CHAPTER 3

E-COMMERCE IN CASE OF SMALL AND MEDIUM SIZED ENTERPRISES (SMEs)

3.1 Introduction

With the continuous spread of the Internet and its related applications, the adoption of information and communication technologies (ICTs) by enterprises and firms is also growing. New e-business practices are more and more integrated into existing business processes, especially those of large firms in developed countries. Firms use ICTs for internal automation, for example, of office and production processes, for customer relations and supply chain management, or for the management of distribution and logistics networks. Internet use may range from simple website presence to the complete integration of business functions.

As a result, e-business practices are increasingly becoming the subject of studies evaluating the impact of ICTs on economic growth and business performance. Unfortunately, most of the available data and studies focus on firms in developed countries, whereas little is known about the adoption of the Internet and e-business in developing country firms, particularly small and medium-sized enterprises (SMEs).

Moving from simply connecting to the Internet towards integrating ICTs in business applications is a major step for SMEs in developing countries and requires management and technical skills as well as organizational changes and investments that can often not be afforded. At the same time, the commercial benefits resulting from such changes are not always obvious to small business owners, and in some cases firms may choose to adopt ICTs as a result of external forces and the need to remain competitive rather than direct increases in productivity.

This section will focus on the adoption of ICTs by SMEs in three developing country regions (Asia, Africa and Latin America). It investigates which companies use ICTs according to sector, size, location or target markets (foreign or domestic); the costs and benefits of using ICTs from the viewpoint of SMEs; the specific circumstances faced by SMEs which may impact on ICT use, such as access, quality, costs, skills or finance; and what kind of assistance they may
need to enhance their e-business activities.

The studies carried out in some of the OECD countries revealed that the adoption of ICTs increases with size, especially the use of network technologies such as intranets, whereas most companies are connected to the Internet (Figure 3.1.1 and 3.1.2). For example, in Europe, 79% of large companies had an intranet in 2001, compared with only 25% of small companies (Eurostat, 2004). Small firms use the Internet mainly for marketing purposes and to search for information concerning potential customers, suppliers and competitors, but also for e-banking and other types of financial services (in fact, the latter activity is more common in small than large enterprises in Europe). As far as e-commerce is concerned, smaller companies are less active: in particular, they buy less online than larger firms and their shares of Internet sales (of total sales) are much smaller (OECD, 2004b). But almost one third of European SMEs that use the Internet have received online orders. Interestingly, the Eurostat survey also revealed that those SMEs that have decided to engage in e-commerce are more intensive users than their larger counterparts. International competition will drive firms to use ICTs or implement B2B e-commerce. Furthermore, use of ICTs increases over time, as firms move to more complex forms of e-business. This holds for companies of all sizes.

**Figure 3.1.1 internet use by size of enterprise, 2003**

![Graph showing internet use by size of enterprise, 2003](image)

At the same time, a Canadian study found that SMEs, while generally lagging behind in Internet uptake, have the greatest potential for productivity gains through e-business (CeBI, 2002). On the basis of a survey with around 2000 SMEs, they found that firms were able to increase revenues by 7%, and decrease costs by 9.5% (costs of goods sold) and 7.5% (sales and administrative costs). Hence, companies run the risk of missing opportunities for business growth by not adopting e-business solutions.

Results from e-business surveys of Irish SMEs revealed that the number of firms connected to the Internet has levelled off at 84% (2002), a 3% increase only over the figure for 2001 (Chambers of Commerce of Ireland, 2002). However, an increasing number of SMEs have their own websites (55%, an increase of 9% over 2001) and are using the Internet for online ordering (46% of SMEs) and e-banking (55%, or 21% more than in 2001). Thirty-three% of SMEs had an intranet and 17% an extranet; computer networking or the presence of local area networks (LANs) was more predominant in larger (i.e. medium-sized) firms (94% compared with 65% of small firms). Most common e-business applications were sourcing information and e-mailing with suppliers and customers. The surveys also showed that cost related to specialized technical skills was a major obstacle to the adoption of e-business. This was followed by security concerns with respect to providing confidential information (an increasing concern), cost of hardware, lack of broadband services in the country, and legal and regulatory uncertainties. The large majority of SMEs planned to increase their e-business investments over the next three years, with higher values for medium-sized compared with small firms.
3.2 E-business surveys in developing Asia

Asian countries/territories figure prominently in the e-readiness rankings of the Economist Intelligence Unit (EIU) and the *Global Information Technology Report* (GITR). Singapore (seventh) and Hong Kong SAR (ninth) are in the EIU top ten, while Singapore is also the second country after the United States in the Networked Readiness Index (NRI) ranking of the *GITR 2003-2004*. Other countries/territories high in both rankings are Japan, Taiwan, the Republic of Korea, Australia and New Zealand.

The surveys provide a useful overview of Internet uptake by SMEs in the four countries and find certain commonalities that can be applied to all of them. The studies revealed three types of SMEs: (i) Internet users, (ii) prospective Internet users, and (iii) traditional companies, namely those that have no intention of using the Internet in the future.

*Internet users* were found to be further advanced in areas such as production management and capacity, capital accumulation, accounting, marketing or English-language skills. The owners of these companies had advanced degrees or long-term experience in their industries; in fact, a strong link could be identified between the level of education and experience of the business owner/manager and the effectiveness of the company's Internet use.

Companies that were *prospective Internet users* were working to improve their management standards, but were still struggling with internal challenges such as credit issues, financial management or obtaining short-term loans. However, they were aware of the importance of marketing and reaching out to customers.

*Traditional companies* (non-users) had a passive approach to doing business in general. Their main focus was on production, and not on market outreach. Non-users were characterized by a lack of awareness about the potential of ICTs and a management indifference to technological progress.

The surveys also revealed a certain pattern of Internet use among SMEs: they usually start with e-mail before moving to setting up a website and using the Internet for research and IT development. E-mail was by far the most commonly used Internet application of SMEs, which used it for interacting with customers, followed by business-related research on the Internet. Websites are used to promote products rather than to carry out online transactions (or
e-commerce). B2B e-commerce was almost non-existent, particularly at the domestic level. Exporters of both goods and services (e.g. the tourism industry) used the Internet much more than those selling to the domestic market. Country-specific evidence is presented in box 3.2.1.

The studies found that profitability is crucial to the willingness of SMEs to go online. If companies experience a positive impact on their business, for example an increase in the number of customers, they are willing to invest in hardware and connectivity. In other words, the readiness of SMEs to invest in ICTs is not necessarily determined by cost.

SMEs located outside major cities are clearly disadvantaged in terms of Internet access. The rural–urban digital divide materializes in terms of higher connection fees, insufficient number of lines, and slow and unreliable connectivity. For example, in Thailand the main criterion for choosing an Internet service provider (ISP) was the connection speed.

**Box 3.2.1**

In Thailand, half of the companies surveyed had websites, in particular those active in the tourism sector. Around 40% of these had online ordering applications, and 13% per cent were members of e-portals.

In the Philippines, while nearly all SMEs consider the Internet and e-commerce important, exporters were more inclined to use ICTs, and the use of e-commerce was still very basic. The Internet was mainly used for communication and research and for maintaining business relationships through e-mail. Business deals were often closed in a face-to-face interaction, not online.

In Indonesia, the tourism sector is a very active user of the Internet. For example, in Bali, online orders for small items are quite common. SMEs use the Internet to offer a wide range of products and services, including online ordering, payment processing, and online delivery services. For example, a tourism company in Bali sells tours and packages online—its website is highly secure and users can easily book tours and pay online. The company also uses the Internet to promote its products and services to potential customers.

The studies also revealed that e-payments were rare, and even for sales generated online most payments were made by bank transfer. Less than 30% of SMEs with websites accepted online payments. An exception was in Sri Lanka, where 60% of SMEs with websites were equipped for online transactions via credit cards. The main reasons for the low use of e-payments were security concerns in relation to Internet banking, fear of credit card fraud and fear that products would not be delivered or would be substandard.
The four country studies draw a number of noteworthy policy conclusions (further addressed in section E). Since neither cost nor technical ability was found to be the main barrier preventing the SMEs surveyed from going online, credit and training were not the most important policy considerations to put in place and would not necessarily accelerate the adoption of ICTs by SMEs. The authors, thus, did not recommend subsidizing the adoption of ICTs by SMEs. Rather, they suggested that governments concentrate on the necessary regulatory and legal changes, such as e-commerce legislation (online contracts, fraud), banking laws to ensure that credit card and foreign currency transactions are affordable and enforceable, and deregulation in the telecommunications industry to lower costs and increase access outside major cities.

In another study, on the adoption of e-business by SMEs in three manufacturing sectors (garments, automobile components and electronic goods) in India, the authors found that the use of advanced e-business tools is greater in the electronic goods and garment sectors than in manufacturing (Lal, 2004). The study also revealed a strong correlation between the level of academic qualification (higher education) of the company manager and the intensity of ICT use by the firms; between the skill intensity of employees and ICT use; and between the size of the firm and the adoption of e-business. On the other hand, capital intensity (measured as capital employed per capita) did not seem to impact on the use of ICTs. The author also found a positive relationship between profitability and the level of intensity of ICT tools, with firms using more advanced e-business tools having achieved higher profitability, in particular in the electronic goods sector. This corresponds to findings from studies in more advanced countries with regard to the impact of ICTs on productivity.
3.3 Surveys and case studies from Africa

Africa remains the least connected continent in the world both in terms of the total bandwidth feeding the entire continent and from an Internet penetration perspective. However, Internet uptake has increased from less than 500,000 users in 1995 to around 33 million in early 2006.

The EIU cites high costs and inadequate coverage of high-speed connections, partly owing to the lack of market competition. Nonetheless, South Africa has developed a competitive advantage in business service processing, and the Government spends over USD1.2 bn annually on its own IT infrastructure, much of it supporting e-government interfaces. Elsewhere in the region, the national telecommunication company in Algeria is investing in next-generation mobile systems supplied by Chinese vendors. However, the rate of Internet penetration in Algeria is at 16 users per 1,000 people, owing to poor telecommunications infrastructure and high costs, and this poses difficulties for the development of e-commerce.

The UNECA SCAN-ICT project has carried out a number of country studies (Ethiopia, Ghana, Morocco, Mozambique, Senegal, Uganda) to assess the penetration of ICTs among businesses. In the case of Ghana (INIIT, 2002), 81% of firms surveyed had Internet access, 35% had Web presence and 16% were engaged in e-commerce. In other countries, SCAN ICT has obtained different insights related to ICT use by businesses. For example, lack of an e-commerce regulatory framework and adequate infrastructure was identified in Mozambique as an impediment in the development of e-business in the country. In Ethiopia, a closed market (government monopoly) posed obstacles to the development of ICT infrastructure and services, and there was a lack of awareness of the wider business applications of ICT (computers are viewed mainly as office tools). Nonetheless, Internet subscribers have increased in Ethiopia (over 6,000 subscribers in 2002, with 96% in Addis Ababa and the rest in 11 other towns), and there were 2.5 subscribers per 1,000 people in the capital versus 0.24 in other towns. From 2001 to 2002, the number of local websites increased from 68 to 88. Information on other SCAN-ICT countries is given below.

In 2001, a survey was carried out in Senegal with medium-size and large industrial enterprises (UNRISD, 2002). Even though the survey did not include small enterprises, it is worth noting that the use of the Internet was very limited among the enterprises (hence it is likely to have been even lower among small firms). While almost all of the firms (92%) were connected to the Internet, in most cases only the head of the enterprise had access. The most common use of the Internet was for e-mail, and a small number of firms had their own website. E-mail was
used to communicate primarily with suppliers, followed by internal company exchanges and customers. E-commerce and e-business were practically non-existent. By way of explaining why the Internet was not used very much, companies mentioned that the “profitability” or commercial usefulness and immediate returns on the investment in ICTs were not clear, or that surfing the Web wasted time. Another reason was that their partners, such as customers and suppliers, the Government, banks and insurance companies, were not using the Internet (yet) and therefore were not able to interact with them online. Given the poor telecommunications infrastructure in most of the countries of the Economic Community of West African States (ECOWAS), no commercial ties have been created through the Internet with partners at the regional level. Furthermore, concerns related to Internet security (virus transmissions, malfunctioning, privacy of information) prevented them from adopting the new technologies. Finally, the overall lack of local, “Senegalese” content useful for entrepreneurs (including business information, legal and regulatory documents, and administrative forms) was noted as a major reason for not using the Internet more frequently. At the same time, business owners felt that, in particular, online government could significantly contribute to reducing costs in terms of both time and transport.

Nevertheless, the use of the Internet has increased rapidly among medium-sized and large Senegalese firms, from 13% in 1996 to 92% in 2001. It is therefore assumed that the overall trend will be an increased adoption of ICTs, in particular website use, followed by more complex e-business applications.

The Government of Egypt, together with the InfoDev programme of the World Bank, carried out a study on the role of ICTs in developing SMEs in Egypt, focusing on the apparel and home-textiles sector (MCIT/InfoDev, 2003). In 2003, they surveyed approximately 70% of all exporting firms in the sector, contributing to 95% of the export volume. They found a clear relationship between the size of companies and their e-readiness and use. Small firms (here defined as employing between 30 and 200 workers) were largely managed by the owner, who was often unaware of the different technologies and too busy with daily operations. At the same time, almost 100% of small companies are connected to the Internet and use e-mail (i.e. this figure is similar to the one for medium-sized and large enterprises). The Internet is largely used for external communication with suppliers and customers via e-mail, and to a lesser extent for research and marketing. E-commerce was found to be of less importance to the development of their sales and marketing. Companies reported that lack of qualified personnel was the main barrier to further development of ICTs, but were reluctant to invest in
staff training since they might not be able to retain these investments. Other reasons included the perception that there was no need to use ICTs and that many of the smaller operations could be carried out efficiently offline.

In 2002, the Moroccan Government conducted a large e-business survey of more than 4,000 firms in the industrial sector (food, textiles, chemicals, mechanical engineering, electronics) as a follow-up to a similar survey conducted in 1999.\(^3\) They found that all firms have personal computers (PCs) with an average of 8 PCs per company (as against six in 1999); 42% of firms were connected to the Internet (compared with 20% in 1999); 11% had a website (5% in 1999); and 7% had an intranet (question not asked in 1999). The Internet was primarily used for e-mailing and information search, followed by file transfer and the search for suppliers and customers.

The company websites were primarily used for dissemination of business information, followed by online orders. More than half the companies use third-party providers to host their websites. As far as e-commerce is concerned, 8% of firms reported that they engaged in e-commerce (online ordering). It is important to note that this is the same as in 1999, and hence no increase in online transactions had occurred. Among the sectors, the most active ICT users were firms in the electronics and textiles/leather sectors, but the largest increase in Internet connections and website presence was among the food and mechanical sectors. The main perceived barrier to using ICTs was the cost of hardware and software and of ICT services, followed by the lack of IT skills and awareness.

The survey also revealed a clear correlation between the use of ICT and the size of the company with respect to the number of firms connected to the Internet or having websites or intranets. However, while the difference between small and medium-sized companies was less significant, major differences exist between SMEs and large companies. Although the survey was very comprehensive in its design, it did not include any questions concerning the use of ICTs for specific business processes, such as human resource management, customer relationship management or value chain management. Hence, no information is available on the use by firms of ICTs for internal business functions or integration with the systems of suppliers and customers.

In 2002, a survey of firms in the auto-components, food and beverage, electronic goods and engineering manufacturing sectors was conducted in Uganda and Nigeria (Oyelaran-
Oyeyinka and Lal, 2004). The objective was to identify factors that influenced the adoption of e-business by SMEs, including microenterprises. The authors found that, overall, the level of adoption of e-business was higher in the high-skill sectors of electrical and electronic goods than in the more labour-intensive sectors of auto-components and food and beverages.

In the case of Uganda, only a few firms (3 out of 84 surveyed) were at an advanced level of e-business adoption. Most used the Internet for e-mailing, and little e-business in production processes or supply chain management was present. The authors concluded that in these cases e-business adoption was mainly driven by vendors, rather than by a change in the firms’ business strategies. Firms engaged in trading (such as in the food and beverage sector) were greater users of e-business than those in manufacturing, mainly for coordinating their activities with customers and suppliers.

The Nigerian survey covered 105 SMEs and microenterprises (fewer than 10 employees) in the engineering sector. More than one third of the firms did not use any ICTs at all, primarily those whose managers had low academic qualifications. Those firms that adopted higher levels of e-business were all run by managers with an engineering background, and had more skilled employees (engineers and graduate degree holders) in the workforce. In other words, limited skill levels in SMEs were a key factor for low ICT use.

Beyond the SCAN-ICT studies, Humphrey et al. (2004), in an e-commerce study carried out in 2002 with 47 SMEs from the garment sector in Bangladesh, Kenya and South Africa, found that while all of them had connections to the Internet, very few were conducting B2B e-commerce. About a third of the firms, mainly those in South Africa, had an intranet, and it was used for sharing databases and documents. Only 20% of companies had used the Internet for buying and selling. This included e-mail orders, and therefore comparisons with other studies (not including e-mail orders/purchases) are limited. Similarly, looking at 27 SMEs in the horticulture sector in Kenya and South Africa, the authors found that while all of them used the Internet, only 19% had their own website (13% in Kenya and 25% in South Africa) and only 7% had an intranet. The companies used e-mail primarily to maintain their customer relationships. For example, Kenyan horticulture exporters sent daily e-mail attachments informing their importers in the United Kingdom about their planting schedules, output projections and delivery details. Producers from South Africa sent digital images to their importers showing the quality of their products. About 30% of the companies surveyed had used the Internet for selling or purchasing goods or services, including via e-mail.
The International Trade Centre (ITC, 2004), as part of its e-Trade Bridge Programme, has evaluated a number of SMEs with regard to their use of ICTs and its impact. They found that, for example, in South Africa a company building model ships used the Web and e-mail effectively in order to enhance management capabilities in production and marketing and thus tap international markets. The adoption of ICTs successfully turned a small business into a global business employing a staff of 40 and with a turnover of USD600,000 a year. Similarly, the Internet enabled a trade logistics provider in Tanzania to streamline and speed up business procedures concerning customs, tracking and handling, thus reducing costs and increasing productivity.

The results of the surveys and studies from developing Asia and Africa reviewed in this section show that, generally speaking, the number of SMEs connected to the Internet is quite high (even in African countries) but the adoption of e-business practices is quite low. Internet access is often limited to the company owner or manager, and its main use is e-mailing and information search. While website presence and online ordering/selling are growing, this growth is relatively slow. Despite the fact that several studies have demonstrated the correlation between ICT adoption and firm profitability/productivity, one of the major reasons for not using the Internet (from the viewpoint of the company owner) is the limited impact on business profitability, often coupled with the argument that few suppliers and customers are online. Other constraints relate to cyber security, and lack of local content and the necessary legal environment (e-commerce, online payments etc.).

Few of the surveys presented above focused in detail on the use of ICTs in specific business functions (e.g. CRM, distribution and logistics). As mentioned at the beginning of the chapter, studying e-business is a rather recent phenomenon and even in OECD country surveys, e-business questions are only now being incorporated. The following section presents the result of an e-business survey conducted by UNCTAD in Latin America, which included several questions related to ICT adoption in business processes.
3.4 The case of Latin America: E-business survey results

Table 3.4.1 Latin American SME survey sample

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<thead>
<tr>
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<th>Manufacturing</th>
<th>Services</th>
<th>Wholesale and retail trade</th>
<th>Total</th>
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<tbody>
<tr>
<td>Small enterprises</td>
<td>87</td>
<td>85</td>
<td>87</td>
<td>259</td>
</tr>
<tr>
<td>Medium enterprises</td>
<td>64</td>
<td>67</td>
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<td>195</td>
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<tr>
<td>Total</td>
<td>151</td>
<td>152</td>
<td>151</td>
<td>454</td>
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1. Availability of ICTs (PCs, Internet, websites)

It was found that 97% of the SMEs surveyed used PCs, 94% used the Internet and 92% used e-mail [Figure 3.4.1]. Interestingly, none of the companies used the Internet in public locations such as Internet cafes, and only a very small number used it at home. This shows that the Internet is easily available to SMEs in urban areas in the countries surveyed and that there is no need for the communal access points (for companies), as is often the case in rural areas. Furthermore, about half the companies had intranets, but only 14% had extranets. While PC, Internet and e-mail use was fairly similar among the five countries, intranet and extranet use was much higher in Chile and Venezuela than in Mexico and Costa Rica.

No major differences between small and medium companies were observed in regard to PC, Internet and e-mail use (although a somewhat higher number of medium-sized companies were using e-mail). On the other hand, 52% of medium-sized companies used intranets as compared with 35% of small companies, while 15% used extranets as compared with 12% of small companies [Figure 3.4.2].

Figure 3.4.1: ICT use by SMEs, by country

As far as the different sectors are concerned, again, there are no major differences with regard to use of PCs, Internet and e-mail. But intranets were most common in services (53% of all service companies), followed by the wholesale and retail trade (38%) and manufacturing (37%). Extranets were also most common in service companies, followed by manufacturing and trade.

The results show that the availability of PCs, Internet and ICT is high among companies in urban locations, with no major differences between small and medium-sized companies in terms of basic Internet access and use (such as e-mail).

The most common type of Internet connection was fixed connections over 2 Mbps and analog modem (32% of all SMEs for each type), followed by fixed connections under 2 Mbps (16%) and ISDN (13%) [Figure 3.4.3]. Here, significant differences exist among the countries. For example, in Venezuela and Chile, fixed connections over 2 Mbps were the most common, while modem use was very low. In Mexico, fixed connections under 2 Mbps were the most common, in Costa Rica modem connections, and in Colombia ISDN [Figure 3.4.4]. Small enterprises were mainly using modem connections (40%), whereas among medium-sized enterprises fixed connections over 2 Mbps were the most common (37%). No major differences existed according to the activities of the enterprises.
2. **E-business**

The module on e-business was the most complex, comprising a range of questions about how the companies use ICTs (e-mail, customer care, internal management etc.) and to what extent. Among all companies, e-mail was the most common use of the Internet (98%), followed by searching for information (90%), banking and financial services (80%), monitoring the market (54%), communicating with public authorities (53%) and looking for information concerning employment opportunities (27%) [Figure 3.4.5]. With regard to differences among
countries, as far as e-mailing and information search are concerned, values were similarly high. But in Venezuela, 95% of firms used the Internet for financial services, compared with only 48% in Mexico. Furthermore, Internet use for communicating with the Government was 77% and 73% in Colombia and Venezuela respectively, compared with 16% in Mexico [Figure 3.4.6]. Service sector companies were more active users of the Internet, having above-average figures for all Internet activities, in particular as regards interaction with public authorities and monitoring the market.

**Figure 3.4.5: SMEs’ use of Internet, by sector**

![Graph showing SMEs' use of Internet by sector](image)


**Figure 3.4.6: SMEs’ use of Internet, by country**

(Percentages)

![Graph showing SMEs' use of Internet by country](image)

More than half of the companies had their own website and 22% were considering creating one within the next two years. Those with websites mainly used them for customers to directly send enquiries to the company, for making available product information and for providing after-sales support [Figure 3.4.7]. Only 12% of the companies offered secure online transactions or online payments via their websites, and only 9% featured back-end integration with suppliers/customers through their sites. The latter figure was particularly low among manufacturing firms. Again, services companies were the most active users of their website. One fourth of services companies with a website offered digital products through their sites.

**Figure 3.4.7: Website functionalities by sector**

![Website functionalities by sector](image)


No major differences were found among the countries with respect to the number of companies with websites or with those planning to set up one in the next two years, except Mexico, where figures were lower in terms of companies with a website and higher for companies planning to create one in the near future. More medium-sized than small companies had websites, and more companies in the services sector compared with trade and manufacturing. While no major differences were observed with regard to size, small firms tended to use websites more for showcasing their products, whereas medium-sized firms largely use them for client contact.

As far as e-commerce – or the online ordering and selling of products – is concerned, purchases are much higher than sales (this is the case globally), with 38% of all firms having purchased online during 2003 (two thirds from third-party websites, one third in e-marketplaces), compared with 13% which had sold products over the Internet [Figures 3.4.8...
and 3.4.9]. In some countries, firms were more engaged in online buying and selling, for example Costa Rica (59%) and Chile (54%), compared with Colombia (27%) and Mexico (16%) [Figure 3.4.10]. Asked about the amount of purchases made online, most firms either did not know the answer or provided figures ranging from 1 to 90% of total purchases.

**Figure 3.4.8: Online transactions by sector (Percentages)**


**Figure 3.4.9: Internet transactions by sector (of total transactions)**

Interestingly, there was no major difference with regard to firm size; the percentages of small firms buying and selling online were slightly higher than those of medium-sized firms. But small firms used e-markets (rather than their own sites) more than medium-sized ones [Figure 3.4.11]. There are some interesting differences among the countries: as far as online purchases are concerned, firms in Costa Rica have mainly used e-marketplaces, whereas most of the firms in the other countries bought directly through other companies’ websites. Similarly, Costa Rican firms made most of their online sales through either e-marketplaces or third-party websites, whereas, for example, firms from Chile and Colombia made all of their online sales through their own websites [Figure 3.4.12].
The companies were also asked about the amount of online sales and purchases. However, this was difficult to answer for most of them and therefore the results are not conclusive. Similarly, most companies were unable to provide information on the percentage of clients and suppliers found through the Internet. This confirms findings from surveys carried out in other regions, such as the European Union.

Using ICTs for internal business functions is becoming part of the business strategy of many enterprises in advanced countries and the questionnaire therefore included questions concerning the use of computer networks for automating certain business tasks and for integration of systems with other companies. Among the SMEs surveyed, 48% reported using an intranet, and 14% use extranets. All of the firms that reported having an extranet also reported having an intranet, with higher percentages among medium-sized companies and those in services. Intranet and extranet use was more common in firms in Chile and Venezuela (59% and 55% respectively of firms with intranets and 25% and 23% of firms with extranets) than in Mexico (27% and 2% respectively). As mentioned earlier, intranet and extranet use increases with firm size.

The companies were asked a number of questions concerning the use of computer systems for various business functions, such as customer relationship management, value chain management, knowledge management, planning of resources and inventory, the use of
application service providers, document control, management of working hours, training and accounting. Some of these functions involve a higher degree of automation (e.g. value chain management) than others (e.g. document control).

From the survey results it was not clear whether all companies understood the question in the same way. For example, a number of companies answered positively to the question about using computer systems for “accounting” and “document control” but negatively to the question about “intranet”. It is possible that they simply meant that they used computers for managing their databases rather than a networked system of storing, retrieving and sharing data or an automated updating of information and databases. The question should have clearly specified the automation of business processes and system integration of certain functions, as opposed to using stand-alone computers for business tasks requiring human intervention.

Therefore, only those firms that indicated that they had an intranet (which include those with extranets) were selected, it being assumed that they would be at a more advanced stage of ICT use for internal business processes. Those with intranets (and extranets) reported that they used computerized systems for a number of business functions. All firms reported that they used computerized systems for client relationship management, followed by accounting, resource planning and inventory, and document control. These were the most common applications, with more than three quarters of firms responding positively. Least common were the use of computerized systems for training or education (43%) and the use of application service providers (ASPs) (33%) [Figure 3.4.13].

Figure 3.4.13: E-business processes by enterprise size (only companies with intranet)

No clear difference was found with regard to the size of firms; in fact, higher values were reported from small firms for applying e-business in value chain management, ASPs, document control and working hours management. Those involved in service activities were clearly more active in applying online systems in their business tasks, with higher values for all applications (in order of importance: accounting, planning of resources and inventory, document control, customer care, knowledge management, management of working hours, training, management of value chain and the use of ASPs) via the Internet. In particular, value chain management and ASP use were significantly higher among services companies, with 53% and 45% of firms respectively using these applications, compared with 30% and 23% of manufacturing firms [Figure 3.4.14].

**Figure 3.4.14: E-business processes by sector (only companies with Intranet)**

![Bar chart showing e-business processes by sector.]


It may be noted that when tasks become more complex, in particular automating and integrating business processes, small companies are as active, and sometimes even more active users than medium-sized firms. While e-commerce is used by all companies, no matter what size and sector, small companies use more e-marketplaces, whereas medium-sized companies use company websites (of third parties or their own) for selling online. Services companies are the most active users of ICTs and the Internet, followed by trade and manufacturing (least active). This is partly explained by the fact that functions such as marketing and selling services online require basic Internet access and website presence, and less system integration related to, for example, supply and value chain management, as is the
case in manufacturing.

Some important differences among countries can be observed as regards the uptake of the Internet and ICTs: the most active users are firms in Chile and Colombia, followed by Venezuela. Firms in Mexico not only are less active online but also report more barriers to the uptake of the Internet and ICTs than those in other countries. One explanation of this could be the sample, which mainly consists of companies located in Mexico City. It is likely that if the sample were taken from companies located in Monterrey, the business capital of the country, the intensity of ICT and Internet use would have been higher.

3. Main perceived impact of using ICT

Almost all companies (90%) consider the use of ICT and the Internet important to their businesses, and 76% believe that having a website is important and are happy with their current use of ICTs. There are some differences, however, among the countries: while almost 100% of businesses in Chile, Colombia and Costa Rica think that the Internet is important, the figures are somewhat lower in Mexico and Venezuela. Similarly, having a website has a higher priority in Colombia, Costa Rica and Venezuela than in the other countries [Figure 3.4.15].

![Figure 3.4.15: Perceived importance of ICTs by country](source: UNCTAD (2004), E-Commerce and Development Report 2004, p. 47.)

When respondents were asked about the main perceived impact or benefit of ICT use, they gave the following answers (in order of importance): change in business processes (81%); customer relationship (78%), supplier relationship (74%), business structure (57%), and
change in products and services (53%) [Figure 3.4.16]. It is worth mentioning that companies in Costa Rica were particularly positive about the impact of ICTs on their businesses, with very high percentages for each of the variables.

Figure 3.4.16: Perceived impact of ICTs by country


Interestingly, small companies considered the impact of ICTs more important than did medium-sized companies and were planning larger investments in ICTs over the next two years. They particularly mentioned the impact that ICTs have on the types of products and services offered and their overall business structure. Services companies consider having a website more important than do trade and manufacturing companies, and 61% of them indicated that there had been a change in products offered as a result of ICT, compared with 39% of manufacturing firms.

The majority of enterprises (68%) were planning further investments in ICTs during the next two years (high or low), while 30% indicated they did not know yet [Figure 3.4.17]. However, there are some major differences among the countries: 96% of companies in Colombia answered this question positively compared with only 26% in Chile. This may reflect to some extent the current level of investment and the resulting needs for future investments. Small companies are ready to invest more in ICTs over the next two years. This shows the dynamics and rapid development of e-business adoption.
4. Main perceived barriers and needs to be addressed

Concerning the use of ICTs in enterprises, about half the companies reported that the costs related to ICTs have much influence; this is followed by insufficient knowledge of employees (42%), the short life cycle of software (41%), the fact that ICTs do not satisfy the needs of the enterprise (38%), a lack of readiness on the part of clients or suppliers to use ICTs (34%), and difficulties in finding and recruiting qualified employees (33%) [Figure 3.4.18]. It is important to note, however, that the companies that responded otherwise considered these barriers to have little influence on their use of ICTs.

The weight given to the various barriers differs among the countries. For example, while only 13% of companies in Chile considered costs related to ICTs to be a problem, 66% of Mexican companies considered this important [Figure 3.4.19]. Interestingly, a higher percentage of medium-sized companies indicated that costs related to ICTs were the main factor influencing ICT use (55% compared with 43% of small companies), in particular companies in the services sectors. In the manufacturing sector, companies gave most weight to the notion that customers and suppliers were not ready to use the Internet (42% compared with only 28% of firms in the wholesale and retail trade).
Security concerns were by far the greatest barrier to Internet use among all companies (71%), followed by high development and maintenance costs (41%), loss of time due to irrelevant Internet surfing (37%), the non-preparedness of customers to use the Internet (33%), and slow and unstable data transmission (32%) [Figures 3.4.20 & 21]. All countries considered security concerns (including viruses) to be the most important factor influencing their companies’ use of the Internet across all countries, firm sizes and sectors, but especially as regards medium-sized companies and those in manufacturing. This confirms similar findings.
in other countries and regions, and reflects one of the main current concerns of Internet use globally.

As with the use of ICTs, companies in manufacturing gave more weight to the fact that clients and suppliers were not ready to use the Internet. Services firms and small firms gave greater weight to the problem of slow/bad Internet connection.

**Figure 3.4.20: Barriers to Internet use by sector**

(Percentages)


**Figure 3.4.21: Barriers to Internet use by country**

(Percentages)

Other needs

A number of needs were identified which, if met, could help SMEs to increase their use of ICTs and the Internet. The most important need with regard to the use of ICTs is the need to train employees. This is followed by (in order of importance) improved connectivity (speed, security etc.), better hardware and software, product compatibility, and consulting on strategy and implementation [Figure 3.4.22]. In all countries, staff training and improved connectivity were accorded great importance. However, there were some differences among the countries. For example, access to credit was more important for Mexico than for other countries; consulting on strategy and implementation was more important for Costa Rica; and product compatibility was more important for Chile [Figure 3.4.23]. Small companies have greater needs for consultancy on ICT business strategies and implementation, and for financing ICTs. Services companies need greater compatibility among products, improved connectivity, and better hardware and software, in particular software meeting the needs of SMEs. These could be customers for open-source software products, an increasing niche market in developing countries (UNCTAD, 2003a).

Figure 3.4.22: Needs in respect of enhancing ICT and Internet use, by sector

![Figure 3.4.22: Needs in respect of enhancing ICT and Internet use, by sector](source)

The results from Latin America, as well as the surveys from other regions that were reviewed, showed that there are significant differences among SMEs in different regions and countries with respect to the use of the Internet. For example, while mainly exporters in South Asia use the Internet, companies in Chile use it for domestic business, and in Europe it is mainly used at the regional level.

This could be explained by differences in the access to and quality of connections; the use and availability of e-banking and credit cards; or the perception of security with respect to data privacy, virus attacks and other legal uncertainties. Many of these differences directly
correspond to the prevailing legal and regulatory frameworks related to telecommunications, banking and finance, as well as trust in the legal system and enforcement of the law. There may also be important local and cultural factors influencing the companies' level of e-business use. This is an area where little work has been carried out, and thus requires further study.

While the Latin American survey did not cover firms located in rural areas, it demonstrated clearly the widespread availability of the Internet and PCs in urban areas. This is a common pattern across developing countries, which has been confirmed by other studies. In urban areas, ICT use is fairly common, irrespective of the size of companies. But in the rural areas of some developing countries, many small enterprises do not even have computers yet.

The main perceived barriers to Internet uptake are very similar across companies from both developed and developing countries. European, Latin American, African and Asian firms (already using the Internet) reported that the lack of network security was the key problem, followed by slow and unstable connections. An important finding from the studies is that for many companies the main reason not to go online is not the lack of technical skills and capacity, since in most developing countries, qualified personnel can be found, and they are growing in number. Rather, the use of ICTs depends on the capacity to manage the enterprise and on the level of education of the owner; the examples from Asia and Africa (Nigeria) showed that firms where owners had received higher education and had management skills were more likely to use new technologies.

Results from developed country studies evaluating the impact of ICT on firm productivity have demonstrated that complementary investments in human capital (i.e. skills), new business strategies and processes and new organizational structures are necessary in order for companies to reap higher benefits from the adoption of ICT. Companies that invested in these factors were also more intensive users of ICTs and the Internet.

For SMEs in developing countries, affording these complementary investments is more challenging. In those countries, it will take longer to see the impact of ICTs, even though many SMEs are already Internet users. An important distinction that needs to be made is between low-intensive users (computers, e-mail – at the lower end of the S-curve) and high-intensive users (intranets, extranets, full integration of business processes – at the upper end of the S-curve) and the related difference in impact of ICTs on business performance. On the
other hand, SMEs have an advantage in that they can implement strategic and organizational changes much quicker (and at lower cost) than large companies. This flexibility should provide them with a competitive edge when it comes to the adoption of e-business.

The results of the Latin American survey and other surveys provide information on how ICTs are used in SMEs. However, in order to evaluate the impact of ICT use on business performance, further analysis – including time-series analysis – would be necessary. In particular, the link between integrating ICTs into certain internal business processes (e.g. automating supplier and customer relations) and labour productivity requires further micro-data analysis based on available statistical data, including data on ICT use and labour productivity collected from various national business surveys.

The review of the e-business surveys showed how difficult it is to make cross-country comparisons, even on such simple indicators as Internet and e-mail use (is it used for communication, ordering or purchasing; how many employees have access, and how often?), or website presence in companies (is it the firm's own server or hosted by third-party providers?). Many surveys are conducted on an ad hoc basis, responding to a specific demand by researchers, business associations or government departments. As a result, the data often do not provide a comparable and representative picture of ICT readiness and use. Such a picture would require the continuous collection of data through official statistical sources. Demand by policy makers is crucial to speeding up the production of ICT-related statistics in developing countries.

A few policy directions can be indicated on the basis of the above observations. First of all, the assessment of e-business in SMEs demonstrated that among the key barriers to Internet use are those related to connectivity (quality, speed, cost) and security concerns. These are clearly areas where Governments can and must take action. For example, to get started, SMEs need access to reliable, low-cost connections, where dial-up services are often sufficient. The reliability of the service is important for maintaining customer relationships. Therefore, and to bridge the urban-rural divide, emphasis should be placed on providing universal good-quality basic access, provided by a number of ISPs between which the enterprises can choose. Naturally, this should be followed by high-speed connections to allow companies to move towards full integration of e-business.
Second, trust in a legal and regulatory environment supportive of the Internet economy is essential for companies to engage in e-business. Third, for SMEs to make the leap from simple (and low-cost) Internet use, such as e-mail and web search, to building e-business systems fully integrated with those of their customers and suppliers, requires additional investments and technical and managerial skills to plan and successfully implement an e-business strategy. These are clearly areas where public and private agencies can play a crucial role in support of SMEs.

Conclusions

A surprisingly large number of SMEs in developing countries are connected to the Internet. The results of the surveys and studies presented in this chapter showed that in most cases, access to the Internet was not a major problem for firms – even if connections are mostly slow (dial-up modem). It is much more difficult to fully integrate the business functions using ICTs, and even more so for SMEs in developing countries, where often only managers have access to the Internet. The surveys also confirm that there is a certain degree of development that all companies will go through when adopting ICTs. This is illustrated in Figure 3.4. A similar approach can be used in the development of e-business: for SMEs, it is relatively easy to start using PCs, then connect to the Internet using e-mail, and then set up a web page. However, the introduction of the Internet into their business activities (internal or external, including e-commerce) does not follow straightaway, and larger companies are more likely to automate their business processes (and to do so earlier) than smaller companies.

One explanation for this is that most SMEs have no defined e-business strategy. Using e-mail for communicating with suppliers and customers, and searching the Internet for business information have immediate, visible effects and are therefore quickly adopted by companies. But putting in place more complex e-business systems, intranets or extranets, and linking up with suppliers’ and customers’ computer systems, require not only technical knowhow but also a solid analysis of the costs and benefits implied by the necessary investments, and convincing arguments in favour of them. In other words, SMEs need proof that e-business will benefit them. Needless to say, expected benefits (or the absence thereof) of ICT adoption also play an important role, in particular as they relate to cost savings/expenditures.
REFERENCES

CHAPTER 3


