Chapter 2

"There are only two themes in all the literature: someone goes on journey, and the stranger comes to town"
- John W. Garden

"It is much easier to point out the problem that it is easy to say just how it should be solved"
- John Kenneth Galbraith

REVIEW OF RELATED LITERATURE AND RESEARCH METHODOLOGY
Review of Related Literature

To probe the problem at hand in an efficient and effective manner, review of existing and related literature is very important. In the word of Walter R., Borg, "the literature in any field forms the foundation upon which all future work will be built". If researcher fails to build this foundation of knowledge provided by the review of literature, work is likely to be shallow and waive and will often duplicate work that has already been done better by someone else. Thus, the review of literature justifies the study, checks the repetitive research work on the same subject matter, eliminates the chances of academic piracy and gives the researchers an understanding of what still remain to be done in the area of subject under the study. Therefore, keeping in view the importance of the review of related literature, researcher attempt here to review the available literature on the subject under study. Brief review of related literature on the present study is given below:

Information Technology has affected the most parts of human society and its dominance over other technology is clearly visible. One of the major application areas where Information Technology has greatly changed the traditions of the society is the way in which business is being conducted (Jain & Jain, 2000)

Ever since the inception of computers and Internet technology, ‘Electronic Commerce’ (popularly called E-commerce) or ‘Internet Commerce’, has become a fashion of the day (Singh & Kaur, 2002)

E-Commerce is often used interchangeably with IBM’s coined term, “E-Business”. However, E-Commerce is a subset of E-Business (Kalakota & Robinson, 2000)

E-Commerce can be supported technologically in number of ways, but the expert feels that Internet is potentially the most significant vehicle for E-Commerce (Verma et al, 2000)

Internet being a World Wide Web (www) based communication system through computer networks (Kotler, 1999) has given the birth to modern E-Commerce. But, Electronic Commerce is not just a technology; it is a way of conducting business that has the potential to impact every aspect of the firm’s value chain (Greenstein & Feinman, 2003)

It has produced a revolutionary new way for businesses to communicate and interact with customers. It breaks down the geographical barriers and brings together customer across globe (Goyal & Gupta, 2004).

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5 Kotler, Philip (1999), Marketing Management, Prentice Hall of India, New Delhi
Thus the growth of E-Commerce as a business technology has been phenomenal. Majumdar (2000) in his study explained, the Internet and its enabled technologies are just few years old and is already being viewed as the worlds most revolutionary development. It has created a universal platform for buying and selling goods and services and driving important business process inside the organization. Small and large companies are using the Internet to make their product information, ordering, and customer support immediately available to help buyers and sellers to make contact (Landon & Landon, 1999). Organizations are finding some of the greatest of this computer technology come from the E-Commerce application that significantly lower purchase transaction costs by eliminating middlemen in the distribution channels. In some categories such as information services and digital products, providers can decrease the financial cost of distribution to zero (Jones, 1995; Haffman; Novak and Chaterjee, 1995). Low cost and ease of use (Timmers, 1999) has resulted in widespread adoption, high degree of interconnectivity between many parties (Shapiro & Varian, 1995) and the richness of information that can be exchange between parties (Evan & Wurster, 1999). E-commerce provide effective and efficient ways in which corporate buyers can gather information rapidly about available P/S (products and services), evaluate and negotiate with suppliers, implement order fulfillment over communication links, and access post-sale services (Archer & Yuan, 2000). There are many factors that influence the adoption of E-Commerce application between large, medium and small-scale industries. Study of Poona & Swatman, (1999) found that perceived benefits are a key reason why organizations adopt and continue to use Internet for commerce. Study of Khatibi et al (2003) in 222 Malaysian manufacturers, traders and services providers, suggest that E-Commerce does provide benefits in terms of providing information, enhancing image, improving the business processes, improving customer’s services and so on. A majority of firms (about three-fourth) perceive that E-Commerce has tremendous benefits and these benefits are the main drivers of E-Commerce application among the organizations. However, these perceived benefits varies from company to company.
company, according to their size and product and services they offered (Khatibi et al., 2003). Many promote e-commerce as a vehicle for the cost reduction and therefore believe that goods sold online should be cheaper than goods sold in an offline shop (example are cited in Scott Morton et al., 2001; Riquelme, 2001; Reibstein, 2002). Study of Yelkur, 2001; and Chesney, 2002 revealed that e-commerce allows easy, direct communication with small groups of customers or individual customers. The web itself can be customized for these small groups or individuals (Harding et al., 2001). This allows the businesses to target the very specific markets. The Internet’s major advantage as a medium through which to conduct business is that it allows very personalized interaction with customers and potential customers at every stage of buying process (Chesney & Darby, 2003). Small businesses should exploit this to build up relationships with customers. However there is literature that does not back this up. Many online companies following the low price model quickly failed (Kung et al., 2002). Such strategies are known to be costly and short lived (Daripa & Kapur, 2001). It appears the logic behind the low price strategy is flawed; evidence suggests that low price is not the most important factor in securing repeat online business (Saloner & Spence, 2002) and that the retailers with the lowest prices are not getting the most sales (Brnjolfsson & Smith, 2002).

Further, the Research Commissioned by Ernest and Young: UK found that large companies, especially manufactured are using E-Commerce to reduce cost in their supply chain and with product distribution, with the cost saving directly related to the company size. The significant of Internet based e-commerce is clearly highlighted in the literature of Angeles, 2000). B2B e-commerce may replace some of the traditional activity in the manufacturing supply chain. The power of B2B e-commerce is that it

18 ibid
30 Business Week (2003), Various.
allows a manufacturer to reduce costs, and more importantly, manipulates information from all sectors along the chain to exploit growth opportunities (Keeffe, 2001)\textsuperscript{32}. John Gramption\textsuperscript{33}, Vice President of Cap Gemini Ernest and Young, said, “e-commerce in manufacturing clearly shows that large manufacturers are capable of tackling the advantages of economics of scale”. In addition to the manufacturing sector, the use of various types of e-services (such as financial, travel, music, auctions and gambling) is increasing at a considerable rate. Shapiro and Varian, 1999\textsuperscript{34}; Evans and Wurster, 1999\textsuperscript{35}; and Lynch and Ariely (1999)\textsuperscript{36} argued that e-services (as compared to the offline services) have the ability to serve customers more effectively and efficiently, and at a lower marginal cost, while offering real time information. Chesbrough and Teece (2002)\textsuperscript{37}. However, study of Poon (2000)\textsuperscript{38}, on companies of internet buying behaviour between potential Internet buyers and non Internet buyers, found that, generally products and services that have a low outlay, are frequently purchased, have intangible value proposition, and relatively high on differentiation are more likely to be purchased via Internet.

Furthermore, by using monitoring software and customer relationship management techniques, e-services firms can track, analyze, and cater to a specific customer needs (Peppers et al 1999)\textsuperscript{39}. Customer loyalty is even more important in e-commerce than traditional retailers (Reicheld & Schefter, 2000)\textsuperscript{40}. Loyalty brings with it repeat sales and customer referrals. Customer loyalty has been found to increase with perceived service quality and increased trust (Gefen, 2002)\textsuperscript{41}. Perceived service quality comes from the firm’s image: a seller’s reputation is used as an indication of their quality when the goods itself cannot be examined before the purchase (Melnik & Alm, 2002)\textsuperscript{42}.

\textsuperscript{33} Wall Street (2003), Various Issues.
Increasing public trust appears to be the main barrier to increase e-commerce growth (Belanger et al, 2002)\(^\text{43}\). Review of indicates that small business operators tend to be more rigid, traditional and outdated in their business practices and this evident in their approach to business planning. Study of Jocusmsen (2002)\(^\text{44}\), concluded that small business tend to follow a much less complex decision making process in compared with that suggested by theoretical framework. Study also shows that small business proprietors tend to make extensive use of learned competencies mostly in the form of perceived rationality and the use of rudimentary analytical tools as well as the extensive use of inherent competencies mostly in the form of intuition and gut feel, arising from innate sources as well as learning experience of the proprietor. According to Atlantic Software’s E-Commerce Report (2002)\(^\text{45}\), small to medium sized enterprises (SMEs) in UK are by and large using e-commerce to increase the sales. The report\(^\text{46}\) suggested some of the key reasons behind the adoption of e-commerce in SMEs are: (1) to increase sale (2) to increase coverage/new geographies (3) competitors are e-enabled (4) customers are demanding it and (5) to lower the cost of sales and others. Study conducted by Communications of Association for Information System\(^\text{47}\) on ‘E-Commerce Adoption: Perception of Managers/owners in Chile’, suggest that Chilean managers/owners most receptive to adopt e-commerce posses the financial and technological resources to implement it. E-Commerce as increasing managerial productivity and supporting strategic decisions, feel external pressure to put e-commerce as compatible with preferred work practices and existing technology infrastructure and perceive e-commerce as useful for all types of the firms.

Thus, e-commerce offers huge opportunities to all types of the organizations, but adoption of e-commerce is not an easy task. The biggest problem that electronic commerce pioneers encounter is the limited set of mental models that constrain our thinking. We tend to think of the web in our “industrial age” paradigm- where everything must be described and related to the physical world (Enix Consulting Limited, 1998)\(^\text{48}\). Forrester Research Corp. based on the Study of 40% of US and European Companies revealed that the most pain in doing the global e-commerce business are: (1) internal obstacles and policies (2) balance of global vs. local e-commerce (3) regional co-ordination, cultural differences, inadequate service providers, transition of global to web based strategy, global logistics and complicated product to deliver. Greenstein and Feinman (2003)\(^\text{49}\) suggest that if e-commerce applications are not placed proper business

\(^44\) Ibid.
context and strategy aligned with the business’ overall business strategy, then the electronic commerce applications is likely to fail. Thus new models are necessary that integrate electronic commerce initiatives with the overall business goals. Further, Frances (2002)\(^\text{50}\) suggested that companies need more than good technology to make most of the Internet. Companies also required flexible and self-confident managers and employees to handle the electronic commerce technology.

The explosive growth in usage of the Internet provides a great number of potential customers to the e-marketers. Whether or not marketers can convert their potential into real ones and retain them depends, to a very large extent, on the service they offer and on the perceived customers’ satisfaction of consumers (Churchill and Surprenant, 1982\(^\text{51}\); Oliver, 1980\(^\text{52}\); Luarn and Lin, 2003)\(^\text{53}\). In fact, the level of satisfactions significantly affected consumer’s attitudes and their intention to purchase (Bearden and Teel, 1983)\(^\text{54}\). Several researchers proposed that consumers shopping behaviour in online shopping may be fundamentally different from that in the traditional environment (Alba et al, 1997\(^\text{55}\) and Winer et al, 1997)\(^\text{56}\). Study of Wolfmbarger and Gilly (2002)\(^\text{57}\) found that the website design quality was an important issue in customer satisfaction. Study of Bakos (2001)\(^\text{58}\) found that the lower search costs in digital markets will make it easier for the buyers to find low cost sellers. Study of Shergill and Chen (2005) revealed that reliability; customer services and security are another important factors affecting the online shopping.

The adoption of e-commerce is widely studied in the industrialized world, only a small number of these studies focus on the developing countries. To study e-commerce in the Indian context we will have to move beyond these global concepts and review the harsh realities of a developing nation. E-commerce is still in its infancy in India. For the reasons just started, growth has been slow, confined to few major cities and some industries, usually multinational companies (Niles, 1999)\(^\text{59}\); Malhotra, (2000)\(^\text{60}\), revealed

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\(^{57}\) Wolfmbarger, M. and Gilly, M.C. (2002), “.comQ: Dimensionalizing, Measuring and Predicating Quality of the E-mail Experience”, CRITO, University of California.


that in India, very few companies are using digital technology for new processes that radically improve how they function, that give them the full benefit of all their employee’s capabilities, and that give them the speed of response they will need to compete in the emerging high speed business world. The study of Rao (1999)\textsuperscript{61}, on ‘IT in Financial Services’ explained that the Indian financial service industry providers are not akin to adopt the change. The probable reasons for not adopting or delaying the implementation of e-commerce technology could be the fear of new technology, reluctance to change, from the addition methods, improper infrastructure, stringent policies, natural resistance of change, pessimistic attitude of the regulators apart from the lack of financial support. Even companies that have made significant investments in Information Technology are not getting the results they could be. The gap between what companies are spending and what they are getting stems from the combination of not understanding what is possible and seeing the potential when they use technology to everyone in the company (Malhotra, 2000)\textsuperscript{62}. According to the Study of Computer Society of India, Madras Consultancy Group, Scope Marketing and Information Solutions with Computer Today Team (2002)\textsuperscript{63}, most CEO said e-commerce was nascent stage in India. Critical issues implying the growth of e-commerce, raised by 92 CEOs are: (1) lack of adequate infrastructure (2) security (3) poor transaction facility like payment mechanism is still in the initially planning stage in India (4) no clear cyber law in India (5) high cost (6) customers and vendors readiness. Study also suggest to CEOs to make e-commerce a part of company, make organization and stakeholders e-ready. Sumanjeet and Mahlawat (2004)\textsuperscript{64} studied ‘E-Commerce in Indian Legal Regime’, and revealed that India’s legal system is still very archaic for the development of e-commerce. There are many important issues like e-taxation, privacy, intellectual property rights (IPRs) and many more, which are not covered by the Information Technology Act, 2000. Unless all these issues are dealt with e-commerce can not really take off in India. Further, Arora (2000)\textsuperscript{65} concluded that apart from the legal and regulatory issues, problem of payment mechanism is the biggest in the front of Indian companies. Trivedi, (2004)\textsuperscript{66}, suggest that when it comes to apply e-commerce in India, the major problem has been that of mind-set, because for Indian, shopping is like a social outing which has to be celebrated.

There are, however many other stumbling blocks in the way of promoting e-commerce in India, but still e-commerce has huge potential in India. Sumanjeet k. (2005)\textsuperscript{67} concluded that Indian companies are fast jumping into the boom of electronic commerce and adopting e-commerce as a business technology in much the same manner as in other parts of the world. It has registered a rapid growth within few years in India.

\textsuperscript{61} Rao, Kullu. P. (1999), “Information Technology in Financial Services Industry”, Chartered Secretary


According to Survey of Nasscom, the total volume of e-commerce transactions in India rose from 4.5 billion in 1999-2000 to an estimated 23-25 billion in the year 2000-01, and further expected to rise 1.95,000 crore by the end of year 2005. The share of B2B will be of Rs. 1.93,000 crore and share of B2C will be of Rs 3,000 crore. The Study of Confederation of Indian Industries (CIIs) predicts that e-commerce activity in India will rise from 4.5 billion in 2000 to Rs 252 billion in 2005, of which B2B segment will account Rs 232.8 billion. Both studies expect that B2B transactions will dominate and will be the primary growth engine over the next 3 to 5 years. Further, Study of Nasscom and McKinsey (1999) indicates that Indian services sector has huge opportunities, which are covered under the broad sector of IT services (E-Commerce as “extended enterprise” application) and E-Business. As per this Study e-commerce is one IT tool that could do wonders to the Indian companies in many fields. India has potential to create e-business worth $ 1.5 billion by 2004 and around $ 10 billion by 2008 with the opportunities in both B2B and B2C areas.

Study of Ministry of Information Technology and IT&T Group (2000) revealed that e-commerce would give opportunity to Indian Small and Medium Enterprises to project their capability globally and thus participate more proactively in such ventures. Many traditional sectors such as handicrafts, textiles, art, natural medicines, which could not tap the global market due to lack of marketing resources, should find an ideal medium in Internet. Indian cultural heritage, monuments, temples, classical music etc., could be widely known to the world and could be further leveraged in enhancing the tourism. Conference of CIIs (2002) focused on the advantages that small and medium enterprises (SMEs) could gain. The gains of e-commerce are not limited to the Multinational and Large Scale industries. SMEs in India are exploiting the potential of e-commerce. The Internet makes it for the artisans and SMEs to access B2C world markets, facilitates activity as the global market for agriculture and tropical products, allows firms in India to tap into B2B supply chains and allows services providing enterprises in developing countries to operate more effectively and to provide certain services to the customers anywhere in the world. Study of North (2001) indicates that the explosive growth of e-commerce in India, demonstrates the Internet’s ability to offer both large and small scale companies major improvements in sales, order processing, supply chain efficiencies, better customer services and the ability to reach a new larger customer base. Singla (2000) in his Study, conducted a survey of 96 respondents from various sectors and highlighted that the organizations viewed Internet as a technology that cannot be ignored; that will serve as a strategic tool; and that will add to some competitive advantage vis-à-vis their competitors. Respondents from retail and wholesale, financial

services, and computer and communication reported to be leading in Internet based implementation. Further the study also concluded that as we move from simple e-mail to complex e-commerce, the present organizations in respective sector using any advanced technology starts climbing down.

E-commerce has the potential to stimulate the economic growth and has strong implication in the developing countries like India. According to UNCTAD-E-Commerce and Development Report (2002), e-commerce is one of the most viable examples of the way in which information and communication technologies can contribute to the economic growth. It helps countries improved trade efficiency and facilitate the integration of developing countries. Mukhopadhyay (2002)\(^7\) e-commerce gears the wheels of economic growth. The advantage of e-commerce (vis-a-vis traditional commerce) is that it can improve productivity and therefore, enhance economic growth (albeit temporarily) by lowering transactions cost, saving time, improving consumer choice, improving supply chain management, and reducing the barriers to entry. The study also revealed that e-commerce allows economic agents (both buyers and sellers) to interact more efficiently by reading new market opportunities. Coppel (2000)\(^7\) studying the impact of E-Commerce on Economic Policy pointed out that on the average prices of goods sold through the net were on the higher side than similar goods sold through the retailers. However, in the case of digital goods like CDs and Books prices were on the lower side. Brynjolfsson and Smith (1999)\(^6\) found the prices over the net are on the lower side. Friedman (1999)\(^7\) has argued that new technologies can greatly increase the speed of financial operations and can reduce the cost of transactions. Studying the Contribution of IT Sector in Indian Economy, Sumanjeet c (2004)\(^7\) concluded that in developing countries like India, where market size is very large and where information intensive industries and international market still needs to open to exploit market opportunities. IT sector is helpful not only for the economic growth but also for the human development. It boost economic as well as social infrastructure, generate revenue, provides employment and many more. Study of Singh and Singh (2004)\(^7\) revealed that the industry currently employs 0.5 million people, and will employ over 2 million people directly and create indirect employment opportunities for at least an additional 2 million people by 2008. Further, by opening the door of Foreign Direct Investment, IT sector and e-commerce (there are 100% FDI allowed in the case of B2B business) are playing most important role in the regional developments. But, the advancement of IT sector would remain


\(^{75}\) Coppel (2000), E-Commerce: Impacts and Policy Challenges (web search)

\(^{76}\) Brynjolfsson and Smith (1999), Frictional Commerce? - A Comparison of Internet and Conventional Commerce

\(^{77}\) Friedman, B. (1999), The Future of Monetary Policy, the Central bank as a Army With Only a Single Cops.


incomplete, unless the info-tech benefit reaches the Indian common mass. Saith (2001)\(^{80}\) studied the impact of ICT of Poverty Alleviation and raised a question, “Does e-commerce provides a new avenue for the poverty alleviation?” and to what extent does such e-commerce open new opportunities for poverty alleviation. The study concluded that there could clearly be advantages for the small-scale businesses and for the geographically isolated (buyers and) sellers; these do not translate automatically in to the benefits for the poor. It is always possible for an international development agency or an NGO to facilitate the sale of the product of poor via the net. But the issue that whether this merely provides an advantage to some of the poor (so assisted) over the rest; whether such efforts are economically viable; and further, whether these can be replicated to scale without individual mediation in every case. The answers to these questions are not immediately encouraging, and lead the debate back into the questions of inequalities in effective access of ICT. Chaudhary (2000)\(^{81}\), the dotcom environment provides the best opportunity to create and distribute wealth to move it from the hands of few (which has been the historical business scenario in India) to a much wider base, to have entrepreneurs created everyday, who in turn can create, generate and distribute wealth. Singla (2000)\(^{82}\), in public administration, IT and its enabled technologies can play a vital role facilitating better levels of services. In a country like India where file movement in public administration became very important for determining efficiency, process and step benchmarking assumes a critical significance. And this cannot be successfully implemented without having IT based solutions.

Thus e-commerce has huge opportunities in India. But, e-commerce cannot be operated in an institutional vacuum. It can succeed only in an enabling institutional environment and a set of influencing factors. Sumanjeet and Mahlawat (2004)\(^{83}\), keeping in view the expanding culture of electronic commerce in India, government of Indian has already taken number of initiatives to boost and strengthen the entire infrastructure of e-commerce in India, which *inter alia*, includes the development and adequate legal and managerial framework. Despite all these initiatives the growth of e-commerce is slow in India; and as compared to global volume the share of e-commerce in the world pie is negligible. Bhatia (1999)\(^{84}\) revealed that e-commerce in India is facing some problems like low penetration of Computers and Internet, cultural and legal issues. Another reason is the language prevailing on the Internet is English and a very small percentage of Indian population is comfortable with English. Further the study suggested that another major factor hampering the growth of e-commerce is the high entry cost, as it requires a huge investment in terms of hardware and software setting costs. Sumanjeet d (2005)\(^{85}\)

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concluded that the psychological fear of IT among the customers and as well as in the companies is the major challenge in the growth of e-commerce in India. The Study also revealed that many Indian organizations are not able to keep the pace with changing technology. An issue of security is also a major area of concern. IDC, India (2002), studying the problems faced by the Indian e-commerce customers (a survey of 180 Indian customers) found that 44% are more comfortable with the traditional way of shopping. 33% do not believe that goods will reach on time. 42% of them are not sure of the quality of goods delivered. 37% of think not enough goods and services are available on the net and 35% think ordering though the net is very slow.

E-commerce requires a sound strategy, which may not be same as the traditional commerce (Sumnajeet, 2005)86. Singh (1999)87, concluded that apart from the hardware, software and physical infrastructure, developing country like India require the right “infrastructure”, which includes: (1) an appropriate legal and financial framework, (2) a conducive political and business environment and (3) the human resources for e-commerce. Further the study suggested that it is essential to create a policy and regulatory environment that favours the e-commerce development. Arora and Banwet (2003)88, concluded on the basis of results obtained by the statistical analysis and response received from 103 respondents identify various capacity building determinants for an organization so as to make it e-commerce capable. The findings identify building organizational capability as a more important facilitator for e-commerce development than environmental facilitation through the various value chain partners. Thus the organizational issues such viz. core competence and structural capabilities are more relevant and important for organization. In fact, the study indicates that factors which are intrinsic to the organization viz. involvement of CEOs are more facilitating than extrinsic factors like insistence by foreign buyers or by other value chain partners. In process facilitation, security and legal issues have been considered as more vital than tariff issues. The study also indicates that organizations followed various management strategies viz, BPR (Business Process Re-engineering) and investment driven, CEO driven, fall in live approach and strategy driven by middle management and foreign buyers. Mishra et al, (2004)89 explained that technology has enabled the organizations to grow faster and that too with enhanced productivity leading to significant economic growth and advancement. In such an atmosphere, optimum utilization of resources through superior management skills can be secured by the modern business entity. Thus the development of a new order management applications and techniques in this era of e-commerce could only be the best alternative that will make the organization more effective, efficient and growth oriented. The study by Kanungo (1998)90 indicates that the use of IT may produce the desired

organizational results depending on the geographical, economic, cultural and psychological context. Study of Gupta and Sanjay (2004) revealed that Indian business scenario still has not implemented applications in business intelligence domain and decision support systems are rare. The overall satisfaction levels of the executives are low and the applications available have not matured enough. On the basis of the study, few impermeable suggestions are: (1) there is a need to create adequate awareness of the larger benefits of these initiatives to provide the picture to all the users and supporters, (2) the availability of skilled resources in this domain is always a challenge and required additional efforts for the success of these initiatives and (3) the availability of sponsors for the strategic application should be made mandatory to the required results. Sumanjeet (2002) in his research work on “E-Commerce” suggested that, without doubt e-commerce will have pervasive effects on both the business and society. The movers and shakers of the Indian industry must first take a look what is to be gained and how it can be achieved. If organizations want to exploit the Internet for the e-commerce to its fullest extent, companies have to move in a phased manner linking their suppliers’ computers to their computer system allowing for design improvement and product innovations to flow freely to the relevant entities and information like production schedule, staff availability and inventory of raw material to flow back. Subsequently these businesses also need to connect their major customers to the company’s network. Free flow of information among all parties (customers, suppliers and Company) requires that every process on the way is clearly defined and completely transparent. Further the study suggested the organizations to educate their employees, customers and management about the various aspect of e-commerce; start slowly and proceed cautiously; protection of information assets and allocate sufficient resources. Mulla (2000), the study reveals that there is concern associated with the system of financial information that the design action should make it a vital tool for operating and planning. Information system should take an approach similar to that of the other areas of company, whose information needs is designed around the managerial functions of planning, operating and controlling. There should be complete understanding among practicing executives as to how decisions are made in companies. Faisal (2000) concluded, IT has traversed a long path, from being looked upon just as a faster means of providing and processing information. It has transformed into a complete new role that deliver strategic value to an organization. But to derive maximum benefits from an IT function in an organization, deeper integration of IT in business units is required. CIO’s role is to be strengthened with the more involvement in strategic planning in addition to realizing and identifying the benefits of IT. Rehman (2000) suggested that for the Indian corporates which has been flirting with the globalization, Internet commerce is perhaps the best thing to have happened. It has the power to change the rule of game rapidly. If deployed effectively and on the time

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Sumanjeet (2003), “E-Commerce”, Dissertation Submitted for the Degree of M. Phil, Department of Commerce, M. D. University, Rohtak
Indian companies could write some of the rules themselves. Since we are in the early stage of deployment of information technology, it is not very difficult for the Indian companies to kick start the Internet commerce age with a corporate Intranet and Extranet. Sampat (2000) study suggested six ‘C’ model of Goldman Sachs. This model classifies the functionality of portals in six ways: (1) Connectivity (2) Context (3) Communication (4) Community (5) Commerce and (6) Content. Successful Indian companies need to have some/all of these for their success in the age of electronic commerce. Teltscher (2000) concluded that, from the developing country point of view, issues that ensure that effective liberalization of e-commerce should have priority. These include resolving the classification issues (i.e., the definition of electronic transmission as goods or services), identifying e-services in which developing countries have export potential (such as software development, audio-visual products, tourism, data protection and other IT enabled services) and reviewing national commitments under GATS that concern e-services. Study of Satapathy (1999) on Cyber Fraud indicates that e-commerce should be allowed to grow without any regulation thereby ensuring privacy of individuals; and business or government should step in creating more checks and balances by instituting systems of accountability. Anonymity of privacy of individuals and business enterprises are no doubt desirable, but criminal equally benefits from such anonymity and privacy. Government has to re-think whether and how accountability should be build into e-commerce activities. This could possible be done in two ways, instituting suitable legal changes and creating enforcement mechanisms. Duggal (2002) India’s Cyber Law Expert and Advocate of Supreme Court talking about the e-commerce and cyber law in India said, “There are complex legal issues arising in the field of electronic commerce and Internet leading to the development of cyber laws which there have been different approaches”. One major problem of global business and global reach is that there is just no global law. Although, the Information Technology Act, 2000 (IT Act, 2000) was implemented in the October 2000, besides registration of couples of cyber cases there has not been much progress. The digital signature regime in the country is yet to effectively taken off and once it comes in there will be great enabling factors. The IT Act, 2000 is the first step forward and others need to follow, the time to act is now. There is also strong need to amend the existing IT Act, 2000, as it does not cover many important aspects of electronic commerce. Sudhakar & Kishore (2002), revealed that the absence of strong e-commerce laws undoubtedly affects the transactional aspects of conducting business over the internet. Faisal (2000) concluded that to realize the full benefits of new technologies, concept like IT outsourcing are to be experimental. In today’s corporate milieu IT has to relate value in the business terms to business people.

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New tools of IT like ERP, SCM, CRM, E-Commerce and M-Commerce etc. are to be integrated with a proper design of IT functions suited to a particular organization considering that it should facilitate effective interaction between business people and IT people. Sudhakar (2000)\textsuperscript{102} suggested that in building a dotcom, the biggest investment should be in the marketing, brand building and customer acquisition. Entire focus should be on how to invest the lowest amount to create the biggest impact. So, Indian corporate has to do multiple things, some of them conventional and unconventional.

Mann (2000)\textsuperscript{103} in this study revealed that electronic commerce in India offers particular promise to the developing countries where co-ordination and transactions cost are highest. In this respect, businesses and workers of many developed and developing countries like USA and India, especially in the high-tech and service sectors stand to benefit from the liberalization of e-commerce and its infrastructure. Rai (2004)\textsuperscript{104} concluded that electronic commerce and Internet integrate both the services and goods sectors, across the domestic and international boundaries. Key synergies exist between telecommunications, financial infrastructure, distribution and delivery and governance. The Internet and electronic commerce both depends on the facilitative liberalization in these areas. Mann, (2000), suggested that the WTO process can help domestic liberalization and open markets abroad. The World Trade Organization seeks to liberalize the trade in services in a gradual manner. The General Agreement on Trade in Services (GATS) identifies four models of supply of trade in services of which the first two are relevant for e-commerce. Further the study of Rai (2003), indicates that we can expect rapid growth also in the cross border services trade as telecommunications cost continue to decline and internet based trade becomes more prominent. However, the influence of electronic commerce in service sector is expected to be very important, but, it is difficult to define precisely services which fall in the category of electronically delivered services which is expanding constantly with new technological development. Dash and Sumanjeet (2005)\textsuperscript{105}, studying the impact of stock market reforms on the liquidity concluded that technological advancement is one of the most important aspects of financial reforms process and found that it has very positive impact on the liquidity. Anand et al (2000)\textsuperscript{106}, in their study suggested that Internet industry or digitalized firms must realize that their greatest assets are in the form of intellectual property. Therefore, it is very necessary for all Internet or e-commerce based companies to familiarize themselves with the scope and ambit of intellectual property rights that could be said to reside in their website and its content thereon. Last but not the least the study of Shah and Dawson (2002)\textsuperscript{107}, suggested that many of the advantages of e-commerce will be lost if it is implemented in isolation.

\textsuperscript{103} Mann, Catherine (2000), Electronic Commerce in Developing Countries: Issues for Domestic Policy and WTO, Institute of Economics, March 15.
\textsuperscript{104} Rai, Sheela (2004), "Electronic Commerce and General Agreement on Trade in Services (GATS)" , The Foreign Trade Review, pp. 79-104.
\textsuperscript{106} Anand, Pravin; Shamnad, Bashkar and Keshav, S. Dhakad (2000), "Prevention is Better than the Cure: An Oft Repeated Aphorism that is Oft Forgotten". Chartered Secretary, Vol. XXX, No. 8, pp 959-963.
It is important to involve suppliers and distributors. This involves spreading the e-commerce culture beyond the company boundary. The relationship with the partner companies will need to be continually reviewed as other companies make and follow their own initiatives. The technical issues of e-commerce implementation will also need to be continually reviewed throughout the system life cycle. With the changes taking place at regular interval, one needs to keep pace with the developments on all fronts in order to successfully exploit the advantages of e-commerce.

**Concluding Remarks**

E-commerce is less than a decade old in India, perhaps therefore; a small research work is available on this particular topic. Most of the literature is available in the form of research papers, articles and projects conducted by various agencies like Nasscom, BCG (Boston Consulting Group), McKinsey etc. After studying the existing literature on this particular topic, it is observed that however, India is not untouched by the wave of e-commerce, but it still has to cover a lot of ground to come up to the level of e-commerce operations as, say, a developed countries like the US, UK and even developing countries like Japan, Singapore etc. Most of the studies indicate that certain technical, infrastructural, as well as psychological constraints are impeding the growth of e-commerce in India. The legal system is still very archaic for the growth of this new form of electronic trading. Studies also revealed that, despite all these challenges, e-commerce has huge potential in a developing country like India, where market size is very large. Transactional cost is high. Customer services are poor, paper work is more, business require huge investment, Internet users are growing rapidly and where information and knowledge intensive industries and international market still needs to open. Review of literature suggested that to exploit these opportunities it requires sound business strategy, which, may not be same as the traditional commerce. Most of the suggested strategies are geared towards development of legal and financial framework, boosting infrastructure for e-commerce and integration of various business strategies with information technology.

But in the absence of sound research work in this particular field, the results of these studies cannot be generalized. However, the studies reviewed so far are able to present different aspects of electronic commerce in India. In fact, above studies not only provide the general guidelines for the future work in this field; but also helping researcher in understanding the basics and various concepts of this new subject in a correct manner. Therefore, the contribution of all the researchers of this field cannot be ignored; it is immense and researcher is very thankful for their efforts and inputs, which makes him possible to go for an almost impossible research work.
Research Methodology

Section-II

A systematic process and methodology is needed to conduct the research in a successful manner. This section of the study highlights the methodology and process used to conduct the present research. This section justifies the present study and highlights the main objectives and hypotheses of the study. Further, this section discusses the research methodology adopted for attaining the objectives and to test the hypotheses of the study. In the end of section, scope and limitations of the study are discussed.

Justification of the Present Study

Change is the law of nature; the way business is being conducted can not be the exception. The emergence of electronic commerce as a business technology in the last decade has brought several changes in the business activity and it is needless to mention that those who have not reaped are lagging behind (Sur et al, 2001). Companies all over the world are finding e-commerce as a new platform for the business of the future (Werbach, 2000). No other industry in the word history has achieved a rapid growth in as short time as e-commerce (Khatibi et al., 2003). Though only a few years old in India, e-commerce has taken off at an unprecedented speed despite much skepticism and some initial hesitation. Irrespective of their sizes and nature, Indian companies are using e-commerce to communicate with their partners, customers to connect with their back-end systems and to transact commerce without the hindrance of time and geographical constraints. As a result of this, e-commerce has registered a rapid growth in India within a few years. Further, studies indicate that e-commerce has a very bright future in India. Therefore, the present topic (E-Commerce: Business Applications, Strategies, Challenges and Opportunities in India) is quite interesting to study because of its relative newness and exploding growth rate in India.

The reviewed studies and researches are of view that e-commerce has not yet fully developed in Indian companies. Order taking and placement systems are the basic models of e-commerce implementation as per these studies. Major benefits from e-commerce to Indian companies are: improved customer services, wider market coverage, cost reduction and improved efficiency/functioning of organization. Among the barriers: poor IT infrastructure, privacy issues and security problems, lack of manpower to handle e-commerce, poor PC/Internet penetration, high investment and poor legal regime are the major factors, as per these studies. The scope of these studies/researches has mainly been limited to: manufacturing sector; large scale industries; top management; either primary or secondary data; behavioral or managerial aspect of e-commerce and the most importantly looking at the general impact of e-commerce in a particular industry. Another limitation of existing studies is that, these studies have neglected the macro

aspect (like electronic payment system, economic implications of e-commerce and e-commerce infrastructure) of electronic commerce. As these studies are conducted at the micro level, the result of these studies can not be generalized in Indian context (macro level).

Thus, the review of literature highlights that this particular field need comprehensive study regarding many aspects of e-commerce pertaining business applications, challenges, opportunities and strategies in India. Therefore, the researcher has decided to work under the title “E-Commerce: Business Applications: Strategies, Challenges and Opportunities in India”. The present study has made an attempt to overcome almost all the limitations of the existing studies by taking into the consideration: all types of industries; all level of management; both primary and secondary data; and combination of behavioral, technical and managerial aspect of e-commerce. Above all, the study has followed a macro approach by studying economic implications of electronic commerce, electronic payment and security system and IT infrastructure, so that the results of these studies can be generalized in Indian context. The broad objectives and hypothesis of the present study are as under:

Objectives of the Study

- To discuss the conceptual framework of e-commerce.
- To find out the various business applications of e-commerce in India
- To study the present status of e-commerce infrastructure in India.
- To discuss the framework of electronic payment systems and study the security schemes to secure electronic payment.
- To find out the opportunities and challenges of e-commerce in Indian business scenario.
- To study the economic and social implications of e-commerce.
- To find out as how e-commerce improves the quality of work
- To study the important aspects of e-commerce while entering in the world of e-commerce.
- To study the satisfaction level of Indian online customers towards the services of Indian dot com companies.

Hypotheses of the Study

- There is no problem in the introducing/adoption of e-commerce in Indian firms.
- Adequate number of trained staff is not available to take care of e-commerce technology and transactions in Indian firms.
- There is relationship between e-commerce and economic development.
- The small-scale industry is going to be benefited more as the technology size is neutral.
- E-commerce will prove to be beneficial for the businesses, customers, employees, society and economy as a whole.
- Customers are not satisfied with the services provided by the Indian dot com companies.

Research Methodology

In modern times, management research has reached a stage of development where the traditional methods and techniques require synthesis and extension. Now, research
has become more complex, cost incurring and time consuming activity. Therefore, a systematic process and methodology is needed to conduct the research in a successful manner. Research methodology is the systematic method/process dealing with enunciating of identifying problem, formulating hypothesis, collecting of facts or data, analyzing these data and reaching at certain conclusion either in the form of solutions towards the problem concerned or certain generalization for some theoretical formulation (Hasouneh, 2003). It also comprised of a number of alternative approaches and interrelated and frequently overlapping procedures and practices. Since there are many aspect of research methodology, the line of action has to be chosen from a variety of alternatives. The choice of suitable method can be arrived at through the assessment of objectives and hypotheses; and comparison of various alternatives. Research methodology used in the present study is as under:

**Research Types:** Type of research is based on the nature of data. In the light of the nature of data, the present research is mainly of quantitative nature, as most of the findings of the present study are based on quantified measures. However, the researcher also manipulates the causality and consequences, which also represents a sign of qualitative research. In the light of purpose of research, the present study is mainly of applied nature as the researcher has tried to test the assumptions and applications of the problem in a given set of conditions. Further, the survey method has been adopted by selecting and studying sample chosen from the population (firms using e-commerce and online customers) to test the hypotheses and discover the relevant incidence, distribution and interrelation of variables.

**Research Design:** Reliability and validity of the research require the planning of inquiry, i.e., the detailed strategy of how the research will be conducted. A good research design depends on two aspects of its designing: first, specifying what one wants to find out, i.e., properly posing the problem or properly phrasing the issues to be studied or the logical structure of inquiry; and second, determining how to do it, i.e., collecting data through scientific and appropriate methods, using effective

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5 On the basis of nature of data, research can be of two types: (1) Qualitative Research and Quantitative Research. In the quantitative research, findings are based on some quantified measures; on the other hand, if the findings are based on some statements, description and other value loaded stories and anecdotes, we may call it qualitative research or exposition research. (see Basotia, G. R. and Sharma, K.K. (2002), *Research Methodology: Made Simple*, Jaipur: Mangal Deep Publications.
6 On the basis of purpose, the research can be of three type's: (1) Pure Research or Fundamental Research, which aims at finding out new knowledge which has more or less theoretical orientation; (2) Applied Research and (3) Action Research, which aims at solving such type of problem which have already become a part of action plan. In fact, action research and applied research are interwoven. In terms of degree an action research aims at solving such business problems which would show immediate utility (see, Sharma, C.K. and Jain, M.K. (2004), *Research Methodology*, New Delhi: Shree Publishers and Distributors).
7 On the basis of research method, there can be five types of research methods; Survey Method; Case Study Method; Statistical Method; Historical Method and Evolutionary Method.
8 Black and Champion (1976) have defined survey research as "procedures for gathering information about a large number of people by collecting information from few of them". (Black, Jones A. and Dean J. Champion (1976), *Methods and Issues in Social Research*, New York: John Wiley)
techniques of data analysis and rational and meaningful deductions (Ahuja, 2001). Therefore, the researcher has to take great care in the preparation of the research design (Thanulingom, 2003). There are many types of research design and there is no standard or ideal research design to guide the researcher; many different research designs may accomplish the same objectives. Broadly, research design can be of three types: (1) Exploratory (2) Descriptive and (3) Casual/Experimental.

In the present study, mainly exploratory research design has been adopted, as the main purpose of this study is to gain familiarity with the various aspects of e-commerce in Indian companies and to achieve new insights into it. Further, the study formulates more precise research problem by developing hypothesis. Since the scope of the study is very vast, the present study also represents some characteristics of descriptive research design.

Sample Design

In the most cases of research studies, it becomes almost impossible to examine the entire universe; the only alternative thus is to resort to sampling. The present study is also of the same nature. According to Manheim (1977), “a sample is a part of the population which is studied in order to make inferences about the whole population”. Thus, a good sample is a miniature version of the population and a good sample design involve the following:

- Sample Unit (Unit of Analysis)
- Sample Techniques and
- Sample Size

Sample Unit: Before selecting a sample, a decision has to be taken concerning a sample unit. The sample unit is the individual, group, or other entity that is selected for the survey. This is also known as the unit of analysis when the survey data are examined statistically (Fink, 1995). Since the major objectives of present study is to study business applications of e-commerce, challenges, strategies and opportunities in Indian companies; therefore, the large scale, medium scale and small scale industries form different segment (trading, manufacturing and services) has been considered as sample unit. Another purpose of the present study is also to find out the customers satisfactions towards the dot com companies; therefore, customers have also been considered as sample unit.

Sampling Techniques: The procedure that a researcher adopts in selecting the unit for the sample is known as sampling technique. There are mainly two types of sampling, the

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13 Most of the times, sample unit and analysis unit are same, but not always. In simple one-stage sampling, they are same; in more complex multistage sampling they are not. In the present study, at one place both were same at the another they were not. They were same when the data was collected from individual customers; and they were not when the data was collected from the companies, because multistage sampling was used there.
first type of sampling is known as Probability Sampling\textsuperscript{15}. And the second type of sampling is known as Non Probability Sampling. Such samples are chosen based on judgment regarding the characteristics of the target population and the needs of the survey. With non-probability sampling, some members of the eligible target population have a chance of being chosen, whereas others do not.

In the present study, both types of sampling techniques have been used. The selection of the units has been made on the basis of non-probability sampling technique, viz, ‘convenience’ sampling\textsuperscript{16}. To obtain the information from the various respondents within the organizations (Top Management, Middle Management and Lower Management), stratified sampling, which is the form of probability sampling, has been used. Information from the customers has been collected by using non-probability convenience sampling, though mainly the use of mall intercept survey. In the present study the researcher approached the prospective respondents in shopping malls with previous online shopping experience in shopping areas of selected cities. This method is really proved very beneficial, as it was really difficult and in fact impractical to compile an exhaustive list of the online customers from the entire population.

**Sample Size:** Sample size means the number of sampling units selected from the population for the purpose of investigation. No doubt, sample size must be sufficiently large so that we can have a representative sample. But, money and time constraints tend to limit the size of sample. The population addressed under the present study consists of all large scale, medium scale and small-scale industries using e-commerce in their operations. 50 units, (manufacturing, trading, and services industries) with the representatives from large scale, medium scale and small scale industries using e-commerce technology located in Haryana, Delhi and Noida were chosen. Some of these industries were highly advanced in the use of IT, while many others were not. The sample industries involved in the survey, are given in the Table 2.1.

<table>
<thead>
<tr>
<th>Table 2.1: Sample from the Industries</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Large Scale Industries</strong></td>
</tr>
<tr>
<td>Multinational</td>
</tr>
<tr>
<td>Delhi</td>
</tr>
<tr>
<td>5</td>
</tr>
<tr>
<td>Indian</td>
</tr>
<tr>
<td>Delhi</td>
</tr>
<tr>
<td>5</td>
</tr>
<tr>
<td><strong>Medium Scale Industries</strong></td>
</tr>
<tr>
<td>Delhi</td>
</tr>
<tr>
<td>5</td>
</tr>
<tr>
<td><strong>Small Scale Industries</strong></td>
</tr>
<tr>
<td>Delhi</td>
</tr>
<tr>
<td>5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
</tr>
<tr>
<td>20</td>
</tr>
</tbody>
</table>

\textsuperscript{15} Probability sampling provides a statistical basis for saying that a sample is representative of the study or target population. In probability sampling every members of the target population has a known, nonzero probability of being included in the sample. Probability sampling implies the use of random selection.

\textsuperscript{16} A convenience sample consists of group of individual that is ready and available for the purpose of the survey.
The main respondents targeted were from the top management (President, Vice President, Chief-Executive Officer, Managing Director or other top most authority of concerned organization), middle management (Chief Information Officer, Chief Operation Officer, Head of Information Technology or other top authority which comes in the hierarchy) and lower management (employees involved in the process of electronic transactions, payment and handling e-commerce technology etc.). Total 150 concerned people were surveyed form the different type of organisations. Table 2.2 indicates the sample of respondents from the organizations.

Table 2.2: Sample of Respondents from Organizations

<table>
<thead>
<tr>
<th>Industries</th>
<th>Top Management</th>
<th>Middle Management</th>
<th>Lower Management</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large Scale</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multinational</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>30</td>
</tr>
<tr>
<td>Indian</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>30</td>
</tr>
<tr>
<td>Total (A)</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>60</td>
</tr>
<tr>
<td>Medium Scale</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total (B)</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>45</td>
</tr>
<tr>
<td>Small Scale</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total (C)</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>45</td>
</tr>
<tr>
<td>A+B+C</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>150</td>
</tr>
</tbody>
</table>

The survey targets a sample population drawn from consumers who have experienced online purchasing in India. To collect the information from the customers, 200 respondents were selected from Delhi, Haryana and Noida. A detail of the customers’ sample size is given in table 2.3.

Table 2.3: Sample from Customers

<table>
<thead>
<tr>
<th>Delhi</th>
<th>Haryana</th>
<th>Noida</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>50</td>
<td>50</td>
<td>200</td>
</tr>
</tbody>
</table>

Data Collection

In research process, the result will be good if the data put in is good. If poor and unrelated data are collected, naturally poor and misleading conclusion will be drawn. Therefore, due consideration should be given to the type and method of data collection (Wilkinson and Bhandarkar, 2000). There are two types of data: primary data and secondary data. Since the scope of the study is really very vast, both types of data have been collected.

Primary data has been collected through the well-structured comprehensive questionnaire. Sets of two questionnaires were prepared which have been given in Appendix I and II.

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Appendix I: Questionnaire for Top Level, Middle Level and Lower Level of Management

Appendix-II: Questionnaire for the Customers

Well-structured questionnaires were prepared for the purpose to collect the necessary information. The questionnaires were prepared in the two phases. In the first phase, unstructured in-depth interviews were conducted to create initial questionnaires (the instrument). Further, expert opinions on the questionnaire were collected and improvements were made to the questionnaires. This necessitated some changes in the final version of the questionnaire. In the second phase, a pilot survey was also conducted with 3 organizations and 10 customers to evaluate how well the questionnaire was understood, and also to test alternative wordings of questions, alternative response options and determining whether some other response should be provided. During the interview process, some weaknesses in the design were also found. Some of the respondents had reservations about some questions in the initial questionnaire, due to the sensitive nature of topic addressed. In question number 2.2 (Appendix-I), respondents found some periods of time overlapped, such as 'less than 1 year' and 'less than 6 months'. In finalized questionnaire, one year was divided into 'between 6-12 months and less than 6 months. In question number 6, respondents were asked to allow them to rate the various reasons behind the adoption of e-commerce, rather than asking only one reason. The survey also helped the researcher in rewording and restructuring the questionnaire. The validation of the questionnaires was done by the feedback from the academicians, practitioners and by the issues identified by relevant literature. Finally, the structured questionnaires were prepared and the survey was conducted by explaining the purpose of the research to the respondents. The content of first questionnaire included the company profile, extent of IT usage particularly E-Commerce adoption, business applications, impact on working efficiency, perceived benefits and barriers, attitudes towards the opportunities etc. some strategical questions were also asked in the questionnaire. The content of second questionnaire included the personal information of online buyers, their buying preferences, methods of payment and their attitudes towards the services of dot com companies.

The questionnaires mentioned above, contain several type of questions keeping in view the objectives and hypotheses of the present study. Easily understandable and answerable questions were prepared and were carried to the respondents to be filled up by them. In most of the cases, personal interviews were conducted by the researcher to secure correct and collect necessary information. Some questionnaires were mailed to the respondents by the ordinary post. However, the response of such types of respondents, were not encouraging. Most of them either did not return the questionnaires or they did not fill the complete questionnaire. Some questionnaires were also mailed to the respondents through the Internet. Here, it was quite interesting to know that, responses of such respondents were encouraging compare to those whom the questionnaires were mailed by the post. However few respondents insisted to collect the questionnaire after a few days.

In the present study analysis is also based on the secondary data, which have been collected from various journals, books, magazines, reports, working paper series. For this purpose researcher visited many libraries. Internet was highly used for the purpose of
Data collection. Some important information was compiled from the different newspapers.

**Data Processing and Analysis**

The task of data collection is completed when all entries (or almost all) are filled with the appropriate responses or values (Galtung, 1967). After the data has been collected the researcher turns to the task of data processing and further analysis these data. ‘Data Processing and Analysis’, the task is to take the completed data matrix, which is amenable to processing, and do two things with, in this order: (1) Processing: to recast the matrix, concentrate and otherwise deal with it so that the data are as amenable to analysis as possible and (2) Analysis: to see the data in the light of the hypotheses and theories, and draw conclusions that are amenable to the theory formation as possible (Galton, 1967).

In the present study, responses from respondents were coded and tabulated with the help of computer. This process was used for the each type of the questionnaires. The responses of individuals have been given in all the tables in the term of both the numbers and percentages. Figures shown in tables with parentheses represent percentages while those without parentheses are simple frequencies.

For analyzing the data, both simple and advanced statistical tools have been used. In some cases simple statistics like average, percentage, weightage average and mean score have been applied. Exploratory research, require some advanced tools; therefore to test the various hypothesis of the study, non-parametric statistical tests based on Chi-square have been used. The test was conducted at 95 per cent confidence level (or 5 per cent level of significance). The calculated chi-square values were compared with the table values of chi-square at a given degree of freedom. A five point Likert scale was also used to measure the intensity of the firms and customers attitudes towards the selected attributes. The respondents were asked to rate the variables, using five point Likert scale, which ranged from strongly agree to strongly disagree. The weighted average score were also calculated at the appropriate places where the respondents were asked to rank/rate different statements, either according to degree of their importance or according to the extent they agree with the statement as the case may be. Likert scale is qualitative in nature. A scoring system was adopted to quantify them. Score of 5,4,3,2, and 1 were allotted to (1) to (5) respectively.

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20 In this process collected data are classified, coded, tabulated, interpreted and analyzed with view to bring out meaning from it.


22 The Chi-Square test is carried out in the following steps. For each observed number (O) in the table find an ‘expected number’ (E); this procedure is discussed below:

- Subtract the each expected number from each observed number: (O-E)
- Square the difference : (O-E)²
- Divide the squares so obtained for each cell of the table by the expected number for that cell : (O-E)² / E
- \( \chi^2 \) is the sum of (O-E)²
Scope and Limitations of the Study

The rapid growth of e-commerce and the anonymous nature of e-commerce transactions have created new opportunities for the researchers to gather and analyze data in order to learn about individuals, companies and societies. Thus, the topic ‘E-Commerce’ offers a vast scope for the study. However, it is not possible to cover all the aspects of e-commerce. Hence, the researcher has restricted to study the ‘Business Applications: Strategies, Challenges and Opportunities in India’. The approaches to the study have been from the point of view of large scale, medium scale and small-scale industries, using e-commerce technology located in Haryana, Delhi and Noida. An attempt has also been made to study the satisfaction level of online customers. Besides all these, the present study covers electronic payment and security systems, socio-economic implications of e-commerce and analyze e-commerce in the Indian legal regime. Despite the scope of the present study is very vast; still the researcher has no claim to say that the present research work is complete in every sense and results are accurate and original. The reason, the every researcher (especially in Social Science) has to conduct the study under certain limitations and collect the data based on certain assumptions. The present study is not an exception. The present study has also been conducted under certain limitations and is based on some assumptions. Some of the most important are given as under:

- As the main objective of the present research is to study the business application aspect of e-commerce in the Indian context, technical aspect of e-commerce has not been covered properly.

- Since the scope of the study in this particular field is really very vast and collected data provides huge information; therefore the researcher may reveal some other interesting results. But, the researcher has limited the result of present study according to objectives and hypothesis of the study. However, the researcher tried to include all the necessary information for justifying the result of the study.

- Small size of present study is relatively small to generalize the results in the Indian context. But time and financial factors did not allow the researcher to selected very large sample size. However the researcher has made the justification by taking into consideration of all types of firms, and the region selected for study is really high tech. Therefore, it is logical to conclude that the result may be generalized in the Indian context. But, for future research this factor should be taken into consideration.

- The result of the present study is based on the opinions and experiences of the respondents. In opinions survey there is always possibilities of individual biasness in opinions, and results looks unreliable. This biasness could not be eliminated.