on the macroeconomic growth and development. Section I of the present work, aims to study the economic implications of e-commerce. Impact of e-commerce on the different segments (intermediation process, agriculture, labour market, transportation, taxation, cost price and competition, monetary system) of economy has been studied in this section. In the end of the section, concluding remarks are given.

The information revolution aided by the revolution in the telecommunications and institutional innovations had initially promised to change the nature of the market altogether. The market’s primary role as merely a place where buyers and sellers meet (it had seemed) now has been revolutionized by the impact of the information revolution on its subsidiary role, i.e., as a transmission belt of information. Today market is a place where there is no intermediaries between a seller of a good and its final buyer to the mutual benefit of both parties (Sengupta, 2004). The Internet and its enabled technologies (especially electronic commerce) have caused the costs of many kinds of market interaction to plummet (Saloner, 2001). Not only cost reduction, e-commerce has the potential to stimulate growth and employment in industrialized as well as developing countries. Further, e-commerce allows economics agents (both buyers and sellers) to interact more effectively by creating new market opportunities (Mukhopadhyay, 2002). Thus, e-commerce has strong economic implications at both micro and macro level.

E-Commerce and Economic Growth

While e-commerce clearly has a positive impact on the business sector, doubts have been raised about its impact on the macroeconomic growth, and productive growth in particular. Various studies show that e-commerce had an impressive performance particular in terms of productivity growth (Solow, 1987; Liebowitz, 2003; Lichtenberg, 1995; Sichel, 1997; Brynjolfsson & Hitt, 1996; Berndt et al, 1992; Dedrick et al, 1992).
The US, which leads the world in IT and e-commerce, has had a notable economic performance, particularly in terms of productive growth, since 1995. But, the same was not happened with the developing countries as they failed to catch up technologically with the industrialized world. To assess the broader economic impact of e-commerce and the ramifications of developing countries’ catching up or not, UNCTAD has conducted a quantitative analysis based on two scenario: one in which the developing countries fall behind technologically and one in which they catch up with the developed countries. The analysis is centered on cost saving and assume that e-commerce can reduce costs of services, particularly in retail and wholesale trade, transport and financial and business services. Cost savings in services are stimulated through a productive growth scenario, which allow for the analysis of such macro-economic variables as GDP, welfare, wages and terms of trade. The analysis is a unique application of a computable general equilibrium model to e-commerce at the global level.

According to the report, under the first scenario developed countries would have welfare gains of $117 billion, while the developing world (excluding Asia) would lose welfare of $726 million. The Asian region, on the other hand, would gain $802 million, largely attributable to the transport services sector. Besides welfare and GDP losses, developing countries would also experience a reduction in wages and deteriorating terms of trade.

### Table 4.1

<table>
<thead>
<tr>
<th>Services</th>
<th>Trade (1)</th>
<th>Air Transport (2)</th>
<th>Maritime Transport (3)</th>
<th>Other Transport (4)</th>
<th>Financial Services (5)</th>
<th>Business Services (6)</th>
<th>Services (1) to (6)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Developed Countries</td>
<td>47942</td>
<td>3365</td>
<td>2896</td>
<td>17238</td>
<td>12071</td>
<td>35081</td>
<td>117869</td>
</tr>
<tr>
<td>Eastern Europe</td>
<td>-55</td>
<td>-13</td>
<td>21</td>
<td>11</td>
<td>-8</td>
<td>-53</td>
<td>-93</td>
</tr>
<tr>
<td>Asia</td>
<td>-121</td>
<td>130</td>
<td>528</td>
<td>261</td>
<td>-8</td>
<td>1</td>
<td>802</td>
</tr>
<tr>
<td>Latin America</td>
<td>-197</td>
<td>-5</td>
<td>83</td>
<td>-19</td>
<td>-52</td>
<td>-123</td>
<td>-301</td>
</tr>
<tr>
<td>Africa</td>
<td>-45</td>
<td>-4</td>
<td>69</td>
<td>-40</td>
<td>-12</td>
<td>5</td>
<td>-23</td>
</tr>
<tr>
<td>Rest of the World</td>
<td>-196</td>
<td>-38</td>
<td>96</td>
<td>-8</td>
<td>-56</td>
<td>-124</td>
<td>-309</td>
</tr>
</tbody>
</table>

Source: UNCTAD, E-Commerce and Development Report, 2001
E-Commerce could therefore end up actually widening, and not narrowing, the gap between the developed and developing countries.

Under the second scenario, however, if developing countries were to catch up with developed countries in productivity, they would increase output, wages and welfare.

### Table 4.2

**Welfare Impact of a 1% Increase in Productivity in Each Developing Region Only.**

<table>
<thead>
<tr>
<th>Region</th>
<th>Trade Services (1)</th>
<th>Air Transport (2)</th>
<th>Maritime Transport (3)</th>
<th>Other Transport (4)</th>
<th>Financial Services (5)</th>
<th>Business Services (6)</th>
<th>Services (1) to (6)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eastern Europe</td>
<td>6604</td>
<td>89</td>
<td>56</td>
<td>345</td>
<td>122</td>
<td>492</td>
<td>1770</td>
</tr>
<tr>
<td>Asia</td>
<td>3601</td>
<td>1914</td>
<td>1530</td>
<td>2389</td>
<td>863</td>
<td>1706</td>
<td>12012</td>
</tr>
<tr>
<td>Latin America</td>
<td>1920</td>
<td>1199</td>
<td>860</td>
<td>1439</td>
<td>949</td>
<td>1236</td>
<td>7614</td>
</tr>
<tr>
<td>Africa</td>
<td>1214</td>
<td>144</td>
<td>139</td>
<td>1214</td>
<td>233</td>
<td>383</td>
<td>2663</td>
</tr>
</tbody>
</table>

*Source: UNCTAD, E-Commerce and Development Report, 2001*

A 1% productive growth in the service sector in Asia, for example, would result in welfare gains of $12 billion, GDP growth of 0.4% and a 2 to 3% growth in the service exports (Table 4.1 & 4.2). By reducing costs, increasing efficiency, reducing time and distance, e-commerce could thus become an important tool for development.

### Impact of E-Commerce on Economy

Business and the economy are inextricably linked with the development and implementation of new technology (Tassabehji, 2003)\(^{14}\). Growth and development of any modern economy has been recognized by many economic theorists, such as Kondratieff, Schumpeter, Mensch and Porter, to be based on innovation of new technology. In the early twentieth century, the economist Kondratieff\(^{15}\) introduced his ‘Long Wave Theory’\(^{16}\) of economic growth. He detailed the numbers of years that the economy expanded and contracted during each part of the half-century long cycle, which industries suffer the most during the ‘downwave’ and how technology plays a role in leading the way out of the contraction into the next ‘upwave’. Building on this theory the economist Schumpeter\(^{17}\) assigned technological innovation an almost exclusive role, as engine of economic development: the fundamental impulse that sets and keeps the capitalist engine in motion comes from the new consumers’ goods, the new methods of production or transportation, the new market, the new forces of industrial organization that capitalist

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\(^{16}\) The theory was based on a Study of 19th Century price behaviour, which includes wages, interest rates, new material, prices, foreign trade, bank deposits and other data. From this he suggested that a long order of economic behaviour existed and could be used for the purpose of anticipating future economic development. He mentioned that an economy goes through the phase of prosperity, recession and recovery in cycles of around 50-60 years.

enterprise creates\textsuperscript{18}. Mensch (1979)\textsuperscript{19} updates the Schumpeter theory, giving it an empirical base in history, where clusters of innovation take place and generate completely new sectors. He stressed that only technological innovations can overcome depression and that government must implement an aggressive innovation policy to stimulate the search for new and basic innovation. Further, Porter (1990)\textsuperscript{20}, emphasizes that the prosperity and competitive advantage of a nation is no longer as a result of a nation's natural resources and its labour force, but rather the ability of its industry to innovate and upgrade. This can be seen as a disruptive technology on a macro environmental level. And today, whether economic community subscribes to these economic theories or not, the impact of new technology on the economy of a nation is indisputable. Continuous growth of e-commerce is expected to have deep impact on structure and functioning of economies at various levels and overall impact on macroeconomy. Some key areas are discussed below:

**Impact on Intermediation**

Traditional production, transportation and distribution process is characterized by the liner-point-to-point path\textsuperscript{21}. In this process intermediaries play an important role (see figure 4.1). In physical world\textsuperscript{22}, because of large distance between production units and consumer units, it is not possible for consumers to approach producers directly and vice versa. The existence of intermediaries namely, distributors, wholesalers and retailers, this increase the transaction costs for both the producers and consumers.

\textsuperscript{18} Dicken, P. (1992), *Global Shift: The Internationalization of Economic Activity*, Paul Champman.

\textsuperscript{19} Mensch, G. (1979), *Stalemate in Technology*, Ballinger.


\textsuperscript{21} In a typical (point-to-point) supply chain, physical goods flows from up stream to down stream (i.e., products from manufacturers to wholesalers, wholesales to distributors, distributors to retailers and retailers to the customers)

\textsuperscript{22} Physical world here mean, an environment in which all commercial activities are conducted without the help of any electronic media.
But in the emerging economic scenario, liner-point-to-point information and knowledge flow no longer represent the reality. In the process of e-commerce transactions, it is possible for the consumer to conduct and place an order with the manufacturer instantly and directly (Singla, 2000).\textsuperscript{23} And same is possible within the various agents of this process (i.e., between producer and Retailers, Retailers and Distributors, Distributors and Retailers etc.). E-Commerce technology brings about the benefits of more accurate and timely information flow, administrative saving, lowering total distribution cost\textsuperscript{24}, closer trading relationship (see Figure 4.2), improved cash flows\textsuperscript{25}, and moving closer to the end consumers (Gattorna & Walters, 1996).\textsuperscript{26}

\textsuperscript{24} E-Commerce can coordinate distribution, transport, buying in bulk, which has the effect of lowering total cost of distribution.
No doubt that online ordering and delivery of products is reducing the role of intermediaries. Therefore, it is also feared that intermediaries would be completely eliminated in the e-commerce economy. However, this fear may be unfounded. In e-commerce economy, though it is possible to deliver a number of goods and services online, it may not be possible to eliminate the physical delivery of many goods because of their nature. Goods such as vegetables and grocery, garments and shoes, toys etc cannot be delivered online (they have physical existence). Though intermediaries like wholesalers and retailers can be eliminated in such transactions, it may not be possible to eliminate distributors and transporters. The demand for distributors and transporters is in fact expected to increase tremendously (Westland and Clark)\textsuperscript{27}. Even with the advent of e-commerce technology, the functions of intermediaries will not change, because collecting information is a labor and time-intensive task. However, this group can exploit new opportunities\textsuperscript{28} and challenges.

**Impact on Agriculture**

The open access architecture of the Internet, declining information technology costs, and high volume have resulted in progressive steps forward for the entire marketing system. Parallel changes in the structure of agriculture have also contributed\textsuperscript{29}


\textsuperscript{28} The corresponding fall in the cost of and time required to collect this information will increase the productivity and customers will respond accordingly by asking for more services from the intermediaries. Within this activity, intermediaries will contribute in a positive manner to the value of the product and to their customers and as purchasing costs are lowered; they will generate more demand for their services.

\textsuperscript{29} USDA's annual National Agricultural Resources Management Study, showed 29\% of the farms had Internet access by 1995 and about 15\% of those had conducted some business (E-Commerce) over the Internet, mostly to purchase crop inputs (Morehart, M. and Hopkins, J. (2000), "On the Upswing: Online Buying and Selling of Crop Inputs and Livestock". Agricultural Outlook, September, p. 4. Further, study of
to the popularity of the current generation of information technology. Chief among the changes is in the need for closer coordination of the supply chain—both upstream and downstream from the producer—and stretching from seed, fertilizers, and machinery suppliers, to the food processors and retailers\(^30\). Thus, technologies like electronic commerce have forced new relationships between and among the buyers of agribusiness to form a complex web interaction (Ehmake et al., 2001)\(^11\).

Various studies shows that there is much about the potential success of e-commerce’s in agriculture. Common agribusiness business-to-business transactions such as buying, selling, trading, delivering and contracting seem to be natural targets for conversion to e-commerce (Shapiro and Varian, 1999)\(^32\). Many theoretical benefits of e-commerce in agriculture have been identified such as: (1) promotion of information flow, market transparency and price discovery (Poole, 2001)\(^33\); (2) facilitation of industry coordination (Nicolaisen, 2001)\(^34\); and reduction or elimination of transaction costs (Porter, 2001)\(^35\); Thompson, 1996)\(^36\). Internet based e-commerce also offer tremendous opportunities to create collaborative marketplaces in low-cost, effective way (Nicolaisen, 2001)\(^37\). E-commerce can also change the situation of hard bargain caused by scattered farmers and lack of information. At the same time, the fast and convenient electronic bargain manner can accelerate the circulation of commodities, and lessen the risk, and increase the competitions of agricultural products in the international market (Cao and Chen, 2001)\(^38\). These theoretical benefits appear to be undisputed. However, these have yet to materialize into profitability. Study of Golman Sachs (2000)\(^39\) discussed the general barriers cited by business to Internet based e-commerce adoption and explained that these barriers also apply to agribusiness as well. These barriers include: (1) unclear return on investment (2) lack of budget (3) lack of stakeholders support and (4) complicated technology. Added to these, there may be some other factors\(^40\) slowing down

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Goldman Sachs estimates that 12% of all agricultural sales in the US will be conducted over the internet in the year 2004, compared to only 4% in the year 1999.

\(^{30}\) In traditional form of supply system products moved from the manufacturer to a series of wholesale distributors before reaching the retailers and the producers.


\(^{37}\) Nicolaisen, R. (2001)


\(^{40}\) Lack of education, poverty, poor IT infrastructure and lack of technology savvy people (farmers and business people) may be another reason for the poor implementation of e-commerce in agriculture; this is especially true in the developing countries like India.
e-commerce adoption in agriculture. No doubt, e-commerce has huge opportunities for the agricultural sector; but adoption of e-commerce in agriculture is not an easy task. And at this point of time it is not very clear-the impact of e-commerce on farms, agribusiness firms, markets, and rural communities. Are there only winners or are losers too? If so, who are they? What will government do, with or against e-commerce in agriculture? Since e-commerce is still evolving, it is too early to definitive answer (Mueller, 2000)\(^41\). An inspection of current practices; however, suggest that success of e-commerce in agribusiness is undeniable. Factors specific to agriculture will create additional challenges, which must be overcome before success may be attained. The ability of each player to work though these challenges will determine the speed of implication of e-commerce in agriculture.

**Impact on labour Market**

E-Commerce, consisting of marketing and other business processes conducted over the computer-mediated networks is changing the way organizations in many industries operate. It leads to the automation of some job functions and replaces others with self service operations, raising output per worker and dampening employment requirements in some occupations, as well as in the industries in which these occupations are concerned (Hecker, 2001)\(^42\). The introduction and implementation of new technologies has posed important challenges for the commercial workers and their trade unions worldwide. Among the issues that unions have to deal with are, both B2B and B2C, self-scanning, logistics system, multimedia and other in store sales support applications. In many ways, they are already deeply affecting labour market (Gottardi et al. 2004)\(^43\). In contrast, e-commerce has spurred employment in industries producing software, and systems used by e-commerce and other occupations associated with websites and networks.

Various studies\(^45\) showed that e-commerce has a positive impact on the labour productivity. In a recent study, Atrostic and Nguyen (2004)\(^46\) considered the impact of computer networks on the labour productivity in the US manufacturing sector, using micro data predominantly for 1999. They found a positive and significant impact of computer networks on plant level labour productivity, suggested that networks increase

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\(^44\) E-Commerce activities, in general, will spur employment needs for workers involved in e-commerce systems and organizations and its website design. More computers workers are needed to set up, maintain, and oversee the additional hardware and software systems that e-commerce require. Among the workers needed are computers and information system managers, computer system analysts, computer engineers, computer support specialists, database administrators, computer scientists and computer programmers. E-Commerce activities also require more artist and commercial artists, designers and writers and editors.

\(^45\) Their studies is based on companies that use all computer mediated networks, including Internet and therefore, it provides a useful reference for our analysis.


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labour productivity by around 7.5 per cent. Motohashi (2001)\textsuperscript{47} provides evidence for the positive impact of different information networks on labour productivity in Japan. In the UK a recent study by Criscuolo and Waldron (2003)\textsuperscript{48}, based on Annual Business Inquiry, shows that buying online positively affects the labour and total factors of productivity, while selling online has a negative impact on productivity.

But, perhaps the larger impact of e-commerce on labour market can be seen in the form of online job search. However, very little is known about the importance of online job applications or direct employer initiated contracts with potential candidates. Even then, online job posting has grown spectacularly (Autor, 2001)\textsuperscript{49}. Estimates place the number of online job boards\textsuperscript{50} at over 3000, the number of active resumes online at over 7 million, and the number of job posting at 29 million (Boyle \textit{et al}., 1999\textsuperscript{51}; Computer Economics, 2000\textsuperscript{52}). Kuhn and Skuterud (2000)\textsuperscript{53} reported that 7 per cent of employed workers regularly use the web to search for a new job in 1998. The leading job board\textsuperscript{54}, Monster.Com, offered 3.9 million resumes and 4, 30,000 jobs in August 2000 (Nakamura and Pugh, 2000)\textsuperscript{55}. Further, the Internet is likely to change how some workers deliver labour services. For example, falling telecommunications traffic regardless of where it originates (Call Centres, 1997\textsuperscript{56}; Uchitelle, 2000\textsuperscript{57}). Improvements in communication and control technology likely mean that people who monitor equipment or other workers can perform their task at the greater physical remove. Remote access to e-mail and company documents will enable many workers to perform some or all of their work from home to elsewhere.

\textsuperscript{47} Motohashi, K. (2001), \textit{Economic Analysis of Information Network Use: Organizational and Productivity Impacts on Japanese Firms}, Research and Statistics Department, METI Tokyo, Japan.


\textsuperscript{50} Job boards holds several advantages over their textual counterpart, newspaper help wanted ads. They offer more information about more jobs in more locations than is conceivable for paper equivalents. They are easier to search. They are potentially more up-to-date, because ads are posted more immediately and can be edited frequently. Job boards can also take an active role in matching, rather than waiting on workers or firms to find one to another, software can parse posted job listings and resumes to identify plausible matches and notify both the parties.


\textsuperscript{52} Computer Economics (2000), \textit{"Resume Renaissance: Projected Number of Resumes From 2000 to 2003"}, Internet Marketing and Technology, July 6-7.

\textsuperscript{53} Kuhn, Peter and Mikal Skuterud (2000), \textit{"Internet and Traditional Job Search methods, 1994-1999"}, Paper Presented to the IRPP and CERF Conference on Creating Canada’s Advantages in an Information Age, May.

\textsuperscript{54} Some job boards are provided on a non-profit basis. For example, the US Department of Labour runs America’s Job Bank, to be found at (http://www.ajb.org), which makes the job listing and search services of the Us Public Employment Service broadly accessible, and Canada’s CareerOwl job search facility, developed by the university faculty, volunteers and found at (http://www.careerowl.ca), provides job search assistance for the Canadian Student.

\textsuperscript{55} Nakamura, Alice and Theresa Pugh (2000), \textit{"Internet Recruiting: A Background Report"}, Paper Presented to the IRPP and CERF Conference on Creating Canada’s Advantage in an Information Age, May.

\textsuperscript{56} Call Centres (1997), \textit{"A Nation of Telephonist"}, The Economist, November 1.

Impact on Transportation

At least from a theoretical point of view, it seems quite clear that the online shopping\(^{58}\) could lead to reduction of transport demand. In some cases, online shopping eliminates any kind of physical transport (when goods can be dematerialized as software, books, music etc.). In other cases, a goods transport is still necessary, but the journeys to shops are eliminated or reduced. Even if the purchase is finally made at the shop, the consumer can have used the Internet, looking for information, instead of visiting different shops (Keskines et al., 2001)\(^{59}\). Thus, electronic commerce transactions have strong implications on transportation. In this context, numbers of studies have been conducted to measure the impact of e-commerce on the number of trips. Browne (2001)\(^{60}\) first quoted the study made by Farahmand and Young (1998). It modeled the effects of the number of trips by switch to home shopping of 10 per cent of the customers of a grocery store and a DIY store (of a typical size) in the UK. They assumed that delivery vans would carry the loads of nine customers on each round trip. In both the cases, the reduction in total trips is around 9 per cent. The vehicle kilometer made by the delivery vans for the 10 per cent of home shoppers suppose a reduction of 87 per cent in comparison with the vehicle kilometers previously made by car. Further, the study (Coirm, 1999) also modeled a case of grocery home delivery in UK and their result shows that if 10-20 per cent of shoppers use home shopping, the reduction in the trips could arrive to 7-16 per cent. For the purchase made from home, the reduction in vehicle kilometers is 70-80 per cent even if each van only carries eight loads.

Not only on the retail transportation, e-commerce does have impact on the companies where heavy transportation is needed. E-transportation tool can enable seamless connectivity, provide dock-to-dock visibility of the supply chain, and deliver real time information that leads to better and faster decisions\(^{61}\). E-transportation also enables shippers a choice of carriers to be used for shipments of merchandise varying in weights and service, and identifies all shipping packing, marking, labelling and communications requirements as well. (Vevaldi and Prasad, 2002)\(^{62}\). But many shippers still are not quite ready to put their faith in this relatively new e-commerce tool. Indeed, as with the introduction of new technology, e-commerce as it relates to the transportation industry, is going to take time to catch on.

\(^{58}\) Online shopping represents about 10-20 per cent of total e-commerce (B2C+B2B) and just a little proportion of retail trade, less than 1 per cent in the US, the most developed e-commerce market. However, now it is growing very fast. Colin, (2001) estimated that online shopping could arrive to around 5-7 per cent of retail trade in 2005 in the US and Europe. (Colin, J. (2001), *The Impact of E-Commerce on logistics*, Paper Presented at OECD/CEMT Joint Seminar on ‘The Impact of E-Commerce on Transport’, Paris, June.


\(^{61}\) Other benefits of e-transactions are: (1) electronic execution of transactions (2) elimination of clerical error (3) compressed cycle time (4) increased asset utilization and increased incremental revenue for private fleets (5) streamlined procurement practices (6) direct savings ranging up to thousands of million of dollars and (7) automation of time consuming manual process.

Impact on Taxation

When new technologies evolve, can taxation issues be far behind? If e-commerce is being billed as one of the greatest economic developments of the 21st century, the taxation issues arising from it pose the single biggest challenge of the century to both businesses and the taxman's. (Girish, 2000) This is particularly true in the context of digitized products because transactions of such products are not backed up by any physical goods. As e-commerce transcends the barriers of geographical boundaries, the concept like the place of transactions and place of consumption become immaterial. Therefore, it is often difficult to determine national jurisdiction and revenue rights particularly in the case of digitized products.

It is trite, but true, that taxation of e-commerce is a major concern for the international agencies and the tax authorities worldwide. In Europe, North America, and Australia and in many Asian Countries (particularly India and Singapore) substantial research have been conducted on the impact of the e-commerce on taxation. Among the plethora of books, reports, articles and papers produced on this topic however, the work of Organization for the Economic Co-Operation and Development (OECD) stands out as the most significant, given its commitment to consulting broadly with the governments.

65 Briefly, the following issues arise for consideration:

- Traditional “source” concepts were based on a strong connection between economic activity and a specific location. Traditional “residency” concepts were based on the parameters such as personal and economic relations, physical presence and place of effective control. These concepts were used as effective tools in allocating tax rights between various countries. As technological changes weaken the physical nexus of business with a specific geographical point, what are the implications for the above concept? With whom lies the jurisdiction to tax?
- A related issue to the above is about the constitution of a Permanent Establishment (PE) in a world where business is carried on in its bits and bytes. Are the traditional principles of PE valid in the determination of the jurisdiction to tax? Can a server or a server space constitute a PE for the tax purpose?
- How can income from transfer of technology over the Internet be characterized? Does it constitute business profits or royalties? Is there an erosion of source taxation?
- How can new technologies be used to improve the administration of taxes by checking problems of tax evasion, identifications and audit trails of the transactions and providing better services to the tax payers?
- What would be the transfer pricing issues arising out of EC transactions?
- What are the issues arising in relation to Value Added Tax (VAT).


65 A proactive and interesting conclusion is submitted by Krever (2000), “Electronic Commerce and Taxation – A Summary of the Emerging Issues”, Asia Pacific Tax Bulletin, June, p 151, who states: “a more sober study will reveal that in many respects much of the hyperbole about the e-commerce and tax is just that and in the overall scheme of things the impact of e-commerce on tax systems may be limited. It is the case, however that e-commerce will place enormous strains on the some aspects of consumption tax bases and will test the boundaries of some important international income tax concepts such as the source of income and the definition of ‘permanent establishment’”. See also Mattson (1997), “Demystifying Taxation of the Global Electronic Commerce: Let’s Get On With the Business of E-commerce”, Paper submitted to the OECD for round table discussion on November, And Boyle; Peterson, Sample; Schottenstein and Sprague (1999), “The Emerging International Tax Environment for Electronic Commerce”, Tax Management International Journal.

66 the OECD has done some pioneering work in highlighting not only issues connected with the Electronic Commerce, but on the overall e-commerce industry. For example, in 1992, the OECD revised its commentary on Article 12 of its model convention to incorporate the income characterization relating to the
worldwide as well as with the business community to develop an integrated and comprehensive approach to the taxation of e-commerce.

The identification and analysis of the inter jurisdictional measures imposed by e-commerce is one thing. The formulation of domestic and treaty policies for dealing with e-commerce is another, even more controversial challenge. Perhaps, the most fundamental threat to the international tax system is the erosion of the worldwide tax base. It is increasingly possible for a company to try to divert income to a tax haven by locating its server there. This raises issues of allocation of business profits between the residence and source countries and leakage to tax haven (Cidambi, 2000)\textsuperscript{67}. The debate over how international tax principles ought to be revealed and may be reformed is still in its formulative stage. It would be necessary to equip the tax administration after reviewing the entire procedure in the light of the advent of e-commerce. First, the procedures have to be simplified. Second, it would be necessary top create an environment within the tax department to ensure that the tax laws are implemented appropriately, and that integrity of the tax base is maintained\textsuperscript{68}. (Mantravadi and Chowdary, 2002)\textsuperscript{69}.

For India, it is high time to learn from the experience of the work of OECD, Japan and the US to suggest a strategy to encourage e-commerce and integrate the tax system in such a way that it takes care of the twin problems of determining the sites of sales and also identifies the jurisdiction with regard to its authority to tax transactions. In doing so, we have to keep in mind the associated risk for the tax compliance.

**Impact on Cost, Price and Competition**

Logically, e-commerce reduces search and transaction cost (Mukhopadhya, 2002)\textsuperscript{70}. The net impact of e-commerce on UK Economy has been estimated to be between 2\% to 3\% of GDP (Landon Economics, 2000). It has also been estimated that improved demand forecasting and stock management as a result of e-commerce will enable reduction in overall inventories by as much as 25\% in the US. At the micro level, there is evidence that this will provides an one-off sustainable improvement in the profitability by an average of 5\% or more for the enterprises currently working with low margin (Goldman Sachs, 1999). The e-commerce lowers costs because\textsuperscript{71}, the Internet

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\textsuperscript{68} For example the system of registration of dealers and submission of tax returns could be through e-mail.


\textsuperscript{71} E-commerce provides a new distribution channels, ideally suited to products and services that can be digitized (such as software, information etc.). These can be delivered for a fraction of cost of traditional distribution channels. Enterprises working online have greater reach, so that they are able to find the cheapest suppliers for their purchasers. e-commerce enables rationalization of the supply chains as more efficient intermediaries emerge to displace existing ones.
lowers selling search costs as well as, by allowing seller to communicate product information cost effectively to potential buyers, and by offering sellers new ways to reach buyers through the targeted advertisement and one-on-one advertising. Thus it is helpful in reducing the search costs on both the sides. By reducing search costs on both sides of the market, it appears likely that buyers will be able to consider more product offering and will identify and purchase products that better match their needs, with a resulting increase in economic efficiency. But the reduction in the cost combined with new capabilities of technology can set off more complex market dynamics (Bakos, 2001).\(^\text{72}\)

\[\text{Figure 4.3: Net Impact on Cost}\]

<table>
<thead>
<tr>
<th>Decrease in the cost</th>
<th>Increase in the cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Paperless transactions</td>
<td>• Packing cost</td>
</tr>
<tr>
<td>• Reduction in the inventory level</td>
<td>• Transportation and distribution cost</td>
</tr>
<tr>
<td>• Reduction in the middlemen</td>
<td>• Payments to portals and e-retailers</td>
</tr>
<tr>
<td>• Lower manpower</td>
<td>• Increase in the number of warehouses</td>
</tr>
<tr>
<td>• Reduction in the property cost</td>
<td>• High cost of e-advertising</td>
</tr>
<tr>
<td>• Reduction in the advertising cost</td>
<td>• Web page development</td>
</tr>
<tr>
<td>• Increasing the return to scale</td>
<td></td>
</tr>
<tr>
<td>• Lower transaction cost</td>
<td></td>
</tr>
</tbody>
</table>

The lower search and information cost should push markets towards a greater degree of price and competition, and this outcome is certainly possible, especially for the homogeneous goods. On the other hand the use of Internet technology to provide differentiate and customized products, and thus avoid competition purely on the price.

Lower search costs in the digitized markets will make it easier for the buyers to find\(^\text{73}\) low cost sellers and thus will promote price competition among the sellers. Thus e-commerce economy comes quite close to the features of the prefect competition, as larger numbers of buyers and sellers can instantly interact with each other. However, some of the distinguishing characteristics of the e-commerce set up also have the potential for creating the monopoly power in the certain lines of products. The e-commerce set up has negligible distribution cost for the intangibles and therefore marginal cost of the production and distribution is almost nil for these goods. Sales of these goods to a particular customer does not reduce its availability to the other potential customers. Economies of scale arising out of negligible marginal cost, along with network externalities and consumer preference for the already acquired skills, provide natural monopoly power to some of the products in the e-commerce set up. Early birds are thus expected to reap the benefits in these lines of production. Therefore, in the e-commerce environment, monopoly is expected to exist along with the prefect competition. Competition would be especially seen in those areas where goods and services cannot be digitized and economies of scale are not very prominent. Breaking the


\(^{73}\) This effect will be most pronounced in the commodity markets, where lowering search costs may result in the intensive price competition, as customers can 'shop' around the world and conduct conduct comparison either directly by visiting different sites, or by visiting a single site where prices are aggregated from a number of providers and compared (example: www.moneyextra.co.uk; for financial products and services)
monopoly power to remain in the competition would require high speed of innovation and making the product visible all the time, whether there is a demand for the products or not. Competition would be basically in the forms of converting ideas, knowledge and brainpower into innovation.

**Impact on Money**

With the new economic landscape now outline, let us return to the money. Not surprisingly, in the intangible (e-commerce based economy) economy, money is also becoming increasingly intangible. The relative weight on non-cash monetary transactions now exceeds the value of cash money by the factor of ten (Goldfinger, 2002)\(^{74}\). Money and payments are delivered via electronic networks as data bits and database entries. At the wholesale level, money representation and manipulation are fully automated. Beyond the alteration of the appearance and mechanics of money, there are deeper structural changes. The triumph of markets means that money is increasingly used to settle multilateral transactions rather than the bilateral commercial transactions. The functional evolution in turn leads to profound modification in the design of the clearing system and networks, which need to handle large volume, work in real time, and offer more open access. Growth of e-commerce and development of various payment alternative channels (ie. Debit and Credit Cards, E-Cheque, Digital Purse, E-Cash etc.) assist payment channels. The delivery channels greatly impacted the retail banking and the wholesale markets of banks (Avasthi and Sharma, 2001)\(^{75}\). And today, these new technologies have transformed the banking business almost beyond the belief in the last decade and the half\(^{76}\). Most of all the customers have benefited\(^{77}\), as have the bank themselves (Sumanjeet and Mehlawat, 2005)\(^{78}\). But, this new forms of money has also posed certain challenges before the banking sector, most of them are related to IT plans\(^{79}\) (Kamesan, 2005).

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\(^{76}\) The first banking system designed for the Internet was written in 1996 and the first Internet bank was set up in US. However, the concept of using IT in banking actually begun in the 1950s when the first automated book-keeping machines were installed at the few US Banks.

\(^{77}\) In the banking sector IT can reduce costs (according to American Banking Association, the cost of a single banking transaction at a traditional bank branch is $1.1, whereas an internet transaction costs barely 0.1, Indian rates are Rs. 35.38 though the traditional account, Rs. 14-16 though an ATM and only Rs. 1-3 via the Internet), increase volume, and facilitate customized products. It opens up new markets. Funds can be transferred electronically between accounts accounts, drastically reducing the need to keep hard cash. Besides, there are lower service fees but the higher interest rates of deposits. The investment for the setting up bank branches is reduced, as the online trading requires fewer branches. There is no need of manual updating of accounts. Relocation of customers does not matter. Internet based banking offers a bouquet of services- mutual funds, brokerage, consumer finance and credit cards. Last but not the least, very large data can be stored for information and decision-making. More secrecy is observed in using IT in banking sector as compared to the manual file system.


\(^{79}\) Deciding the IT plans for the bank as whole; working out the strategy for the implementation of plan' training requirements for the IT implementation data warehousing, data mining and other related areas; sourcing of IT requirements; standardization of the various components of IT-including hardware, software, operating system and application software platforms; interfacing across the banks-especially in the context of the competition.
No doubt, these changes make money more visible and pervasive but also less stable, more volatile in its value and more elusive. Therefore, in the new economy, monetary policy become more important as a lever of economic management at the same time that the classical monetary aggregates-$M_1, M_2, M_3$—lose their reliability as signals of the future economic growth and inflation (Goodhart, 1984). Nevertheless, one thing appears certain, electronic money will continue to emerge, rendering the overall money landscape more intricate and multifarious. To facilitate the emergence of electronic money, it is important to be open minded, to accept innovate vision of money and money transaction. At the same time it is also essential to recognize that many of these visions will either never be implemented or fail the critical test of customer acceptance.

**Concluding Remarks:**

The emergence and rapid growth of Internet and E-Commerce has strong implications on economic and social actitivities. It is quite possible that these new technologies might transform the future of economic and societal landscape. At the economic front, there is a clear evidence that E-Commerce and Internet technology have positive impact (UNDP, (2003), Pohjola (2000), Dewan and Kramer (2000), Kraemer and Dedrick (2000)). To study the economic implications of e-commerce, few areas of economy (transportation, Intermediation, Agriculture, Labour Market, Taxation, Cost, Price and Competition, and money) has been selected. On the basis of various studies it is revealed that e-commerce technology have strong economic implications. At the general level, there are two types of potential economic gains from the use of E-commerce and IT enabled technologies. First, are the gains in efficiency, both in static and dynamic. Static gains are one-time, and come from more efficient use of scarce resources, allowing higher consumption in the present. Dynamics gains come from higher growth, potentially raising the entire future stream of consumption and population. Efficiency gains of e-commerce also come about through the enabling of new digitized goods and services. The second type of potential benefits comes from cost reduction. Studies indicates that e-commerce is helpful in reduction of search cost, administration cost, distribution cost and even the labour costs. However, all these opportunities are yet to materialize in to profitability i.e. in agricultural sector, benefits of e-commerce exists, but, only theoretically; not practically, as the implemetnation of e-commerce technology in

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UNCTAD/SIDTE/ECB/20031 accessed on http://www.unctad.org/e-commerce
agricultural sector has certain challenges. Addes to this, e-commerce based economic models has also posed number of challenges before the concerned people and community. The area of e-taxation is one of the best example and most controversial issue all over the world. As e-commerce transaccends the barriers of geographical boundaries, the concept like the place of transactions and place of consumption become immaterial. With the emergence and growth of digital money in the economy, the chances of frauds have also increased. Another most difficult issue is the planning regarding the adoption and implementation of e-commerce technology in the various economic activities. In nutshell, with the e-commerce based economic models, there is little to lose and more to gain.
Section-II

Social Implications of E-Commerce

There are various things that can be done by the use of the web to make a difference, whether it is donating money to charities via click through, educating people, helping the local community, signing the online petition or accessing the information. Section II of this chapter, mainly aims at to study the social implications of e-commerce. To study the social implications of e-commerce and other IT enabled technologies in a systematic manner, few areas have been selected, especially those which are of prime social interest. Further, to justify the true impact of e-commerce on the society, negative impact of e-commerce and IT on the society has been studied. In the end of this section, concluding remarks are given.

Basically, electronic commerce is an economic phenomenon; it forms part of a broader process of social change, characterized by the globalization of markets, the shift towards an economy based on the knowledge and the information, and the growing prominence of all forms of technology in everyday life. These major societal transformations are now under way and will probably continue far into the foreseeable future. As both a product and manifestation of such transformations, electronic commerce is being shaped by, and increasingly will help to shape, modern society as a whole. Social factors will thus have profound influence on its future development. They will also merit attention from a public policy standpoint, both to establish the social conditions that allow electronic commerce to reach its full economic potential and to ensure that its benefits are realized by the society as a whole. It is therefore vital to understand the social processes that will inevitably influence how electronic commerce evolves and how quickly it can grow, as well as the areas where, through externalities of various kinds it may profoundly affects society.

Impacts on Society

Initiatives beginning ICTs and Internet access to the poor people and communities have been active since early 1990s. The 1998/99 World Development Report entitled ‘Knowledge for Development’ accelerated this process (World Bank, 1998-99). Support often took the form of regional or global grant mechanism. Domestic organization

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86 The knowledge-based economy is commonly thought of as an information technology economy, with an emphasis on software and hardware. Information technology is however, primarily an enabler, not an end in its own right (other than for data based products such as information). As such, it will have an impact on the entire economy.

87 Analysis of social dimensions of electronic commerce is hindered, however, both by the rapidity of change, which limits the collection of quantitative data on the growth and implications of new forms of electronic business, and by the difficulty of isolating electronic commerce from ICTs more generally. Research is also hampered by the pervasiveness of electronic commerce in the economy and the consequently diffuse nature of its linkage to broader social, institutional and cultural factors. Within these limitations, this section of study reviews literature and evidence from a variety of disciplines to point to areas where a significant relationship appears to exist between social and economic considerations and which consequently may merit attention in terms of public policy.

cooperated with international donors (Spence, 2003). Recently countries experience a more systemic diffusion of ICTs, with national programmes in most countries aimed at introduction and rollout of e-strategies, like e-government, e-learning, e-commerce and e-business, after financed by the international donor community.

There are various things that can be done to use the web to make a difference, whether it is donating money to charities via click through, helping the local community or signing an online petition. The launch of a site from Amnesty International that enables people to e-mail and SMS their support for the various cases is one such scheme. Today, the response rate for each appeal has been growing rapidly and Amnesty can now expert around 5000 people to respond within a couple of days, with people signing up to the urgent appeals at a rate of two minutes. By using the web in this was to target users, Amnesty International can now reach people that otherwise would never been able to get involved with the organization.

To study the social implications of electronic commerce and other IT enabled Technologies in a systematic manner, few areas have been selected, especially those, which are of most social interest and where the impact of these technology can be seen widely. Among them some of the most important are:

Health: Information technology and electronic commerce health care applications can play an integral role in the promotion of virtuous cycle. It can help realize cost saving while broadening the reach of the health care system (Industry Canada, 1998). In addition Internet and other IT enabled technologies can assist the overall health system to become more cost effective through, structural and functional rationalization of the delivery system, and the wide implementation of ICT will result in improved availability and quality of health services (European Commission, 1996). It can play a positive role in expanding services and service delivery options while creating cost efficiencies in the administration and management of health services and therefore lead to greater economic prosperity. This is particularly true if access to these now and better services is extended to the most disadvantaged segments of the society, as they have the most to gain from improved health conditions.

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90 Examples are the Botswana National e-learning strategy, co-funded by the European Union, Namibia’s e-government strategy, Egypt’s e-government portal (www.egypt.gov-eg/english/default.asp), or the large scale ICT programme for Education in Ethiopia, co-funded by the World Bank (www.uneco.org/aisi/nici/ethiopia/ethiopia.htm).
91 This is one of the world most oldest and popular Human Right Organization.
92 It is well established that a population’s overall health is closely related to its economic prosperity. Improved health conditions and access to health information contribute significantly to economic growth, because healthier workers are more productive. Government policies that promote health education help people lead healthier lives by increasing their access to and are of relevant information. When combined with polices to ensure effective and accessible health services and those generate income growth, a virtuous cycle is created in which economic growth and improvements in health reinforce each other (World Bank, 1993), World Development Report 1993: Investing in Health, Oxford University Press, New York).
Education and Human Resource Development: ICTs integration in primary, secondary and tertiary education is one major goal of ICT projects. One prominent project is the SchoolNet initiative that aims to connect school to Internet and to train teacher in the developing countries. They operate in partnership with the private sector, government, NGOs and the donor community. In South Africa per example, where SchoolNet is focusing on historically disadvantaged schools, almost 3000 schools are already involved in the initiative (Spence, 2003). ICTs also have deep impact on distance education, which is currently most relevant to poverty reduction. E-learning enhances the access to education for the who have access to ICTs reducing several constraints that distance education has faced in the past: lack of interactivity, long development cycles, lack of flexibility of materials and insufficient support mechanisms for learners (UNESCO, 1996). In tertiary education access to online journals and to other information through the world wide web (www) has revolutionized research possibilities in the countries with the limited resources.

Poverty Alleviation/Reduction: information and communication technologies (ICTs) have an important role to play in reducing the poverty by improving the flows of information and communications. Much of the recent attention to the role of ICTs in development has focused on the new technologies, such as the Internet and mobile phones. Yet no full range of ICTs is relevant to the fight against the poverty (Chandra, 2003). The potential impact of ICTs on the poverty can be seen at the micro level, intermediate and macro level. At the micro level, ICTs can be used by the poor directly to address their information needs, develop their own strategies and solutions for improving their lives, and articulate their interest in societal processes and institutions that affect them. At the intermediate level, ICTs can help a range of intermediary institutions and agents work more effectively and be more responsive to the needs of the poor. Health workers can access the latest information, get assistance with diagnosis, and more effectively target intervention and resources with the help of ICTs. At the macro level, ICTs can help foster more efficient and transparent markets more participatory process of the governance, and new forms of economic and social innovations that benefits the poor.

Gender Equality: Since recent studies indicate that the Internet use by men and women may soon approach equality, gender is becoming less of an issue. There is clear evidence that the majority of poor are women and poverty reduction is nowadays highly
correlated with the gender equality. Thus it is stressed to include the gender equality into ICT Policies, programmes, projects at all level. Experiences range from empowerment initiatives at local levels, to national and regional networks. However, implications of IT for women empowerment are not an easy task. (Spence, 2003)\(^\text{100}\) identified that women face specific barriers\(^\text{101}\) to the use of ICTs. Therefore, it is important to target women in ICT projects specifically. On a community level experiences shows that radio favours women to men, because radio requires little skills to operate and broadcast (Gerster and Zimmermann, 2003)\(^\text{102}\). ‘Women for Change’ is a Zambian NGO, committed to working with an empowering remote rural communities, especially women 103. The essence of networking for the ‘Women for Change’ is to share resources and action strategies for women’s empowerment. Networking allows ‘Women for Change’ to stay in touch with what is happening locally, regionally and internationally and use of information and resources so gathered in helping the rural Zambian women. To facilitate the networking a website and online content have been developed to disseminate the information.

Added to all this, e-commerce is also helping in reducing the gender gap. With the emergence of IT enabled service industries, more and more women are getting employment in these industries\(^\text{104}\). In these industries women have equal opportunities (even more in some cases\(^\text{105}\)) to men. Thus it is quite logical to conclude the IT and e-commerce is helping in reducing the gender gap.

**Access to Information on Community Level:** We are moving on from IT to ICT and from ICT to Information Society (IS), according to Richard Heeks. Electronic Commerce and ICTs abolish distance and alter the concept of community. Many of these changes are positive creating links with new people, maintaining closer ties with far-flung friends and family members\(^\text{106}\), and creating new online communities with potentially global

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\(^{101}\) Lower level of literacy and education; domestic and reproductive responsibility; restricted access to training; cultural attitudes and Practices; less proficiency in English; lower level of financial resources and lower access level to ICTs at work, public access is located in the areas where women do not feel comfortable. And higher density of women in the rural areas.


\(^{103}\) See http://www.wfc.org.zm

\(^{104}\) In some industries it is quite natural and logical to place a women than men. For example in call centers women are preferred because of their soft voice and lower pitch pitch. And in these industries women can work very easily because there is no physical work.

\(^{105}\) Like call centers, medical transcription and other voice based services and even in some industries women are intentionally employed to attract more and more customers. (This statement is based on the personal experience of the researcher. Working with India’s biggest stock broking company lindiabulls) the research found this.

\(^{106}\) For example, e-mail brings family closer. A growing number of parents with children away at college are surprised at the frequency that their children are using e-mail to stay in touch. Parents also find their children are opening up to them via e-mail for more readily than if they were talking to them over the telephone, or even face to face. Convenience is cited as a main reason for using e-mail, as well as cost savings and 24 hours. Contact availability without disrupting scheduler.
membership. The ‘e-governance’\textsuperscript{107} is a result of such development and has emerged because of the increasing interest of government and citizen around the world.

**Figure 4.4: E-Governance for Development**

It involves new styles of leadership, new ways of debuting and deciding policy and investment, accessing education, listening to citizens and organizing and delivering information and services. Sumanjeet (2006)\textsuperscript{108} identified the following benefits of e-governance.

- Increase the accessibility of individual citizens to information and services that allows them to influence govt. operations.
- Opportunities to earn a living by learning a new skill in the knowledge based economy.
- Producing same output at lower total cost.
- Opportunities to trade and banking online.
- Reduction in time and paperwork.
- Supports effective decentralized decision making by providing an efficient information flow.
- Various govt. departments find it very easy to perform their functions like collection of tax, water charges, professional taxes etc.
- Enhance access to information and communication across large distance.

\textsuperscript{107} E-Governance or Electronic Governance is an attempt of government to harness information technology to improve the efficiency or effectiveness of the executing function of government including the delivery of public services. In a very broad sense it can be defined as "the application of the electronic means in the interaction between government and citizen (G2C) and government and business (G2B), as well in the internal government operation (G2G) to simplify and improve the democratic government, and business aspects of e-governance.

- Deliver essential services to citizens.
- Improving agriculture productivity.
- Improves resource management.
- Enables marketisation by supplying information related to the market and enhances public services.
- Transparency in judicial and administrative work.
- All notifications and circulars can be put online, so that cases can be disposed faster.
- Helpful in confidence building among the citizens and the government machinery.
- Market expansion and organized job creation and its overall impact on the macro economy.
- Transition from cumbersome procedures for clearances to improved relations by providing quick approvals.
- It is an innovative way of administration. It facilitates easy monitoring and tracking of files. There is no place for red tapism.

**Other Expected Implications:** The Internet also has had a great influence in empowering consumers over the last few years, and there is a great opportunity for citizens to similarly empower themselves. Today, many communities have used the Internet to effect change in the things that matter to them. This is because the Internet allows communities of interest to communicate and share knowledge in ways never before possible, unrestricted by previous geographical boundaries. One consistent finding across many countries is that intensive users of information technology tend to be well educated and to have higher than average household incomes (IDC, 1998)\(^{109}\).

Last but not the least, ICT can assist notional management that relies critically on good information and statistics notably social service delivery, especially health and education require good information bases. Furthermore, ICTs are important for increasing knowledge on human and constitutional rights, laws and regulations. ICTs such as radio and the Internet have been used for monitoring government programmes, thus making the powerful more accountable and giving the poor a voice, e.g. through rural radios. Thus ICTs can be highly effective in enhancing transparency and accountability in the political system.

**Negative Impact of E-commerce and IT on Society**

Internet and e-commerce offers many opportunities to those who are brave enough to seize them. It not only opens the barriers to business, they also create a thousand areas where crimes can proliferate. Due to technological advances, crimes are committed today that could not have existed a decade ago and the traditional crimes are being made easier (Crime Time, 2001)\(^{110}\). With the growth Internet connection, the opportunities to exploit weakness in information security are multiplying. People are stalked and even murdered, credit card details are stolen, viruses wreak havoc, companies’ trade secrets are liberated and drug dealers play their evil trade-and all via the net. These crimes all exist any way web or no web and we call them cybercrime or e-

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crime, computer crime and IT crime\textsuperscript{111}. But whatever be the name in essence, it is same-all crime\textsuperscript{112} (Taneja, 2003)\textsuperscript{113}.

Global Picture of Cybercrime

Cyberspace is a new frontier of different types of crimes. It provides huge opportunities\textsuperscript{114} for criminals because of anonymous nature of Internet, it is possible to engage into a variety of criminal activities with impunity and people with intelligence, has been grossly misusing the aspect of Internet to perpetuate criminal activities in cyberspace (Brains, \textit{et al}., 2000)\textsuperscript{115}. The field of cybercrime is emerging and new forms of criminal activities in cyberspace are coming to the forefront with the passing of each new day.

According to Web Statistics Crime: Total complaints filed in 1993 was 640 (1.7 per day), it went up from a total of 971 (2.6 per day) in 1994 to 1494 in 1995, to 4322 in 1996, to 12775 in 1997, to 47000 in 1998 and almost 100000 in 1999. And it was about more than 280000 in the year 2000 at an almost phenomenal rate of almost 775 complaints per day.

Graph 4.1: Global Picture of Cyber crime

![Graph 4.1: Global Picture of Cyber crime](image)

Source: Web Statistics Crime Report, Various Years

\textsuperscript{111} The use of electronic communication resources especially the Internet to engage in unauthorized or illegal acts.

\textsuperscript{112} The term ‘Crimes’ means any act of commission or which made punishable under the Indian Penal Code, 1872 or any offence against morality, social order or any unjust or shameful act. The ‘offence’ is defined under the code of criminal procedure to mean as an act or omission made punishable by any law for the time being in force.


\textsuperscript{114} As cybercrime is easy to learn how to commit, easy to operate, faster, as compared to traditional crimes, require few resources related to the potential damaged cause, can be in a jurisdiction without being physically present in it and often not clearly illegal.

Forms and Consequences of Cybercrime

There are various kinds of computer, Internet and e-commerce related crimes\textsuperscript{116}. It can be an illegal act perpetrated against computers or telecommunications. Or it can be use of computers or telecommunications to accomplish an illegal act. (Brains \textit{et al}, 2000)\textsuperscript{117}. Crimes against information technology include theft of hardware, of software, of computer time, of cable or telephone services, of information and other illegal acts are crimes of malice and destructions\textsuperscript{118}. Crimes using information technology include hacking, cracking, Denial of Services (DoS), cyberprone and cyber terrorism etc. Recently it has been expanded to include forgery, illegal gambling and cyber stalking\textsuperscript{119}. For the sake of systematic analysis, different types of cybercrimes could broadly be classified under the following heads (Duggal, 2001)\textsuperscript{120}.

- Cybercrime against property
- Cybercrime against person
- Cybercrime against government (Cyber terrorism)

Cybercrime Against Property: Cybercrime against property include hacking and cracking of computer system\textsuperscript{121}, secret codes, trade names, domain names etc. It also includes theft of hardware and software, theft of data and information, network sabotage, viruses and malicious code and computer related fraud\textsuperscript{122}. The diagram shows the incidence of cybercrime against property.

\textsuperscript{116} However in a very exact sense cybercrime constitutes a crime on the Internet.
\textsuperscript{118} Computer Viruses, Worms and Trojan Horses are example of malicious code. A Trojan Horse is a program which performs a useful function, but performs an unexpected action as well. Virus is a code segment, which replicates by attaching copies to existing executables. A Worm is a program which replicates itself and causes execution of the new copy. There can create havoc on the client side.
\textsuperscript{120} Duggal, Pavan (2001), \textit{"Categorizing Cybercrime"}, E-Commerce, October, pp. 60-61.
\textsuperscript{121} Hacking and cracking are the most dangerous forms of cybercrime committed against property. Hacking entails cracking system in order to gain unauthorized access to confidential information. Hacking and cracking are closely correlated terms. A person engaged in one of crime deviance is likely to engage in another.
\textsuperscript{122} Some such cyber assault reported in the year 2003 includes the following:
- Disgruntled Philadelphia Phillies fan charged with hacking into the computer triggering Spam e-mail attacks (October 7, 2003).
- Former computer technician in Douglasville, Georgia arrested for hacking into the computer system in Southern California (August 25, 2003).
- Russian man sentenced for hacking into computer system in the US (July 25, 2003).
- Southern California man who hijacked Al Jazeera website agree to plead guilty to federal charges (June 12, 2003).
- Juvenile arrest for releasing vibrant of blaster of computer worm that attacked Microsoft (September 26, 2003).
- Minneapolis, Minnesota 18 years old arrested for developing and releasing B vibrant of blaster of computer worm (August 29, 2003).
- Queens, New York man pleads to federal charges of damage the privac of computer, access device fraud and software.
Figure 4.2: Incidence of Cyber Crime Against Property

Incidence of Cybercrime Against Property
(in Percentage)


Internet fraud is also very dangerous forms of white color crime whose growth may be as rapid as diverse as the growth of Internet itself\textsuperscript{21}. The special feature of Internet fraud is that; it is easy for fraudsters to make their message look real and credible, but it is nearly impossible for the people accessing the information to tell the difference between the fact and function. While there are immumerable scams and frauds going on that use of the Internet. Many of there relate to investment\textsuperscript{124}.

Cybercrime Against Person: There are also some other dangerous forms of crime exist, which cannot be measured in terms of money. These mainly includes cyberstalking\textsuperscript{125} and child pornography\textsuperscript{126}. Child poronography and cyberstalking, much...

\textsuperscript{124} Kolkota based businessman, Piyush Kankaria has set the ball rolling by filing a case with the West Bengal Police, referred to Nigeria 419 fraud by the Federal Investigation and Intelligence Bureau, the case has been registered by Howrah Police under section 420 of IPC along with section 75 (2) of the IT Act 2000 (Section 75 of IT Act apply for offences or contravention committed outside India). It has already been transferred to CID in collaboration with Interpol. Kankaria’s case is not an isolated one. Many Indians have been flooded and some trapped with similar mails luring them to facilitate the transfer of millions of dollars from an over-invoiced contract or a dormant account with no claimants mostly from Nigerian letter fraud complaints have gone up from 2600 to over 16000 in 2002, according to Internet Fraud Complaints Centre Annual Report. The total loss from all referred Internet fraud case during the year was dollar 5 million.

\textsuperscript{125} Cyberstalking, which is simply an extension of the physical form of stalking, is where the electronic mediums such as Internet are used to pursue, harness or contact another in an unsolicited fashion.

\textsuperscript{126} Precisely what child pornography is, and what it is not, may not be explicitly defined in a given jurisdiction. Moreover, definitional boundaries may expand or contract over time, depending upon evolving social and political values. The narrowest definition would embrace only depictions of children engaged in exploit sexual activity. One could, however, imagine suggestive depictions of a children entailing other than sexually exploit behaviour. To some observers, there is a significant difference between pornography and erotica; to others, not.
like any other crime, it very hard to assess in terms of its incidence and prevalence within given population. Anyone can be stalked online, but the majority of its victims as in real life are female. Stalking estimates shows that 80% of stalked victims are women and most cyberstalkers are male. It is estimated that there are about 2,00,000 real life stalker in America today. That is about 0.08% of the US population. In another word, there are roughly 1 in 1250 person is a stalker. Stalking estimates also shows that over 1.5 million Americans today have been or currently stalking victims that is 0.6% or 1 per in 166.

In India first cyberstalker Manish Kathuria was arrested by the New Delhi Police. He was stalking an Indian Lady, Ms Ritu Kohil by illegally chatting on the website MIRC using her name. He was charged under section 509 of IPC for outraging the modesty of Ritu. In the year 2001 Mumbai Cybercell registered four crime within 15 days.

Child pornography is another serious crime against individual not only in India, but all over the world. This has especially distributing consequences in the case of children. Obtaining porn material is not too difficult for them. Any search engine can do this and many of these are free of cost. Furthermore, for more serious offences, which have disapproved (such as child pronography), it is far easier for the offender to remove material.

**Cyber Terrorism:** The cyberterrorism which is one of the recent coinage, is the consequences of terrorism and Internet. It is generally understood to mean unlawful attacks and threats of attack against computers, networks, and information stored therein when done to intimidate or coerce a government or its people in furtherance of political or social objectives. Terrorists do use the cyberspace to facilitate the traditional forms...
of terrorism such as bombing. They put up the web site to spread their messages and recruit supporters and they use the Internet to communicate and coordinate action. However, there are few indications that they are pursing cyberterrorism, either alone or in conjunction with the acts of physical violence. In February 1998, Clark Staten, Executive Director of Emergency Response and Research Institute in Chicago, testified before the Senate Judiciary Committee on Technology, Terrorism and Government Information that it was believed that “members of some Islamic extremist organisations have been attempting to develop a ‘hacker network’ to support their computer activities and even engage in the offensive information warfare attacks in the future”. And in November, the Detroit News reported that a member of the militant Indian separatist group Harkat-ul-Ansar had tried to buy military software from hackers who had stolen it from the ‘Department of Defense; computers they had penetrated.

India is also facing the serious problem of cyber terrorism which is sponsored not only by terrorist organisations, but also by some of the hostile neighbouring states (Singh and Parsoon, 2004)\(^\text{135}\). In fact, it is reported quite often in the print media that Pakistani computer hackers have been making continuous effort to penetrate protected Indian computers site and systems. With the help of some Europena and American Cyber experts, an attempt has been made to entre the mail server site of Bhaba Atomic Research Centre in order to scan and decodify the secret e-mail.

**Concluding Remarks:**

At the social front, e-commerce and ICTs can definitely empower the poor, give them a voice and connect them to the global world. These technologies can also help in attaining a minimum level of education, health and nutrition. The ability to participate in democratic decision making can also fall into this category. But it is difficult to predict the extent to which these technologies will transform the developing countries. On the basis of various studies, it is observed that, there is very high costs and relatively low benefits of the direct Internet and e-commerce technologies to the poor or the other needy people. Access to radio and telephone services show a higher benefit cost ratio and lower the overall costs as the alternatives to and intermediaries for the Internet and e-commerce in poverty alleviation and other social upliftment programmes.

In a developing country such as India, it is of particular interest whether such benefits can reach to the poor and even help directly or indirectly reducing the deprivations associated with poverty. For example, better access to education, agricultural market, information or to government services may be relatively more valuable for the poor people who cannot afford to use the traditional methods or communications media, or to pay for the services of traditional facilitating intermediaries.

In short, development of e-commerce and IT has great significance not only in the economic growth, but also in human and social development. It boost social as well economic infrastructure, generate revenue, provides employment and many more. But the development of these technologies would remain uncomplete, unless the benefits of these technologies reaches to the common man.

These technological developments (especially Internet) not only open the barriers to the business community, society as well as the whole economy, they also create a thousand areas where crimes can proliferate. But, net can not be held responsible for the cybercrime. In fact, it is the first global communication that can be exploited in various ways. However, studies indicates that there is positive correlation between the growth of Internet and crime, but, in reality poor security system, lack of awareness, and poor legal system is the most responsible factors for the growth of cyber crime. Therefore, there is a strong need for a dedicated, continuous, updated training of the cyber law enforcement agencies. At the same time it, it is necessary to train a pool of expertise so that necessary skills are developed by all those who have to grapple with the problem fo cyber crime including the policy maker, framers the judges, the lawyers and the administrative. All the more, the change will come only with awareness.