Application of E-Commerce-problems and prospective
4.1- Introduction

The emergence of electronic commerce (EC) technologies has affected many industries and organizations. EC is defined as the process of buying, selling, transferring or exchanging products, services and/or information via computer networks, including the Internet\(^1\).

Regardless of organizational size, EC offers enormous opportunities and benefits to improve business performance. Small-to-Medium sized Enterprises (SMEs) are increasingly realizing the potential benefits of EC technologies\(^2\). The definition of SMEs varies in different countries and studies but is usually based on employment, assets, or a combination of the two\(^3\). The importance of SMEs has increasingly grown over the years and they have become the backbone of any country’s economy and especially in developing countries. SMEs represent approximately 90% of the total number of firms across the world and they have a significant role in creating employment opportunities.\(^4\) In 2006, there were about 140 million SMEs around the world employing at least 60 percent of the total work force\(^5\).

SMEs are generally considered to be flexible, adaptive and innovative firms and these characteristics, in turn, make them a good fit for EC\(^6\). SMEs may use EC technologies in a variety of ways, including: to communicate with customers and suppliers, collect market research data, promote goods and services, provide detailed information about products and services, support online ordering of goods and services and offer after sales support and assistance\(^7\).

---

Furthermore, research also indicates that SMEs can take advantage of EC technologies in expanding their business\(^1\). Thus, the use of EC technologies enables SMEs to improve their efficiency and competitive position in the marketplace. However, in this chapter we try to describe the barriers, problems, advantages and challenges of E-Commerce applications for SMEs unit in India.

4.2- An Introduction to India

The Indus Valley civilization, one of the oldest in the world, goes back at least 5,000 years. Aryan tribes from the northwest invaded about 1500 B.C.; their merger with the earlier inhabitants created the classical Indian culture. Arab incursions starting in the 8th century and Turkish in 12th were followed by European traders beginning in the late 15th century. By the 19th century, Britain had assumed political control of virtually all Indian lands. Non-violent resistance to British colonialism under Mohandas Gandhi and Jawaharlal Nehru led to independence in 1947. The subcontinent was divided into the secular state of India and the smaller Muslim state of Pakistan. Fundamental concerns in India include the ongoing dispute with Pakistan over Kashmir, massive overpopulation, environmental degradation, extensive poverty, and ethnic and religious strife, all this despite impressive gains in economic investment and output.

India, a Union of States, is a Sovereign Socialist Secular Democratic Republic with Parliament system of Government. The Republic is governed in terms of the Constitution, which was adopted on 26 November 1949 and came into force on 26 January 1950. India comprises 28 States and 7 Union Territories. It has achieved multifaceted socio-economic progress during the last 54 years of its Independence. India has become self-sufficient in agricultural production and is now the tenth industrialized country in the world and the sixth nation to have gone into outer space to conquer nature for the benefit of the people.

Area:
It covers an area of 3,287,590 sq km, extending from the snow-covered Himalayan heights to the tropical rain forests of the south. As the seventh largest country in the world, India stands apart from the rest of Asia, marked off as it is by mountains and the sea, which give the country a distinct geographical entity. Bounded by the Great Himalayas in the north, it stretches southwards and at the Tropic of Cancer, tapers off into the Indian Ocean between the Bay of Bengal on the east and the Arabian Sea on the west. It measures about 2,933 km from north to south between the extreme latitudes and about 2,933 km from east to west between the extreme longitudes. Terrain is upland plain (Deccan Plateau) in south, flat to rolling plain along the Ganges, deserts in west, Himalayas in north.

Climate:
The climate of India may be broadly described as tropical monsoon type. There are four seasons: (i) winter (January-February), (ii) hot weather summer (March-May); (iii) rainy-western monsoon (June-September) and post-monsoon (iv) (October-December).

Population:
India's population of approximately 1.17 billion people (estimate for July, 2009) comprises approximately one-sixth of the world's population. India has more than two thousand ethnic groups, and every major religion is represented, as are four major families of languages (Indo-European, Dravidian, Austro-Asiatic and Tibeto-Burman languages) as well as a language isolate (the Nihali language spoken in parts of Maharashtra).¹

Literacy:
There has been an increase in literacy in the country. The literacy rate in the country is 65.38 percent (75.85 for males and 54.16 for females).

Natural resources:
Coal (fourth-largest reserves in the world), iron ore, manganese, mica, bauxite, titanium ore, chromites, natural gas, diamonds, petroleum, limestone, arable land.

Economic overview:
India’s economy encompasses traditional village farming, modern agriculture, handicrafts, a wide range of modern industries, and a multitude of support services. India’s international payments position remained strong in 2009 with adequate foreign exchange reserves, and

¹: (http://en.wikipedia.org/wiki/Demographics_of_India)
moderately depreciating nominal exchange rates. Growth in manufacturing output has slowed, and electricity shortages continue in many regions. India has large numbers of well-educated people skilled in English language; India is a major exporter of software services and software workers.

**GDP:** Purchasing power parity – $2.966 trillion (2007 est.)
- Real growth rate: 9% (2007 est.)
- Per capita: purchasing power parity – $2,600 (2007 est.)

**SMEs:**
In India, it is estimated that there are around 128.4 lakh Small and Medium Enterprises units in 2006-2007 and at the same period of time SMEs employ over 312.5 lakh persons. SMEs account for 42 percent of Manufacturing sector turnover and 35 per cent country’s exports.²

### 4.3- Information communication and technology (ICT) industry in India

The Indian ICT industry is among the worlds largest. It is the most important outsourcing destination for software, IT and IT-enabled services. The key driver of the Indian ICT industry has been to a large extent the technology transfer induced by big Multinational Corporations (MNCs), which started becoming established in India in the early 1990s. Initially, the largest operations were MNC captives. The types of services performed have little complexity. The ICT sector quickly scaled-up, and as important domestic firms emerged, such as Infosys and Wipro, the variety of activities increased and gained more depth. Today, the Indian ICT industry can compete with the world giants. Indian IT clusters are home to advanced R&D centers serving several global IT leaders. In 2006, this industry posted aggregated revenue of US$37.4 billion, growing by 31% over the previous year, with an overall contribution to the GDP of 4.8%. Software and IT services account for the most, with 61% of share; hardware follows with another 21%; the remaining 18% is represented by ICT-enabled activities. Direct employment is well above 1,300,000 units. The MNC’s direct investments in this sector for the current year are expected to hit an unprecedented US$10 billion. The total number of Indian ICT/ICTE firms is not known, but it may be around 4,000–5,000 (excluding micro-enterprises, small retail

---

¹: [http://www.indexmundi.com/india/gdp_per_capita_%28ppp%29.html](http://www.indexmundi.com/india/gdp_per_capita_%28ppp%29.html)
²: [www.rbi.org.in](http://www.rbi.org.in)
businesses and Internet points). SMEs account for 80–85% of the total. However, the Indian ICT/ICTE industry also includes a handful of giant players with revenues in excess of US$1 billion, and about 200 medium to large foreign-owned facilities. The software and IT services industry is articulated in various segments, such as software development, customized applications, value-added services, and IT engineering. The software sector focuses on exports, which amount to US$17 billion. Similarly, the ICT-enabled sector is skewed toward exports. India is by far the world leader in this segment, with an impressive growth rate, and a workforce of nearly half a million employees. Contact centers and financial services are the main lines of business. By contrast with the highly advanced software and IT services industry, the Indian domestic hardware industry is still relatively underdeveloped. Most of the MNC investment in manufacturing and assembling tends to concentrate on other countries in the region. The bulk of the domestic production is destined for the growing internal market. In addition, the Indian ICT industry encompasses 150 Internet service providers and 100,000 public Internet points (cybercafés).

In advance of many other developing countries, India has had a liberal policy in the telecom and ICT sector since the early 1990s. The main changes occurred in the period of 1994–2001, when various initiatives were undertaken in order to:
(i) define medium and long-term policies;
(ii) attract private investment;
(iii) create an adequate institutional landscape; and
(iv) Adopt concrete measures to support the growth of the ICT industry.
In 2000, the parliament passed the “Information Technology Act”, which contained various provisions aimed at enhancing e-commerce and e-governance. In 2004, a specific policy to support the diffusion of broad-band technology was issued. In addition to the interventions in the legal and institutional framework, several other measures have been undertaken by the Indian Government to support the development of Private IT entrepreneurship. These measures fall principally into three categories:
1. fiscal policies;
2. Custom facilitations; and 3. Infrastructure.
The first category includes income tax holidays and excise exemptions, particularly for software and IT services firms. The second group encompasses custom duty reductions or exemptions in
imports and exports of ICT/ICTE services and components and other facilitations. What is arguably the most important measure in the area of infrastructures involves the establishment of technology parks and processing areas that enjoying special treatments.\footnote{Zavatta, Roberto, (2008), Financing technology entrepreneurs & SMEs in developing countries: challenges and opportunities, Information for Development Program, India, Zernike Group BV, Meta Group SRL, www.infoDev.org}

\section*{4.4- ICT and Small and Medium-Sized enterprises}

A major component of all economies is small-and medium-sized enterprises (SMEs). SME usage of ICT ranges from basic technology such as radio and fixed lines to more advanced technology such as email, e-commerce, and information processing systems (see Figure 4.1). Using advanced ICT to improve business processes falls into the category of e-commerce. However, not all SMEs need to use ICT to the same degree of complexity. The first ICT tool that most SMEs adopt is having basic communications with a fixed line or mobile phone, whichever is more economical or most convenient for their business. This allows the SME to communicate with its suppliers and customers without having to pay a personal visit. After acquiring basic communication capabilities, the next ICT upgrade is usually a PC with basic software. Even without Internet connectivity, SMEs can use PCs for basic word processing, accounting, and other business practices. With the Internet, SMEs are able to use more advanced communications capabilities such as email, file sharing, creating websites, and e-commerce. This may be sufficient for most SMEs, especially those in service industries such as tourism. SMEs in manufacturing may adopt more complex IT tools such as ERP software or inventory management software. SMEs may adopt the tools progressively or jump immediately to advanced ICT capabilities.
When firms in developed countries adopt ICT, firms in developing countries will lose out on the competition. This in turn can slow the growth rate of SMEs and hurt the economy as a whole. ICT can thus play a very important role because it can help SMEs both create business opportunities and combat pressures from competition. Appropriate ICT can help SMEs cut costs by improving their internal processes, improving their product through faster communication with their customers, and better promoting and distributing their products through online presence. In fact, ICT has the potential to improve the core business of SMEs in every step of the business process.¹

Small- and medium-sized businesses often have limited IT resources as well as limited IT expertise. These limitations often culminate in SMEs being incapable of exploiting their use of IT to its full potential or developing all the information systems (IS) they need. The use of ICT by SMEs is increasingly common according to survey for OECD countries. A Eurostat survey on e-commerce shows that nine out of ten SMEs were equipped with computers at the end of 2000/early 2001. Internet access is also commonplace among SMEs. While Internet penetration is generally higher in larger enterprises, the gap between larger firms and SMEs is narrowing. In most OECD countries, Internet penetration rates for medium-sized firms (50-249 employees) are the same and sometimes higher than for larger firms (more than 250 employees), with penetration rates of over 80%, although there are exceptions. Small firms (10-49 employees) have a slightly lower penetration rate, between 60% and 90%. Even in micro-enterprises, the

---

penetration rate is nearly 60% in most countries\(^1\). Previous studies in the area of SME adoption of ICTs suggest that the motivations for adoption are based on opportunistic reasons, i.e. those relating to cost. In particular, managers in SMEs have identified the time and effort to incorporate telecommunications in their business as principal barriers to adoption of information technology\(^2\).

Furthermore, limited capital has also been used to explain a relative lack of investment in ICTs by SMEs. In SMEs, there is often insufficient sharing of business information between managers and employees and among employees in part because the personnel’s daily routine tends to be extremely busy. To improve firm’s responsiveness to customers, client feedback and information on employee’s professional experience, such as know-how for winning a contract, can be electronically stored and thus available to be shared within the company. Some SMEs have exploited ICT effectively to improve internal communications and have improved their reputation through swift responses to customer’s complaints and an ability to capture clients (hidden) needs\(^3\). ICT offer benefits for a wide range of business processes. At firm level, ICT and its applications can make communication within the firm faster and make the management of the firm’s resources more efficient. Seamless transfer of information through shared electronic files and networked computers increases the efficiency of business processes such as documentation, data processing and other back-office functions (e.g. organizing incoming orders and preparing invoices). Increasingly sophisticated ICT applications such as KMS (Knowledge Management System) and ERP (Enterprise Resource Planning) allow firms to store, share and use their acquired knowledge and know-how. For example, customer databases with a history of client-specific correspondence help managers and employees to respond more effectively to customers.\(^4\) Poon et al\(^5\) postulate that the entry point for SMEs to use the Internet is for them to start with the inter-organizational dimension only. Integration with their business processes occurs subsequently; with full Internet-to-internal process integration ultimately presenting the greatest benefit to a company. These authors acknowledge that these benefits

---

2: Chappell and Feindt, 2000. analysis of e-commerce practice in SMEs, Communications and strategies, (37)1, 49
would only be achieved following significant organizational process adjustment within a company and also across the business sector it operates in. A more critical view of the impact of the internet on small firms vis a vis large firms is offered by Samiee\(^1\), who argues that, despite the internet, small firms will always be at a disadvantage compared to large firms which, by virtue of their greater resources and network of operations, will continue to be better known.

As per the industry association (NASSCOM) assessment the Indian IT industry has grown its revenues ten fold in the past decade, from $4.8 billion in financial year (FY) 1997-98 to $47.8 billion in financial year 2006-07. Its contribution to GDP is estimated to have grown from 1.2 percent to 5.4 percent in the same period.

The Internet offers unlimited shelf space and isn’t bound by operational timings and geographical boundaries; with an opportunity to cater to country wide city markets (for consumers and suppliers alike) at a comparative miniscule cost. E-commerce activities in India have spread across the country to the prominent ‘tier-II’ cities and towns which are witnessing a pick-up in online retailing activity and increased transaction values.

By early 2007, Internet subscribers in India totaled more than 8.5 million. This equated to an estimated 60 million Internet users throughout the country. The number is set to grow to a 100 million by 2007-08. An estimated 4.6 million Indian Internet users are Banking Online today. The number is expected to grow to 16+ million by 2007-08 including both Internet and Mobile Banking.

The following tables give us an idea about time spent on the internet and users of internet in India;

---

**Table 4.1:** Time Spent on the Internet in India

The business community was very slow in accepting the Internet as a viable and reliable tool. The bulk of Internet users are still home users. The smaller companies and businesses of India realized that this was a cost effective means of communication and embraced the Internet faster than the larger businesses. The SMEs segment forms a larger chunk of the Internet user market compared to the corporate users, also due to the fact that they are simply far larger in numbers than the larger corporate entities. The SMEs segment also views the Internet as a great leveller, or at least used to the earlier years. Some disillusionment has set in with the Internet, as it did not really give as big a competitive leverage to the SMEs as they had initially been led to believe.

---

1: Unadkat, Chirag, (2007), DFID Internet Costs Study Appendix B: Country Case Study: India, p11
from the media hype.\(^1\) Moreover the ability to be flexible to environment is crucial for small firms in the information age. Introducing some of the new challenges created by the internet, Hsieh and Lin\(^2\) warn that the ability to change is even more critical when a firm has an on-line presence, since in the market space of the internet, things change much faster than in the traditional marketplace. The rapid, and somewhat unexpected, adoption of internet by businesses as a commercial medium had forced firms to experiment with new ways of marketing and doing business with existing and potential customers. Use of Internet can provide small firms with an efficient way to expose the firm and the products to a wide range of viewers.

### 4.5- Stages of e-commerce adoption by SMEs

Although the previous section shows that SMEs have adopted many types of e-commerce applications, they might be at different stages of adopting those applications in accordance with the level of complexity. Therefore, it is important to examine the state of e-commerce adoption among the SMEs. In order to study different stages of e-commerce adoption, a conceptual framework is needed. One of the earliest models with respect to the usage of ecommerce was proposed by Ho\(^3\) who has used this model to evaluate the value of the commercial websites from different parts of the world. In his study, he categorized usage of e-commerce into promotion of products and services, provision of data and information and processing of business transactions. This model was then adapted and merged with the Internet business models\(^4\) by Burgess and Cooper (1998) and developed into a graphical model of e-commerce adoption which was labelled as Internet e-commerce staged model. This model was later developed further by Lawson et al\(^5\), but without much modification to study the adoption of e-commerce by SMEs in Australia. This model was termed as Model of Internet commerce adoption (MICA) and it

---

1. [http://www.antelope.org.uk](http://www.antelope.org.uk)
basically describes the three stages of e-commerce adoption proposed by Ho in graphical form. Details of the three stages of e-commerce adoption are shown in Table 3.

**Table 4.3:** Stages of e-commerce adoption suggested by Lawson et al. (2003)

<table>
<thead>
<tr>
<th>Stages</th>
<th>Descriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Promotion</td>
<td>Promotion of products and services</td>
</tr>
<tr>
<td>Provision</td>
<td>Online enquiry, technical information, FAQ and value-added links.</td>
</tr>
<tr>
<td>Processing</td>
<td>Online sales, online ordering and payments, order status enquiry, Links warehouse and links distributors.</td>
</tr>
</tbody>
</table>

In addition, another adoption model known as the IBM model of stages and states suggested by Stone (2003) categorises e-commerce adoption into the early stage, the integrating stage and the advanced stage and these three stages again subdivided into six states as described in Table 4.4. Stone’s IBM model and MICA are similar. Beside these two models, there is yet another model which was proposed by Rao et al. It divides the stages of ecommerce development into presence, portals, transactions integrations and enterprises integrations. This model is summarised in Table 4.5.

---

### Table 4.4: Stages and states of e-commerce suggested by Stone\(^1\)

<table>
<thead>
<tr>
<th>Stages</th>
<th>States</th>
<th>Descriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early</td>
<td>Access</td>
<td>Uses the web for email and support a simple web page.</td>
</tr>
<tr>
<td></td>
<td>Publish</td>
<td>Maintains a multi-age web site and use it for email and communication or</td>
</tr>
<tr>
<td></td>
<td>Transact</td>
<td>publication of business information</td>
</tr>
<tr>
<td>Integrating</td>
<td>Integrate</td>
<td>Uses the web to integrated core business processes within the organization.</td>
</tr>
<tr>
<td></td>
<td>Internally</td>
<td>Uses the web to integrate business processes across enterprises</td>
</tr>
<tr>
<td></td>
<td>Integrate externally</td>
<td>Uses the web as the foundation for existing in a digital community.</td>
</tr>
<tr>
<td>Advanced</td>
<td>Adapt dynamically</td>
<td></td>
</tr>
</tbody>
</table>

### Table 4.5: Stages of e-commerce suggested by Rao et al\(^2\)

<table>
<thead>
<tr>
<th>Stages</th>
<th>Descriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presence</td>
<td>- Use web site to display information on products and services</td>
</tr>
<tr>
<td></td>
<td>- One way communication</td>
</tr>
<tr>
<td></td>
<td>- No integration with internal and external processes</td>
</tr>
<tr>
<td>Portals</td>
<td>- Uses website for two-way communication with suppliers and customers</td>
</tr>
<tr>
<td></td>
<td>- Provide services such as ordering, product feedback, product survey and</td>
</tr>
<tr>
<td></td>
<td>customizations but without financial transactions</td>
</tr>
<tr>
<td>Transactions</td>
<td>- Online financial transactions and order fulfillments</td>
</tr>
<tr>
<td>integration</td>
<td>- Low level collaborations and e-marketplaces</td>
</tr>
<tr>
<td>Enterprises</td>
<td>- Complete B2B and B2C integrations across value chains</td>
</tr>
<tr>
<td>integration</td>
<td>- Implementation of CRM and SCM and full collaborations</td>
</tr>
</tbody>
</table>


4.6- Types of e-commerce applications in SMEs

According to Daniel et al.\(^1\), not many researches have been conducted to explore the adoption of e-commerce by SMEs compared to studies on larger organizations in the same area. However, based on the handful of previous studies on adoption of e-commerce applications by SMEs as summed up by Daniel et al., usage of e-commerce could be categorized into the following areas: communication, researching for information, marketing, business with suppliers and business with customers. On the other hand, Martin and Matlay\(^2\) found that the main applications of e-commerce are related to marketing activities. It is suggested that common e-commerce applications such as email and websites could be employed as cost-effective marketing tools in terms of information dissemination, advertising, customers support and servicing as well as brand building\(^3\). Further, Tetteh and Burn\(^4\) suggested that SMEs could employ Internet infrastructure to develop a virtual community or rather a virtual marketplace that could encourage interaction between manufacturers, service providers, suppliers and customers through exchange of information via websites. Website usage can be categorized into commerce, promotion, content, corporate information and search agents\(^5\). According to Michalak and Jones\(^6\), the main product of online commerce is information. Other e-commerce applications are online transactions, which includes internet-based order processing and fulfillment\(^7\) and supply chain management, which includes e-procurement and the use of EDI\(^8\). Research by Hoffman, Novak and Chatterjee found that the basic usage by commercial websites is in the area of marketing.

---

communication. Study by Sulaiman in the Malaysian context suggested that e-commerce applications could be categorized as electronic marketing, electronic advertising, customer support services, ordering and delivery and online payment. Based on the above studies, the usage of e-commerce could be summarized as:

(a) Marketing communication such as using email and websites to advertise products and services as well as other information
(b) Online transactions which include order processing and fulfilment as well as payment facilitation
(c) Relationship management which includes customer support and service such as providing web-based FAQ and auto-feedback
(d) Supply chain management such as online procurement, which includes the use of EDI.

Although there are many possible uses of e-commerce, empirical studies showed that most SMEs have not fully adopted e-commerce applications. According to a research conducted by Poon et al., small businesses normally use Internet as a communication tool and the most popular Internet-based communication tool is email. However, even e-mail usage by SMEs was still very much lower than the usage of conventional communication tools. A study by Chapman et al., found that the usage of Internet tools such as email by small and medium enterprises was lagging behind the larger firms. The reasons that SMEs lagged behind in e-commerce usage could be because they have less resources and expertise in implementing e-commerce applications.

Besides, most companies surveyed by Poon et al. did not implement advanced e-commerce applications such as online order processing, electronic payments and so on.

Instead, empirical evidences showed that many firms have adopted basic web applications.

For example, according to a study by Kardaras et al. in Greece, a large number of organizations were using Internet to provide information about products and services such as prices, availability and new features. A survey study by Poon et al. found that many firms use e-mail as

---

a communication tool because it could enable asynchronous and multimedia communication, and it is more cost effective. In fact, most SMEs surveyed by Poon et al.\textsuperscript{1} were using the Internet for communication. Mackay et al.\textsuperscript{1} in an empirical research in British Columbia found that the majority of the SMEs use websites to share information with suppliers as well as clients but only a handful of SMEs have adopted advanced e-commerce usage such as online retailing and information sharing with their staff. This report is supported by a separate study by Haynes et al.\textsuperscript{2} where it was discovered that Internet usage by most of the companies is still relatively low. Besides, a survey by Mackay et al. also shows that online transactions are rarely used by SMEs. From the above findings, the most commonly used Internet applications were found to be e-mail and websites. On the other hand, there was evidence that most businesses especially the SMEs are not keen to use Internet to access their suppliers, contrary to the opinions of many researchers who believe that Internet could offer a cost-effective supply chain management.

In addition, many other studies also showed that many firms have not made full use of advanced Internet-based technologies such as relationship marketing to gain competitive advantage. For example, La and Kandampully\textsuperscript{3} pointed out that many websites are slow to response or do not even response to inquiries from users. The discrepancies between suggested usage and actual usage might be due to certain factors, which could influence the extent of usage of e-commerce by SMEs.

4.7- Barriers E-commerce applications in SMEs

Research works investigating the barriers that affect SMEs application of e-commerce have identified a variety of factors which can be grouped into several categories. A number of authors (for example, (Panagariya,\textsuperscript{4}) identify factors relating to three major categories:

\begin{itemize}
  \item owner/manager characteristics,
  \item firm characteristics,
\end{itemize}

\begin{flushleft}
\end{flushleft}
• Costs and return on investment

The owner/managers play an important role in decision making in SMEs. Hence it can be concluded that a number of factors that affect the adoption of e-commerce relate to owner/manager characteristics. Iacovou et al.\(^1\) found that the owner’s lack of awareness of the technology and perceived benefits is a major barrier to a take up of e-commerce. The lack of knowledge on how to use the technology and the low computer literacy are other contributory factors for not adopting e-commerce\(^2\). Mistrust of the IT industry and lack of time are two other factors that affect the decision to adopt e-commerce. SME owners are concerned about a return on their investments, reluctant to make substantial investments particularly when short-term returns are not guaranteed\(^3\).

There are some other factors related to the characteristics of the organization, which affect application of e-commerce. Iacovou et al found that the current level of technology usage within the organization affects the process of adoption. In another study by the OECD\(^4\) it was identified that: lack of awareness; uncertainty about the benefits of electronic commerce; concerns about lack of human resources and skills; set-up costs and pricing issues; and, concerns about security as the most significant barriers to e-commerce for SMEs in OECD countries. Low use of e-commerce by customers and suppliers, concerns about security, concerns about legal and liability aspects, high costs of development and computer and networking technologies for e-commerce, limited knowledge of e-commerce models and methodologies, and unconvincing benefits to the company are among some factors found in another study\(^5\). SMEs definitely have limited resources (financial, time, personnel). This “resource poverty” has an effect on the application of

---

e-commerce, as they cannot afford to experiment with technologies and make expensive mistakes.

### 4.7.1- Barriers to e-commerce applications in developing Countries

It is revealed that less attention with SME e-commerce research has been paid to developing countries with different economic, political, and cultural circumstances. Identifying the differences is an initial step to understanding the process of technology adoption. This is particularly important if governments believe that electronic commerce can foster economic development.

SME studies of electronic commerce issues in developed countries indicate that issues faced by SMEs in developed countries can be totally different from those experienced by SMEs in developing countries. Organizations adopting ICT and e-commerce in developing countries face a number of challenges that are specific to them and are more pronounced than would be the case in developed countries. Some of these are the lack of telecommunications infrastructure, lack of qualified staff to develop and support e-commerce sites, lack of skills among consumers needed in order to use the Internet, lack of timely and reliable systems for the delivery of physical goods, low bank account and credit card penetration, low income, and low computer and Internet penetration (Anigan, Bingi, Marshall).

Lack of telecommunications infrastructure includes poor Internet connectivity, lack of fixed telephone lines for end user dial-up access, and the underdeveloped state of Internet Service Providers. Cultural barriers in some countries may also exist to deter the acceptance of e-commerce as a way of doing business. In countries like Sri Lanka and India, shopping is a social activity and personal face-to-face contacts with sellers are an important part of the shopping experience. Distrust of what businesses do with personal and credit card information is an ecommerce issue in any country, but in countries where there may be good justification for such distrust, it could become a serious obstacle to e-commerce growth.

---

Lack of developed legal and regulatory systems also would inhibit the development of e-commerce in developing countries.

Cloete et al.,\(^1\) in their study of SME adoption of e-commerce in South Africa found that adoption is heavily influenced by factors within the organization. Lack of access to computers, software, other hardware, and telecommunications at a reasonable cost; low e-commerce use by competitors and supply chain partners; concerns with security and legal issues; low knowledge level of management and employees; and unclear benefits from e-commerce were found to be the major factors that inhibit adoption. Another study of e-commerce in China found that there are many significant barriers to e-commerce adoption. Limited diffusion of computers, high cost of Internet access, and a lack of online payment processes were found to directly inhibit e-commerce. Inadequate transportation and delivery networks, limited availability of banking services, and uncertain taxation rules indirectly inhibit e-commerce\(^2\). El-Nawawy et al.\(^3\) in their study of e-commerce adoption by SMEs in Egypt found that the main factors contributing to the non-adoption of electronic commerce in Egypt are awareness and education, market size, e-commerce infrastructure, telecommunications infrastructure, financial infrastructure, the legal system, the government’s role, pricing structures, and social and psychological factors.

Schmid et al suggest that the main e-commerce issues facing SMEs in Argentina are awareness, access to hardware, infrastructure, organizational culture, financial issues. A comparison of the two studies in Argentina and Egypt, (both developing countries) suggests that the key factors of electronic commerce adoption in developing countries are: awareness, telecommunication infrastructure, and cost. It also suggests that SMEs in developing countries share similar issues. The Internet and e-commerce issues of SMEs in Samoa are consistent with the studies conducted in other developing countries\(^4\). In a study of Sri Lankan SME capability to adopt e-commerce conducted by the Sri Lankan Business Development Centre in 2002 identified the key factors inhibiting the adoption of e-commerce by SMEs as lack of knowledge and awareness about the

---

benefits of electronic commerce, current unprepared-ness on the part of the SMEs to adopt e-commerce as a serious business concept, lack of exposure to IT products and services, language barriers and lack of staff with IT capability, Web-based selling was not seen as practical as there was in developing countries face a number of challenges that are specific to them and are more pronounced than would be the case in developed countries. Some of these are the lack of telecommunications infrastructure, lack of qualified staff to develop and support e-commerce sites, lack of skills among consumers needed in order to use the Internet, lack of timely and reliable systems for the delivery of physical goods, low bank account and credit card penetration, low income, and low computer and Internet penetration Lack of telecommunications infrastructure includes poor Internet connectivity, lack of fixed telephone lines for end user dial-up access, and the underdeveloped state of Internet Service Providers. Cultural barriers in some countries may also exist to deter the acceptance of e-commerce as a way of doing business.\(^1\)

In countries like Sri Lanka and India, shopping is a social activity and a personal face-to-face contact with sellers is an important part of the shopping experience. Distrust of what businesses do with personal and credit card information is an ecommerce issue in any country, but in countries where there may be good justification for such distrust, it could become a serious obstacle to e-commerce growth\(^2\) Lack of developed legal and regulatory systems also would inhibit the development of e-commerce in developing countries.

Cloete et al.\(^3\) in their study of SME adoption of e-commerce in South Africa found that adoption is heavily influenced by factors within the organization. Lack of access to computers, software, other hardware, and telecommunications at a reasonable cost; low e-commerce use by competitors and supply chain partners; concerns with security and legal issues; low knowledge level of management and employees; and unclear benefits from e-commerce were found to be the major factors that inhibit adoption. Another study of e-commerce in China found that there are many significant barriers to e-commerce adoption. Limited diffusion of computers, high cost of Internet access, and a lack of online payment processes were

---

found to directly inhibit e-commerce. Inadequate transportation and delivery networks, limited availability of banking services, and uncertain taxation rules indirectly inhibit e-commerce.¹

El-Nawawy and Ismail in their study of e-commerce adoption by SMEs in Egypt found that the main factors contributing to the non-adoption of electronic commerce in Egypt are awareness and education, market size, e-commerce infrastructure, telecommunications infrastructure, financial infrastructure, the legal system, the government’s role, pricing structures, and social and psychological factors. Schmid et al. suggest that the main e-commerce issues facing SMEs in Argentina are awareness, access to hardware, infrastructure, organizational culture, financial issues. A comparison of the two studies in Argentina and Egypt, (both developing countries) suggests that the key factors of electronic commerce adoption in developing countries are: awareness, telecommunication infrastructure, and cost. It also suggests that SMEs in developing countries share similar issues. The Internet and e-commerce issues of SMEs in Samoa are consistent with the studies conducted in other developing countries². In a study of Sri Lankan SME capability to adopt e-commerce conducted by the Sri Lankan Business Development Centre in 2002 identified the key factors inhibiting the adoption of e-commerce by SMEs as lack of knowledge and awareness about the benefits of electronic commerce, current unprepared-ness on the part of the SMEs to adopt e-commerce as a serious business concept, lack of exposure to IT products and services, language barriers and lack of staff with IT capability, Web-based selling was not seen as practical as there was limited use of Internet banking and web portals, as well as inadequate telecommunications infrastructure.³

The above literature reviews of SME barriers for e-commerce adoption reveal that there are many significant factors, which affect the adoption of e-commerce technologies. These factors can be grouped to develop a framework for investigations. This paper applies the following framework for this purpose. The barriers for SMEs in adopting ecommerce can be broadly categorized into Internal and External Barriers as follows.

4.7.1.1- Internal Barriers

3 : SLBDC, (2002), Survey on E-Commerce Implementation in the SME Sector of Sri Lanka Conducted by the SLBDC for the Asia Foundation
A SME has control over and the ability to change the internal factors within the organization. For example, lack of time or resources, and lack of awareness on the part of the owner/manager. Internal Barriers could be further categorized into Individual (owner/manager), Organizational barriers and cost and return on investment\(^1\)

**4.7.1.2- External Barriers**

Barriers that cannot be resolved by the SME, They have no control over these, and are compelled work within the constraints, for example inadequate telecommunication infrastructure. Some of the barriers could be addressed by the SMEs working together, and can get together irrespective of the industry sector to form clusters to share expenses, resources and facilities, Alternatively, SMEs from the same industry sector can work together to address certain other external barriers where governmental intervention may be required.

---

4.8- Advantages and Disadvantages of E-commerce applications in SMEs

The emergence of the Internet has allowed SMEs to compete effectively and efficiently in both domestic and international markets\(^1\). The invention of faster internet connectivity and powerful online tools has resulted in a new commerce arena – Ecommerce. E-commerce offered many advantages to SMEs and customers but it also caused many problems.

**Advantages** of E-commerce include:

- Faster buying/selling procedure, as well as easy to find products.
- Buying/selling 24/7.
- More reach to customers, there is no theoretical geographic limitations.
- Low operational costs and better quality of services.
- No need of physical company set-ups.
- Easy to start and manage a business.
- Customers can easily select products from different providers without moving around physically.

**Disadvantages** of E-commerce include:

- Any one, good or bad, can easily start a business. And there are many bad sites which eat up customers’ money.
- There is no guarantee of product quality.
- Mechanical failures can cause unpredictable effects on the total processes.
- As there is minimum chance of direct customer to company interactions, customer loyalty is always on a check.
- There are many hackers who look for opportunities, and thus an ecommerce site, service, payment gateways; all are always prone to attack.

---

4.8.1-Problems and benefits of E-commerce applications in SMEs

The following table shows briefly the benefits and problems receiving from electronic commerce applications in small and medium enterprises.

**Table 4.6: problems and benefits of electronic commerce**

<table>
<thead>
<tr>
<th>Benefits received from electronic commerce</th>
<th>Problems of e commerce applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduce in costs e.g. transaction, marketing</td>
<td>Slow access / downloading</td>
</tr>
<tr>
<td>Increase in Return on Investment(ROI)</td>
<td>Security breach / fraud</td>
</tr>
<tr>
<td>Improved of customer service</td>
<td>Internet connection failures</td>
</tr>
<tr>
<td>Increase accessibility to the end-users</td>
<td>Unsolicited email</td>
</tr>
<tr>
<td>Increase responses from end-users</td>
<td>Reliability of service</td>
</tr>
<tr>
<td>Increase the efficiency in dealing with suppliers</td>
<td>Customer difficulty in using / finding our website</td>
</tr>
<tr>
<td>Enhance company brand and corporate image</td>
<td>Difficulty using / finding websites</td>
</tr>
<tr>
<td>Increase customer loyalty and retention</td>
<td>Problems between ISP and telecoms supplier taking responsibility for service failures/problems</td>
</tr>
<tr>
<td>Improve business processes flow</td>
<td>Poor advice from user support</td>
</tr>
<tr>
<td>Increase in market share</td>
<td>Lack of user support</td>
</tr>
<tr>
<td>Increase in profit</td>
<td>High Cost of user support</td>
</tr>
<tr>
<td>Increase in productivity</td>
<td>Running and maintenance more costly than expected</td>
</tr>
</tbody>
</table>
4.9- Growth of E-Commerce in India

As per the Industry Association (NASSCOM) Strategic Review 2007 the Indian IT Industry is on course to achieve an exports target of $60 billion by 2010. The key findings of study are:

- Software and Services (IT-BPO) exports to exceed $31 billion in financial year (FY) 2006-07, a 32.6 percent growth;
- Employment in sector to exceed 1.6 million up from 1.28 million last year;
- Domestic IT market broke out of the hardware linked growth pattern for the first time ever in FY ’06 and the trend of software and services gaining share is expected to continue; total rise expected to cross $15.9 billion in FY 2006-07, a 21 percent growth;
- MNC investments reach an unprecedented scale; over $10 billion announced in FY 2006-07, to be invested over the next few years;
- Indian Service Providers have grown their share of contracts of values in excess of $50 million dollars from 1 percent in 2002 to 7 percent in 2006; and
- Offshore product development and engineering services to drive increased Internet Protocol (IP) creation.

As per another study, the internet usage has become more widespread as half of the Indian online population now comes from outside the eight largest cities. The key findings of survey are:

- E-commerce in India has reached $575 Million
- 10.8 million of the total Internet population shopped online - an increase of 76% Year-on-Year
- Online travel booking seems to be the biggest e-commerce activity. 84% of the 10.8 million shoppers have booked their travel online at least once
- The 10 most popular activities include email, Instant Messenger (IM), chatting, e-greetings, dating, news, sports, music, games
- Fastest growing online activities include social networking (one third of Internet users use social networking) and online matrimony
- 27% of Indian Internet population read blogs, 15% comment on blogs and 7% write a blog themselves
19-35 age groups comprised 76% of the users in 2006. In 2007, they account for only 67% of the total users.

21% came from an IT background in 2006. In 2007, only 17% hailed from an IT background.

59% of the users browsed in English in 2006, while 41% browse in English in 2007.

As per Department of telecommunications there are 211.7 million telephones in India as on 30th April 2007 i.e. a growth of 44.83 % over last year. In terms of teledensity it is 18.72%. The mobile sector has grown from around 10 million subscribers in 2002 to reach 150 million by early 2007. The Ministry of Communications and Information Technology is targeting 250 million telephone subscribers by end-2007 and 500 million by 2010.¹

4.10- Challenges for SMEs in India

The advances in e-commerce technology are continuing to transform personal communication and business at an astounding pace in India. Although these advances promise to bring a substantial percentage of the India’s population online in the coming years, they also present significant challenges to industry and policymakers alike. Thus in orders to create the foundation for the rapid growth of e-commerce, small and medium enterprises are adopting the effective e-commerce technology policies that embrace strong intellectual property protection and innovation that drives e-commerce technology.

Change is happening faster than ever before. Small Businesses need to work hard not just to cope with change, but to embrace it. But what are the likely challenges for the SMEs over the next few years in India?

1. Internet and E-commerce:
   ▶ Increasing use of internet and e-commerce
   ▶ The Death of Distance: proximity to customers, distance and location are no longer important;
   ▶ Ease of Access to Information: about markets and potentially about competitors will drive down prices;

¹: AFACT, (2007), E-Trade Division, Department of Commerce, Ministry of Commerce & Industry, Government of India, New Delhi, Country Progress Report India
- Lower Transaction Costs: will reduce barriers to entry and reduce the effect of economies of scale;
- Effective Distribution: will offer a competitive edge

2. Knowledge Based Economy:
Increasing growth of knowledge based economy – an economy that relies far more on intellectual capital than on physical assets

3. Demanding Customers:
Increasingly demanding customers

4. Industrialization & Competitiveness:
Increasing industrialization in developing countries and cheaper labour means that SMEs have to innovate more to stay ahead

5. Globalization:
Increasing globalization even by smaller firms

6. Harmonization:
More harmonization and integration of Europe & Asian economies

7. Skilled Manpower:
Finding staff with appropriate skills and managing them effectively.

8. Increasing Pressures for additional care on firms of all sizes - to be good corporate citizens and provide for employees, environment & community.

---

1: Bhasin, Dolly, (2009), Challenges for SMEs: Agenda for Change, SPH Consultants, creating value for SMEs concepts & strategies in Indian context