Sample for this included SMEs operative in the National Capital Region and divided along manufacturing sector and service sector. More than half of the medium-sized (71.6%) and small (63.3%) firms were using internet for business purpose over and above serving the other administrative requirements. SMEs most often used e-mail (72.7% - medium-sized and 80.2% - small firms). Second most important usage of internet was searching for the business information (68.8% medium-sized and 77.4% small firms). Chat was not widely used, but smaller firms used it more often (14.8%) than medium-sized firms (7.8%). Video conferencing was used only in 2.8% small firms. Surprisingly, more than one third of the examined proprietors/managers both in small and medium-sized firms thought that their firm/s was/were did not possess enough information and had less familiarity about internet uses such as e-commerce.

SMEs in general indicated that the primary reasons for establishing an internet connection was mainly to gain competitive advantage (22 percent), to increase the customer base (20 percent), to promote and advertise (15 percent), and doing market analysis (14 percent). An overview across the firms studied corroborates the general picture of SMEs as ‘anxious adopters of internet and e-commerce’ as on today.

SMEs reasoned out maintaining the website ‘for publicising the firm’s name and intent (95.5%)’, ‘to communicate specific product and/or service information (68.2%)’, ‘to provide customer service (68.1%)’, ‘to enable interaction with specific customers (52.2%)’, ‘to source new supplies/suppliers (36.6%)’, ‘to generate online transactions (orders) (35.4%)’, and ‘to support sales that are not made online (22.6%)’.

The main reasons for adopting e-commerce by the SMEs were ‘to expand and grow their business’, ‘to improve customer service’, ‘for attracting and locating new customers’ and ‘to keep up with existing competitors’.

Among the early adopters of e-commerce were the real estate developers, firms manufacturing automotive part/s, and educational groups, consulting firms, fitness firms, health care firms, retailing firms and firms in the entertainment sector as far as the service sector was concerned.

There existed a great confusion about what the term ‘e-commerce’ amongst SMEs. Is it about having a website, selling online, or does it refer the use of e-commerce in business? Statistics show that by now many SMEs have computers and e-commerce access. However, in general SMEs lagged behind larger companies in benefiting from the integration of e-commerce into their daily business. It was so stimulating for the SMEs that SMEs believed that e-commerce adoption could promote their competitiveness and contribution to economic growth. However,
there was a lack of insight in what was holding SMEs back in adopting e-commerce. Is it a lack of awareness of the possibilities of e-commerce, a lack of knowledge and skills, or perhaps a lack of resources? Therefore, this investigation aimed to identify firm characteristics their e-readiness and other relevant factors that explain e-commerce adoption by the SMEs.

**Adoption of e-commerce by SMEs**

In the literature, most studies explain e-commerce adoption from an innovation adoption perspective, wherein the adopter’s perception of e-commerce in terms of benefits to be realized, barriers envisaged and other organizational, technological and environmental factors is used to explain its adoption. However, e-commerce is not just the adoption of ‘of-the-shelf’ technologies with stable and pre-determined features. On the contrary, that e-commerce in SMEs context was evidently found as an innovation that is largely shaped by the adopting firm’s characteristics, its owner’s perspective and even employees’ personality and the organizational culture. It is the adopting firm that decides how to apply e-commerce adoption and continue to use e-commerce on modular basis usually developing islands of use and integrating them at a later stage.

Moreover, e-commerce adoption is about finding ways to capitalize on e-commerce, and create new value. Entrepreneurship theory proves to be helpful in understanding the entrepreneurial element in e-commerce adoption. In an entrepreneurship perspective, e-commerce adoption is about recognizing business opportunities to apply e-commerce in ways that improve existing business, or create new business for the company gradually over years. In this perspective, e-commerce adoption can be explained from the firm’s ability to recognize opportunities to create value by adopting e-commerce. Statistics present evidence that SMEs have been fast picking up the e-commerce and (though facing many of the implementation problems), the day is not far off, when SMEs will be termed as highly computer and e-commerce savvy.

E-commerce has the potential to greatly improve how enterprise operates internally and how it serves its customers. E-commerce is much more than a tool for improving cost-quality ratios in SMEs services. This research investigated the factors that influence and inhibit the implementation of e-commerce in SMEs in NCR. The results showed that most of SMEs have only adopted basic applications of e-commerce. They widely adopted the most common e-commerce technologies (e-mail and e-commerce) as additional marketing tools to display company’s products and services information, rather than using the e-commerce platform to enable online transactions. Indeed, the adoption of e-commerce applications like online payment system, order processing is picking up. The findings implied that more efforts are needed to help and encourage SMEs to speed up e-commerce adoption, particularly the more advanced applications.
This study covered e-commerce acceptance and progression by the SMEs along two aspects viz. e-readiness and economics of e-commerce amongst SMEs. First, it logically explored a descriptive account of perceived benefits and limitations associated with e-commerce activities for SMEs and hence adoption, relying on managerial perceptions, organizational, environmental and technical characteristics. Second, the attempt circumvented over investigating the realhem of ‘e-readiness’ for e-commerce amongst SMEs. In fact benefits and the limitations of e-commerce for SMEs determines the economics of e-commerce adoption. The number of e-commerce applications, usage extent, and both financial and non-financial accruals have been taken into account to justify economically the adoption of e-commerce by the SMEs.

It must be put on records that the sharp rise in interest and usage of e-commerce related technology by small and medium businesses in the NCR cannot be taken to imply that there will be any immediate or seamless transition to full blown electronic commerce. Most of the small firms were in the early stages of e-commerce adoption and few showed any inclination to make the leap towards full integration or even attempting to explore how and where electronic commerce can be used to add and increase business value.

Majority of the SMEs surveyed had e-commerce access. The e-commerce was primarily used for information gathering and communication (82%) and (68%) respectively, with e-mail usage at (96%) and (77%) using it for advertising.

The extent of e-commerce adoption by SMEs was measured based on the mean measure of the usage frequency across a set of e-commerce applications. The highest ranked e-commerce applications were found to be principally concerned with external communication and acquisition of information for market and product research. An e-commerce adoption index was then computed by taking the cumulative sums of the responses regarding the usage frequency of each e-commerce application.

Managers were also asked to evaluate perceived benefits and limitations of internet for e-commerce. The findings indicate that while the company managers perceived the benefits of internet-based e-commerce very favourably, they do not indicate relatively high level of agreement to the perceived limitations of e-commerce on the internet.

Studies in emerging markets indicate that top management in SMEs generally did not understand what e-commerce is all about and this lack of understanding lead them to underestimate the impact of e-commerce and prefer to be ‘followers’ rather than ‘leaders’ in the adoption of e-commerce technologies. One important issue appears to be ‘e-awareness’ and the provision of training and skills to micro and small businesses. Perry and Schnedier (2001) showed that mass media knowledge of the benefits of electronic commerce was not in itself sufficient to lead to adoption within the context of small businesses. Only 25% of the businesses provided formal training in the technology which is not surprising given their size and limited resources. This has also been highlighted in other surveys in foreign countries
which identified a low level of training being carried out across all company size grouping, especially lowest among the smaller businesses. What is evident is that although local and national policy makers have achieved a certain degree of success in persuading SMEs to get online, there is still much work needed. Policy makers need to address the level of consultant support and ensure that SMEs feel that they are getting value for money. Policy makers also need to address the current attitudes and support mechanisms with regards to how to develop a positive approach to training staff with the skills needed to capitalise on e-commerce related technologies.

With regard to the planning and implementation of e-commerce, creating a uniform strategic plan for e-commerce projects is the first step for successful adoption of e-commerce. Also, issues relating to culture and societal structure should be addressed very carefully to influence and convince the SMEs to participate and become involved in e-commerce systems. Awareness of e-commerce and other new e-services among the proprietors and managers/employees need be addressed to raise and promote the e-commerce benefits and advantages.

The study has developed and tested a model of e-commerce adoption for SMEs. Apart from reconceptualising the theoretical framework from established IS research on adoption, innovation, implementation and diffusion, the study has clarified the definition and measurement of the concept of “adoption”.

This study focused on theories already developed and tried to integrate most of the variables as reported in literature. This, with the cross sectional nature of data limits the ability of this study to draw causal implications in the findings. Owing to the inherent time constraints in a study of this kind, the adoption decision, which would have required a longitudinal perspective, was not investigated. As such, adoption is only observed in hindsight. In making generalisation from the research sample, one has to take into consideration the Indian context. The findings may not be universally true, but they are likely to be applicable in similar cultural contexts.

The exploratory nature of the research has helped identify associations between variables from which more confirmatory or causally directional hypotheses has been generated.

This study used the TOE framework to investigate factors influencing the acceptance of e-commerce in SMEs. The data analysis confirmed the significance of perceived benefits of e-commerce in the adoption process. This result can be interpreted to mean that SMEs’ executives are not ignorant about the advantages and benefits of e-commerce. As such, the acceptance of e-commerce is likely to be positively encouraged by this understanding. The data analysis revealed that perceived benefits emerged as the most salient factor for e-commerce acceptance in comparison with the other variables used in the study. To that end, this finding supports earlier studies that have signified the critical importance of perceived benefits in the adoption processes of technological innovations, including e-commerce in SMEs.
This study intended to address factors affecting e-commerce adoption, as well as adoption and non-adoption of different e-commerce applications among the SMEs through the use of a wide range of variables in the light of TOE framework supplemented with other frameworks. The suggested model of e-commerce adoption makes a significant contribution to research and practice since; it provides support for TAM model in the context of e-commerce finding that perceived relative advantage (usefulness) of e-commerce is a significant discriminator between adopters and non-adopters of different e-commerce applications.

The findings of this research have several implications for governmental agencies, IS/e-commerce consultants, and e-commerce applications vendors responsible for developing SMEs to the e-business environment. To enhance the widespread adoption of e-commerce applications, e-commerce vendors are advised to target their products and services at SMEs with innovative proprietors having positive attitude toward advantages of e-commerce adoption, as well as to cooperate with SMEs to jointly improve the compatibility of e-commerce applications with specific characteristics of SMEs active in different industries. Furthermore, assuming adopting e-commerce and entering to global e-business environment as a necessity for survival of SMEs, and concerning proprietors with less innovativeness and positive attitude towards e-commerce adoption benefits, it is suggested that governmental agencies and e-commerce consultants need to promote the attitude and innovativeness of proprietors through improving their awareness toward e-commerce adoption (e.g. by providing training). In SMEs, as the innovativeness and attitude of proprietors toward e-commerce adoption become more positive, their receptiveness of e-commerce applications will be improved. In such circumstances, governmental agencies can play a significant role in promoting e-commerce in this business type through providing gratis training programs and workshops particularly designed for and targeted at employees and proprietors of SMEs. In the context of SMEs, it means that relative public organizations such as the ministry of communications and information technology and the ministry of industries need to address discussed issue through commencing some campaigns aimed at enhancement of proprietors’ awareness regarding the advantages of e-commerce on their businesses.

**E-readiness**

It has been revealed that as a result of the many supportive plans of the government, e-readiness of Indian SMEs has been significantly improved. Accordingly, this finding signifies that policy maker plays an important role in disseminating e-commerce effectively across SMEs. Therefore, e-commerce-friendly policy ought to be developed to compensate for the
inherent lack of necessary financial, legal, and physical infrastructures for the development of e-commerce within SMEs.

External e-commerce readiness forces have also materialised as affecting communication improvement and cost-saving benefits. In particular, market forces e-commerce readiness and supporting industries e-commerce readiness explain some 17% of the variations in communication improvement and cost-saving benefits. This shows the impact of network externalities and institutional forces in affecting value from e-commerce in developing countries. Therefore, e-commerce benefits to developing countries depend not only on the fusion of organisational e-commerce readiness forces, but also on the forces of the external environment.

The overall e-readiness suggests that SMEs in sampled area were ready to embark upon the e-business journey. However the readiness to adopt e-commerce can still be improved. The findings of the study also showed that in general infrastructure and technology has impact on SMEs’ e-readiness. Top management commitment has the most significant impact on SMEs e-readiness. However, human capital, resistance to change, and information security do not have significant impact or contribution to e-readiness of SMEs. Further studies are needed to refine this conceptualization so that we can have a better understanding and tool to measure the e-readiness of SMEs.

Different organisations might demonstrate different combinations of e-commerce readiness attributes and e-commerce success profiles. Overall, though, survey respondents demonstrated a stronger profile of human and technological resources, but a weaker profile of governance and business resources. Of all the e-commerce readiness variables, the government’s e-commerce readiness received the lowest rating. On the other hand, the e-commerce success profile revealed that e-commerce benefits are mainly limited to communications improvement. Particularly, there appears to be a general perception that e-commerce projects are delayed and not delivered within budget. Further, cost-saving benefits have yet to materialise for firms.

Of the external e-commerce readiness factors, market forces and supporting industries but not government seem to have some effect on e-commerce success. This result does not completely refute the critical role played by the institutional environment set by government in creating an e-commerce-friendly environment. Indeed, there is no doubt that the future of e-commerce and consumers’ confidence in e-commerce would not fully materialise without government's e-commerce readiness to put in place supportive national legal infrastructure. However, what we can conclude here is that government e-commerce readiness is a necessary but insufficient condition for e-commerce.

Overall, these findings chime with Hartman et al. (2000) suggestion that success in e-commerce is unlikely to come to organisations which are "conspicuously short" in any of the forces of organisational e-commerce readiness. In particular, e-commerce governance,
technology resources and commitment emerge as chief factors weighing the relationship between e-commerce readiness and e-commerce success. This finding corresponds with findings of previous studies on IT implementations in developing countries (Boer and Walbeek, 1998; Jarvenpaa and Leidner, 1998; Montealegre, 1996; 1999) and is supported by Enns and Huff’s (1999) framework for the successful implementation of IT in developing countries. The above reveals the significant firm-level challenges that SMEs must overcome in order to secure timely and within budget delivery of e-commerce projects and extract maximum benefits from their implementation. Because most SMEs materially lack such capabilities (see Jarvenpaa and Leidner, 1998; Montealegre, 1998; Odedra and Straub, 2003), SMEs in India in particular might consider trying to excel in these three areas in order to gain competitive advantage over their main comparator firms. Nonetheless, it is important to recognise that any sustained advantage is context-specific; that is, there are no universal sources of advantages. As a result, a focus on excellence in these three areas should not allow the importance of other internal and external contexts to be ignored.

A practical question that emerges from the discussion hitherto is how much of the desired attributes of e-commerce readiness should businesses demonstrate? Or, putting it another way, how e-ready should SMEs be? The position is that e-commerce readiness is a shifting goalpost. The process requires continuous monitoring of organisational and environmental contexts and a capacity to routinely observe and understand organisations' e-commerce activity while simultaneously undertaking that activity. This is essential because the very organisational and environmental resources and conditions on which organisations draw in migrating to e-commerce can at the same time be the basis for shaping and reproducing the internal and external environment under which they operate. As organisations accumulate their capabilities, learn from their past experiences and interact with their environment (which in itself is in a state of change), their profile of e-commerce readiness changes too. Especially in the age of the internet where agility is an important business capability, it will be impractical for businesses to wait before they or their environment is "e-ready", if such a state of equilibrium can ever truly exist. Therefore, it is necessary for SMEs to migrate to e-commerce (using various entry-level strategies) while at the same time working towards improving their e-commerce readiness profile.

**Benefits of e-commerce in SMEs**

While many large companies are completely interwoven with e-commerce, there were also exciting examples of small and medium sized enterprises (SMEs) in traditional industries that managed to change their existing ways of working and created new business by adopting e-commerce. To them, adopting e-commerce meant using e-commerce to effectively support their daily business.
Large companies were found to have been benefited more or less equally from accessing a wider range of consumers (20 percent), keeping track of customers' preferences (20 percent), and improving communication with customers (18 percent). Among mid-sized companies, the most important benefit has been - accessing a wider range of consumers (30 percent), followed by improved communications with customers (21 percent), and keeping track of customers' preferences (18 percent). Small companies' major benefits have been - improved communication with customers (26 percent) and wider access to customers (25 percent).

Small companies named cost savings in the following order: reduction in paper-based systems (26 percent), advertising and promotion costs (22 percent), reduction in intermediary costs (22 percent), and reduction in customer service (17 percent). Large companies reported cost reduction also in paper-based systems (27 percent), customer service (25 percent), intermediary costs (24 percent), and less frequently in advertising and promotion (14 percent). Medium-sized companies experienced similar ranking as large companies: reduction in paper-based systems (26 percent), customer service (26 percent), intermediary costs (24 percent), advertising and promotion was mentioned only with a relative frequency of 10 percent.

Of the highest ranked perceived benefits were: '24-hour accessibility to customers', 'low-cost communication', 'easy access to international markets', 'easy access to potential customers', 'gathering information about potential markets', 'enhancing the company image', and 'creating a global image'. Data indicates that e-commerce benefits were largely limited to internal (77% of respondents either strongly agreeing or agreeing) and external (71%) communication improvements.

Other benefits that were supported by the majority of the respondents were improved company image (65%) and improved process speed (50%). On the other hand, e-commerce did not appear to enable most of the SMEs to reduce the cost of marketing (76% disagree or strongly disagree), operations (83%), purchasing and recruitment (81%) or maintaining information (66%). Further, 84% of SMEs did not appear to realise increased revenue as a result of e-commerce. Another 74% and 72% of SMEs either disagreed or strongly disagreed with the improved supplier relationships and the customer loyalty and retention benefits of e-commerce respectively.

Factors analysis was conducted to each set of perceived benefits and limitations to produce parsimonious set of distinct, non-overlapping factors. From the full set of perceived benefits identified, the factor analysis yielded four factors that explained 59.1 per cent of the observed variance in the sampled data. From the ten limitations identified, the factor analysis produced three factors, explaining 54.8 per cent of the observed variance.

A multiple regression analysis was undertaken in an attempt to investigate the functional relationships between the SMEs’ willingness to adopt e-commerce and the underlying factors of perceived benefits and limitations of internet-based e-commerce. This analysis provided
strong evidence for the view that the perceived benefits of internet for e-commerce positively affected the e-commerce adoption by SMEs. However, no support was found concerning the impact of potential limitations of e-commerce on SMEs’ willingness to e-commerce adoption. The analysis also showed that company and industry-specific factors, with the exception of amount of resources allocated for export development, did not appear to have any significant impact on e-commerce adoption by SMEs.

There was clear evidence that SMEs were though experiencing limited success with the use of e-commerce in exposing their products or services to global audience and reaching new customers, the results demonstrate that e-commerce usage in SME was now widespread and was not confined to particular sectors of industry or business activity. The survey findings lend support to the earlier studies which revealed that many SMEs participating in e-commerce activities do so in the hope of achieving marketing benefits, better global exposure and customer relationships.

Analysis of the survey result reveals that medium-sized companies were still the most enthusiastic about the use of e-commerce in their business and the small companies the most uncertain. This is partly a reflection of the fact that medium-sized companies are more likely to have the financial capability to invest in IT whilst small companies are more wary of committing their funds.

The difference in attitude is also related to the fact that small companies tend to be less aware of the benefits that can be derived from a small investment in e-commerce technologies. The study found that the use of e-commerce has not been able to fulfil the SMEs business objectives of increased sales and profits satisfactorily. It was discovered that the hype and speculation by business and media reports about what the e-commerce can do was not always right; sales increase and profitability were far lower than expected. However, the e-commerce was very useful in gathering information and communicating with suppliers or customers. The e-commerce was an extremely attractive method for SMEs to expand their markets and reach global audience. However, fruitful use is being hampered by concerns over security and whether target markets can be reached.

The results obtained from the SMEs indicated that the level of e-commerce support was positively related to the perceived benefits and the number of e-commerce uses. This result was consistent with previous studies that showed that organizations that possessed higher level of IT knowledge and capabilities were more likely to adopt and implement e-commerce capabilities.

Business type not only had an impact on the number of e-commerce uses, but also on the level of perceived benefits. These findings support an earlier study by Clark (2002), who suggested that the type of business operations influences the types of technology solutions that are appropriate to the firm and that are actually used by the firm. While manufacturing
sector firms were using the e-commerce tools almost in the same proportion as the service sector firms, yet, the firms in the service sector perceived more benefits of e-commerce. Business size only affected the number of e-commerce uses within firms. These overall results were consistent with the findings of Dholakia and Kshetri (2004), Lertwongsatien and Wongpinunwatana (2003), and Wang and Cheung (2004), but contradictory to those of Grandon and Pearson (2004), Mehrtens et al. (2001), and Scupola (2003).

Overall, firms’ usage of e-commerce was generally proportional to size. Involving e-commerce in sales transactions, ownership of marketing, management and production software, and the use of e-commerce for management were all directly proportional to size. With the exception of design and creation, one may make a similar conclusion about the use of e-commerce in production. The case for marketing was not as clear cut.

For businesses with an international focus, the overall results suggested that whether or not organizations are engaged in international business, had a significant impact on the level of perceived benefits and the number of e-commerce uses. It was found that international businesses had no effect on the level of external pressure, and only a partial impact on organizational readiness.

Prior experience of the IT tools did not have any impact on the e-commerce adoption factors, but it was found that the more experienced a firm was in terms of IT presence, the greater the number of e-commerce uses it reported.

Among the three main categories of adoption factors, perceived benefits provided a stronger impact on the adoption decision than either organizational readiness or external pressure. This finding was consistent with previous studies that pointed to the relative advantage of the technology as the key factor influencing SMEs’ decision to adopt innovation (Chau and Hui, 2001; Thong, 1999). However, SMEs were concerned with the organizational and technological resources needed to support e-commerce adoption decision.

The e-commerce is an important medium for SMEs to establish and tighten relationships with their suppliers and customers. Communication (e-mail) using e-commerce is regarded as additional means of communication, rather than a substitute. The e-commerce is seen by some of the respondents as transforming the way business is conducted, offering competitive edge and a gateway to the global marketplace. There was no evidence from the survey to support the claims made by business and the media of the "revolution" expected from the use of the e-commerce. However, the overall attitude of the surveyed companies toward the use of the e-commerce in their business is positive.

Clearly more detailed and focused work needs to be conducted to ensure that the impact of electronic commerce awareness and training programmes and initiatives can be maximised. In order to reap the advantages of e-commerce, SMEs must fully embrace it by making a group of managers aware of the potentials of e-commerce.
Another important conclusion emerging from this study is that there exists a positive relationship between the amount of resources allocated for export development and the extent of e-commerce adoption of SMEs. This finding confirms the view that the e-commerce can reduce the barriers to exports faced by SMEs by lowering the costs of extending their geographic reach. The managers of such SMEs should, then, ensure that they are able to acquire the enabling and enlightening technical and cultural skills related to international e-commerce usage. Policymakers in emerging markets can take steps to promote e-commerce by SMEs by setting up dedicated information web sites similar to those offered by the governments of industrialized countries.

This research has also examined some of the speculations normally associated with the e-commerce and small companies. For example, much has been said about the capabilities of the e-commerce to equalize small and large companies in many respects: access to broader markets, ability to keep track of customers' preferences, advertising, apart from the many benefits and cost savings that can be achieved, thus making smaller businesses more competitive.

The results indicate that it is still the large sized companies that accumulate the benefits and cost savings as compared to SMEs. Although the e-commerce has been portrayed as a major solution for small businesses, both large and small businesses concede that the new technology does not put both types of company on an equal basis.

It is interesting to note that all companies established a Web connection in order to gain a competitive advantage, but if everybody can have similar access to the technology there is no competitive advantage. This is especially the case when small companies do not have the same amount of resources required to compete on the basis of information technology. Small companies still have liabilities such as the lack of brand name and credibility. Perhaps the strategy for a small company is to work through intermediaries (e.g. portals) that can compensate for that liability. However, small companies still have to pay for that intermediation.

Companies, whether big or small, have tried to gain access to larger markets and to increase the customer base. It is larger companies that have achieved these benefits overall. On the side of cost savings as a result of the e-commerce, both large and small companies have reported cost savings, but proportionally it favours large companies. It seems that large companies are becoming more competitive than small ones because of the potential for cost reduction and productivity improvement among larger companies than smaller ones.

It is apparent from this research that small companies were not realizing all the potential offered by the e-commerce. Unfortunately, there are not many empirical studies on which this study can be compared.

Human, business and technological resources contribute to marketplace benefits. This is consistent with the tenets of resource-based theory whereby the routines, processes, skills
and other resources organisations build give them a competitive advantage in the marketplace (April and Cradock, 2000). Organisations’ ability to maintain and manage their relationships with suppliers, customers and other partners occupy a central role in e-commerce. The finding in this regard reveals that building and maintaining trusting and economically-viable relationships and leveraging those relationships using e-commerce applications could contribute significantly towards ensuring better market performance. This is a particular challenge to businesses in developing countries that belong to international trade chains.

One of the arguments of the potential of e-commerce to developing countries is making information transfer faster, cheaper and simpler. Nevertheless, this benefit depends considerably on the adoption of e-commerce by customers, suppliers and other partners of an organisation. Therefore, benefits related to communication go to firms whose market stakeholders are ready to conduct business electronically. This again is consistent with the tenets of network externalities in which the benefit and value of using a network depend, among other things, on the size of that network (Au and Robert, 2001; Sillince et al., 1998).

While every organization needs to show its existence in virtual environments for various purposes, commercial companies aim to increase their performances through e-commerce. The e-commerce is not only a growing trend but also it is irreversible (Liou and Wang, 2011). SMEs have already started redesigning their structures, business processes and IT infrastructure in order to capitalize on the opportunities provided by the internet as an effective medium of commercial transactions.

This study further contributes to e-commerce literature by finding evidence about significant positive and linear relation of financial resources and perceived benefits on e-commerce performance in SMEs. Another contribution is that online advertisement and SCM can serve as higher e-commerce performance and sales. The last important contribution is detecting negative influence of content on e-commerce performance.

Current business issues in e-commerce are related to security and privacy, processing capabilities and order fulfilment. The e-commerce storefront should be kept free of popup, secure all transactions with latest security standards, respect the privacy of visitors and be protected from any security threats. The speed and accuracy of order fulfilment with secure payment processing by including all pay methods and allowing customers to track their order online, real time are the most important e-commerce issues. Although this study did not have a focus for security related issues, other areas of current concern have been covered in the study. Applications of current interest such as online sales, online advertisement, online procurement, after sales support, and internet based SCM were among the main components of order fulfilment process and processing power of e-commerce web site. This study shows that EDI provides significant superiority in sales, competition, procurement and overall performance. EDI increases the speed of processing between trading partners and decreases
errors and costs by allowing a SME to have benefits of storing and using data electronically without paper work.

Perceived benefits are the advantages that are offered by e-commerce in comparison to the traditional ways of doing business. Importance of perceived benefits in effecting e-commerce adoption has been emphasized in the literature by a large number of researchers (Mehrtens et al., 2001; Kutlu and Ozturan, 2008; Grandon and Pearson, 2004; Al-Qirim, 2007; Beatty et al., 2001). The results of this study’s research model concerning SMEs is aligned to the findings in the literature. In companies where the employees perceive benefits of e-commerce more, superior performance in e-commerce has been experienced. Additionally, here the data shows that the contribution of perceived benefits in e-commerce performance was higher than the contribution of financial resources as it can be seen in regression equation. The study indicates that increasing perceived benefits by training employees about the potential gains of e-commerce will improve the performance in e-commerce.

**Barriers to e-commerce usage among SMEs**

It has become evident that the e-commerce processes of SMEs are at present isolated from the strategic e-commerce context where the ability to implement full-blown e-commerce is for this company impeded by various obstacles.

The prominent barriers to e-commerce usage among SMES that the study could find were - 'high cost of acquisition of e-commerce infrastructure’, ‘high cost of maintenance of e-commerce infrastructure’, ‘high cost of e-commerce personnel training’, ‘excess order’, ‘payment difficulty’, ‘delivery difficulty’, ‘high level of cyber-crime’, ‘insecurity of documents’, and ‘lack of stable power supply’. Other barriers (with little less intensity) were ‘inadequate telecommunication facilities’, ‘few informed online market’, ‘tangibility requirements of products’, ‘low level of education of the owner/manager(s) of SMEs’, ‘inadequate managerial skills’, ‘lack of government directions on e-commerce for SMEs’, and ‘lack of Government support’.

Another leading issue that mattered SMEs was security measures that should be taken to protect data transfer in internet environment. To this end, collaboration of governmental bodies to enact necessary rules and regulations within the framework of international law is essential in order to remove security concerns. Also the factors that hindered the implementation of e-commerce were limited use of e-commerce banking and web portals by SMEs. So, security and privacy are critical issues that need to take the highest level of priority in e-commerce implementation process.

Although prior research suggests that cost of e-commerce adoption is still considered as a barrier within SMEs, e-commerce adoption cost was not perceived to be a major barrier by SMEs.
This resulted in an eclectic, mostly inductive way of working, combining theories that appear to be best or true for the subject under study. As a result, our understanding of the coherence of the variables is limited, and other variables may have been overlooked. The choice to work inductively also resulted in a selection of relatively ‘simple’ constructs. The constructs have not been selected deductively from a more fundamental model of firm behaviour. Consequently, the constructs in this study do not represent more abstract theoretical concepts. As a result, the researcher was refrained from using latent constructs, and only included directly measured (or unweighed summations of measured variables) variables in the adoption model. Effectively, each construct was measured by one empirical indicator. Nevertheless, the explanation of e-commerce adoption turned out to be effective and insightful.

Even so, the empirical results show that for the majority of SMEs business process support is exactly what e-mail and the e-commerce are used for. Further, while operationalizing e-commerce adoption to distinguish first-users from experienced users of e-commerce in SMEs, the benefits might be different and this limits the interpretation of the results.

Results showed that while the retail and manufacturing sectors appear to regard the grouping of barriers the same way, the service sector SMEs regard certain barriers as distinct and different to the other groups. The results also show that in all three cases, the technical difficulties surrounding e-commerce adoption appear to be of higher priority than those that might be considered more organizational in nature. This would suggest that any initiatives to promote e-commerce adoption in small firms located in areas away from the cities, must take into account the business sector and respond accordingly.

Another "real" issues of limited resources was cited as inhibiting e-commerce activities where the owners agreed to the lack of resources (manpower and financial), or technical capabilities to manage the demands that online orders may generate. This issue of limited resources impacted the distribution system of the SMEs.

The owners/proprietors admitted that they were not technically adept and the person responsible for all the administrative duties already had a huge workload to handle each day. Consequently, although SMEs have taken an initial step towards e-commerce, the barriers to full-blown implementation still relate to:

- lack of senior management support/enthusiasm;
- lack of skills among the employees;
- lack of resources; and
- a lack of awareness of the benefits of e-commerce for the business.

To date there has been weak indications of advancement through the stages of e-commerce growth to maturity amongst SMEs. Subsequently, it is suggested that the e-commerce decision which was a natural reaction (as opposed to being proactive) to much of the hype
that has surrounded e-commerce adoption, rather than any pre-conceived ideas about the benefits for the business, where these SMEs have taken a less than risky approach in their e-commerce decision, now needs much more deployment of the financial resources to e-commerce, otherwise soon a state of stagnation shall be realizable.

Existing models of e-commerce recognise the potential impact of the e-revolution that is taking place within the global economy. Some of these new models imply fundamental shifts in business strategies, operations and technologies for the services sector. The evidence suggests that technological competence will be a critical differentiator between those companies that succeed on the e-commerce and those that will fall behind. Thus a picture emerges that links the technological competence to the sophistication of the e-commerce strategy being employed. Although many of survey respondents had a Web site, the usage remained limited to basic application; sophistication in the use of technology has not increased.

Consequently, it is suggested that unlike the SMEs in this research sample, many of whom supported e-commerce as a stand-alone activity, and presented a fragmented view of their customers must approach the business via more than one channel and use an integrated strategy of e-commerce. This lack of vision has painted a grim picture in relation to the research findings, where most of the e-commerce activities (Web sites) may be viewed as experimental "add-ons" to existing business activities. Consequently, the majority of the SMEs surveyed have a low expectation of the cost-benefits to be gained, focusing on customer-facing e-commerce that they may perceive to be the easiest route to take with the least disruption to existing business practices.

In relation to the process of reaching e-commerce maturity, it appears that as aforementioned, this is highly dependent on factors such as service/product characteristics, market demand, competition, and affordability of solutions, logistics, distribution, maintenance support and, most importantly, management vision and the entrepreneurial culture of the firm. Processes are not always clear cut in SMEs, hence they may struggle with the concept of e-commerce, where all entrepreneurial functions are located within one office environment. In reality, problems will not reduce by merely increasing the technological competence of SMEs that each have specific needs, resources and capabilities. Consequently, the e-commerce solution may become less attractive for such heterogeneous and complex mix of economically active SME units.

For many organizations e-commerce is an exciting new opportunity with much potential. It represents an opportunity to compensate for their traditional weakness in areas such as access to new markets and gathering and diffusing information on a broad and international scale. Therefore it is imperative that growing awareness and understanding of the benefits and uses of e-commerce among SMEs can positively influence their desire and interest in adopting e-commerce in their business practice. However, as Henderson and Venktraman
(1998) warned, there is a risk of failure if the technology/business strategic alignment process is not properly carried out. Consequently, with carefully developed e-commerce planning, implementation and maintenance policies, it can be one of the very few tools that SMEs can use effectively to compete with the bigger rivals on the same grounds. It must, however, be remembered that "full-blown", high tech e-commerce solutions may not be for every small business. By contrast, it is suggested that for the majority of SMEs, e-commerce remains a curious notion that has little significance for their enterprise and business plans, where the reality is that some small firms will stay with simple e-commerce solutions if it serves the purpose of the company.

Contrary to expectations, budgetary concerns were not the leading barrier to e-commerce implementation for small and medium enterprises. The lack of qualified personnel was the number one barrier for implementing e-commerce in both management and manufacturing for both small and medium firms. Limited awareness came next. For large firms, budgetary concerns emerge, sometimes as the only barrier. This may imply the conclusion that human capital and awareness need to be satisfied as prerequisites before affording the luxury of worrying about costs of e-commerce investment.

SMEs in two of the sectors (retail and manufacturing) loaded their barriers across two factors, which we have termed “Too Difficult” and “Unsuitable”. The service sector, by comparison loaded barriers to e-commerce adoption across three different factors, termed “Too Difficult”, “Unsuitable” and “Time and Choice”. In all three sectors, the barriers e-commerce related to e-commerce not being suited to products/services, ways of doing business and clients, and e-commerce not offering any advantages to the organization were loaded onto the “Unsuitable” factor and in all cases this factor had the highest priority amongst the owner/manager respondents.

In all three cases, four barriers loaded onto the factor termed “Too Difficult”. While the barriers related to time and too many options also loaded onto the “Too Difficult” factor for the retail and manufacturing respondents, the service respondents considered this a separate factor which we have termed “Time and Choice”. It is interesting to note, however, that small business respondents across all three sectors rated the unsuitability of e-commerce as a higher priority barrier than the others, suggesting that other barriers are viewed as being less critical and easier to overcome.

**E-commerce success/performance**

Though, 44% of the SMEs were satisfied with the performance of e-commerce, in view of the fact that the majority of the SMEs have not even visualised most of the benefits of e-commerce, the percentage of SMEs who expressed satisfaction with e-commerce performance looks relatively high. However, inspection of the correlation coefficients indicates that satisfaction with e-commerce performance was related only to improvement in process speed,
company image and inter-organizational communication items. It can be seen that these three items had received a better rating and could explain why 44% of respondents expressed satisfaction despite not realising most of the benefits of e-commerce.

This study analyzed success factors of e-commerce in SMEs and showed that SMEs using online sales channel have better overall performance and higher sales when compared to SMEs with no online sales. Online advertising brings more competitive strength and online procurement leads to improved performance in supplier related activities. While after-sales-support increases sales, competitive strength and procurement, internet based supply chain management improved overall performance along with sales and procurement.

Electronic connections between suppliers and the organization facilitated efforts for purchasing materials that were necessary for production and allowed better inventory control, faster stock replenishment and on time delivery of customer orders. Based on their priorities, each organization can decide which e-commerce technology to use for improving their performances in the desired dimensions. For example, if a company decides to improve e-commerce performance in sales, managers should consider using online sales, after sales support, and internet based supply chain management in their e-commerce system.

There are a number of previous studies searching for the success factors of e-commerce. Zhu et al. (2003) determined financial resources as being critical in achieving e-commerce objectives. However, Scupola (2003) and Mehrtens et al. (2001) discussed that financial resources are not major determinants in e-commerce adoption. In this study, financial resources provided additional evidence to literature by showing a positive effect on e-commerce performance as far as the SMEs were concerned. Since financial resources have been defined as the ratio of budget for e-commerce to sales, any incremental spending on e-commerce will return as improvement in e-commerce performance.

Variables such as market orientation, innovative capacity and strategic flexibility can be predictors of e-commerce capacity hence the level of organizational performance in virtual environments (Jehangir et al., 2011). According to data here online advertisement, SCM and EDI helped to increase e-commerce performance and sales.

There are new opportunities with services such as blogs, wikis, social networking websites, tagging, social bookmarking, multimedia sharing, podcasting and RSS. Usage of these new Web tools in SCM brings improved e-commerce performance (Ooi et al., 2011). Data was scary to find much of the use of these tools amongst SMEs considered.

Although content is found to be a significant factor effecting success of websites in the literature (Palmer, 2002; Srinivasan et al., 2002), in this study, content was observed to have a negative effect on e-commerce success. The negative relationship between content and performance of the e-commerce could be a result of the complexity created with the abundance of information which had led to more confused customers hence lowered e-commerce performance. Website of the firm not only provide information, but also, collects
information about customers. As customers move to be information sources they become knowledge partners of the firm (Zanjani et al., 2009). Since there is interaction with customer, website content deserves a strategic focus and attention.

**Implications for SMEs**

The results of this research offer a number of implications for both managers and public policy makers. More efforts have to be made to remove or at least to mitigate the impediments to SMEs’ willingness to e-commerce adoption. First, the globally exploding e-commerce activity has raised concerns for governments and regulatory bodies. The results of this study indicate that the lack of legal regulations is one of the most serious limitations of e-commerce and hence e-commerce is least used for payment purposes. These findings confirm that legal and security issues are highly sensitive issues for SMEs. There are also some ambiguities concerning mainly the enforcement of contracts created through internet-based e-commerce. One of the most vivid implications of e-commerce for SMEs is the potential for external communication and information gathering for market and product research. Although the breadth of activities pursued in e-commerce field is limited at present, the continued growth of e-commerce will enable companies to engage in currently under-utilized applications such as job advertisements and video-conference. SMEs need to be persuaded that benefits of e-commerce will outweigh the costs of e-commerce. The Government and private sector should therefore provide various incentives to help SMEs engaged in e-commerce with minimal investment and costs.

An important finding in this study is that e-commerce adoption is largely dependent on the choices SMEs make themselves. There is virtually no evidence that uncontrollable outside factors determine the chances of SMEs to adopt and benefit from e-commerce. So the good news to SMEs is that they have the opportunity to influence their own future regarding the use of e-commerce. However, stimulating e-commerce adoption involves a wide range of firm factors that comes down to the following suggestions for SMEs:

Above all, improving the level of IT use in the SMEs appears to be the best preparation for the adoption of e-commerce. It in this respect refers to more conventional, non-e-commerce related information technologies like office automation, internal networks, integrated information systems, and external connections like EDI. Buying hardware and software is but one element of gaining experience with it. More importantly, experience with it refers to everything that comes along with it: going through selecting and implementing ITs (including dealing with IT-suppliers), adapting to new ways of working, dealing with new technologies, training and education, etc., etc. All this knowledge and experience forms a valuable knowledge base that facilitates the absorption of related new knowledge about for example e-mail and the e-commerce.
Entrepreneurship matters

To actually capitalize on knowledge and experience with IT, adopt e-commerce and create value from it, an entrepreneurial strategic posture is what really matters. In fact, an entrepreneurial orientation is about a firm’s willingness to really act upon business opportunities, a pro-active, risk-taking and innovative mentality. In entrepreneurship literature there is an ongoing discussion on whether entrepreneurship can be taught or not. Drucker has a clear opinion about the issue: ‘The entrepreneurial mystique? It’s not magic, it’s not mysterious, and it has nothing to do with the genes. It’s a discipline. And, like any discipline, it can be learned’ (Drucker, 1985).

Literature evidences characteristics that are important to entrepreneurship and opportunity recognition in particular. What we can conclude is that knowledge and experience, cognitive mechanisms and networking abilities are necessary ingredients to entrepreneurship. Basically, knowledge and experience play a key role in discovering and developing business opportunities. The knowledge base provides a domain of interest and curiosity that may lead to the (unexpected) discovery of a new business idea. Also, it facilitates the assessment of opportunities for new business. The results of this study indicate that knowledge and experience with it constitutes a valuable knowledge base. Network contacts can be used to expand this knowledge base. A pro-active attitude towards searching and processing information, utilizing the social network, and change, enables the SME to actually organize and benefit from the opportunities identified. In sum, an entrepreneurial orientation is the result of choices consciously made within the firm.

Use your network

The findings show that an active use of network contacts facilitates the adoption of e-commerce and creating value from it. A variety of network contacts prove to be useful in acquiring information about e-commerce and expanding the knowledge base. Sources of e-commerce related information are not only the suppliers of e-commerce or consultants, equally important are contacts with for example customers, suppliers, competitors, friends and family. Each of them may contribute in their own way to the discovery and development of business opportunities based on e-commerce by providing information, and feedback. What is more important is that network contacts provide support and motivation. The perception of a social pressure to adopt makes it easier to positively evaluate e-commerce adoption.

Commit resources

The study has strong implications for managers about resource allocation and e-commerce strategies. Managers should allocate more financial resources to e-commerce for achieving higher e-commerce performance and they should take measures to improve the understanding of advantages of e-commerce among their employees. Training programs will increase awareness about benefits of e-commerce. Adequate financial resources allow firms to make necessary investments to develop superior e-business functionalities enabling them
for realizing the potential e-business value. Due to the negative effect of content on e-commerce success, they should be selective about the content they are providing on their website.

To actually comply with good intentions to adopt e-commerce by the SMEs, the investment in resources is a next step towards adoption. Dedicating time and money to e-commerce seems very obvious, however it is just as important that people within the firm have the perception that time and money are available. This will stimulate any opportunity recognition behaviour. Resources include human resources: the presence of individuals that take on certain innovation roles stimulates e-commerce adoption. A ‘gatekeeper’ that is enthusiastic and well informed about e-commerce can acquaint the organization with new knowledge. The ‘champion’ turns ideas for business opportunities into concrete proposals for the adoption of e-commerce. Finally, training and education, whether general or related to e-commerce, support e-commerce adoption.

Apart from the above suggestions, this study provides another insight for SMEs. Many companies benefit from e-commerce adoption by improving the efficiency and effectiveness of their business processes. It seems that this type of value creation is realistically attainable for most small or medium-sized firms, regardless of their size or line of business. In this sample, 82% of the respondents indicated that e-commerce adoption resulted in saving time and money, improved communication, customer service or an improved company image. Strategic value creation however, is more difficult to achieve. In the sample, 38% of the companies reported that e-commerce adoption resulted in entering a new market, opening up a new market channel, the introduction of a new service or product, or a higher turnover associated with these changes. Further analysis of SMEs that report strategic value creation showed that these firms exhibit distinct entrepreneurial behaviour. Ergo, by and large any SME can benefit from e-commerce adoption. However, the introduction of new economic activity is particularly attributable to SMEs exhibiting more pro-active, entrepreneurial behaviour.

**Implications for policy making**

Policy measures concerning the stimulation of e-commerce adoption in SMEs have not been studied in this research. However, based on the findings two types of recommendations can be made to policy makers, and other parties involved like commercial consultants. The first recommendation concerns the relation between the use of information technology and e-commerce. The second suggestion deals with the importance of entrepreneurship.

The empirical findings in this study demonstrate a strong relation between the level of IT use, the adoption of e-commerce, and value creation ensuing from that adoption. SMEs gain valuable knowledge and experience by selecting hardware and software, dealing with IT-suppliers and consultants, comparing complicated offers, deciding on new ways of working,
training employees, etc. etc. This knowledge base plays an essential part in the adoption of e-commerce. Earlier e-commerce stimulation projects, had an emphasis on the use of the e-commerce and the World Wide Web, in a way taking the level of it use for granted. Current policy initiatives need to stress the integration of e-commerce in businesses. The government agenda is explicitly aimed at stimulating better preparation of SMEs for the switch to e-commerce, stressing the integrated e-commerce concept. The policy is aimed at advanced information and communication technologies such as e-commerce related technologies, mobile data communication, open source software and broadband applications, as well as more conventional information technologies like process and office automation, networks, and integrated information systems.

This study shows that conventional IT plays an important role in bringing about advanced e-commerce innovation. Knowledge and experience with IT provides a springboard to bridge the gap towards advanced applications of e-commerce. It may be tempting for policy makers and consultants to address attention and resources to exciting new e-commerce applications. However, policy measures aimed at stimulating e-commerce adoption in SMEs need to include more conventional (and attainable) types of information technology.

This study has shown that entrepreneurship is essential for e-commerce adoption to lead to new economic activity. SMEs that manage to create new economic activity from adopting e-commerce, exhibit distinct entrepreneurial behaviour. They interact more with their environment, commit resources to e-commerce, and above all behave in a pro-active, risk-taking and innovative manner. This shows that entrepreneurship enables the creation of new business from the application of e-commerce. Now, the importance of entrepreneurship for the Indian economy is beyond dispute. The Ministry of Economic Affairs aims at an increase of the number of entrepreneurs, as well as an increase of entrepreneurs that consciously work on the growth of their existing firm. Entrepreneurship is predominantly associated with starting new ventures and existing ventures seeking growth. However, entrepreneurial behaviour is just as important in existing companies, of which only a minority is growth seeking. Moreover, there is an essential link between entrepreneurship and e-commerce, other than entrepreneurship in the e-commerce sector.

The empirical findings of this study suggest that entrepreneurial behaviour is a necessary ingredient to make the chemistry between SMEs and e-commerce work. E-commerce is a tool for business development and offers opportunities for creating new economic activity. Policy measures should support SMEs in recognizing and seizing those opportunities. In this respect, policy measures for stimulating entrepreneurship in general are just as relevant for stimulating e-commerce adoption and value creation. This includes measures such as improving the status of entrepreneurship, training business skills, promoting networking, and facilitating access to information, support, R&D, and capital.
The question remains as to what extent these measures really cater for entrepreneurs in existing SMEs in non-e-commerce sectors, which form the main part of our economic engine. To develop our national economy, we should not only rely on new ventures, the survival of those ventures, or entrepreneurship in new sectors. Stimulating renewed entrepreneurship, intrapreneurship or corporate entrepreneurship is just as valuable for our economy and competitive position.

The responsibility to innovate lies with the SME. However, to equip entrepreneurs with more knowledge and skills seems a daunting task: ‘Interestingly in terms of the education to existing entrepreneurs, there is a paradox in that whereas there is a high need for further training and development, entrepreneurs in general have a high need for independence and do not like being supported’. Perhaps the knack of the matter is to emphasize that policy measures are meant to support entrepreneurs in achieving their goals easier and better, rather than focusing on education, ‘pushing’ new technologies or business growth. Entrepreneurship literature shows us that knowledge and experience and network contacts are valuable ingredients to the recognition of business opportunities.

Limitations of Study

The results must be interpreted in the light of the study’s limitations. First, cross-sectional data of this research tend to have certain limitations when it comes to explaining the direction of causality of the relationships among the variables. The researcher was not able to measure the perception of proprietors at the time of e-commerce adoption. Although level best efforts were made to address this issue through requesting proprietors to ascertain their perceptions before e-commerce adoption, it cannot be said with certainty that the respondents were able to backtrack their mind uninfluenced by the experience of e-commerce adoption to what the state was before adoption of e-commerce applications. Thus, it is suggested that a longitudinal study be undertaken to understand the adoption of e-commerce and strengthen the direction of causality proposed by the model.

Second, the study focused only on those types SMEs in the region from where enough responses could be obtained. Many SMEs (operative in a specific field e.g. electronic assembly of items and agricultural inputs) could not be accommodated in the sample because of limited number of such type of SMEs. Gurgaon and Faridabad districts are known to be industrial hubs and thousands of ancillaries and SMEs have come up as a natural corollary to the establishment of many large passenger/commercial automobile manufacturers. The conditions prevalent at these places may be distinctly different from other areas; therefore, the generalizability of the study to other regions and business contexts might be problematic.

Finally, the research uses data provided by only one key informant per firm which were proprietors of surveyed SMEs. While the researcher did assess the opinions of employees which are also users of e-commerce applications (which were usually at cross purposes), the
researcher has based the relationship study on the perceptions of the proprietors/managers. It would have been preferable to use many informants per firm to collect their opinions, as well as to incorporate employees’ related factors in relationship with e-commerce adoption within SMEs.

The scope of study is limited to manufacturing and non-manufacturing companies located in sampled area. The limited number of companies engaged in this study may raise a concern on representativeness of the sample. Interpretation for the model has to be made with caution because there could be other unknown factors contributing to the remaining unexplained percentage. These unknown factors could be organizational characteristics and manager’s past experience. Future studies may look into these factors.

Finally, there are limitations to the value of the results in a wider context. This study concentrates on established SMEs in different sectors with many of them with less than 100 employees. With respect to the different sectors, the statistical generalization of the results may not be true. The response rates from the financial service sector, and the catering and hotel industry were relatively low compared to the other sectors. However, it may be questioned to what extent these two sectors actually differ from the other sectors included in this research.

**RESEARCH RECOMMENDATIONS**

Based on the research result, the following suggested recommendations could help successful adoption of e-commerce in SMEs:

1. Develop a political vision; strategic objectives; policies and design mechanisms for the cooperation between parties to control e-services, regardless type of service.
2. Adopt programs to protect the information to prevent misuse and to increase e-commerce security.
3. Attention and media publicity to increase public awareness to push customers and employees to make use of e-commerce.
4. Determine the strategic priorities of e-commerce adoption and redesign some of the actions in order to cope with the provision of e-commerce.
5. Study and simulate the best experiences of e-governance worldwide.
6. Continued focus on improving technical infrastructure is necessary for the operation of e-commerce and the procedures and internal systems support e-commerce.
7. Finally, Government should improve the legal infrastructure such as privacy law, e-signature and knowledge acquisition law.
8. SMEs should fully integrate e-commerce resources into their marketing strategy through the utilisation of other e-commerce resources other than the e-mail and World Wide Web (WWW). This could be achieved by designing and hosting a comprehensive website that incorporate order processing, e-procurement, and e-payment, among others.
9. SMEs should embark on e-commerce capacity building to ensure better understanding of e-commerce and the operations. This could be achieved by collaborative efforts with the relevant educational institutions, government agencies and consultants through the organization of seminars, workshops, conferences and training programmes for both the management and the staff of the concerns.

10. SMEs that have not yet adopted any form of e-commerce resources as a marketing strategy should make immediate efforts to begin the adoption of some in order to satisfy the demands of their customers and to keep pace with the current global marketing. This would ensure the continued existence and growth of SMEs in the current global marketplace.

11. SMEs should exploit the full benefits of e-commerce by establishing Enterprise Portal for SMEs to serve their e-commerce marketing demands. This would reduce the cost of establishing portals on individual basis.

Suggestions for Future Research

Future research in this e-commerce area should replicate this study, with an extension to all industrial zones in all the states of India. Larger sample size and inclusion of all industries would increase the external validity of these findings and may be used as a general guideline for evaluating effective e-readiness strategy.

As there are other factors that are not considered, future studies should consider other factors, for example the business strategy, organizational characteristics, managers past experience, and managers’ characteristics. Perhaps future study should also focus on specific competencies, attributes and characteristics of the users in relation to their roles. In addition, focusing on the technology-savvy culture as a variable will be interesting to note too. Besides, other factors could also be employee’s past experience, funding support to the SMEs, issues specific to a particular industry, maturity and incentives in the usage of telecommunication infrastructures, political, legal and social.

One must avoid being too sweeping in the generalisations of these results as the study reported here is limited in its sample coverage in geographic terms. In addition, the results observed here are likely to change in the future as SMEs accumulate experience and improve their organizational and e-commerce capability. Hence, in order to better understand the e-commerce phenomenon, further research that expands the geographic coverage is recommended. Research is also recommended that not only assesses the benefits but also the antecedents that affect those benefits.

Further research is needed to develop effective cost-benefit techniques to apply to e-commerce use. For example, a checklist of criteria for success would help companies evaluate if their needs warrant the use of the e-commerce. Such techniques are essential for
companies making decisions about e-commerce use and trying to monitor its effectiveness. It is thus proposed that future research need to concentrate on effective evaluation techniques that will help SME’s understand whether the e-commerce can realize the expected benefits. One of the limitations of the study was that it did not investigate in detail the websites of the SMEs to determine the full extent to which electronic commerce was taking place. This will be an area of future research which will help place the statistics within the context of actual electronic commerce activity and how SMEs can work towards developing electronic commerce activity on a wider scale.

Another limitation of the study is that because nearly 40% of the respondents have only been connected to the e-commerce within the last 12 months, it is difficult to see how e-commerce use and electronic commerce activity is developing over time. With this in mind, the researchers will be continuing the study in order to learn if and how e-commerce use and electronic commerce activity is developing over time for these SMEs and when specific barriers become an important issue.

Further there is a need for comparing of the research model over several countries, particularly from different geographic regions. The contrasting contexts may provide some interesting results. Also, having established the soundness of the theoretical framework of adoption for SMEs, other researchers may investigate its applicability to a wider range of business communication technologies and further innovations in the future.

The findings of this study can serve as a benchmark measure of factors affecting e-commerce adoption for future researchers in which, the same population of SMEs, or others, at different industry section, country, and times in the future can be examined. In addition, the presented research model of e-commerce adoption in this research can be the foundation of hypotheses formulation for relative e-commerce widespread researches in future.

This study can be extended in several directions. As this study has only examined a subset of the technological, organizational, and environmental characteristics, future studies can investigate whether other characteristics of these contexts, in particular characteristics of both internal users (employees) and external users (e.g. customers) are the potential determinants of e-commerce adoption by SMEs.

Moreover, it was found that cost of e-commerce is not a significant determinant of e-commerce adoption while SMEs are generally restricted regarding financial resources. With regard to the fact that in SMEs, IS adoption costs are usually underestimated and indirect adoption costs are mostly disregarded (Love et al., 2005), in addition, as since imprecise IS adoption decision may imperil the survival of these businesses, future studies need to assess both perceived direct and indirect cost of e-commerce adoption to test whether adoption cost is still not a significant determinant.

Further this research study seems to indicate that barriers and the perception of the potential of the e-commerce do not differ across national boundaries when compared to results of
earlier studies as far as the SMEs and large companies is concerned. This report comes several years after one of the few empirical studies initiated in the area, however, it needs to be tested over time if the barriers and benefits have remained the same for both groups of companies irrespective of the region or the country.

Future research in e-readiness for e-commerce should also replicate this study, with an extension to all industrial zones in all the states of India. Larger sample size and inclusion of all industries would increase the external validity of these findings and may be used as a general guideline for evaluating effective e-commerce readiness strategy. As there are other factors that are not considered, future studies should consider other factors, for example the business strategy, organizational characteristics, managers past experience, and managers’ characteristics. Perhaps future study should also focus on specific competencies, attributes and characteristics of the users in relation to their roles. In addition, focusing on the technology-savvy culture as a variable will be interesting to note too. Besides, other factors could also be employee’s past experience, funding support to the SMEs, issues specific to a particular industry, maturity and incentives in the usage of telecommunication infrastructures, political, legal and social.

Finally, the study has some limitations in terms of its sample size and external validity. Ideally, a larger sample size is desirable for greater stability of the findings. Future research using a larger sample size is therefore needed to test if the results obtained here are replicable. Therefore, the extension of the findings documented here should be cautioned and requires further research. A replication of the study in other places will help shed light over interesting questions like: do the identified relationships prevail in other settings? What other relationships exist and how are they different from the patterns that emerged in this study? The model described in this study together with the instrument constitutes a contribution to guide such further studies.

The choice of variables selected for the study was somewhat problematic because of the complex nature of adoption barriers which change over time. This study was carried out in SMEs many of which were located far away from the city area. The results cannot necessarily be generalized to similar areas in metro areas. Finally, this is a quantitative study, and qualitative research is required to gain a better understanding of the key issues.

Critical success factors of e-commerce may not be the same for different SMEs. Therefore this research can be repeated with a greater sample for multiple industries. The sample should contain enough number of companies to represent each specific industry. In addition, the scope of the study can be extended internationally and critical success factors for different countries can be compared in a multinational sample.