Chapter 2

Review of Literature
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2.1 Objectives of Literature Review
The study of literature published in the subject area helps the researcher to fairly have a view of the growth and development of the same. It also helps assist in identifying the grey areas and the aspects that need further research. An extensive review of literature published in developed and developing countries was reviewed and in the process of extensive review, it was proposed to identify the gaps in the existing literature on issues related to technology adoption by SME’s, which forms the basis of this study.

The first few sub-sections of the chapter discuss the definition and the concept of E-commerce and E-business and small and medium enterprises and their status in India. The later sub-sections deal with the experience of companies in various countries after having embraced the concept of E-business in their strategies, the parameters for success of E-business in organizations and also the impediments for implementing the same. The chapter concludes with identification of gaps in the existing literature and identifying the research problem.

2.2 Information Technology (IT) and Commercial Functions in Business
Each B2B and B2C company must make a fundamental choice about how to compete in its chosen market. Some of these choices represent the traditional
blocking and tackling of business strategy, as in "How do we segment our market?", "Does our offering add value to these targeted customers?", and "How do we outperform competitors in our chosen markets?". It's important to systematically analyze a company's value chain and find out whether commercial activities performed by present methods make it a reality (Elias Awad, 2007).

Michael Porter (1985) in his book 'Competitive Advantage: Creating and Sustaining Superior Performance' introduces the concept of the value chain and says that it is a strategic tool for identifying how the critical components of a business tie together to deliver value for the business across the value-chain process. Businesses receive raw materials as input, add value to them through various processes, and sell the finished product as output to customers. They are a chain of value-creating activities that assure competitive advantages by the way they deliver value to the customer. Competitive advantage is achieved when an organization links the activities in the value chain more cheaply and more effectively than its competitors. With all this in mind, communication plays a key role in developing linkages to improve value within the broader spectrum of the supplier's and the customer's value chain activities.

According to Professor Tom Cannon (2000), "the new industrial revolution which surrounds us requires profound change: profound change in the way we consider enterprise, develop our businesses, the way we manage and the structures within
which we manage”. He foresees not just a change in the market but a fundamental change in the economic relationships between people, between economies, and between societies. Information and information technology (IT) are the key drivers of this age. Technology is an enabler of change and a catalyst, but change has to be driven by business drivers that take advantage of the technology.

Nonaka and Takeuchi (1995), opine that technology is an integral driver of growth and knowledge is essential to innovation in companies. The requirements of the new industrial revolution, or the information age, are thus the efficient creation and use of information and knowledge. Information technology becomes a transforming resource for the organizations of the 21st century. It is the effective and innovative use of information technology to create the right kind of information from its knowledge base that is associated with technology which can create significant value in the competitive age. Electronic commerce has been an outstanding example of this kind of value addition for businesses in the market place.

2.3 Electronic Commerce and Electronic Business

Commercialization and popularization of the internet has put E-commerce at the top of the public and political agenda but E-commerce using electronic markets and EDI [Electronic Data Interchange] have been an established part of the business scene for at least a decade prior to the “internet era”. A more general
A definition of E-commerce was given by Wigand (1997) as: 'The seamless application of information and communication technology from its point of origin to its end point along the entire value chain of business processes conducted electronically and designed to enable accomplishment of a business goal. The processes may be partial or complete and may encompass business to business as well as business to consumer and consumer to business transactions’. This definition introduces the value chain, an important point as E-commerce technologies can be applied in transactions between two entities doing business.

A further definition of E-commerce is provided at the European Union website (Esprit, 1997):

> Electronic Commerce is a general concept covering any form of business transactions or information exchange executed using information and communication technology, between companies, between companies and their customers, or between companies and public administrations. It includes electronic trading of goods, services and electronic material.

E-commerce can be applied to all, or to different phases, of the trade cycle. The trade cycle varies depending upon: The nature of the organizations (or individuals involved), the frequency of trade between the partners to the exchange and nature of the goods or services being exchanged. Also the trade cycle has to support: Finding goods or services appropriate to the requirement and agreeing the terms of trade (referred to as search and negotiation), placing the order, taking delivery and
making payment (execution and settlement) and after-sales activities such as warranties, service etc. (David Whiteley, 2000)

DTI UK defines E-business as “exchange of information across electronic networks at any stage in the supply chain, whether within an organization, between businesses, within businesses and consumers whether paid or unpaid”. It is the process of production, distribution, marketing, sale or delivery of goods and services by electronic means.

Kalakota and Whinston (1997) define E-commerce from the following perspectives:

* **From a Communication perspective.** E-commerce is the delivery of information, products / services, or payments over telephone lines, computer networks, or any other electronic means.

* **From a Business Process perspective.** E-commerce is the application of technology towards the automation of business transactions and workflow.

* **From a Service perspective.** E-commerce is a tool that addresses the desire of firms, consumers, and management to cut service costs while improving the quality of goods and increasing the speed of service delivery.

* **From an Online perspective.** E-commerce provides the capability of buying and selling products and information on the internet and other online services.

The term ‘commerce’ is viewed by some as transactions conducted between business partners. Therefore, the term ‘electronic commerce’ seems to be fairly
narrow to some people and so use the term E-business. E-business refers to a broader definition of E-commerce, not just buying and selling but also servicing customers and collaborating with business partners, and conducting electronic transactions within an organization. When the term E-commerce is used in its broadest scope, it is basically equivalent to E-business. (Turban, Lee, King, Chung, 2001). According to Lou Gerstner from IBM: ‘E-business is all about cycle time, speed, globalization, enhanced productivity, reaching new customers and sharing knowledge across institutions for competitive advantage’.

E-commerce can take many forms depending upon the degree of digitization of the product or service sold, the process, and the delivery agent or intermediary. Choi et al. (1997) created a model that explains the possible configurations of these three dimensions. He goes further and says that a product can be physical or digital, an agent can be physical or digital, and the process can be physical or digital. This results in eight cubes, each of which has three dimensions. In traditional commerce all dimensions are physical, and in pure E-commerce all dimensions are digital. All other cubes are a mix of digital and physical dimensions.

According to Turban, Lee, King, Chung (2001), applications of E-commerce are divided into three categories:

* **Electronic Markets** – Buying and selling goods and services
* **Interorganizational Systems** – Facilitating inter and intra-organization flow of information, communication and collaboration
* **Providing Customer Service**
When the marketplace is electronic, the business center is not a physical building but rather a network-based location where business interactions occur. The electronic market is the place where shoppers and sellers meet for exchanging information, products, services and payments.

An Interorganizational System [IOS] involves information flow among two or more organizations and holds the major objective of efficient transaction processing, such as transmitting orders, bills, and payments using internet. A typical IOS will include a company and its suppliers and/or customers.

According to Jaiswal and Ganeshkumar (2002) E-commerce is not new as a concept, it existed earlier too. But the way it was carried out was a little different. It was being conducted in a more traditional manner – by telephone, fax, electronic data interchange systems or face-to-face contact. But after the evolution of the internet as a business tool, it is being carried out through the use of internet.

E-business basically involves an internet platform to link vendors, suppliers and distributors, banks and customers wherein information exchange, price negotiation, order placement, delivery confirmation, billing and payments take place online. It is essentially an evolving set of IT tools and implementation techniques as well as the business strategies and practices necessary to do business electronically. E-business uses technology and E-commerce processes to build better customer relationships and create new value propositions.
According to Napier, Judd, Rivers and Wagner (2001), E-commerce today is used in a broader sense, encompassing not only buying and selling but also the delivery of information, providing customer service before and after the sale, collaborating with business partners, and enhancing productivity within organizations. Others refer the term E-business to indicate the broader spectrum of business activities that can be conducted over the internet. Most people today use the term E-commerce, in its broadest sense, interchangeably with E-business.

According to Judith E. Payne (2002), E-commerce in a broader sense is defined as any use of information and communication technology by a business that helps it improve its interactions with customers or suppliers. A narrower definition of E-commerce might be to limit it only to the electronic exchange of business transactions themselves e.g., orders, and invoices (with or without the use of a website). Businesses in developing countries may be able to reap significant benefits from E-commerce defined more broadly even when legal, regulatory or infrastructure constraints may make it difficult or impossible for them to actually transact business electronically. Many SME’s can also gain a competitive edge by using the internet well to do market research, find information on competitors and track down leads for new customers, or provide better customer support. These activities all fall under the broader definition of electronic commerce and could be termed as “E-business”. It is in this context, the terms E-commerce and E-business have been used interchangeably throughout the thesis.
This broad definition includes transacting business or exchanging business-related information between:

# B2C: Business and Consumers (Their customers)

# B2B: Business to Business, e.g., where one business buys supplies from another or buys products to resale.

# B2G: Business to Government, where perhaps businesses conduct transactions electronically with Government regarding various business licensing or reporting requirements or where businesses sell products or services to Governments (Payne, 2002).

**Table 2.1 : E-commerce transactions in India [Snapshot view]**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>B2C (Re. crore)</td>
<td>130</td>
<td>255</td>
<td>Rs 570</td>
<td>1180 crore</td>
<td>Rs 2300</td>
</tr>
<tr>
<td>% Growth</td>
<td>96%</td>
<td>124%</td>
<td>107%</td>
<td>95%</td>
<td></td>
</tr>
</tbody>
</table>

**Table 2.1 (Contd)**

<table>
<thead>
<tr>
<th>Year</th>
<th>2003-04</th>
<th>2004-05</th>
<th>2005-06</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average No. of Transactions per month</td>
<td>207,000</td>
<td>440,000</td>
<td>795,000</td>
</tr>
<tr>
<td>% Growth</td>
<td>-</td>
<td>112%</td>
<td>80%</td>
</tr>
<tr>
<td>Average Transaction Value</td>
<td>-</td>
<td>Rs 1080</td>
<td>Rs 1100</td>
</tr>
</tbody>
</table>

**Source:** Website of IAMA [www.iamai.com], Internet & Mobile Association of India

# E-commerce and E-business . . Benefits and Limitations

E-commerce benefits to organizations (Turban, Lee, King and Chung, 2001) are in areas of expansion of marketplace to national and international markets,
decreasing costs of creating, processing, distributing, storing, and retrieving paper-based information, reduced inventories and overhead by facilitating ‘pull’ type supply chain management, lowering telecommunications cost and a host of other benefits that include improved image, improved customer service, identification of new partners, simplified processes, reduced delivery times and improvement in flexibility. E-commerce benefits to consumers are in the areas of enabling customers to have access for transactions 24 hours a day, all year round, from almost any location, providing customers more choices among many vendors, ensuring quick delivery and also facilitating competition resulting in substantial discounts.

According to Joseph (2007), advantages of E-commerce lie in 24 X 7 operations, global reach, lesser costs of acquiring, serving and retaining customers, directly approaching customers and suppliers for business (disintermediation), improved customer service to clients and providing a technology-based customer interface. Employing E-commerce reduces administrative costs of trading (transaction costs), increases logistic efficiency of the supply chain, meets requirements of a trading partner that trade is conducted electronically, differentiate the product or service that is offered from that of competitor organizations and provides a new marketing and servicing channel. (Whiteley, 2001)

A lot of literature is available regarding disadvantages of E-commerce. According to Joseph (2007), the disadvantages of E-commerce are to the extent that some
businesses never lend themselves to E-commerce, newness and rapidly developing pace of underlying technologies, products and services requiring a critical mass of potential buyers who are well-equipped and willing to buy through the internet, difficulty in quantifying return on investment with E-commerce ventures, difficulty of integrating existing databases into a software that enables E-commerce, and cultural, legal and security issues in conducting E-commerce.

According to Turban, Lee, King and Chung (2001), the limitations of E-commerce can be grouped into technical and non-technical categories. According to them the technical limitations of E-commerce includes lack of system security, reliability and standards, insufficient telecommunication bandwidth and difficulties in integrating the internet and E-commerce software with existing applications and databases. Amongst the non-technical limitations are included the high cost of developing E-commerce in-house, security and privacy issues, lack of trust and user resistance and lack of touch and feel online.

2.4 Small and Medium Enterprises [SME]
The definition of SME varies by country, or more specifically, by market size. There is no common definition of SMEs among nations. Each country applies its own definition and in some countries the definitions vary even among ministries. SME’s are defined in different ways in different parts of the world. Some define them in terms of assets, while others use employment, shareholder funds or sales as criteria. Some others use a combination of revenue and employment as a hybrid
criterion. Hence in the context of the study, it is relevant to examine the different classifications of small enterprise to have a better understanding of the various implications within it.

# Definitions

Small and medium enterprises (SMEs) account for a considerable majority of industrial units and contribute a major proportion of employment, output and exports in most developing as well as developed countries. Some of the common characteristics of SMEs are greater operational flexibility, individual initiative and skills, low cost production, high propensity to adapt technology, high capability to innovate, high employment orientation etc. (Tujeta, 2002).

Small and medium sized businesses, also called SMBs or small and medium enterprises, also called SMEs are organizations whose headcount or turnover falls below a certain limit. (Wikipedia, 2007).

In the past, the European Union Member States had a definitive explanation of exactly an SME constitutes. For example, conventionally; Germany had a limit of 500 employees, while, for example, in Belgium it could have been 100. (Wikipedia, 2007). Now, the European Union has standardized the concept, in which a “small business” would constitute a company with less than 50 employees and companies with less than 250 employees would come under the definition of “medium sized business”. In the United States there is a variation in
terms of the above figures to fit the SME definition. In the United States, a small business refers to fewer than 100 employees while a medium-sized business constitutes less than 500 employees.

The definition of SMEs is fairly diverse and based on a number of different parameters. The definition of SMEs in India takes into consideration investment in plant and machinery as the deciding factor for categorizing firms as small and medium sized.

Countries with large economies like the US and member states of the EU use cut-off points of fewer than 500 workers to describe SMES. In developing countries, where market size and average firm size are both much smaller, cut-off points of fewer than 100 workers or 250 workers are often used (Tyler Biggs). We do observe from a lot of review that the definition of SME also has other dimensions such as: *Nature of management control within the firm* and *size of the firm in relation to its larger counterparts*.

**Table 2.2: Definition of SME’s in Different Countries**

<table>
<thead>
<tr>
<th>Country</th>
<th>SME’s Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Asia Pacific Region</strong></td>
<td></td>
</tr>
<tr>
<td>Australia</td>
<td>Small: &lt;20 employees</td>
</tr>
<tr>
<td></td>
<td>Medium: 21-200 empty.</td>
</tr>
<tr>
<td></td>
<td>Large: &gt; 200 empty.</td>
</tr>
<tr>
<td>Brunei</td>
<td>Small: &lt;10 employees</td>
</tr>
<tr>
<td></td>
<td>Medium: 10-100 empty.</td>
</tr>
<tr>
<td></td>
<td>Large: &gt; 100 employees</td>
</tr>
<tr>
<td>Country</td>
<td>Large:</td>
</tr>
<tr>
<td>----------</td>
<td>----------------</td>
</tr>
<tr>
<td>China</td>
<td></td>
</tr>
<tr>
<td>Large:</td>
<td>&lt; 2000 (industrial sector)</td>
</tr>
<tr>
<td></td>
<td>&lt;3000 (construction sector)</td>
</tr>
<tr>
<td></td>
<td>&lt;500 (wholesale/retail)</td>
</tr>
<tr>
<td></td>
<td>&lt;3000 (transportation &amp; posts)</td>
</tr>
<tr>
<td></td>
<td>&lt;800 (hotels &amp; restaurants)</td>
</tr>
<tr>
<td>Medium:</td>
<td>≥ 300 (industrial sector)</td>
</tr>
<tr>
<td></td>
<td>≥ 600 (construction)</td>
</tr>
<tr>
<td></td>
<td>≥ 100 (wholesale/retail)</td>
</tr>
<tr>
<td></td>
<td>≥ 500 (transport/posts)</td>
</tr>
<tr>
<td></td>
<td>≥ 400 (hotels &amp; restaurants)</td>
</tr>
<tr>
<td>Small:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>India</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Indonesia</td>
<td>SMEs: &lt;200 million rupiahs (excl. land &amp; buildings)</td>
</tr>
<tr>
<td>Japan</td>
<td>SMEs: &lt;300 employees (for manufacturers)</td>
</tr>
<tr>
<td>Malaysia</td>
<td>SMEs: &lt;200 employees</td>
</tr>
<tr>
<td></td>
<td>Small: 10 - 99 employees</td>
</tr>
<tr>
<td>Country</td>
<td>Large:</td>
</tr>
<tr>
<td>--------------</td>
<td>--------</td>
</tr>
<tr>
<td>Philippines</td>
<td>&gt; 199 employees</td>
</tr>
<tr>
<td>Singapore</td>
<td>&lt;200 employees</td>
</tr>
<tr>
<td>Thailand</td>
<td>&lt;50 employees (manufacturing)</td>
</tr>
<tr>
<td>Vietnam</td>
<td>&lt;500 employees</td>
</tr>
<tr>
<td>Poland</td>
<td>&lt;250 employees</td>
</tr>
<tr>
<td>Other Regions:</td>
<td></td>
</tr>
<tr>
<td>Bulgaria</td>
<td>&lt;50 employees</td>
</tr>
<tr>
<td>France</td>
<td>&lt;250 employees</td>
</tr>
<tr>
<td>Vietnam</td>
<td>&lt;500 employees</td>
</tr>
<tr>
<td>Other Regions:</td>
<td></td>
</tr>
</tbody>
</table>
The definition of SME has been a contentious issue in India. In fact, the term, the term SSI (Small scale industry) is more commonly used to refer to SME’s. In recent years, the Government of India has sought to provide greater clarity in this sector by specifying a clear definition (Vasanthi Srinivasan and Diana Joseph).

# In 2005, the definition of a small enterprise was expanded to include a two category classification:

- a. Enterprises engaged in production/manufacturing of goods for any industry
- b. Enterprises engaged in rendering/providing of services

Enterprises in the manufacturing sector are defined in terms of investment in plant and machinery (excluding land & buildings) and further classified into:

| United Kingdom | Small: <50 employees  
| Medium: 51-250 employees  
| Large: > 250 employees |
| South Africa | SMEs: 20-250 employees |

Source: 1. Confederation of Indian Industries (www.ciionline.org)
2. ASEAN-EU Partenariate'97 (http://aeup.brel.com)
3. Bank of Thailand (www.bot.or.th)
<table>
<thead>
<tr>
<th>Category</th>
<th>Investment Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Micro enterprises</td>
<td>up to rupees 2.5 million</td>
</tr>
<tr>
<td></td>
<td>i.e. Upto Rs. 2.5 mn. (UD$ 60,000 approx)</td>
</tr>
<tr>
<td>Small enterprises</td>
<td>between Rs. 2.5 mn. and Rs. 50 mn.</td>
</tr>
<tr>
<td>Medium enterprises</td>
<td>between Rs. 50 mn. and Rs. 100 mn.</td>
</tr>
</tbody>
</table>

**Service Enterprises:** defined in terms of their investment in equipment (excluding land & buildings) and further classified into:-

<table>
<thead>
<tr>
<th>Category</th>
<th>Investment Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Micro enterprises</td>
<td>investment up to rupees 1 million</td>
</tr>
<tr>
<td>Small enterprises</td>
<td>investment above Rs. 1 million &amp; upto Rs. 20 mn.</td>
</tr>
<tr>
<td>Medium enterprises</td>
<td>investment above Rs. 20 mn. But below Rs. 50 mn.</td>
</tr>
</tbody>
</table>

(Source: http://www.sme.gov.eg/English_publications/Issue2_english.pdf)

Business enterprises which comprise of less than 10 employees are categorized under SOHO (Small Office/Home Office). Among the majority of economies of the world, the number of small enterprises is greater in number. In the European Union itself, small and medium enterprises comprise approximately 99% of all firms and employ between about 65 million people. (Wikipedia, 2007). These SMEs are often the driving force of creativity and innovation and impart the impetus for future competition as well. SME is an abbreviation which is common particularly in the European Union and other international organizations like World Bank, the United Nations as well as the WTO.
Small industries in India contribute 40% of the country’s industrial output, producing over 8,000 value added products. They contribute nearly 35% in direct export and 45% in the overall export from the country. They are one of the biggest employment providing sectors after agriculture, providing employment to over 28 million people. The large base of small and medium-sized firms produce a diverse range of very basic to highly sophisticated products. Small and medium enterprises (SMEs) represent the largest proportion of the manufacturing sector in every country. In India, 95% of industrial units are in small-scale sector with 40% value addition in the manufacturing sector and 6.29% contribution to the Indian Gross Domestic Product (Singh et al, 2006). For a long time before economic reforms, Indian SMEs were concentrating on domestic market under government protection. The average growth rate of labor productivity in manufacturing during 1986-95 for India has been 4.95% in comparison to 7.31% for China, 9.45% for Singapore and 8.65% for Pakistan (APO, 1997). Share of manufacturing in India’s Gross Domestic Product is about 17% in comparison to China’s 35% and Korea’s 31% (The Times of India, 2005). After 50 years of independence and over a decade of liberalization and economic policy reforms, India is yet to nudge its global export share beyond 0.5%. The technology gap in the Indian industry, in some cases, is up to 15-20 years equivalent due to low emphasis on research and development (R&D). A typical industry in India spends less than 0.6% on
average, of its turnover on R&D as against the world average of 2.5% (Garg et al., 2003). (Rajesh Singh, Suresh Garag and Deshmukh)

# Small Industries: The Triggers for Growth and Development

Technology capacity building for SMEs is largely influenced by the overall national Science and Technology (S&T) climate and policies, mechanisms and support structures, though there are specific policies and mechanisms for SMEs within the overall framework. SMEs would continue to play a significant role in national industrial and social development, and are presently passing through a transition phase and process of restructuring due to need for enhancing global competitiveness and faster technological developments. The new world trade rules and increasing operations of transnational corporations (TNCs) are opening business opportunities as well as posing challenges for SMEs, including an active role in international supply chain management, rural development, innovation management, services sector, etc.

Review of literature throws open two concerns on SMEs and ICT adoption (Information and Communication Technology) across countries viz.

1. Factors shaping adoption of information technologies in SME business practices
2. The strengths of E-commerce driven processes in SMEs.

The second theme looks at ICT adoption to address the digital divide and place disadvantaged economies in a position where using information and communication technology for development might not be an immediate reality (Molla 2007). It mentions an absence of research in evaluating internal, external and contextual imperatives in impacting E-readiness in these countries (Molla & Licker 2005).

The third theme borrows from the previous two to frame ICT adoption studies of India. Although PC (Personal Computers) and internet adoption show a persistent growth, they are not the preferred medium of communication, especially in small business networks. Despite its rapidly expanding global IT capacity, much of India
remains on the weaker side of the digital divide experiencing ICT resource and infrastructural gaps.

SMEs have commonly been categorized to be component manufacturers for larger companies, where they operate in the 'make to order' or rather the 'engineer to order' approach that imposes rigid constraints on meeting changes in requirements at short notice (Little and Lee, 1999). The main barriers to be competitive for SMEs are inadequate technologies as well as inadequate in-house human expertise and poor financial resources (Armstrong and Coyle, 1999). Resource scarcity can impact on the ability of smaller firms to enter export markets and can also limit a smaller firm's ability to reach more advanced stages of internationalization (Moen, 1999).

Owners of smaller firms do not often have specialist executives to manage their internal operations. In some instances, the shortage of management time in smaller firms can impede internationalization. Financial constraints faced by smaller firms and a reluctance to utilize external funding (Westhed, 1997) are strategic obstacles that may deter an entrepreneur from using the latest technology. Consequently, smaller firms may be unable to export products or services of superior quality. It is observed that small firms are often constrained by their very limited ability to either acquire adequate information from external sources and/or utilize such information to evolve new operational practices (Robertson et al., 1996).
Institutional constraints, both governmental and non-governmental can also impede internationalization by smaller firms (Acts et al., 1997).

Lack of growth conducive environment and inadequate government support/incentives are top-ranking constraints for small and medium enterprises (SMEs) and large-scale industries. While Government policies have played a facilitative role in countries like Japan, South Korea, Taiwan, etc. (Wang et al., 1995), but in countries like India, red tapism and various Government policies are still considered as main barriers for the expansion and growth of the industry. Although Indian Government has also taken some initiatives such as raising limits for investment on plant and machinery by SSI, easy funding by banks and other support for technological upgradation but positive results are yet to come.

Performance measurement is the process of quantifying the efficiency and effectiveness of manufacturing system. Performance of an enterprise is often measured as a ratio of output to input. The outputs constitute the products of the enterprise and the inputs are the resources used by the enterprise. Though there are developed special methods of SMEs efficiency measurement (Abouzeedan and Busier, 2004), often smaller companies have much less sophisticated accounting systems, shorter operational track records, and their internal data is less available for outside research. Garg et al. (2003) suggest that as most small firms are privately held, it is unlikely that their CEOs will be willing to provide detailed
accounting data on the firm’s performance. Therefore, they suggest the use of "subjective and self-reporting measures of performance". He terms ‘competitiveness’ as performance of an organization relative to its industry standards.

It is observed that quality and cost have now become qualifying criteria for the industries. Therefore to sustain their competitiveness, Indian industries need to add some other features in their products for winning orders from their customers. Performance of Indian organizations, specifically, the SSI segment is not comparable with respect to international standards. Major weakness of Indian SSI’s is in the areas of research and development, application of information technology, identification of niches and employee training. Studies show that SMEs in developed countries give maximum focus for product and process innovation and IT tools. Indian SMEs can overcome their constraints by forming alliances and being a part of the larger supply chain.

Performance of Indian organizations specifically in terms of manufacturing cost, level of inventory and employee turnover rate is found significantly below international standards. Although findings imply that Indian SMEs have started giving focus on employees’ welfare, inventory reduction and strategies for cost and quality on priority basis, results are yet to pour in. This has been a positive sign in the attitude of Indian organizations. Therefore Indian organizations should
continue to give more focus on areas such as effective utilization of resources, human capital and application of advanced management systems and upgradation of technology while developing their strategies proactively. [Rajesh Singh, Suresh Garg and S.G.Deshmukh]

One of the main determinants for the success of SME development is the establishment of useful linkages between large enterprises (LE’s) and SMEs through subcontracting arrangements (Berry, 1997). Subcontracting involves purchase supply relationships where SMEs will be the subcontractors who deliver product or service to the contractors, usually large firms, for the production requirements of the latter as per their specifications. The development of technology, especially in the area of information technology and economic growth has intensified global competition among firms and economies. With the growing importance of foreign direct investment (FDI), the developing countries are seeking inter-firm linkages between transnational corporations (TNCs) and domestic firms (UNCTAD, 2001).

In the globalization era, there has been an increasing trend of TNCs shifting their production bases to developing countries, which offer growing markets on the one hand and better conditions of manufacturing (mainly labor and infrastructural conditions) on the other, to have advantages of productivity and distribution (Ivarsson and Alvstam, 2004., UNCTAD, 2002). This international expansion of
TNCs provides increasing opportunity of subcontracting relationships for local SMEs and an important source of technology resulting from the linkages that SMEs can forge with TNCs. TNCs which concentrate on their core capabilities and outsource the provision of non-core products, processes and services can serve as important channels for the transfer of technologies, marketing and managerial skills to SMEs (UNCTAD, 2000). Subcontracting relationship with TNCs provides local SMEs more opportunity for the transfer of knowledge and technology which, in turn enable SMEs to learn new practices and develop new characteristics and become competitive. TNCs in developing countries can diffuse valuable knowledge throughout the economy not only through direct flows to linked firms but also through spillovers to other firms in the economy (UNCTAD, 2001). SMEs of developing countries should make use of this opportunity to enter into subcontracting relations with these TNCs to acquire competitiveness, among others. Of late, this trend has been covering SMEs in industrializing economies like India as well. However, there are only a few empirical studies, which probed the nature of assistance local SMEs of developing countries would be able to receive from their TNC customers quantitatively and how SMEs have benefited from this type of assistance.

Berry points out that SMEs in Asian developing economies were constrained by insufficient capabilities in technology, management, marketing and financing and
from a lack of access to effective support systems. SMEs in East Asia tend to suffer from several common problems which hinder their development. They faced inadequate access to markets, raw materials, favorable credits, production technology and information, in addition to issues such as lack of economies of scale, adverse effects of Government policies and insufficient managerial and organizational capabilities (Hayashi, 2005). This context brings out the need for SMEs of developing countries to improve upon their technological, marketing, human resources and financial capabilities to compete in the global market. [R.Sudhir Kumar and Balasubramanya, 2004]

R&D expenditure, patents, number of publications, number of S&T (Science and Technology) qualified people, etc. are some of the indicators for technology capability. There are vast differences in the technological capabilities of SMEs in advanced and developing countries. In advanced countries, many SMEs are innovative, technology based and operate in new or high technologies, while SMEs in most developing countries generally operate in traditional sectors, and look for easier access to technology elsewhere, which can be absorbed, re-engineered and updated. The R&D expenditures and capabilities are limited. Nevertheless, the innovative or absorptive or re-engineering capabilities largely depend upon the national technology climate.
The SME sector has been lobbying towards the Government looking at encouraging commercial banks to be favorable at risk capital funding for SMEs. Funding is made available only on the strength of balance sheets when venturing into technology driven areas and because of this the SME’s feel the limitation in the process of getting funds. “The Government also needs to encourage commercial banks to actively look at early-stage risk capital funding”, opines Mr. Harpreet Singh, Managing Director, Tiger Logistics, a Rs 50-crore first-generation enterprise, seeking actively to expand into the global markets. Rakesh Malhotra, Managing Director of Luminous Power Technologies, that is into manufacturing of power invertors opines that the Government should aim at being more proactive rather than being reactive. Government should, through various communication channels, aim at displaying information, which is forward looking rather than putting up information only on rules and laws. They should also aim at setting up sources for qualified information that shows how the Government plans to match up to the changing scenarios rather than just putting up rules and regulations.

Another critical challenge that Indian SMEs have been facing is that of mid and Senior-level managers. “The Government, along with education institutions (and not just the tier-I and II institutions) must aim at developing this category of personnel power so that SMEs can benefit from this. The lack of quality
managerial bandwidth actually stunts the growth of SMEs,” says Perry Madan, senior partner of Delhi based HR firm Elixir Web Solutions. [Mayur Jha]

National Governments increasingly promote the SMEs development in recognition of the critical roles played by them in the socio-economic situation. They have set policies and supporting measures for the purpose of economic development. Departments/offices assisting SMEs’ business have been set up in most countries of the region. The Government of Vietnam has adopted a number of measures, such as the establishment of centers for consulting and supporting SMEs, expanding domestic and international markets and coordinating technical assistance from international organizations. In India, only SMEs are allowed to produce certain products and therefore are protected from competition with large companies. Moreover, because of the specialties of the local sectors, municipal and state Governments are often in better positions to play leading roles and offer tailored measures for the SMEs’ development. One of the most appreciated measures to be initiated by the Government machinery is in the area of financial supporting arrangements. [Prashant John and Rajnish Dass, 2008]

These years, small and medium-sized enterprises (SME’s) are facing management challenges related to secure competitiveness in global production networks and smart business networks. Specialized sub-suppliers are able to compete in a global market, e.g. due to high quality and reliability. However, research also indicates that SMEs when compared with larger companies are less likely to create
organizational changes when new systems are being implemented and that they have too much focus on day-to-day operations in the absence of strategic considerations on information and communication technology (ICT)-systems. [Jan Stentoft Arlbjorn, Torben Damgaard and Anders Haug]

While financing the small and medium businesses forms a vital aspect of economic policies, the SMEs find themselves constantly competing with the large firms. This is primarily because they possess a relatively smaller reserve of resources: be it human or financial. As a result, due to limited resources, SMEs are able to afford only a few information technology (IT) initiatives as compared to the bigger giants. The small and medium businesses usually avoid the risks associated with trial and error methods of testing technology. Only when a particular technology starts to mature the company is willing to try it after careful investigation into its degree of success or failure with the larger companies. It is also seen with the passage of time that there is a dip in the pricing of IT related products making it more affordable for the small and medium businesses (SMBs). The SMBs have been constantly revolutionizing themselves primarily by adopting advanced technologies. In order to retain and enhance market credibility and a competitive edge, channelization of resources into E-business activities can further the growth of the SMBs. [Plumb, Stewart. Arcplan (2007)]
The introduction of the SME Development Bill 2005 (SMED 2005) in the parliament was specifically for the SME’s, and consistently uses the term SME throughout. The bill clarifies what it defines as small and medium enterprises. The relevant passage, section 7, where the definition is given says –

a) In the case of enterprises engaged in the manufacture or production of goods pertaining to any industry specified in the first schedule to the industries (Development and Regulations) Act, 1951:

* A **Small Enterprise** is one where the investment in plant and machinery does not exceed five crores

* A **Medium Enterprise** is one where the investment in plant and machinery is more than five crores but does not exceed ten crores.

b) In the case of the enterprises **engaged in providing or rendering of services** in relation to any industry specified in the first schedule to the industries (Development and Regulation) Act, 1951:

* A **Small Enterprise** is one where investment in equipment does not exceed two crore

* A **Medium Enterprise** is one where the investment in equipment is more than two crore rupees but does not exceed five crore rupees.

The SMED 2005 bill further clarifies that the investment in land and building or equipment, as the case may be, shall not be taken into account while determining
the investment in plant and machinery or, as the case may be, equipment for the purposes of the subsection (A.S. Vasudevrao, 2003).

For this study, a broad definition, drawn from various definitions for small enterprises from abroad and investment criteria as specified by Government of India, was used. This broad definition used for the present study exemplifies the following:

1. Small scale industrial undertakings are one in which the investment in fixed assets in plant and machinery, excluding land and building, whether held on ownership terms or on lease or on hire purchase, does not exceed Rs. 5 Crore.

2. Medium scale industrial undertakings are one with investment in plant and machinery between Rs 5 crore and Rs 10 crore.

3. Management is independent; usually the manager is owner or one of the owners in case of partnership or private limited type of organization.

4. The equity capital required is raised by owner(s), either individually or as a small group.

5. The area of operation is mainly local and/or regional (neighboring districts).

6. The sample frame consists of modern small and medium enterprises located mainly in industrial estates/ areas and belonging to manufacturing activities of all items reserved for small enterprises, by the Government of India.
# E-business and SME's

According to Rajiv Bhatnagar, Chairman and Managing Director, National Small Industries Corporation, distance is no more a major factor in doing business and infomediaries are rapidly replacing middlemen and agents. Small companies will be able to compete with bigger companies offering similar services at lower costs.

Technology and in particular E-commerce ensures reduced transaction costs through efficiency in the use of time and procedures (e-mail, instant chat, electronic data interchange), is used as a marketing tool to increase sales as well as create new business, reduces marketing and advertising costs and ensures improved supply chain management for SME’s. Purchasing and supply chains are crucial for SMEs as on an average the cost of inputs is 60% and even a 10% reduction proves substantial. Speaking on the benefits. Rajiv opines E-commerce ensures no geographical barriers providing a 24 hour global reach, no requirement of intermediaries, can ensure operation from different locations away from markets and on a smaller scale, possibility of introducing new products & services, ensuring speedier customer service & after sales support. He firmly propounds that E-commerce is more about strategy and business management than merely technology.

On the aspects of opportunities thrown open by employing E-commerce within SME’s. Rajiv opines that they lie in the areas of new markets and new channels.
ability to target small segments and audiences, opportunity to control costs and become more competitive and profitable, increased prospects of extending value chain using E-business and opportunities for long term business with key suppliers/distributors in supply chain management. On the aspects of challenges posed by SME’s in adopting E-commerce. Rajiv expresses that they lie mainly in the areas of cost reduction to counteract competitive pressures and stay ahead of competition, coping with technological changes and convergence with a very low level of E-readiness on the whole, acquisition of new skill sets to get the best out of technology, issues regarding payment, understanding of legal, financial and taxation frameworks, uncertainty of investments in terms of returns and a host of issues related to security.

Electronic Commerce is fulfilling its early promise for business-to-business trade. Marketplaces that connect buyers and sellers are up and running in many product categories, and are creating value by making trade more efficient. The experience of early participants suggests that an electronic marketplace can capture saving of 10 to 20 percent on sales and deliver lower prices for buyers (Kenneth et al: 1998)

Although large organizations provide much employment and training across Europe, in many areas it is the small firm that provides the majority of opportunities for employment, learning and development. Growth oriented small business make a major contribution to economic development and employment
generation within local communities and national economies (Smallbone and Wyer. 2000).

The use of information and communication technologies by small organizations has been regularly monitored by the Small Business Research Trust (SBRT) since 1985. The SBRT has reported the increase from 36% of SME’s having personal computers to near saturation by 1996. Brock (2000) notes that small firms use ICT more as tools to support organizational tasks like administration and accounting, rather than for formal, internal communications as in larger organizations. The size of the firm does not necessarily determine levels of ICT awareness, as very small firms can be high IT sophisticated (Gray and Lawless, 2000)

Business-to-Business electronic marketplaces are the advanced form of E-business which brings together buyers and sellers to conduct commercial transactions by electronic means. Their different forms range from simple catalogue-based online buying and selling to sophisticated process integration solutions. In this way, E-markets contribute to improving efficiency and enhancing the productivity and competitiveness of enterprises. However, despite the potential benefits of business-to-business E-commerce, the participation of small and medium sized enterprises is still relatively low as compared to large companies. B2B E-commerce in SME’s has been becoming a popular way of conducting transactions between companies in various parts of the world. Many enterprises have adopted
ambitious strategies to increase the efficiency of internal business process as well as to improve and streamline the customer relationships. (EC Report, 2004)

E-commerce has provided a lot of opportunities to improve the performance of businesses. E-commerce is one of the most popular forms of electronic technology applied to businesses and its impacts on competitive strategy and its formulation is regarded to be fundamental (Lanckriet an Heene, 1999). The selection of suitable E-commerce application is a strategic way which must be made in the context of company’s competitive strategy (Evans and Wurster, 1999). The suitable option about E-commerce strategies for brick-and mortar SME’s is expansion of their customer base and leveraging their customer services (Sekhar, 2001; Kienan, 2000).

The advantage of E-commerce participation for SME does relate to their ability to keep pace with a changing business landscape. Brought about by information technology, these changes include facilitated access to global markets, changing production methods and costs, enhanced communication, reduced transaction costs, and stimulated competition (Scully and Woods, 2001; Timmers, 2000, Tumolo, 2001). The size of the firms enables SME’s to be more adaptable and responsive to changing conditions than large organizations and also benefit from the speed and flexibility that the electronic environment offers (Walczuch R., Braven G., and Lundgren H., 2000).
The new environment promises much to SME’s from E-commerce, but adoption levels remain low (Levy and Powell, 2003; Mehrtens et al. 2001; Poon. 2000). This is partially due to lack of understanding of the benefits SME’s can achieve (Goode, 2002) and of unrealistic expectations of benefits and the difficulties of evaluating them (Poon, 2000). In contrast, the literature on the electronic marketplaces does not differentiate between sizes of firm, but rather takes a “one size fits all” approach to benefits (Fariselli et al. 1999).

E-commerce has often been described as the gateway for SME’s to the global market. However, despite the potential benefits, many SME’s are facing problems to engage in electronic commerce. Many SME’s are not achieving even minimal levels of E-commerce adoption, raising concerns as to why adoption has not really been successful (Jutla et al., 2002; Korchak and Rodman, 2001; Van Beveren and Thomson, 2002). Major barriers to increasing adoption are: lack of resources and knowledge (Cragg and King, 1993; Mehrtens et al. 2001), the skill level of business operators (Darch and Lucas, 2002; Duan et al 2002), the lack of trust in IT industry (Vart Akkeren and Cavaye. 1999; Bode and Burn, 2002), and lack of E-commerce readiness in some industry sectors (Lewis and Cockrill, 2002). A further barrier is the lack of recognition of the potential to improve business appropriate to the effort and cost of adoption and lack of understanding of the realizable benefits (Goode, 2002; Poon, 2000).
Benefits of E-commerce for large companies has been well established and documented (Joseph et al., 2001; Bellman, 2001; Schneider and Perry, 2000). Despite the shakeout of dot-com companies, E-commerce has been growing by staggering proportions. A report by the US Commerce Department noted that whereas traffic on the net was 100 million worldwide by the end of 1997, more than a billion people expected to be logging on by 2007 (Ingersoll, 1998). Forrester Research, a reputed research firm had predicted that online business to consumer sales will increase from 20.3 billion dollars in 1999 to more than 39 billion dollars by 2002 (Korper and Ellis, 2001).

There is no doubt that the large companies appear to dominate E-commerce, but small companies have increasingly joined the trend. Involvement of small businesses in E-commerce was estimated by the International Data Corporation (IDC) to be over 4.3 million by 2001 (Kienan, 2000) and by Access Media International to be over 5 million by 2002 (Tiernan, 2000). Forrester Research had estimated that 45 percent of small companies, 85 percent of medium size companies, and 98 percent of large companies will participate in E-commerce by 2002. It is generally considered that Governments need to play an active role in facilitating the adoption and productive use of E-commerce. Whilst it may not make economic sense for all SME’s to embrace E-commerce it is considered that there is a need to encourage SME’s to consider the possibilities of E-commerce in
the context of their own business planning. The challenge is to create awareness and interest among the audience and then get them to evaluate the product (E-commerce) favorably. The best way to evaluate a new product is through actual use so that performance can be judged. The issue then is how to encourage trial. The demonstration or simulations of the use of E-commerce in terms of businesses similar to their businesses may be effective. Based on preliminary research conducted, it is concluded that the web is used effectively as a support tool but is not utilized to its full capacity. Further research needs to be conducted into why SME's are reluctant to adopt E-commerce and reasons for the partial use of its functionality.

2.5 E-commerce Strategies and SME's

E-commerce offers a rich array of opportunities to improve business performance. Choosing a particular E-commerce application is a strategic decision that must be made in the context of the company’s competitive strategy. Strategic approach to E-commerce decisions has become increasingly important in view of emerging competitive environment (Evans and Wurster, 1999).

E-commerce is one of the most popular forms of electronic technology applied to businesses and its impact on competitive strategy and its formulation is regarded to be fundamental (Lanckriet and Heene, 1999).
Adapting to changes in technology is a key factor driving competitive advantage (Miles and Snow, 1978). An empirical study conducted identified three progressive levels to which companies evolve in their attempts to pursue E-commerce strategies.

<table>
<thead>
<tr>
<th>At the initial level</th>
<th>The focus is mainly on cutting costs or raising productivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>At the second level</td>
<td>The focus shifts to the use of E-commerce to access new customers and markets</td>
</tr>
<tr>
<td>At the third level</td>
<td>This level builds upon gains at the previous levels. The companies seek sustainable competitive advantage by attempting to achieve a complete integration of E-commerce into the company’s overall business strategy.</td>
</tr>
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</table>

Most large companies advance to the third level objectives whereas SME’s focus on the first and second levels. Third level objectives reflect greater complexity and risk and SME’s are less likely to pursue these objectives, at the present stage of their learning curves, due to their relatively limited access to slack resources to absorb the risks.

Also, more sophisticated E-commerce features such as personalization for customer specific content may be more affordable to larger companies (Korper and Ellis, 2001). Among the E-commerce strategies (Sekhar, 2001; Kienan, 2000; Calkins et al., 2000) the suitable options for the brick-and-mortar SME’s includes expansion of their customer base, leveraging their customer service, and
improving their purchasing management. The E-commerce strategy associated with customer base expansion entails operating a website to provide product information, building brands and advertising, and selling products online (Sekhar, 2001). One of the studies has shown that a greater proportion of SME’s use E-commerce as a mechanism for marketing activities rather than providing online purchasing (Rosen, 2000). Online sales opportunities face limitations due to security risks (Patton and Josang, 2004), perceived by the potential customers to provide their credit card information online (Griffith and Palmer, 1999; Rennhard et al., 2004), and the concerns over the cannibalization of a company’s traditional channel sales by the online sales (Tiernan, 2000).

# E-commerce Strategy to Access New Customer

Another E-commerce strategy which constitutes a supplementary measure to the strategy of accessing new customers is customer service (Pitera, 1999). Features for customer service include, for example, providing product information, implementing a question and answer database, designing an easily navigable website, making it simple and secure to order online, warranty information, and clearly stated return policies and procedures (Korper and Ellis, 2001; Schneider and Perry, 2000). SME’s may also utilize E-commerce to reduce their purchasing costs. E-commerce allows for a low transaction cost environment where search, price and terms negotiation, payment and settlement related costs decrease significantly (Kambil, 1995). Moreover, in the E-commerce context, the
information asymmetry advantage by the suppliers, where the purchasing company falls prey to the suppliers’ premium pricing resulting from a lack of knowledge of the competition’s products and prices are also diminished. It is contended that SME’s formulate the aforementioned E-commerce strategies consistent with their competitive strategies.

# Differentiation and Cost Leadership Strategy

Widely accepted understanding of competitive strategy is offered by Porter (1980) who distinguished between differentiation and cost leadership classifications. SME’s tend to favor a differentiation strategy and are less apt to pursue cost leadership strategy due to their inability to utilize economies of scale (Miller and Toulouse, 1986). However, SME’s may also favor a hybrid strategy, a combination of cost leadership and differentiation strategies which may yield multiple sources of competitive advantage (Wright et al., 1991; Miller and Dess, 1993). Hybrid strategy may be feasible for the SME’s in particular owing to their adaptive and flexible characteristics. Defender strategy compares with Miles and Snow’s (1978) prospector strategy, cost leadership strategy with their defender strategy (Segev, 1989), and hybrid strategy with their analyzer strategy (Venkataraman and Prescott, 1990). Differentiation and prospector archetypes strive to grow by offering innovative products, a greater array of product features, higher quality offering than competitors, and superior service. Cost leadership and defender archetypes tend to grow by offering lower prices than competition, create
a stable domain, and rarely seek new market opportunities. Hybrid and analyzer archetypes strive to defend existing product markets through efficiency oriented approaches while seeking new markets through entrepreneurial endeavors (Venkataraman and Presscot, 1990).

# E-commerce Strategy focused on Customer Base Expansion

E-commerce strategy focused on customer base expansion is more likely to be adopted by the SME’s pursuing differentiation and hybrid competitive strategies rather than cost leadership strategy. Cost leaders rarely scan the environment for new opportunities, have lower risk-taking propensity and focus mainly on defending their turf. The SME’s pursuing differentiation and hybrid strategies are likely to adopt E-commerce strategy focused on customer service in parallel with the strategy of customer base expansion in order to achieve superior performance outcomes (Kienan, 2000; Reynolds, 2000).

Existing literature has not sufficiently addressed the levels of transformation that E-commerce can have on the business processes of SME’s. For SME’s, or any business, to reach a stage of advanced E-commerce requires their business systems and processes to be electronically integrated. To achieve this can require considerable change and is therefore referred to as having a transformative effect on the business. Many SME’s are gearing up at the front end of their business
process through the use of E-commerce tools such as e-mail and having a web page.

2.6 Models of E-business Adoption

This subsection presents three popular models of E-business which are usually adopted by SME’s.

A) Adoption Ladder Approach

SME’s take-up rates of ICT and the techniques of E-business along with their geographical patterns are, however, only snapshots of business level processes of investment decision making and innovation. When they are viewed from a purely technological perspective, they tend to suggest that engagement with the technology of E-business is sequential and progressive. The sequence begins with the use of e-mail and progresses through website development to the buying, selling and payment mechanisms of E-commerce, to the supply chain management of E-business and the new business models built on full immersion in the technology. This “adoption ladder” approach is favored by the U.K Government’s Department of Trade and Industry (DTI) which details the elements of organizational sophistication that are seen as accruing at successive steps on the ladder. It implies that business benefits derive directly from the organizational change and increasing ICT sophistication than the internet facilitates. That change
is progressive and the greater sophistication derives, in turn, from the supposed unique qualities of the Internet.

# Interactivity ... That permits collaboration

# Speed ... That allows businesses to build quickly

# Intelligence ... Endowing the ability to retrieve, store and process information.

These qualities, it is argued, offer new ways of organizing value chains (especially disintermediation and reintermediation) and allow new forms of marketplace to emerge (Kenney and Curry, 2001). But, to achieve the goal of becoming an “E-SME”, firms must cross two digital divides. The first divide involves acquiring basic ICT skills and technology to operate e-mail and simple brochure websites. The second digital divide is the threshold to E-business proper, and requires advanced technology and IT skills (including R&D) and a wide range of specialist business skills and knowledge in areas such as management, strategy and marketing (Dixon et al., 2002)

The benefits of this “adoption ladder” approach are that, it highlights the transformational aspects of technology and the key social processes from which it emerges (Scarborough and Corbett, 1992). However, it remains a profoundly and problematically deterministic view of change and implies that:

* Technological necessity operates by welding science, technology, markets and organizations together in an objective and interlocking chain (Dixon et al., 2002)
It implies that all SME’s have the need and opportunity to follow one prescribed course; with the implication that not to finish the course is some kind of failure (cross the divides and climb to the top of the ladder).

B) PIT’s Model by Foley and Ram

Perhaps a more sympathetic way to view and interpret patterns of uptake of E-business techniques among SME’s, is provided by Foley and Ram’s PIT model (2002) which better accommodates the diversity of application and adoption of ICT and E-business approaches amongst SME’s. The model has two elements: What functions ICT can be used for in the firm, and what activities it can be applied to?

First, ICT and the internet can be used by SME’s for three increasingly sophisticated activities, which give the model its name:

* To publish and publicize information on a website, such as product and contact details and other ‘brochure ware’, and terms and conditions or delivery schedules;
* To interact with customers and suppliers through automated communications systems that are more than the simple exchange of e-mails. For example, verify credit cards or recognize returning customers;
* To transform the way a business undertakes its activities, allowing customers to specify delivery times and places or enabling real time tracking of deliveries.
Second, this progressive E-business sophistication can be applied to some, or even all, of a number of areas of business activity within an SME. In the finance area, for example, it might be introduced for account reconciliation with customers and suppliers, online access to banking, and to communicate and transact with accountants and statutory bodies on tax related aspects. Foley and Ram (2002) recognize six of these areas of activity in SME’s:

- Logistics and Delivery;
- Finance;
- Purchasing and Procurement;
- Operations, processing and assembly (including process, product and services, R&D);
- Marketing and sales; and
- After-sales service.

C) A Stage Model for E-commerce Development

This model was described by O’Connor and O’Keefe (1997) and Timmers (1999). O’Connor characterized the models by the level of information content and level of transactions. Later on Timmer (1999) characterizes a business model using two dimensions:

- Level of Functional Integration
- Degree of Innovation
S.Subba Rao, Glenn Metts and Carlo A.Mora Monge believe that ‘A stage is a set of descriptors that characterize the evolutionary nature of E-commerce’. Examples of such descriptors are brochure ware, online catalogues, online financial transactions etc.

The above researchers propose that E-commerce development takes place in four stages:

* Presence
* Portals
* Transactions integration, and
* Enterprises integration.

Though the stage model as proposed appears sequential, it is necessary that a company begins at the presence stage and then progresses through subsequent stages. The model allows for a company to enter at any stage. As technology and E-commerce awareness increases, it can be anticipated that any SME may enter at a later stage, leapfrogging earlier stages in order to accelerate its development process.

Each and every stage listed above does have some benefits and barriers for SME’s. The following paragraphs describe the same.
# Stage 1: Presence

Most companies make their first steps in E-commerce by displaying their company brochure and product offer on a website (Timmers, 2000). The ‘Presence stage’ involves the initial steps that organizations do to get involved in a digital environment. This stage is characterized by an organization having a “Window to the Web” thinking (Barry, 2000). At this stage the website provides information and primarily one-way communication to any potential user. This stage is best represented by a company having a website that provides information about the company’s products and services, contact information, and other relevant information in a static manner. Another important characteristic of this stage is that there is no integration with internal and/or external processes, and the presence is primarily used to attract new customers (O’Connor and O’Keefe, 1997)

# Facilitators (Stage 1):

Facilitators of this stage include not only the physical creation of the site but a number of activities and/or management level mindsets that would precede the development of the site. One of the most important facilitators at this stage is commitment. Commitment refers to strategic organizational motivation to use the internet as a mechanism for achieving some strategic objectives whether it is increasing sales, providing better service to existing customers, making information more available and/or at a cost savings. Thus, commitment is
considered to be a necessary factor for the long-term success of E-commerce development.

Other important facilitators include content, price flexibility and competitive access cost for the target users. Content (Jeffcoate et al., 2000) refers to the effective presentation of a product or service on a website. In other words, a company must have a product that presents itself well through this medium and have taken the appropriate steps to ensure that the site is attractive and user friendly. Price flexibility refers to the ability of a company to absorb the competitive environment of the web and still achieve acceptable levels of profitability. The nature of the web is such that a regional pricing strategy can be almost immediately exposed to global competition at a level that, when transportation cost is taken into account, may make it infeasible for a given company to do business beyond their regional market. Therefore, any company contemplating such a move should do planning prior to investing in a web channel to make sure that they handle the competitive environment. Access cost is an external factor that refers to the relative cost of consumer access to the web. Access cost is a Governmental/technological facilitator to the extent that Government policy and regional technology availability is in place to support vibrant web usage for the targeted users.
# Barriers (Stage 1):

| * Technological resistance within their organizations and in-house know-how or expertise |
| * Acceptance of growth by managers |
| * Issues regarding problems of mindset especially at the top management level |
| * Financial investment |
| * Development of telecommunication infrastructure |

Sometimes top management may be convinced of the new direction and be committed to it, but attitudes of lower level managers' towards technological acceptance could be a significant obstacle to the successful implementation of E-commerce. An alternative is to use an E-commerce consultant to work with and guide internal staff through this critical step. Management level acceptance can be a barrier because there are a number of issues including aggressive growth, increased competition and the potential for performance pressures that may accompany any new undertaking. The financial cost to the organization, including hardware investment, training, and adoption cost, can be very substantial for SME’s and therefore be a barrier in adopting E-commerce (Walczuch et al., 2000). While the cost of software and hardware has significantly decreased in recent years, it remains significant for certain types of businesses. For example, a company with an extensive product mix may incur substantial costs related to reproducing their catalogue on the web because of the lack of adaptability of the publishing technology they currently use. Another barrier discussed is the
development of telecommunications infrastructure. The non-availability of competitive telecommunications capability and the development of its infrastructure is an important barrier to E-commerce among SME’s (Le and Koh, 2001).

# Stage Two: Portals

The portals stage is viewed as the introduction of two-way communication, customer or supplier order placing, the use of profiles and cookies. The main difference between this stage and the first stage i.e. Presence Stage is the capability of two-way communications between the business and customers (B2C) and/or between businesses (B2B). The information provided in the presence stage can be coupled with facilities for ordering, product feedback, and product and/or quality surveys. This allows not only the attraction of new customers, but it also allows the company to engage and retain visitors, and relate them to their individual preferences for customization purposes (Le and Koh, 2001). Another advantage of this stage is the ability to link information displayed with the inventory data, and search capabilities for the users (Timmers, 1999). It is important to note that although there is two-way communication at this stage, it is not possible to process financial transactions.

# Facilitators (Stage 2):

There are three important facilitators that come into play at the portals stage:
At the portals stage, the website becomes an information gathering and disseminating tool that must be connected to more than just the marketing or sales department of the organization. Others within the organization must be connected to the system in order to handle the increased traffic of the E-commerce system. This means that additional investment in training and hardware/software could be very beneficial to the smooth implementation of the organizational strategy. Internal organizational changes at this stage can enhance the additional interactions taking place with customers and suppliers. For example, restructuring the sales department to ensure that web orders are filled with the same priority as other orders will encourage the further development of the E-commerce side of the business (Vlosky, 1999). Another facilitator at the portals stage is usability, which refers to the development of user-friendly website interfaces and designs. The internal users are more likely to adapt quicker if the system is easy to use. External users are also more likely to utilize the system if it is properly designed and easy to use (Chapman et al., 2000).

# Barriers (Stage 2):

In addition to all the barriers listed for the previous stage, at the portals stage there are two important barriers:
* Development of B2B interfaces
* Cultural and/or language issues

The degree of integration at this stage is driven by the level of technological development outside the organization as well as within. If suppliers are not capable of or are not willing to utilize the system, further development can be hindered. The organization may be faced with a dual problem whereby small suppliers are technologically deficient and are not developed enough to participate while at the same time much larger suppliers may be technologically inflexible and not interested in participating. The organization faces substantial challenges in attempting to overcome these issues and may find out that an ideal structure is not obtainable with the current supply base; therefore adjustments may have to be made to the level of integration and/or the pace of the development. Culture and/or language can become more of an issue here because of the fact that the website is not only being used as on the marketing front but is being relied on for effective business communication (Zhivago, 2000). The sudden move into a global marketplace with two-way communication can produce multi-lingual requirements on staff and cultural issues on web site design and product/market strategies.

# Stage Three: Transactions Integration (TI)

The transactions integration stage (TI) is differentiated from the portals stage mainly by the presence of financial transactions between partners. This in turn will
require higher technical capabilities and IT infrastructure and, thus SME's will face new challenges to overcome. An important characteristic of this stage is that interactions can be for selling as well as buying. This stage can include the participation in virtual communities, that allow participants to share information around an area of common interest (Timmers, 2000); electronic auctions, where sellers offer products or services to buyers through a web site with a structured process for price setting and order fulfillment, third party E-marketplaces, where a third party provider places the catalogues of suppliers online, and offers catalogue search, ordering and payment facilities in a secure environment to purchasers. Integration at this stage is viewed as the integration of internal processes, which allows for the optimization of all the operations of the organization. Also, the level of collaboration between partners is considered to be low.

**Facilitators (Stage 3):**

- The ability to extend IT technology within the SME's from a financial investment perspective
- The ability to have acquired or to acquire the necessary internal IT competencies
- Partnerships for B2B and third party opportunities
- E-commerce community development
- Selection of competitive payment systems

A SME at this stage must possess a higher level of technological ability in order to run the E-commerce business (Chesher and Skok, 2000). For this reason they must
either have competent staff available to work on continual adaptation of the E-commerce effort or be able to obtain such services at a cost that will not erode the added value of the expected results. This is considered as a facilitator because the SME’s can anticipate this need and plan for it, in other words it is within the strategic control of the SME’s. Partnering with a third party E-marketplace and/or other businesses in B2B efforts is also something that can be addressed through planning and is necessary to achieve maximum benefit from the technology. The development of relationships with other businesses/customers and groups helps develop the E-commerce community within which the SME’s can seek new opportunities for increased sales growth and profitability. A final facilitator is the selection of competitive payment systems (Fariselli et al., 1999). Here again the SME’s have control over the selection process and must make certain that their E-marketplace relationships can support their choice. The transaction cost of doing business over the web is an important strategic consideration. Therefore careful evaluation of alternative systems and negotiating for the best rates is important (Bishop, 1999). This is an important area for collaboration between SME’s. Groups of SME’s can negotiate for better rates to help alleviate some of the transaction cost disparity between large transnational corporations (TNC’s) and smaller enterprises (Farkas-Conn, 1999)
Barriers (Stage 3):

There are a significant number of barriers at this stage because of the complexity of adding financial transactions to the E-commerce effort. With the addition of money transactions, many external barriers, which are beyond the direct control of the SME's come into play. *There are five barriers of importance* at this stage—

<table>
<thead>
<tr>
<th>Financial systems</th>
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<tbody>
<tr>
<td>Governmental tax and trade policies</td>
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<tr>
<td>Security and/or privacy</td>
</tr>
<tr>
<td>Governmental contractual and legal environments</td>
</tr>
<tr>
<td>Treatment of intellectual property</td>
</tr>
</tbody>
</table>

Financial systems vary throughout the developed and under-developed countries and the lack of compatibility can result in enormous problems for SME's trading across borders (Walczuch et al., 2000). The lack of compatibility may result in either making financial transactions virtually impossible or making them so expensive that no added value is obtained. In this same vein are Governmental tax and trade policies because taxes and/or tariffs may have to be reported and paid across borders.

Security and privacy are other major concerns because of the transmission of financial data including credit card and other financial related account numbers and information (USSBA, 2000; Timmers, 2000; Bollo and Stumm, 1998). The
regulation of encryption raises the potential for smaller enterprises being locked in to using a third party for transactions, potentially further increasing transaction cost to the SME's (Timmers, 2000). Another important barrier at this stage is the development of international laws regarding the enforcement of contracts, taxation, privacy, patent, copyright, and trademark (USSBA, 2000; Timmers, 2000).

# Stage Four: Enterprises Integration [EI]

Enterprises integration (EI) refers to complete integration of business processes to the extent that old-line business is indistinguishable from online business. This level of integration involves high levels of collaboration between customers and suppliers. Enterprises integration includes full integration of B2B and B2C business including value chain integration. This level of integration utilizes the E-commerce systems to manage customer relationships (CRM) and the supply chain (SCM). This level of integration is E-commerce + CRM + SCM. This stage is somewhat of an ideal concept for the 'e-world' environment. Many of the requirements of this stage still have technology problems and over-whelming integration issues. Successful players in the EI stage will be able to distinguish themselves if they –

* Intimately understand their partners’ current and future strategic needs;
* Work proactively with their partners to create solutions that address these needs
It is argued that significant opportunities for improvement often lie at the interfaces between the various supply chain member organizations (Handfield and Nichols, 1999).

**Facilitators (Stage 4):**
The characteristics of the EI stage include all E-commerce and non E-commerce aspects of the enterprise. At this stage they all melt down together to one system that serves the entire needs of the enterprise. Whether an order is initiated by the web-based customer or a mail order customer does not matter. At this stage the E-commerce departments disappear and all business processes are fully integrated across internal systems and external collaborators and customers. The *critical facilitators* for this stage are:

* The competencies of internal staff
* Business process integration and control
* Back office integration

At this point technological considerations (barriers) interfere with the ability of the SME’s to help it. Completion of this stage is not even possible until further developments happen on the technology front. However once the solutions are available, the enterprise can begin the process of full integration.
# Barriers (Stage 4):

There are significant technological barriers at this stage based on the fact that numerous technology gaps exist for SME’s to completely integrate all business processes. The barriers here include technology availability, technology diffusion regionally and globally, international standards for trade and transaction processing, development of E-markets, and network complexity.

As we move into the future it is only a matter of time before these obstacles are successfully addressed. Most of these processes are dynamic in nature and involve very complex interactions between Governments, technology based companies and the growing E-commerce world. Governments can encourage and influence technology diffusion within borders, which would increase the demand for E-commerce technology. Technology based companies, the producers of E-commerce solutions, will then have the required demand to make the appropriate investment in effective and efficient solutions to the technological issues. The need for international standards to handle financial, trade, legal, and security issues is also a barrier to full integration as well as a current issue for financial transactions (Le and Koh, 2000).

As companies move into new markets and with an increased emphasis on outsourcing non-core competencies (everything from manufacturing to applications management), companies are conducting business with greater
number of partners than ever before and are looking to informally manage these relationships (Upin et al., 2000). This in turn will undoubtedly create network complexities among the players in the supply chain.

2.7 Opportunities and Benefits of E-commerce to SME’s

E-commerce boasts of a number of opportunities and benefits to the SME’s some of which are identified as under: (Yannis A. Pollalis, 2000; Prime Faraday Technology Watch, May 2001)

a) Access to Global Market

It tends to be assumed that over recent decades the economy of the world has been characterized by increasing globalization. Precisely what this means is unclear but a popular view is that markets are now global, that everywhere large and small firms have equal access to markets that span the world. Moreover, it is also suggested that such activity is increasingly fuelled by access to the internet and use of electronic payment systems. For example, a consumer in the European Community interested in unusual books may order a volume from a specialist supplier in North America, paying by the credit card; the order and details of the credit card can be conveyed on the internet, hence the transaction (at least prior to delivery) can be completed in seconds (Yannis A. Pollalis, 2000). E-Commerce has a potential to give SME’s access to global markets immediately after the
implementation. SME's can gain global access to customers and suppliers by just launching the website.

b) Low Cost

SME's can achieve the low cost of communication e.g. order getting, order processing, promotion and advertising through implementing E-commerce. E-commerce gives opportunities to streamline internal and external processes to improve cost efficiency of SME's. Access to global suppliers, appropriate level of inventories, in-time deliveries will not only save the process cost but also prevent the cost incurred due to errors and inefficiencies.

c) Improved Processes

The process of going “on-line” with key business processes, from sales to production control requires mastering of the possibilities offered by information systems. Multimedia development tools, database access, e-mail, electronic documents become all part of the daily activities and key elements of the operations in even the smallest company that wants to benefit from electronic business.

d) Enhanced Communication

Markets throughout the globe tend to be dominated by the large global producers, the giant transnational corporations. It is in this context that there is a potential role for business among SME's, and more particularly in the way in which this
potential role may be influenced by the opportunities resulting from developments in E-commerce technologies. However, one can argue that, while in the short run the power of the internet may favor SME’s, the growth in electronic commerce raises the danger of greater domination by transnationals and of reduced openings for SME’s. Nevertheless, appropriate public policies may avert this danger and lead to new opportunities. These policies would include education and training which provides SME’s with the knowledge to access new technologies, linked to their awareness of possibilities for evolving appropriate networking relationships. The policies would also have implications for financial issues, as well as for the deployment of systems of electronic commerce at regional and global levels.

e) Stimulated Competition

As regards the selling of goods, it can be stated that sellers have adapted the internet to their current modes of business by using the internet as a new means by which to reach their consumers, but they have not moved beyond their traditional business models to take advantage of the power of the internet. The consequence is that, in the short run, the power of the internet as a sales vehicle will be inversely proportional to the size of the seller; the world-wide web can instantly transform a smaller firm into a global distributor; by contrast, large corporations that already have their distribution network in place often find the web to be a niche channel, with direct web sales registering only a fraction of their total revenue. Finally, SME’s who do not keep up with the evolution are in danger of
being left out in the international competition, particularly where larger corporations are pushing business that could be attractive for SME’s, e.g. the website of Japan Airlines published invitations to tender internationally for non-strategic supplies that were previously limited to a small circle of suppliers.

f) Networking

The potential role of networking among SME’s in the context of electronic payment systems and virtual market-places lead to broader considerations: they raise questions about the role of electronic commerce regarding the formation of production networks, hence queries about synergies in creating appropriate networks which span production processes, electronic payment systems and virtual market-places. By a production network we mean a group of firms that co-operate over such input activities as finance, training, research and technological development, product design, marketing, export promotion and distribution. There has been a tendency to discuss electronic commerce till now, to ignore these wider concerns involving production networks and hence these potentially crucial synergies see the overview of discussions reported in European Commission (1996). Leaving aside electronic commerce, for the time being, if SME’s are to be more than marginal players in the economies of the future, there is ample theoretical and empirical evidence pointing to the possible need for these firms to co-operate in certain forms of production networks. A considerable amount of recent literature has focused on successful groupings of firms, such as "Industrial
Districts”. “Clusters” and “Webs” as systems of innovation (Yannis A. Pollalis, 2000).

g) Efficiency and Effectiveness

Electronic commerce aims at improving efficiency in terms of lower costs, improving effectiveness in terms of widening market potential and better meeting customers’ needs and enhancing product and service innovation, notably through customer-supplier interactivity.

2.8 Barriers for E-commerce Adoption amongst SME’s

The barriers to E-marketplace participation sometimes reflect the more generalized barriers of E-commerce adoption. The eight barriers to E-marketplace participation are as follows:

a) Lack of Support from Technology Vendors

Vendors of various technology products often aim their marketing at the large corporations and do not perceive the difficulties of smaller companies and their differing needs (Howarth, 2002; Stockdale and Standing, 2003). Although some marketplaces carry statements that they support smaller businesses, they may charge initial fees that are beyond the resource of many or require an understanding of, and commitment to, specialist software. SME’s are unlikely to commit resources without a recognizable return of benefits for the investment of time and money (Korchak and Rodman, 2001).
b) Lack of Standards

The lack of a common framework for buyers and sellers hinders the development of many marketplaces. Currently, E-marketplaces often adopt their own platforms without regard to any industry or technological standards. Gulledge (2002) reports that over 120 standards have been identified. Such variety can deter participation by large and small firms, unwilling to commit to software and training before they can identify returns on their investment (Howarth, 2002; Lucking-Reiley and Spulber, 2001).

c) Understanding of the Environment

SME’s often do not have an understanding of the nature of the Internet and how it interacts with other methods of trading (Stockdale and Standing, 2003), although this is not confined to smaller businesses (Porter, 2001). It is important for SME’s to understand that the Internet is not a substitute for established methods of trading except for companies that are created specifically for the Internet environment such as Amazon. For the majority of businesses the internet is a complementary tool that can enhance their current business.
d) **Supply Chain Integration**

Smaller companies do not often see themselves as a part of a large supply chain. They underestimate how E-commerce can facilitate interaction with larger firms within a supply chain by enabling the sharing of information, electronic ordering (thereby getting away with the paper system), electronic fulfillment, tracking and efficiencies in cost and time (Korchak and Rodman, 2001). If SME’s do not understand that E-commerce competencies will support their ability to function within the larger supply chain, they will lose out to other firms which can operate in the electronic market.

e) **Industry Environment**

Many SME’s operate within a relationship environment that does not encourage innovation and there is little incentive to be the first mover in the transition to E-marketplaces. For example, while small companies that supply Ford or Renault must go to the major automobile marketplace, Covisint, to maintain that relationship, there is little incentive for publishers to go online as few of their buyers (bookshops) are sophisticated E-commerce users.

f) **Identification of Benefits**

The perceived instability of the electronic environment hinders the progress of E-marketplace adoption. SME’s rarely benefit from being first movers unless action is in response to innovations in their external networks (North and Smallbone,
and therefore, there is no incentive to undertake risk. There has to be some realistic immediate benefits to encourage the first move, before longer-term benefits become an issue (Korchak and Rodman, 2001).

g) Global Trading

The ability to trade globally is often associated with the electronic environment. While E-marketplaces can support many of the processes required to achieve global purchases and sales through offering customs advice, currency exchange and shipping services, many pitfalls remain (Ives and Jarvenpaa, 1991; Peppard, 1999). These can include language difficulties, cultural differences and import/export legislations. These are not great obstacles, but require recognition and understanding.

h) Financial Constraints

There may be an adverse effect on credit lines from trading through E-marketplaces for SME’s that do not have the financial backup to appreciate any differences in the trading environment. There is some evidence that SME’s credit lines are not geared to frequently changing buyer/supplier relationships and financial institutions may be wary of extending credit for internet-based trading.

There is a wide variety of potential benefits and barriers to E-marketplace participation for small and medium sized businesses and there is no easy recipe for overcoming the challenges and realizing the benefits. Some barriers relate to
recognized problems common to SME's E-commerce adoption such as connectivity, while others are more specific to the individual company such as lack of resources. In contrast, the realization of the benefits of participation generally rests with the ability of individual SME’s to identify opportunities and to plan their online trading effectively within the constraints of their industry environment. Effective planning of a participation strategy is therefore of vital importance if an SME is to realize benefits.

2.9 E-business and Performance of Firms

Review of literature reveals that there are two distinct camps that emerged on the issue regarding the effects of E-business on performance of the firm and its competitive advantage. These two camps were named as the ‘Revolutionary View’ (RV) and the ‘Evolutionary View’ (EV). To the proponents of RV, E-business embodies a conduit for radical change. The adoption of internet based solutions allows firms to increase revenue generation through externally focused initiatives such as expansion into new markets and development of new products and services. For the proponents of EV, internet based solutions primarily lead to increased efficiencies and reduced costs. Its focus is on internal systems and processes. Thus the choice of which internet based solution to adopt is driven, in part, by the strategic view of the adopting organization. Organizations subscribing to the RV will tend to adopt internet based solutions that focus on expanding the
reach and range of their product and service offerings. They will concentrate on
revenue enhancing opportunities and new markets. Organizations following the
EV, by contrast, will tend to adopt internally focused internet based solutions,
such as finance and accounting solutions, HR solutions or procurement solutions.
They are focused on cost-reducing opportunities. It is theoretically possible to
adopt both strategies concurrently i.e. managers could adopt both internally and
externally focused internet based solutions concurrently. Any performance gains
achieved by the adoption validates whether an RV and/or EV view best describes
the strategic impact of internet based solutions (Wade, Johnston and McClean,
2003).

To date, most research into the implications of the internet for small and medium
size enterprises (SME’s) has focused on individual business barriers to
information and communication technologies (ICT) and E-business adoption.
Such research has shown that SME’s tend to be time and resource-poor, with their
size being their main disadvantage vis-à-vis ICT adoption. It is felt that the current
approach to ICT adoption interventions fail to take into account the incremental
nature of the SME’s E-business learning processes. To help small business owners
articulate, value and meet their evolving E-business needs, there is a suggestion
that ICT adoption strategies should focus on facilitating not only the acquisition of
skills and knowledge, but also the development of E-business networks which underpin the SME ICT adoption process (Braun, Harman, 2004).

Embracing ICT tools and E-business related technologies is a complex and phase-based process. While e-mail has become the standard communication for most SME’s, many have not yet progressed to the E-commerce phase, suggesting that adopting E-business technologies is an evolutionary process that requires the negotiation of a journey that involves continuous learning and change. Adoption of the entire cluster of ICT technologies may hence be conceptualized as a linear process along an adoption continuum. After adopting E-mail, the web is the second step for adoption consideration, E-commerce the third step, potentially followed by adoption of a complete E-business model, a case which is referred to as ICT paradigm shift (Braun, Harman, 2004).

Information technology (IT) has contributed to the acceleration of structural changes in the automotive industry, which have been taking place since the 1990’s. E-business is not the cause of this structural change; rather it allows companies to implement strategies that are necessary in the face of increasing modularization. Information systems enable organizations to do what they want to do more efficiently and with flexibility. Technical development of E-business has led to a high degree of different applications, which affect the level of cooperation between firms or function as a market stimulus. E-business is a part of IT, defined
as internet-based applications between two or more companies. E-business applications affect to various degrees on the organization of transactions. The three effects are:

# The Electronic Communication Effect – IT allows the exchange of information in lower amounts of time and cost.

# The Electronic Brokerage Effect – Assumes that networked databases can assume the tasks of a broker to improve the matching between buyers and suppliers. Computer supported systems allow an increase in the number of potential market participants and the quality of decision between market alternatives while decreasing the costs of selection process.

# The Electronic Integration Effect – Occurs when companies define or standardize interfaces for information exchanges and processes, for example in the cooperative usage of CAD/CAM technology.

In small and medium enterprises (SME’s) the implementation of E-business seems less planned and structured as compared to larger suppliers. The introduction of E-business applications confronts these firms with enormous challenges regarding their financial and personnel resources, as well as technical know-how (Muhge, Hertwig and Tackenberg, 2004).
2.10 Limitations of Literature Review

There was enormous literature available in the case of technology adoption amongst large enterprises and the researcher was able to extensively review information regarding the problem area. But the same was not so in the case of small and medium enterprises, especially in the Indian context. Not enough literature was available on the various issues regarding the usage levels, perceptions regarding benefits of E-commerce to their firms, barriers that they perceived in the process of decision making and the extent of impact of E-commerce initiatives in firms. Hence the literature review on the present topic suffers this limitation and the researcher has gone ahead reviewing and identifying the gaps from amongst the available literature of SME’s from various sources.

2.11 Summary

In conclusion, this chapter presents the review of research work carried out both internationally and in India on E-commerce adoption and applications in SME’s. E-business strategies adopted in SME’s, E-business models, E-business and performance of firms, opportunities and limitations due to E-commerce, the perceptions and barriers to E-commerce adoption amongst the SME segment and lastly the limitations faced by the researcher in the process of literature review.

While reviewing the available literature, it was noticed that there were visible gaps in the areas of SME’s perceptions regarding E-commerce, factors inhibiting E-
business adoption amongst SME’s and issues regarding utilization or rate of adoption of E-commerce by SME’s, especially in the Indian context. These gaps motivated the researcher to undertake in-depth study to understand the various issues connected to the uptake of technology by SME’s with a view to harness the resulting opportunities arising therein.

The research methodology adopted to study the problem is described in the next chapter.