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CHAPTER 2.

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Chapter 2
E-BUSINESS AND SMEs

A. 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, including in previous editions of the *E-Commerce and Development Report*. Unfortunately, most of the available data and studies focus on developed countries' firms, whereas little is known about the adoption of the Internet and e-business in developing country firms, particularly small and medium-sized enterprises (SMEs).

At the same time, global developments and competitive forces are increasingly driving firms in all countries towards adopting new ICT-based strategies and business practices. For example, the interaction with (foreign) suppliers and clients has already led most firms in developing countries to connect to the Internet for e-mail purposes. Although e-mailing is only the first step towards the adoption of ICTs, it is an important one; subsequently, firms usually set up their own website and start to use the Internet for information searches and marketing of their products and services.

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 chapter will focus on the adoption of ICTs by SMEs in three developing country regions (Asia, Africa and Latin America). It will investigate 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 usage, such as access, quality, costs, skills or finance; and what kind of assistance they may need to enhance their e-business activities.

Most of the existing knowledge about the use of ICTs in enterprises or e-business, and its impact on business performance in the developing world, is based on anecdotal and case study evidence, whereas little statistical data on e-business are available. This chapter sets out to review the results of e-business survey data from selected Asian and African countries. It then presents and discusses the results of a survey on ICT usage by SMEs in five Latin American countries. The survey included questions related to access to and use of ICT and the Internet, the impact of and barriers to using ICT and perceived solutions that could address these constraints.

The next section looks at the potential and current adoption of ICTs by enterprises, using available data mainly from developed countries, and discusses the case of SMEs. Section C assesses the use of e-business by SMEs in developing Asian and African countries on the basis of case studies and available country surveys. Section D presents the survey carried out among SMEs in Latin America, and discusses its main results. Section E draws some conclusions and makes policy recommendations on the basis of findings from the Latin American survey and from studies carried out in other regions.

B. Using ICTs in enterprises

During the late 1990s, much attention was paid to the emergence of e-commerce, or the move towards online purchases and sales. The figures for global business-to-business (B2B) e-commerce soared, with estimates ranging between $200 and 600 billion for the year 2000, and predicted to reach $12 trillion by 2006 (UNCTAD, 2001; Forrester, 2001). These estimates were largely produced by private data providers, who based their calculations on their own surveys and methodologies. As a result, the data from one source were usually not comparable with those from another.

Recognizing the need for more reliable and internationally comparable data and indicators, since the beginning of the millennium an increasing number of (mainly advanced) countries have started to collect ICT-related statistics – including e-commerce – on a regular basis, through their official national statistical systems.[1] From their results, we now know that the amount of e-commerce conducted is much less than anticipated a few years earlier and that – even in the most advanced countries – online purchases and sales account for only a small, albeit growing, share of total transactions.

However, the use of ICTs and the Internet in enterprises is not confined to e-commerce, or ordering and selling online. More attention needs to be paid to "where" firms are actually using the technologies within the firm, in their regular business activities. In fact, and this is where ICTs will have their most profound impact on business structures, they are increasingly incorporated into business activities such as customer acquisition and retention, finance and account management, product service and support, or logistics and inventory control. By automating some of these functions, companies integrate internal tasks and systems as well as their relations with suppliers and customers and their applications (box 2.1).

Box 2.1

E-business processes

Customer acquisition and retention	Customer relationship management (CRM); marketing campaign management, planning and execution; database marketing, direct marketing, telemarketing; electronic catalogue; Web activity analysis, Web advertising; call centres; arranging repairs and maintenance; handling customer complaints
E-commerce	Sale or purchase/procurement of goods or services (includes getting estimates, negotiating, ordering, arranging contracts); EDI; mobile commerce; integration of ordering system with that of customer/supplier; integrated invoicing and payment of customers; full integration with back-end system; use of extranet; secure transactions; automated payment of suppliers
Order fulfilment and order tracking	Order control, product control, order tracking; data processing that relates to order fulfilment or tracking; sales force automation
Logistics (inbound & outbound) and inventory control	Supply chain management (SCM); production and inventory control (including of raw materials, parts, finished goods), distribution control, management of inventory, management of customers' inventory, transportation and shipping, automated warehouse; arranging and managing transport, dispatch of goods, tracking, provision of services
Finance, budget and account management	Enterprise resource planning (ERP); managing, planning and evaluating finance; invoicing and payment systems; software systems (e.g. SAP)
Human resource management	External and internal recruitment, online job applications; automating of administrative tasks such as time reporting, payment of salaries and pension schemes, travel reimbursement, tracking working hours and production time; training; teleworking
Product service and support	Website support, frequently asked questions (FAQ), downloadable manuals, online queries; after-sales support
Research and development	Research, development and design of products, services or processes; computer-aided design (CAD), computer-aided manufacturing (CAM) and collaborative design;
Knowledge management	Systematically aggregating and disseminating information and knowledge within the company; content management system; e-learning

For example, upon receipt of an online order, product availability is automatically checked, accounting and logistics are notified, and new supplies are ordered. By merging functions such as order processing, payments and after-sales services, firms are able to reduce operational costs and provide better services. Some of the functions are internally linked, through the companies' computer systems, and some are linked or integrated with other companies' systems (those of suppliers or customers).

The use of the Internet improves customer relationship management (CRM) and allows firms to customize their services. Customized customer care allows companies to respond to customers in real time, thus improving customer confidence; moreover, customer preferences can be monitored and more targeted marketing strategies developed.

Through computer networks business processes such as ordering, transacting, fulfilment and delivery, inventory control and accounting can be streamlined and connected regardless of location. They can create value by offering enhanced order features, such as order status verification and back order information. Intra-firm and inter-firm computer networks allow companies to outsource certain activities, and to integrate activities throughout the value chain. They also improve supply chain management (SCM) using a just-in-time approach.

In summary, ICTs and the Internet can play a substantial role in implementing companies' major strategies for growth, such as increasing strategic marketing/promotional efforts, customer relations or the quality of products and services.

1. Evidence from developed countries

Since a number of statistical offices in developed countries have started to collect ICT usage data through business surveys during the past few years, there is now a much better understanding of the use and impact of ICTs on enterprises. Studies by the OECD (2002) and Eurostat (2004) provide the following evidence, based on official data sources.

- In 2003, on average 87 per cent of enterprises in the European Union (EU) had an Internet connection (up from 80 per cent in 2002).

- Companies use the Internet mainly for marketing purposes, while e-commerce still accounts for a small – albeit growing – proportion of overall sales: 0.4 to 1.8 per cent of total sales in 2000, with the highest figure in Sweden (13 per cent). Sales using electronic data interchange (EDI) are higher than those via the Internet, and purchasing is more common than selling (about twice as high). On the other hand, almost one third of companies with Internet access in the EU purchased at least some of their products online in 2001 (ranging from 8 per cent in Spain to 62 per cent in Sweden).

- Internet sales are mainly domestic or at the regional level, for example within Europe. E-commerce is greater in services than in manufacturing, and it features particularly in financial services, business services and wholesale trade. Only a few companies deliver their goods and services online, and few offer online payment facilities.

- Business-to-consumer (B2C) e-commerce still accounts for only a small share of e-commerce, but is growing. It is highest in Denmark, Sweden, the United Kingdom and the United States and covers mainly computer-related products, clothing and digitized products. In some countries, retail transactions are used as proxies for measuring B2C electronic transactions. The results show that they account for a small proportion of total sales, with the highest figures in the United States (with 1.9 per cent of total retail sales online in 2004; see chapter 1).[2] Despite the low value of its transactions, B2C e-commerce has received most attention, partly because issues such as consumer trust and data protection have received considerable attention from policy makers.

- Internet access usually increases with the size of companies, but in some countries (e.g. Denmark) even 85 per cent of microenterprises (with 5 to 9 employees) use the Internet. ICT usage depends on the nature of the business – it is more appropriate for some activities than for others. The Internet is more prevalent in certain sectors than in others. These include finance and insurance, business services and wholesale trade, whereas retail trade has the lowest Internet penetration rates.

- Available data also show that countries with lower access costs have a higher take-up of the Internet. The highest rate of ICT diffusion among OECD countries can be found in the United States, Canada, New Zealand, Australia, the Nordic countries and the Netherlands. And the cost of hardware and software is important for determining the level of investment.

- Key problems in Europe, defined as perceived barriers to Internet use by companies, include the lack of network security, slow or unstable communications, and legal uncertainties (concerning payments, contracts and deliveries). On the other hand, costs related to access to and use of the Internet are not perceived as major barriers.

As one of the pioneers in the collection of e-business statistics, the UK in its 2002 e-commerce survey included a number of questions on e-business processes (as set out in box 2.1). Generally speaking, responses showed that while about half of the large companies are using e-business-related systems, only 20 per cent of medium-sized firms (50 to 249 employees) and 8 per cent of small firms (10 to 49 employees) are doing so. Most common functions were integrated invoicing or payment systems, integrated production or service operating systems, and integrated logistics or delivery systems. The survey also found that firms that had linked one process to selling or purchasing often had linked at least three. This suggests that as firms start to integrate business processes, they do so for a number of activities. As regards the integration of companies' systems with those of suppliers and customers, a higher number of firms reported that they had linked with suppliers rather than with customers. But overall, less than 10 per cent of SMEs had their systems integrated with those of others (Goodridge and Clayton, 2004).

The Scottish e-business survey, carried out annually, revealed that dynamic (or fast-growing) companies are more likely to adopt e-business technologies or broadband. By contrast, companies that have not yet adopted e-business say that they do not see the value to their business or do not have the right skills to do so (Scottish Enterprise, 2003). The survey also found that the adoption of e-business increases with size, and changes from sector to sector, with a higher rate of adoption in services than in manufacturing (except for the use of websites). The adoption of broadband does not automatically lead to an increase in e-business practices, and is therefore not the main constraint on (or main enabler of) the adoption of e-business.

There is also now a growing amount of evidence concerning the impact of ICTs on business performance. During the past few years, a number of firm-level studies have shown the positive impact of ICT use on firm performance, in particular on labour productivity (UNCTAD, 2003a).

In a comprehensive cross-country study, an OECD-led consortium of researchers looked at the impact of ICT at the firm level, on the basis of official data sources for the use of ICT in enterprises from 13 OECD countries (OECD 2003, 2004a). They found a positive impact of ICT use on productivity in all of the country studies, with somewhat more significant results in the services sectors. For example, in Australia, firm-level econometric analysis revealed a positive link between ICT usage and productivity growth in all sectors studied. The productivity growth effect of using one particular technology, however, is greatest in the earlier years and seems to taper off over time (OECD, 2004a). In the United Kingdom, buying online has been shown to have a greater impact on firms' output growth than selling online, a fact which is explained by pricing effects and price transparency related to e-procurement, which allows companies to secure more competitive deals. Online suppliers, on the other hand, may suffer from the negative impact on prices related to e-marketing and online selling of goods.

The studies conclude that ICT usage contributes to enhanced business performance provided that it is complemented by other investments (e.g. in skills) and organizational changes. Organizational changes that enhance the benefits of ICTs include new strategies, new business practices and processes, and new organizational structures.

The studies also show that companies which are poorly managed and lack skills and innovation do not benefit from ICT usage. In other words, simply using ICTs does not automatically lead to increased returns on investments if other conditions are not in place. Hence, an important conclusion is that the economic impact of ICTs may be limited if no other investments or changes are being introduced at the same time. The studies also conclude that the benefits of investment in ICTs are not felt immediately, and that it takes time before returns on investment materialize.

2. The case of SMEs

Much of the evidence provided above does not specifically address the case of SMEs. One problem related to capturing SME adoption of ICT (or any other behaviour, for that matter) is related to the problem of size definition, which varies from country to country. Therefore, cross-country comparisons of SME surveys always have to take into consideration the size definition.

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 (charts 2.1 and 2.2). For example, in Europe, 79 per cent of large companies had an intranet in 2001, compared with only 25 per cent 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 (chart 2.3). 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.

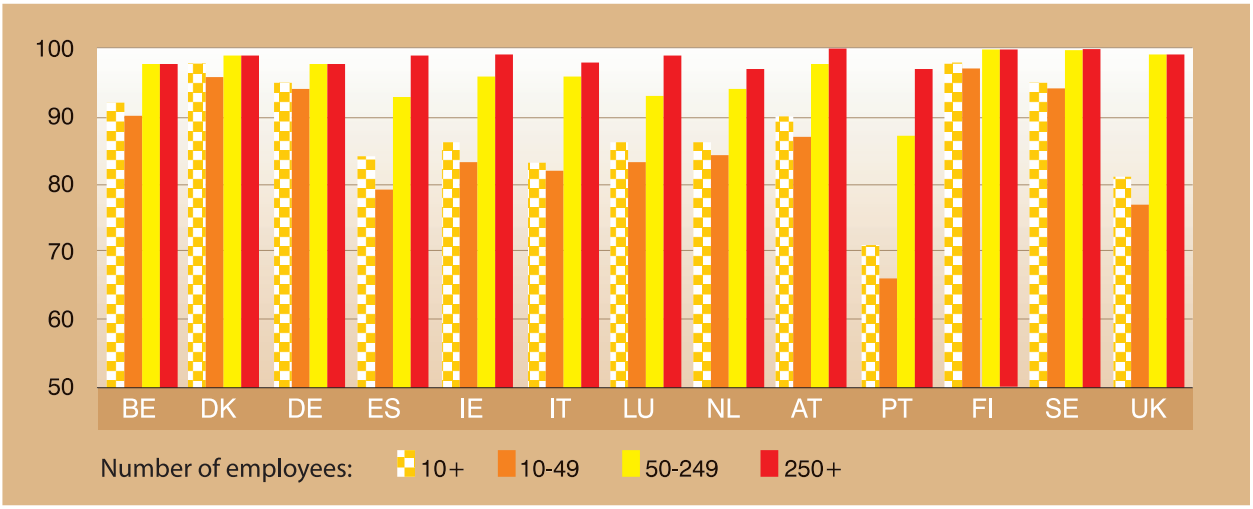
At the same time, a Canadian study found that SMEs, while generally lagging behind in Internet uptake, have the greatest potential for productivity gains through e-business (CeBI, 2002). On the basis of a survey with around 2000 SMEs, they found that firms were able to increase revenues by 7 per cent, and decrease costs by 9.5 per cent (costs of goods sold) and 7.5 per cent (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 per cent (2002), a 3 per cent increase only over the figure for 2001 (Chambers of Commerce of Ireland, 2002). However, an increasing number of SMEs have their own websites (55 per cent, an increase of 9 per cent over 2001) and are using the Internet for online ordering (46 per cent of SMEs) and e-banking (55 per cent, or 21 per cent more than in 2001). Thirty-three per cent of SMEs had an intranet and 17 per

Chart 2.1

Internet usage by size of enterprise, 2003

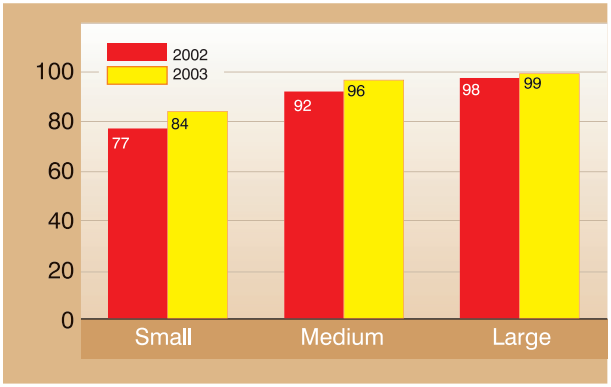
(percentages)



Source: Eurostat (2004).

Chart 2.2

Internet usage by size of enterprise: EU 15
(percentages)



Source: Eurostat (2004).

cent an extranet; computer networking or the presence of local area networks (LANs) was more predominant in larger (i.e. medium-sized) firms (94 per cent compared with 65 per cent 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.

From a policy perspective, information on SME use and the impact of ICTs is crucial. SMEs comprise the bulk of enterprises not only, but particularly, in developing countries. They normally employ the majority of the workers in the country, both in manufacturing and in services. At the same time, their contribution to gross domestic product (GDP) is often small, and they serve the domestic rather than the foreign market.

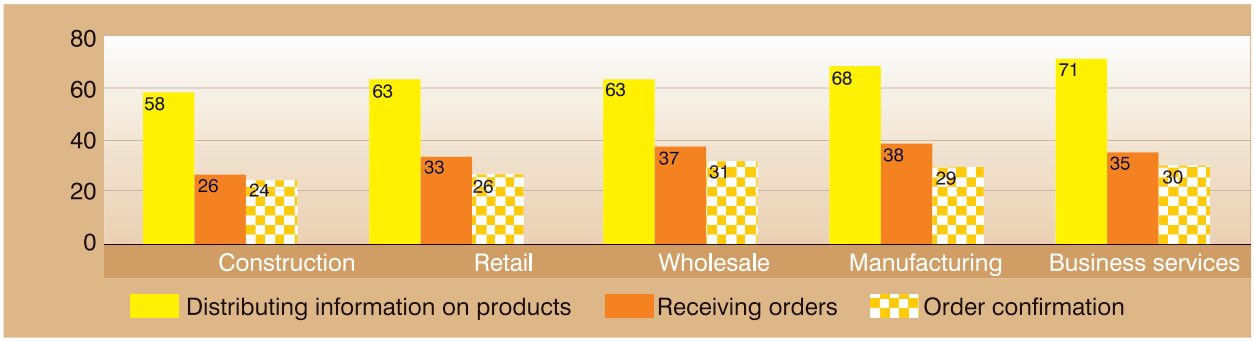
How are SMEs different? Generally speaking, the overall capacity to absorb the new technologies is lower in SMEs. Some of the constraints they face relate to access to finance, availability of skills and know-how, and international exposure. Legal uncertainties related to cross-border e-commerce and the need to keep up to date on latest e-commerce-related legislation (including in target markets) add another burden to SMEs, which often do not have legal departments.

Unlike large companies, SMEs do not have established brand names; these, however, play an important role as regards online business since customers prefer to put their trust in well-known brands rather than take the risk of buying from unknown companies over the Internet. But establishing brand names requires heavy investments in international marketing, which SMEs often cannot afford. While setting up a website may be cheap, promoting it effectively is expensive (UNCTAD, 2003b).

SMEs lack logistics networks for the prompt and reliable delivery of products, particularly in the case of B2C e-commerce. Since shipping and handling costs decrease with the volume of the transaction, SMEs are disadvantaged.

Chart 2.3

SMEs in Europe: Commercial activities using the Internet, 2001
(percentages)



Source: European Commission (2002a).

On the other hand, there is a wealth of information available on the Internet, which can be very useful for SMEs' operations. This ranges from trade information, information about potential customers' profiles and creditworthiness, and model contracts, to manuals and guides on best business practices and how to engage successfully in exporting markets. The use of e-mail has proved to be a cost-effective means of communicating with suppliers and customers, and has replaced the use of fax in many SMEs.

Small companies also have certain features that favour the rapid adoption of ICTs. For example, their often hands-on managerial style allows quick decision-making and enables them to follow rapid technological changes.

Crucial to the adoption of e-business by SMEs are potential returns and profitability. Unless there is clear evidence that the use of ICTs will increase business profits, there is little incentive for small companies to invest in the new technologies and the skills necessary for exploiting them effectively (OECD, 2004b). While a certain level of connectivity is present in most companies, such as Internet access and a website providing company and product information, moving towards more complex e-business and e-commerce applications requires that benefits clearly outweigh costs. As pointed out earlier, the effective adoption of e-business often depends on complementary investments, such as those related to organizational and management changes and related training. This, however, could imply additional costs that SMEs may not be able to afford.

Available studies suggest that the adoption of ICTs by SMEs in developing countries is largely a market-driven process. Eventually, competitors and buyers will prompt SMEs to improve internal management and to use the Internet. Global competition is a driver of ICT uptake among SMEs, in particular those targeting the export market. For example, in certain industries (e.g. agricultural products, handicrafts) foreign buyers in developed countries already expect their suppliers (i.e. SMEs in developing countries) to participate effectively in the global online supply chain (see the case of Indonesia, below). In this case, foreign buyers want to be close to the producer in order to have more control over design, quality and delivery, and they therefore invest in educating and supporting SMEs. This will lead to an increased uptake of ICTs by SMEs in developing countries.

C. Assessing e-business in developing countries

While the monitoring and measuring of ICT usage in enterprises is increasing among developed countries, in many developing countries no statistical indicators on e-business have been collected yet (box 2.2). Therefore, almost no quantitative analysis is available on the impact of ICTs on developing country firms and much of the available information is based on anecdotal and case study evidence.

This section will summarize the results of available e-business surveys and case studies on the adoption of ICTs in SMEs in selected countries of developing Asia and Africa. It is not meant to offer a comprehensive overview of e-business take-up in the developing world, but reflects data and information available at the time this Report was prepared. Most of the surveys and studies mentioned below were carried out on an ad hoc basis, responding to a specific demand (internationally, regionally or nationally) by researchers or policy makers. While no (solid) cross-country analysis can be performed, the section will extract some commonalities and differences among countries. The purpose is to highlight the particularities of e-business in developing countries' SMEs and the implications this may have for ICT-related policy-making.

1. E-business surveys in developing Asia

As shown in chapter 1 of this Report, Asia has over 200 million Internet users, a figure which represents growth of almost 100 per cent from 2000. China represents almost 28 per cent of that, followed by Japan with approximately 27 per cent. However, it is Singapore, with only 2.1 million users, that leads the rankings.

Asian countries/territories figure prominently in the e-readiness rankings of the Economist Intelligence Unit (EIU) and the *Global Information Technology Report (GITR)*.[3] Singapore (seventh) and Hong Kong SAR (ninth) are in the EIU top ten, while Singapore is also the second country after

Box 2.2

Towards official statistics on e-business

So far, few developing countries have started to systematically collect information society statistics, including e-commerce and e-business data. This is due to, among other things, the lack of awareness among policy makers of the need for information society statistics and indicators, as well as limited resources and capacities in national statistical offices.

The majority of developing countries are just beginning to recognize the importance of collecting ICT statistics, driven by the policy debates that are taking place at the international level, for example in the context of the WSIS. As a result of such debates, a number of initiatives are emerging with the objective of advancing the production of ICT statistics in developing countries and working towards international harmonization of the data and indicators (see chapter 1 and web site measuring-ict.unctad.org).

International comparability is crucial to the development of statistics and indicators in all areas, including on the information society. So far, most of the methodological work at the international level has been carried out by the OECD, which has started to work on common definitions, methodologies and model surveys for the collection of ICT indicators in the mid-1990s (OECD, 2002b). Since then, considerable progress has been made, as a result of which a number of OECD countries are now collecting e-business (and other ICT) indicators on a regular basis. For example, a model questionnaire on ICT usage in enterprises was adopted in 2001 and has since been used in many OECD countries. Similarly, EU members have used the model questionnaire to design their business and household surveys, which are carried out on an annual basis. Currently, a module on e-business activities is being developed; its aim is to collect ICT usage indicators related to customer acquisition and retention, finance and account management, product service and support, or logistics and inventory control.

International comparability of ICT indicators needs to take into consideration definitions of business size and industries. For example, cut-off numbers of employees for "small" companies may vary across countries, leading to shifting weights of different size groups (OECD, 2002b). In some countries, business surveys do not cover all sectors, and this can result in misleading international comparisons. The model surveys developed by the OECD help to harmonize the definition of indicators, thus contributing significantly to the international comparability of ICT data.

But to what extent can the definitions and model surveys that were developed in an advanced country context be applied to developing countries? Some of the main challenges which enterprises (and particular SMEs) in developing countries face include lack of management and ICT skills, international exposure, and trust in online payments or access to international credit cards, and slow and unreliable connections. In particular, there is no universal access to the Internet in most poor countries and huge urban–rural divides exist.

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 Province of China, the Republic of Korea, Australia and New Zealand.

Increasingly, there are synergies between the region's leading operators and vendors, in particular in the telecommunications sector. For example, a Japanese mobile Internet provider has set up a research and development facility in China to develop fourth-generation technology (EIU, 2004). Also, Asia is an emerging market for outsourcing, as evidenced by India's IT-enabled service sector, call centres in the Philippines, customer help desk centres in Malaysia, and Korean-language and Japanese-language software production houses in China.[4] Basic connectivity and related investment remain low in many countries; for example, India ranks 46th in the EIU e-readiness ranking and 45th in the NRI ranking despite its strong outsourcing sector (estimated at $17 billion annually).

The Asia Foundation has carried out a project to survey the use of the Internet and e-commerce in four South-East Asian countries – Indonesia, the Philippines, Sri Lanka and Thailand.[5] The data were collected at the end of 2001. Since then, many companies have connected to the Internet and thus some of the results may look different today. Furthermore, the selection of SMEs for the survey was not based on a random sampling, because Internet penetration was too low at that stage (i.e. the number of companies using the Internet as a percentage of total Internet users was still very small). Therefore, the companies are not representative of all SMEs in each country and the surveys do not reveal how many companies use the Internet. Rather, they look at those that use the Internet, plus some non-users and prospective users.

Nevertheless, 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. Generally speaking, 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 usage.

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 usage 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 2.3.

The studies found that profitability is crucial to SMEs' willingness 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 a cost factor.

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 2.3

Examples of ICT usage by Asian SMEs

In Thailand, half of the companies surveyed had websites, in particular those active in the tourism sector. Around 40 per cent 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 travel companies support small hotels that do not have computers or the Internet by taking online orders for them. Hotels reported that their average occupancy rate increased from 20 to 90 per cent as a direct result of web listings. Ten per cent of the SMEs surveyed had sold online — for example, jewellery suppliers in Bali sell to retailers and individuals in other countries. In this case, online payment facilities are important for customers who do not want to disclose credit card information by regular mail or make international money transfers for low-value transactions. B2C e-commerce was almost non-existent, in particular at the domestic level, owing to high online payment and delivery costs. Domestic B2B e-commerce still relies on faxes to confirm orders and does not accept the legitimacy of e-mail confirmations.

Source: www.asiafoundation.org/ICT/surveys.html

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 per cent of SMEs with websites accepted online payments. An exception was in Sri Lanka, where 60 per cent 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 considered the most important policies to put in place and would not necessarily accelerate the adoption of ICTs by SMEs. The subsidization of SMEs' adoption of ICTs was thus not recommended by the authors. Rather, Governments should 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 confirms findings from studies in more advanced countries, with regard to the impact of ICTs on productivity (see section B).

2. Surveys and case studies from Africa

Africa is the region with the fewest Internet users, although their number has doubled since 2000 (see chapter 1), and information on ICT usage indicators is largely incomplete. South Africa represents nearly one third of Africa's Internet users and has the highest EIU and NRI rankings in the region (32nd and 37th, respectively).

However, uptake of Internet services, including broadband, has been modest at 7 per cent of the population. 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 $1.2 billion 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, including among businesses. In the case of Ghana (INIIT, 2002), 81 per cent of firms surveyed had Internet access, 35 per cent had Web presence and 16 per cent 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).[6] Nonetheless, Internet subscribers have increased in Ethiopia (over 6,000 subscribers in 2002, with 96 per cent 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 per cent) were connected to the Internet, in most cases only the head of the enterprise had access (too costly, not necessary). 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 for 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 per cent in 1996 to 92 per cent 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 per cent of all exporting firms in the sector, contributing to 95 per cent of the export volume. They found a clear relationship between the size of companies and their e-readiness and usage. 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 per cent 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.[7] They found that all firms have personal computers (PCs) (with an average of 8 PCs per company compared with 6 PCs in 1999); 42 per cent of firms were connected to the Internet (compared with 20 per cent in 1999); 11 per cent had a website (5 per cent in 1999); and 7 per cent had an intranet (question not asked in 1999) (table 2.1).

The Internet was primarily used for e-mailing and information search, followed by file transfer, and

Table 2.1

Results from e-business surveys, Morocco, 1999 and 2002

	1999	2002
Number of PCs per firm (ave.)	6	8
Internet connection (%)	20	42
Web presence (%)	5	11
Intranet (%)	---	7
E-commerce (%)	8	8

the search for suppliers and customers. The companies' 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 per cent 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 has occurred. Among the sectors, the most active ICT users were firms in the electronics and textiles/leather sectors, but the largest increase in Internet connection 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 firms' use of ICTs for internal business functions or integration with suppliers' and customers' systems.

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 higher-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 a low standard of 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) among the workforce. In other words, limited skill levels in SMEs were a key factor for low ICT usage.

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 had an intranet, mainly those from South Africa, and it was used

for sharing databases and documents. Only 20 per cent 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 per cent had their own website (13 per cent in Kenya and 25 per cent in South Africa) and only 7 per cent 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 per cent 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 the impact of the latter. 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 40 staff and with a turnover of $600,000 a year. Similarly, the Internet enabled a trade logistics provider in the United Republic of 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, they are growing much more slowly. 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.

D. The case of Latin America: E-business survey results

Estimates of the number of Internet users in Latin America vary, but all sources point to rapid growth during the past few years (see chapter 1). Accenture estimated 44 million users in 2004, while eMarketer estimated 60.6 million.[8] Mobile phones are increasingly providing a channel for basic electronic services (subscriptions in the region grew by 18 per cent in 2003), although mobile Internet services are still in their infancy. The EIU e-readiness leaders in Latin America are Chile (29th) and Brazil (35th), which are also leaders in the NRI ranking (32nd and 39th, respectively). Interestingly, Argentina is 37th in the EIU e-readiness ranking, owing to its position as an outsourcing "powerhouse", but occupies 50th place in the NRI ranking, after Mexico and Costa Rica. Government and private initiatives are helping along progress in e-business; for example, a law on digital signatures was recently passed in Mexico and efforts are being made by the national telecommunications company to accelerate the installation of Internet services. In Brazil, a private group will install free broadband in State schools, contributing to an expected doubling of the country's broadband rate.

More data on e-commerce and e-business are becoming available, but they are still scarce. Recently, a number of Latin American countries started to include ICT questions in their business surveys, for example Argentina, Chile,

Colombia, Peru and Mexico (ECLAC, 2004). In most countries, however, data on e-business are not yet collected through the official statistical system on a regular basis, and therefore only limited data are available on the use and impact of ICTs in enterprises. Furthermore, some of the ICT-related questions that have been included in the country surveys differ between countries. As a result, the indicators collected are not always comparable across countries, or at the international level.

In order to assess the uptake of ICTs by SMEs in the region and to obtain comparable results across countries, UNCTAD, jointly with FUNDES (see box 2.4), has carried out an SME e-business survey in five Latin American countries – Chile, Colombia, Costa Rica, Mexico and Venezuela.

Using the FUNDES infrastructure (i.e. local call centres in the countries) and SME database, during the months of February and March 2004, telephone interviews were carried out with a total of

Box 2.4

FUNDES: E-business for SMEs in Latin America

The Fundación para el Desarrollo Sostenible en América Latina (FUNDES) is a network of enterprises and private institutions that works to promote the competitiveness and sustainable development of small and medium-sized enterprises (SMEs) in Latin America. It has offices in 10 countries (Argentina, Bolivia, Colombia, Costa Rica, Chile, El Salvador, Guatemala, Mexico, Panama and Venezuela) as well as a training agreement with an institution in Peru. FUNDES has 280 employees and more than 400 consultants and facilitators, and approximately 80,000 SMEs are included in its database.

FUNDES provides services geared primarily to improving SMEs' access to information, know-how and technology (consulting and training), and access to finance, and to supporting the development of entrepreneurial initiatives. In this context, it appointed in 2000 an international e-business manager to lead projects related to the Internet and to develop and implement a FUNDES e-business strategy. It has offered a training programme on the Internet and e-commerce, as well as consulting services for technological innovation, product and services innovation, and business development on the Internet. FUNDES has also partnered with information technology providers (Tecno-PYME) to offer business server packages, including technical diagnosis and support, conceived specifically for SMEs.

Furthermore, FUNDES created the MIPYME online business portal (http://www.MIPYME.com/), which allows SMEs to register and interact with other enterprises in their country, region and economic sector. MIPYME.com is also essential to the organization of a networking initiative that matches large companies requiring products and services with SMEs offering to provide these; online tools are used to initiate contacts between potential buyers and suppliers and to schedule physical meetings. More than 2,100 SMEs participated in this networking initiative between 2001 and the first half of 2004, and 80 per cent of them conducted transactions. The networking initiative has provided some lessons:

- Success is determined by a link between the online and the real world (virtual contact and information exchange, followed by actual meetings).
- The promotion of ICT use by SMEs must offer added value to be successful.
- Results are important to SMEs, not the process itself.
- Quality control must be ensured in order to encourage continued participation by buyers.

In addition, all of FUNDES' services have been integrated into MIPYME.com: online consulting and assistance, auto-diagnosis and distance learning, networking, e-business services, information on country business/market indicators, access to entrepreneurial capital, financial intermediation and even online credit (Banco Santander, Chile). An example of an SME that benefited from FUNDES' roundtables organized through MIPYME.com is Negocios Múltiples de Panamá (Nemupasa), which gained new clients and contacted new potential suppliers. As an authorized distributor of multinational 3M and a partner of US-based Prime Meridian Trading Corp., Nemupasa was able to secure a contract as supplier to the Panama Canal authority and a number of private clients.

The strategic partners of FUNDES help mobilize resources for its work and include the World Bank's International Finance Corporation, the Multilateral Investment Fund of the Inter-American Development Bank, German and Swiss cooperation enterprises, the Andean Development Corporation, and foundations such as AVINA and Argidius.

Source: http://home.fundes.org/

Table 2.2

Latin American SME survey sample

	Manufacturing	Services	Wholesale and retail trade	Total
Small enterprises (11-50 employees)	87	85	87	259
Medium enterprises (51-200 employees)	64	67	64	195
Total	151	152	151	**454**

454 SMEs – 90 in Chile, 90 in Colombia, 92 in Costa Rica, 90 in Mexico and 92 in Venezuela. In each of the five countries, SMEs are classified differently. For the purpose of this survey, the following definition was used: small (11–50 employees) and medium (51–200 employees). The sample was stratified according to the size of companies, with a slight bias towards small companies (195 medium-size enterprises, 259 small enterprises) and certain economic sectors (see table 2.2). The companies included in the database are mainly located in the capital cities of these countries. Therefore, the urban–rural divide could not be analysed through this survey, and the survey results therefore represent only SMEs in urban areas.

The questionnaire was divided into four modules (see annex I for complete questionnaire):

Module A: General information on ICT systems (including availability of PCs, Internet, e-mail, intranet, extranet)

Module B: Use of Internet and ICT (including types of connection, type of use of Internet and website, e-commerce, use of ICTs for internal and external business processes)

Module C: Perceived impact of the use of ICT and Internet on SMEs

Module D: Perceived barriers and needs as regards the use of Internet and ICT in general

The latter two (perceived impact and barriers/needs) are qualitative measures and therefore need to be interpreted with caution. In particular, using qualitative indicators for international comparisons is risky. On the other hand, if used in combination with quantitative indicators, they could explain some of the differences in e-business across countries.

The survey carried out for this study is based on previous work on measuring e-business in the OECD. The OECD model questionnaire on ICT use in enterprises was used as a basis for preparing the questionnaire for this survey.[9] An effort was made to adapt the questions to the local context and to the particular methodology used for this survey (i.e. telephone survey). Some questions, such as those concerning e-commerce via EDI or computer-mediated networks other than the Internet, were excluded. On the other hand, questions about future needs regarding the use of ICTs were added. The questionnaire was therefore adapted to meet concerns and needs specific to SMEs in the countries surveyed.

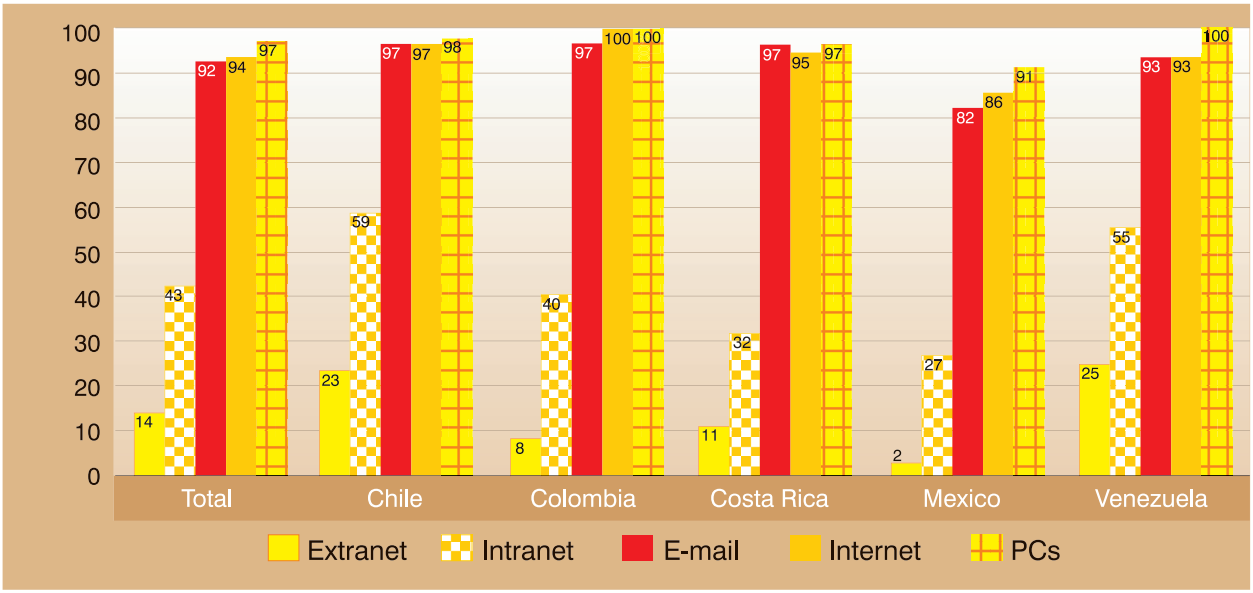
1. Availability of ICTs (PCs, Internet, websites)

It was found that 97 per cent of the SMEs surveyed used PCs, 94 per cent used the Internet and 92 per cent used e-mail (chart 2.4). 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 per cent had extranets. While PC, Internet and e-mail usage 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 as regards PC, Internet and e-mail usage (although a somewhat higher

Chart 2.4

ICT use by SMEs, by country



number of medium-sized companies was using e mail). On the other hand, 52 percent of medium-sized companies used intranets as compared with 35 per cent of small companies, while 15 per cent used extranets as compared with 12 per cent of small companies (chart 2.5).

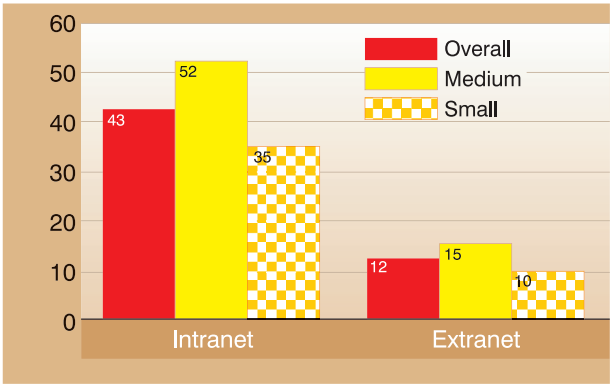
As far as the different sectors are concerned, again, there are no major differences with regard to use of PCs, Internet and e-mail. But intranets were most common in services (53 per cent of all services companies), followed by the wholesale and retail trade (38 per cent) and manufacturing (37 per cent).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

In conclusion, the results show that the availability of PCs, Internet and ICT is high among companies located in urban areas, and there are no significant differences between small and medium-sized companies as regards basic access and use of the Internet (such as e-mail).

The most common type of Internet connection was fixed connections over 2 Mbps and analogue modem (32 per cent of all SMEs for each type), followed by fixed connections under 2 Mbps (16 per cent) and ISDN (13 per cent) (chart 2.6). Here, significant differences exist among the countries. For example, in Venezuela and Chile, fixed connections over 2 Mbps were the most common

Chart 2.5

Use of intranet and extranet by enterprise size



connection, whereas 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 (chart 2.7). Small enterprises were mainly using modem connections (40 per cent), whereas among medium-sized enterprises fixed connections over 2 Mbps were the most common (37 per cent). No major differences exist according to the activities of the enterprises.

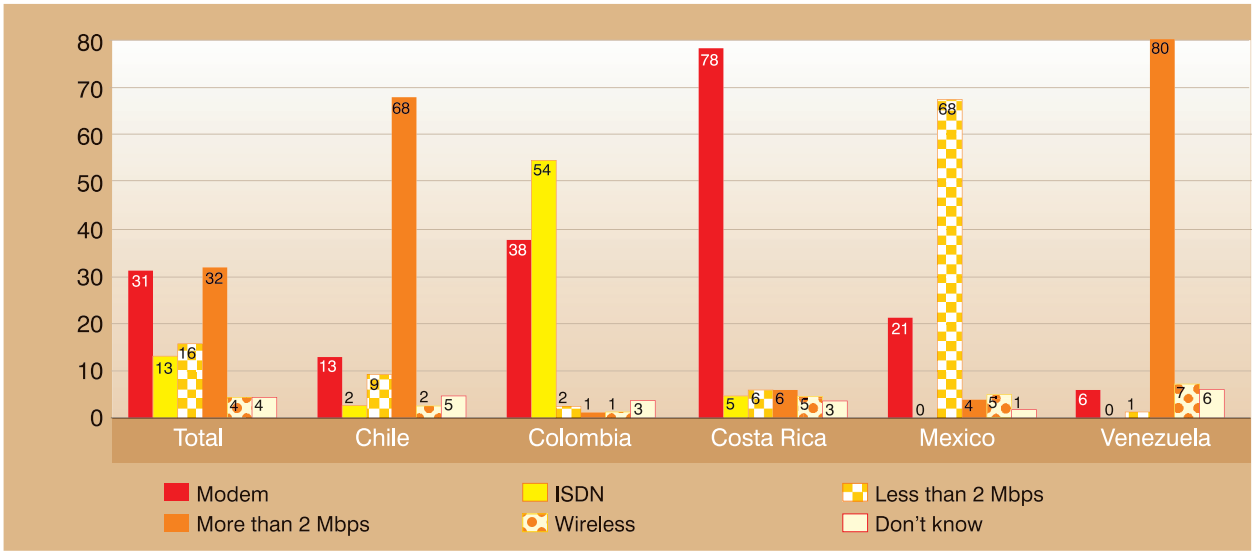
2. E-business

The module on e-business was the most complex one, comprising a range of questions about how

Chart 2.6

Types of Internet connection by country

(percentages)



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 per cent), followed by searching for information (90 per cent), banking and financial services (80 per cent), monitoring the market (54 per cent), communicating with public authorities (53 per cent) and looking for information concerning employment opportunities (27 per cent) (chart 2.8). With regard to differences among countries, as far as e-mailing and information search are concerned, values were similarly high. But in Venezuela, 95 per cent of firms use the Internet for financial services, compared with only 48 per cent in Mexico. Furthermore, Internet use for communicating with the Government was 77 per cent and 73 per cent in Colombia and Venezuela respectively, compared with 16 per cent in Mexico (chart 2.9). Service sector companies are 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.

Chart 2.7

Types of Internet connection by size

(percentages)

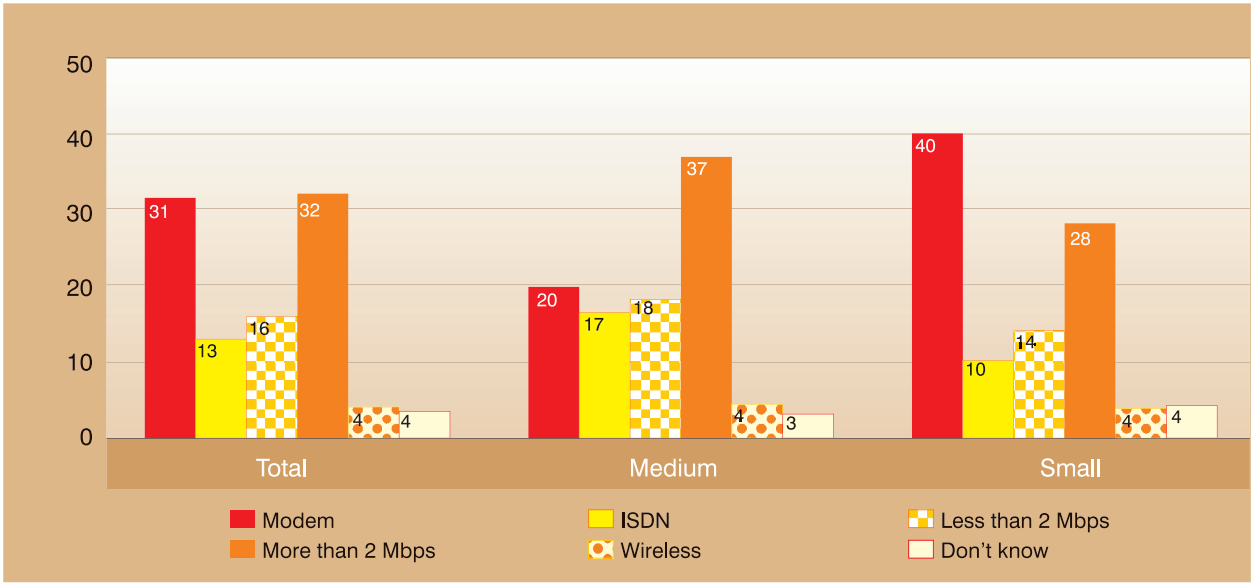
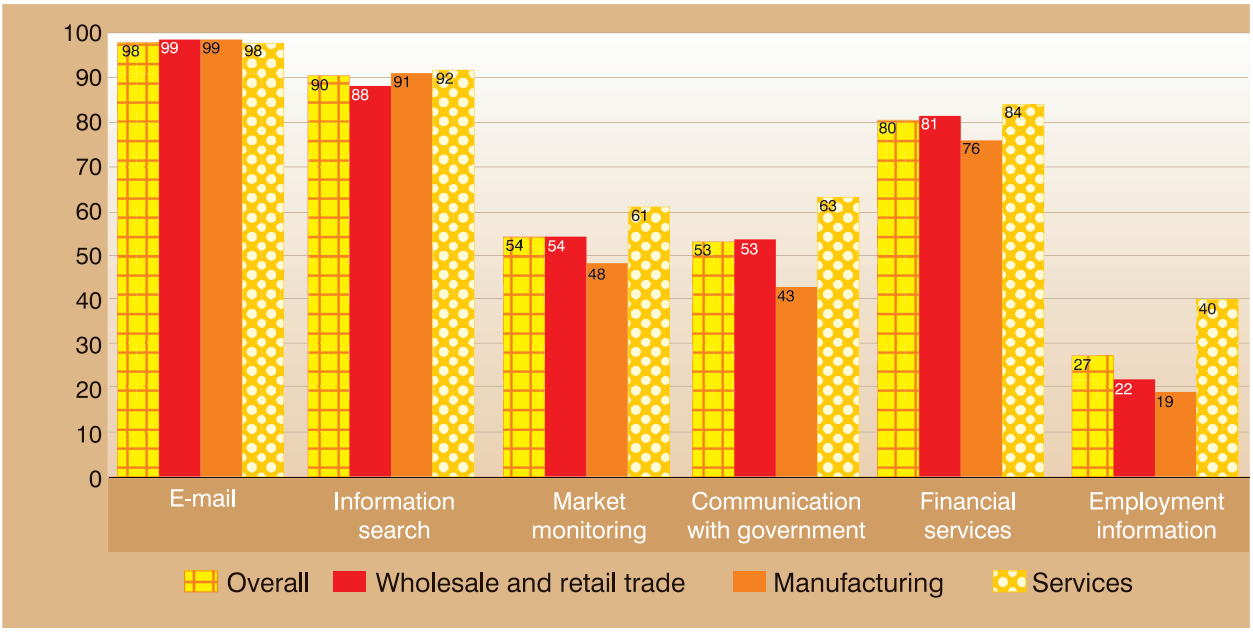


Chart 2.8

SMEs' use of Internet, by sector

(percentages)



More than half of the companies had their own website and 22 per cent were considering creating one within the next two years. Those with websites mainly use them for customers to directly send inquiries to the company, for making available product information and for providing after-sales support (chart 2.10). Only 12 per cent of the companies offer secure online transactions or online payments via their websites. And only 9 per cent featured back-end integration with their 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 offer digital products through their sites.

Chart 2.9

SMEs' use of Internet, by country

(percentages)

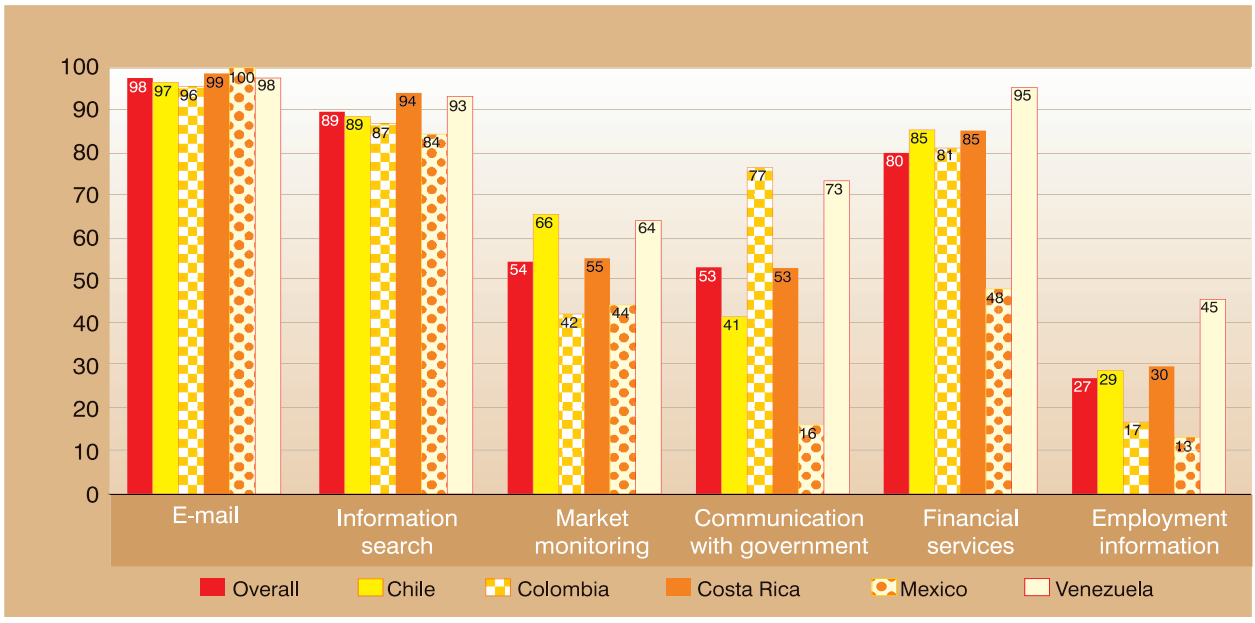
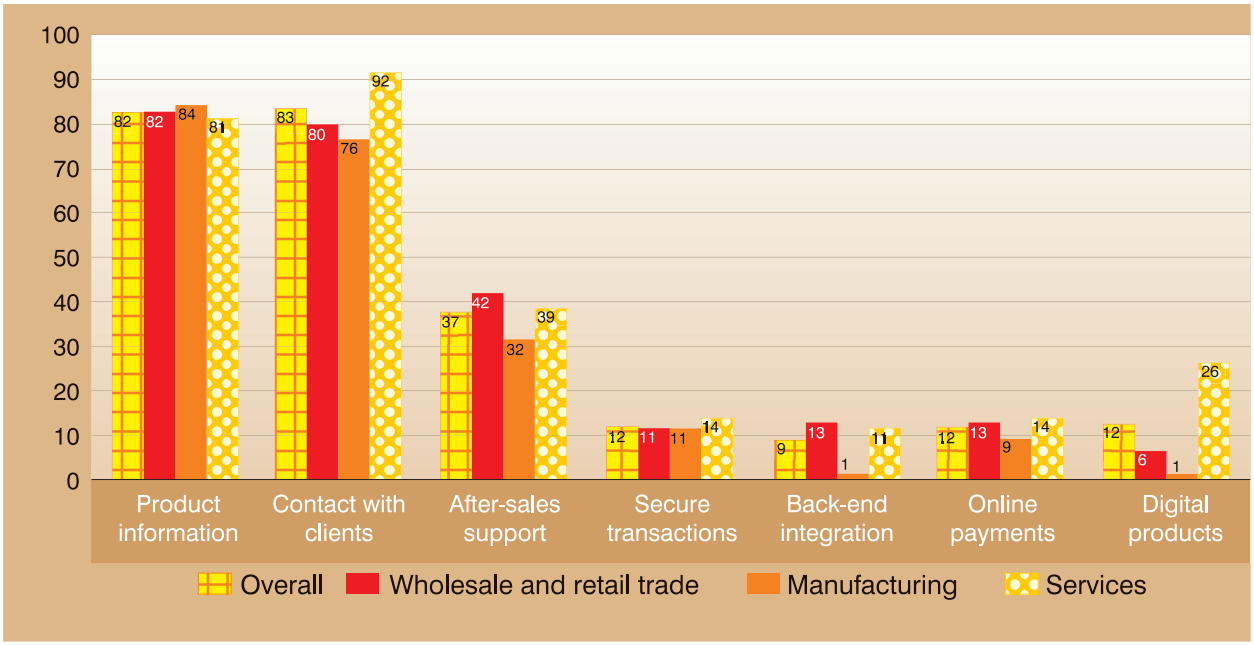


Chart 2.10

Website functionalities by sector

(percentages)



No major differences were found among the countries with respect to the number of companies with websites or 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 tend 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 per cent of all firms having purchased online during 2003 (two thirds from third-party websites, one third in e-marketplaces), compared with 13 per cent which had sold products over the Internet (charts 2.11 and 2.12). In some countries, firms were more engaged in online buying and selling, for example Costa Rica (59 per cent) and Chile (54 per cent), compared with Colombia (27 per cent) and Mexico (16 per cent) (chart 2.13). Asked about the amount of purchases made online, most firms either did not know the answer or provided figures ranging from 1 to 90 per cent of total purchases.

Interestingly, no major difference could be observed with regard to firm size; in fact, the percentages of small firms buying and selling online were even slightly higher than those of medium-sized firms. But small firms use e-markets (rather than their own sites) more than medium-sized ones (chart 2.14). 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

Chart 2.11

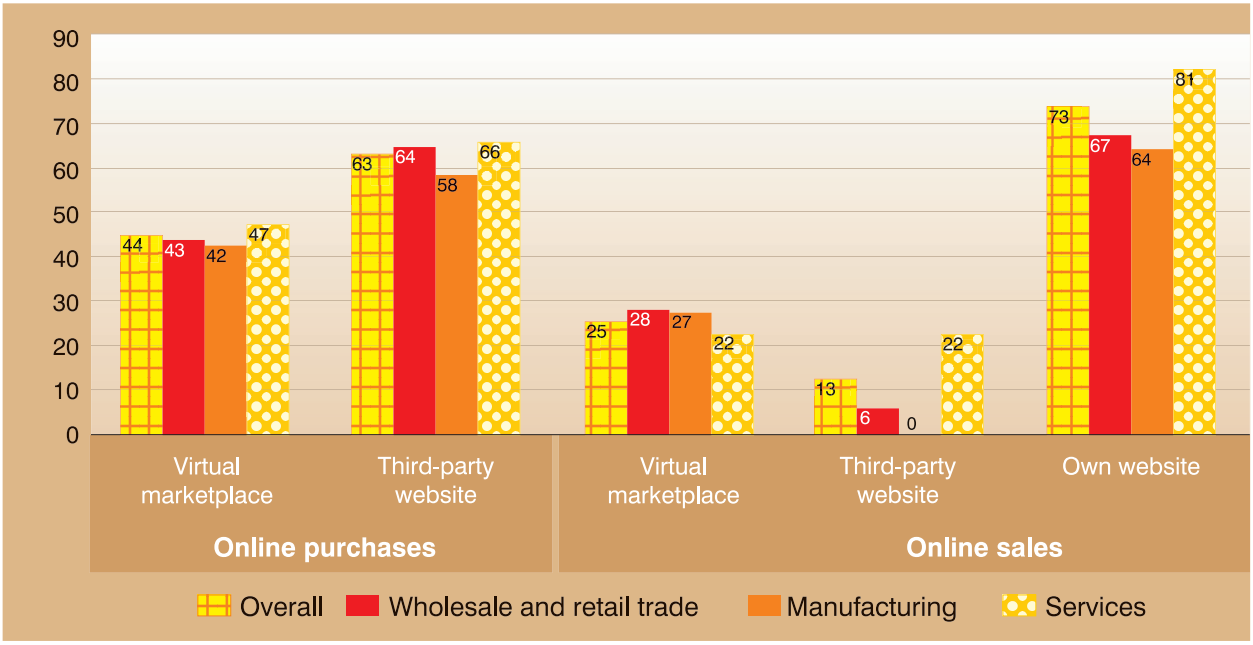
Online transactions by sector

(percentages)

Chart 2.12

Internet transactions by sector (of total transactions)

(percentages)



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 (chart 2.15).

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 (see section B) and the questionnaire therefore included questions concerning the use of computer networks for automating certain business tasks and integrating with systems of other companies. Among

Chart 2.13

Online transactions by country (only companies with Internet)

(percentages)

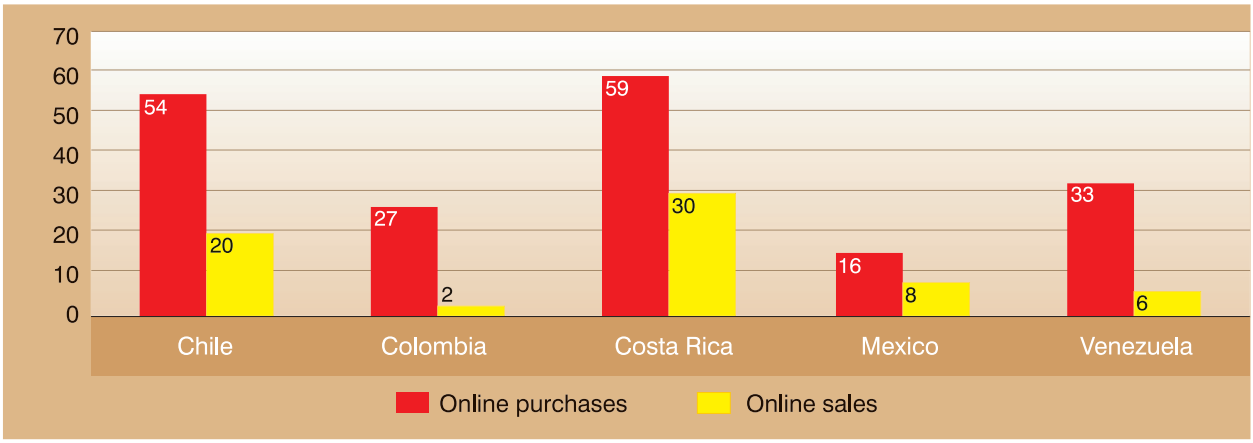
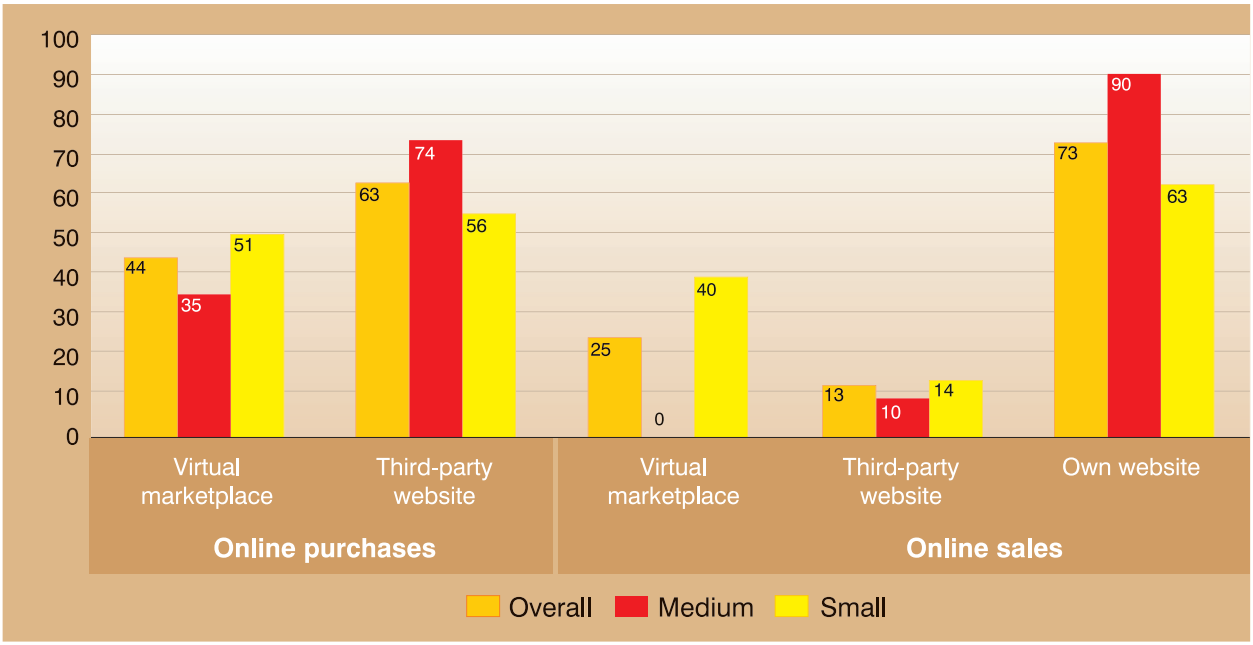


Chart 2.14
Online transactions by size
(percentages)



the SMEs surveyed, 48 per cent reported using an intranet, and 14 per cent 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 per cent respectively of firms with intranets and 25 and 23 per cent of firms with extranets) than in Mexico (27 per cent and 2 per cent respectively) (chart 2.4). As mentioned earlier, intranet and extranet use increases with firm size (chart 2.5).

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

Chart 2.15
Online transactions by country
(percentages)

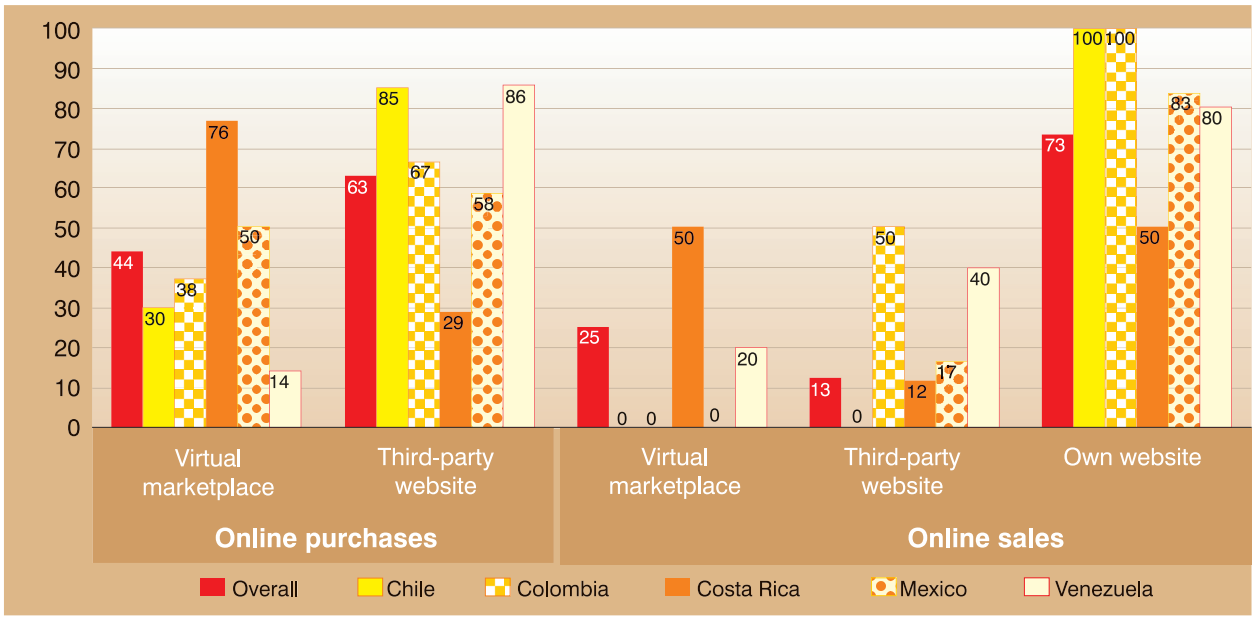
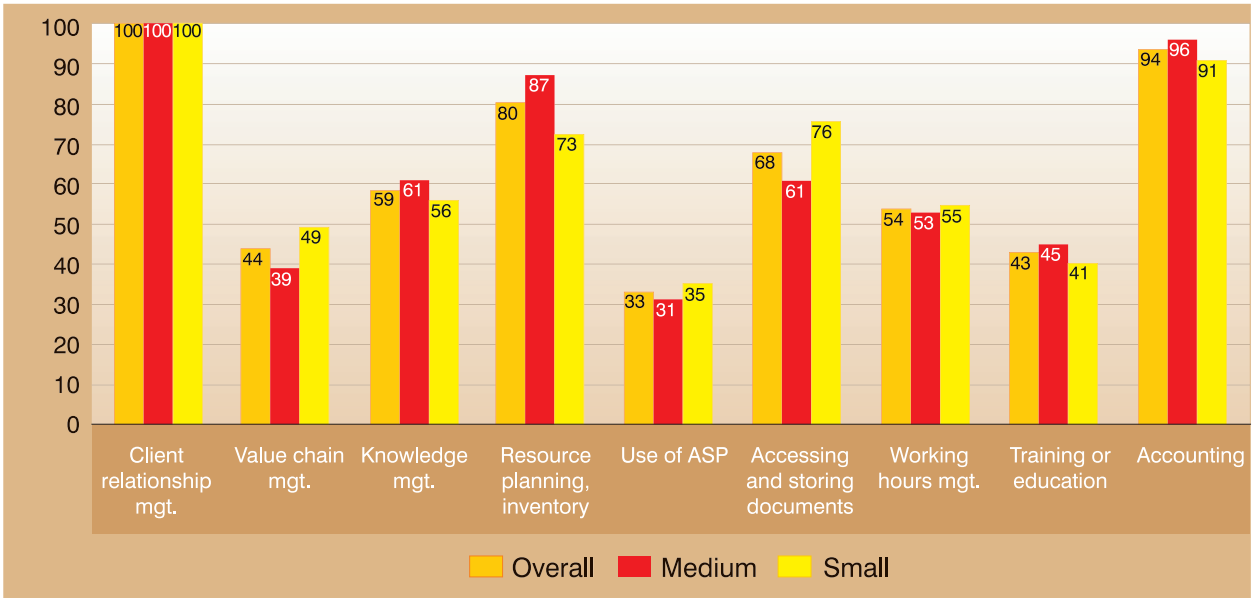


Chart 2.16

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

(percentages)



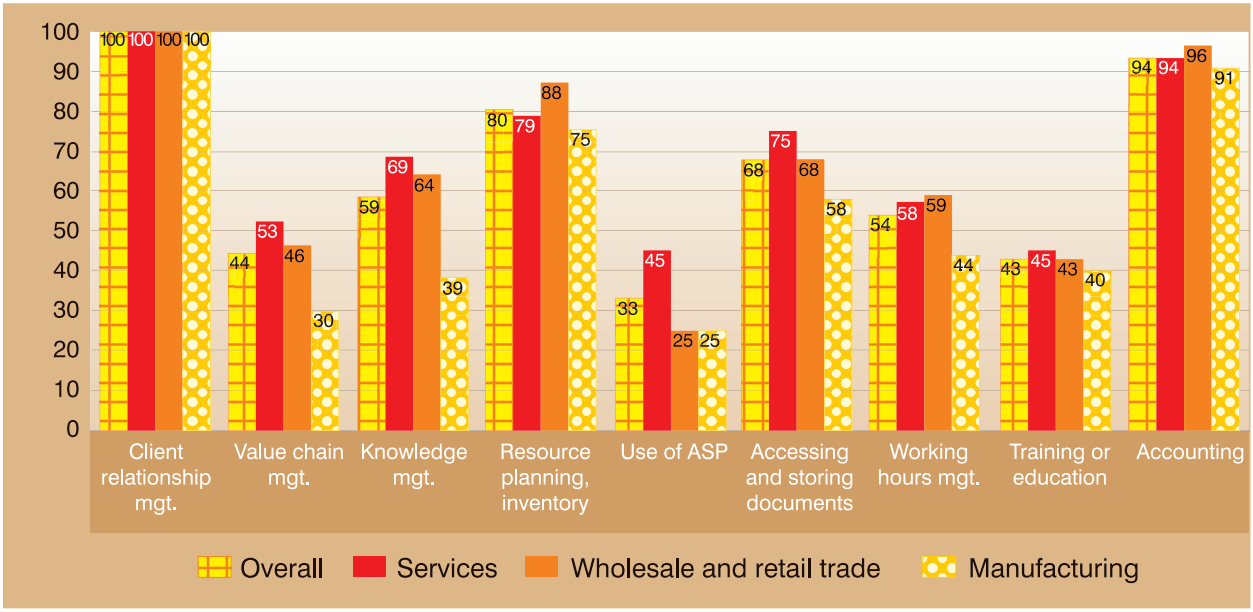
management, knowledge management, planning of resources and inventory, the use of application service providers, document control, management of working hours, training and accounting (see box 2.1). Some of these functions involve a higher degree of automation (e.g. value chain management) than others (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 data-

Chart 2.17

E-business processes by sector (only companies with intranet)

(percentages)



bases 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 usage 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 per cent) and the use of application service providers (ASPs) (33 per cent) (chart 2.16).

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 for 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 per cent and 45 per cent of firms respectively using these applications, compared with 30 per cent and 23 per cent of manufacturing firms (chart 2.17).

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 corresponds to findings elsewhere (see previous section) and 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.

Chart 2.18

Perceived importance of ICTs by country

(percentages)

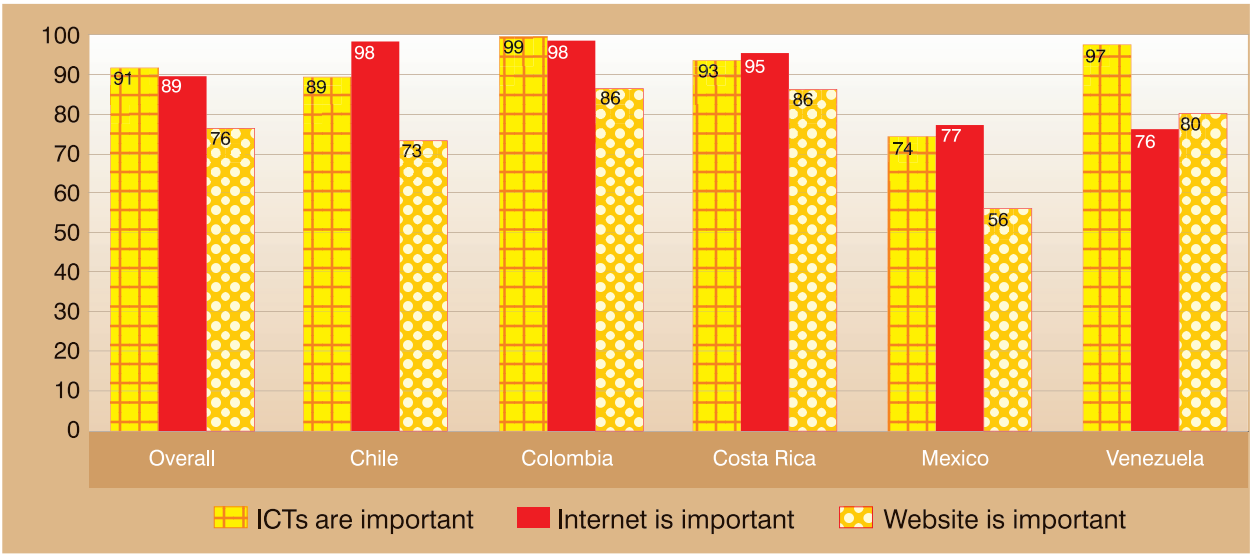
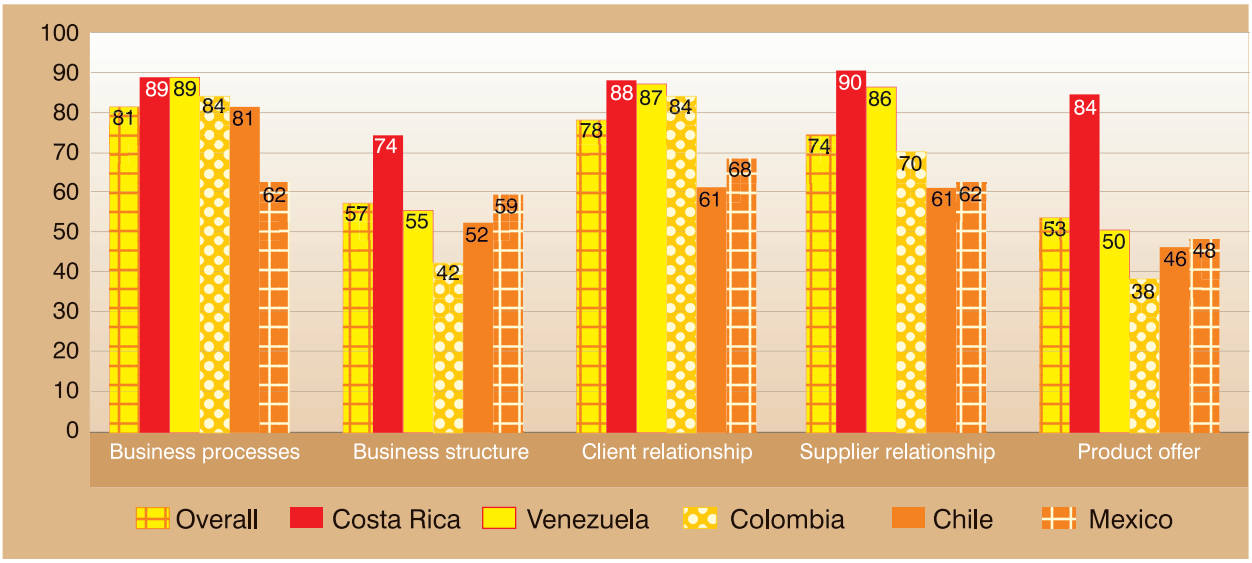


Chart 2.19

Perceived impact of ICTs by country

(percentages)



Some important differences among countries can be observed as regards the uptake of Internet and ICTs: 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 (see below). 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 usage would have been higher.

3. Main perceived impact of using ICT

Almost all companies (90 per cent) consider the use of ICT and the Internet important to their businesses, and 76 per cent believe that having a website is important and are happy with their

Chart 2.20

Projected investment in ICTs by country

(percentages)

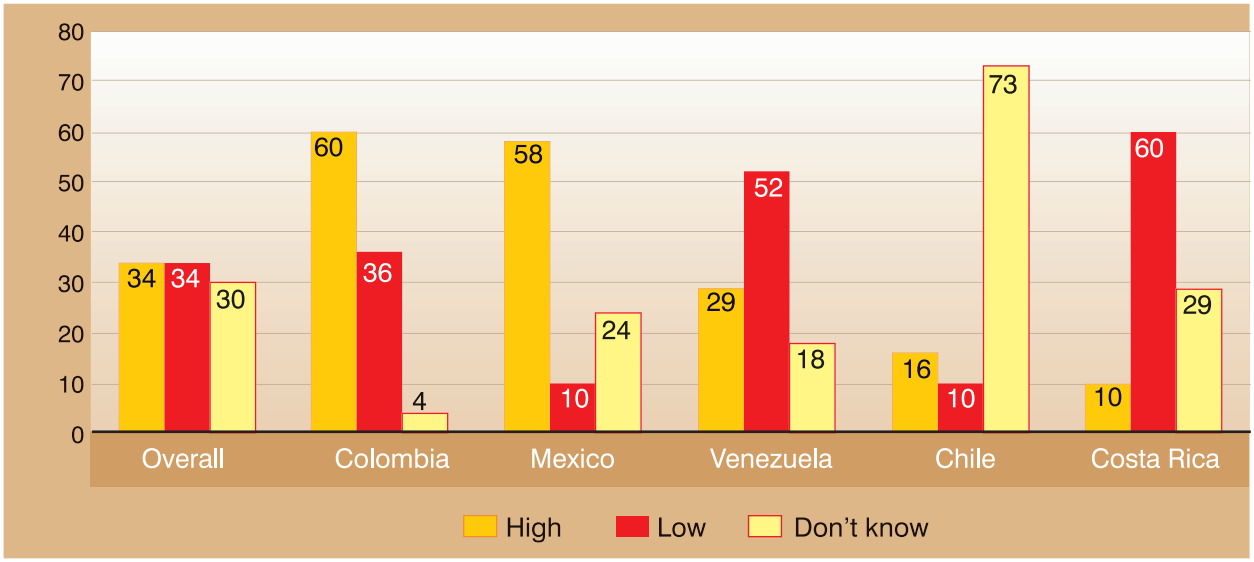
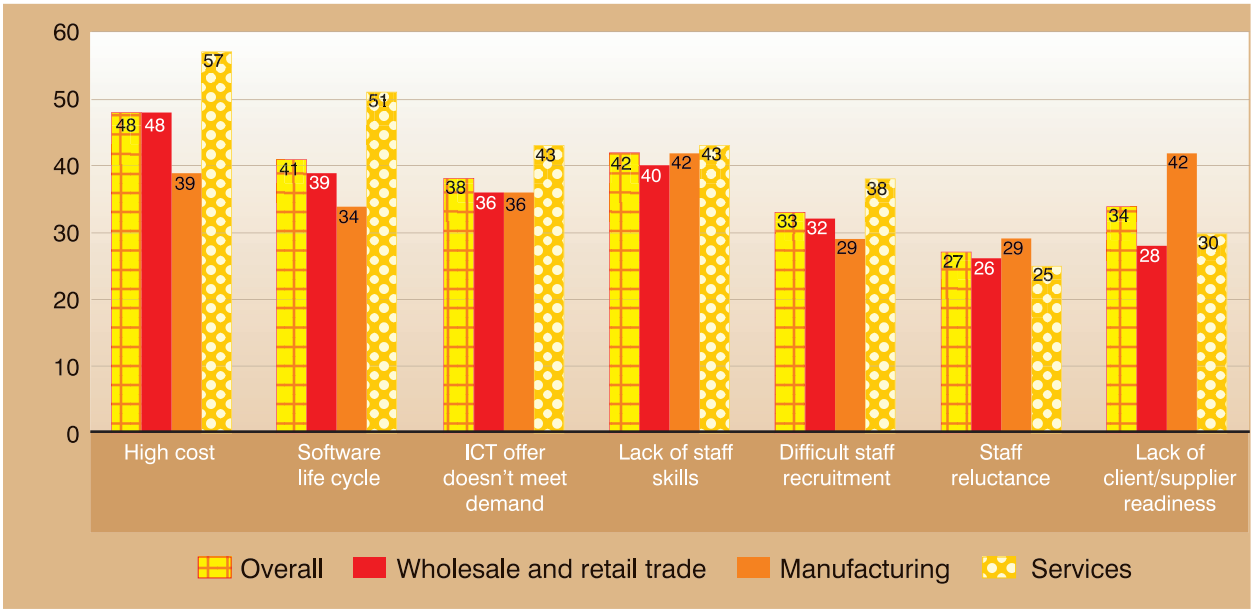


Chart 2.21

Barriers to ICT use by sector

(percentages)



current use of ICTs. There are some differences, however, among the countries: while almost 100 per cent 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 (chart 2.18).

When respondents were asked about the main perceived impact or benefit resulting from ICT usage, they gave the following answers (in order of importance): change in business processes (81 per cent); customer relationship (78 per cent), supplier relationship (74 per cent), business structure (57 per cent), and change in products and services (53 per cent) (chart 2.19). 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.

Interestingly, small companies considered the impact of ICTs more important than did medium-sized companies and were planning larger investments in ICTs for 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 per cent of them indicated that there had been a change in products offered as a result of ICT, compared with 39 per cent of manufacturing firms.

The majority of enterprises (68 per cent) were planning further investments in ICTs during the next two years (high or low), while 30 per cent indicated they did not know yet (chart 2.20). However, there are some major differences among the countries: 96 per cent of companies in Colombia answered this question positively compared with only 26 per cent 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

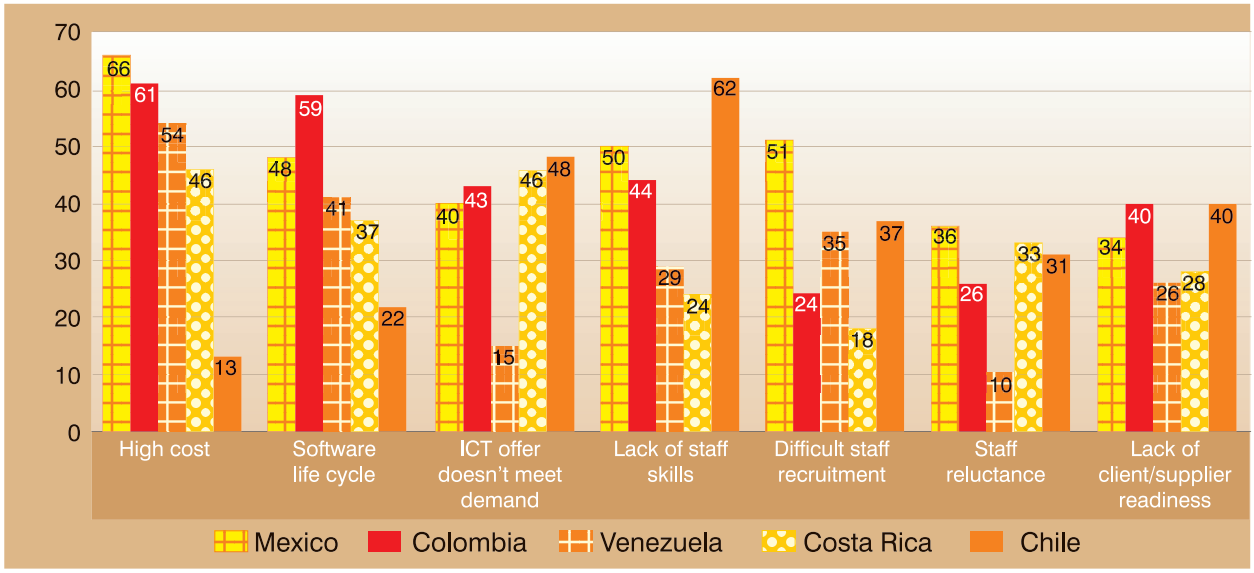
Barriers to ICT use

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 per cent), the short life cycle of software (41 per cent), the fact that ICTs do not satisfy the needs of the enterprise (38 per cent), a lack of readiness on the part of clients or suppliers to use ICTs (34 per cent), and difficulties in finding and recruiting qualified employees (33 per cent) (chart 2.21). It is impor-

Chart 2.22

Barriers to ICT use by country

(percentages)



tant 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 per cent of companies in Chile considered costs related to ICTs to be a problem, 66 per cent of Mexican companies considered this important (chart 2.22). Interestingly, a higher percentage of medium-sized companies indicated that costs related to ICTs were the main factor influencing ICT use (55 per cent compared with 43 per cent 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 per cent compared with only 28 per cent of firms in the wholesale and retail trade).

Chart 2.23

Barriers to Internet use by sector

(percentages)

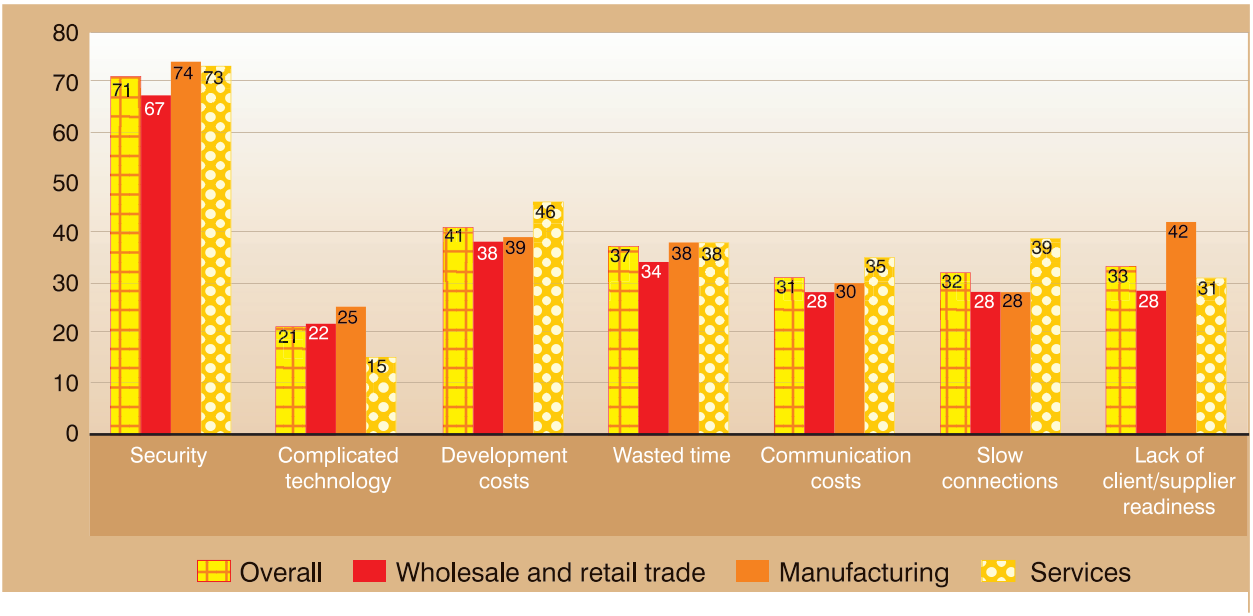
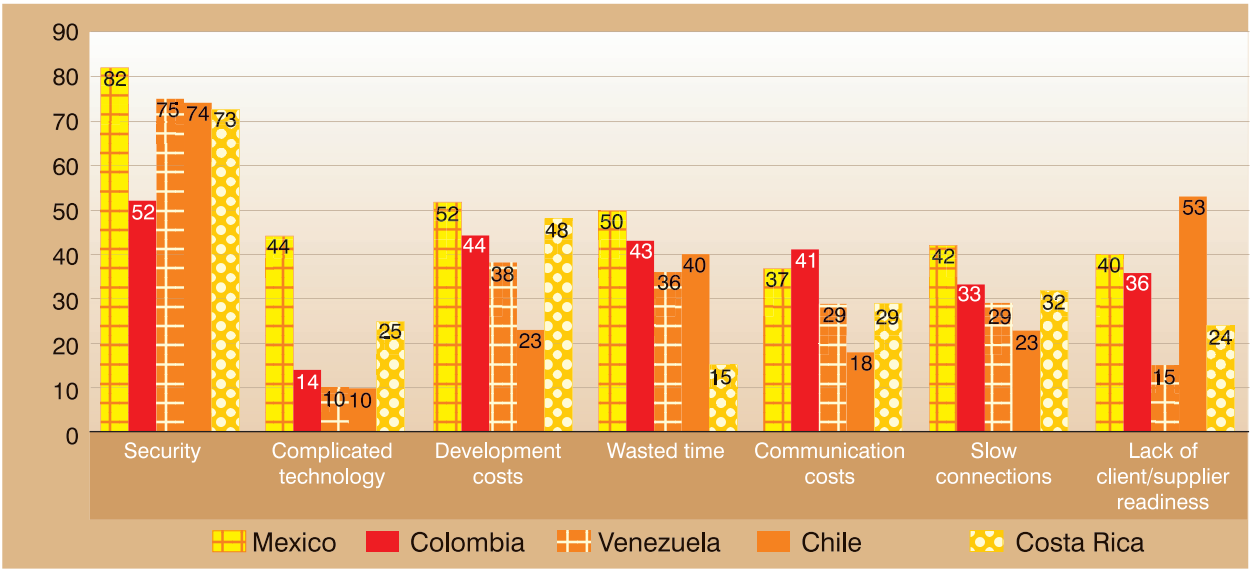


Chart 2.24

Barriers to Internet use by country

(percentages)



Barriers to Internet use

Security concerns were by far the greatest barrier to Internet use among all companies (71 per cent), followed by high development and maintenance costs (41 per cent), loss of time due to irrelevant Internet surfing (37 per cent), the non-preparedness of customers to use the Internet (33 per cent), and slow and unstable data transmission (32 per cent) (chart 2.23). 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.

Chart 2.25

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

(percentages)

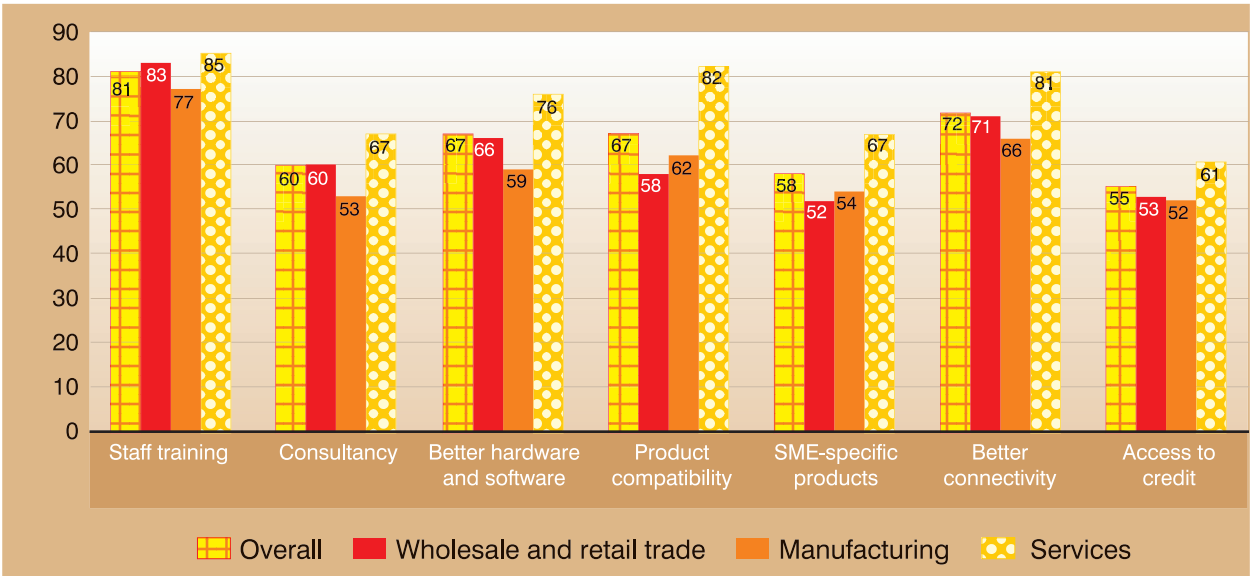
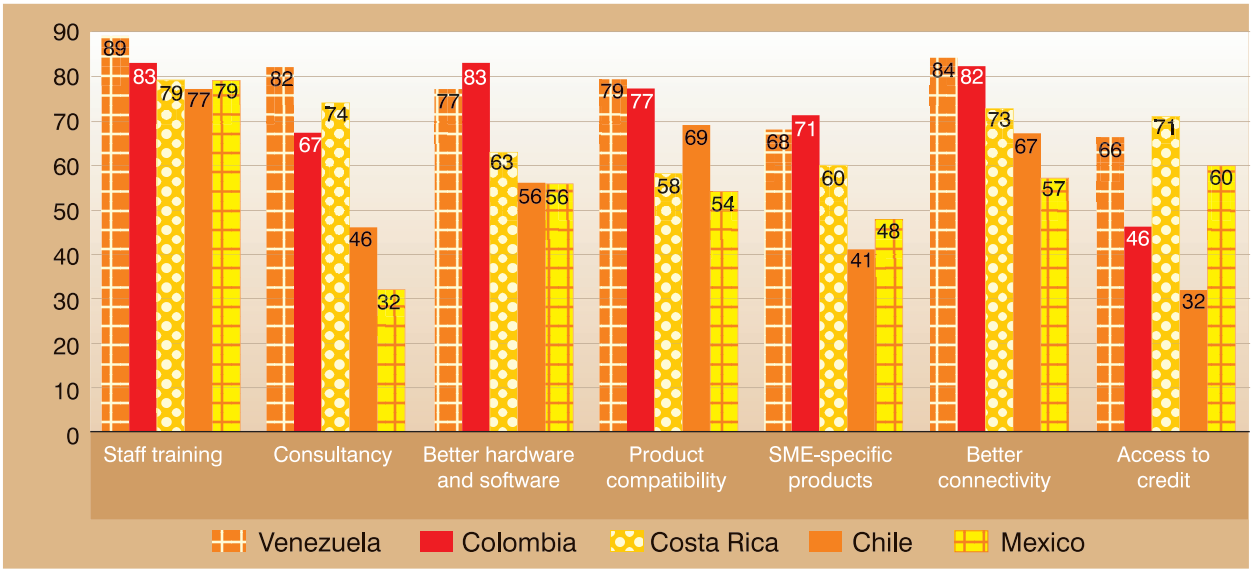


Chart 2.26

Needs in respect of enhancing ICT and Internet use, by country

(percentages)



Other needs

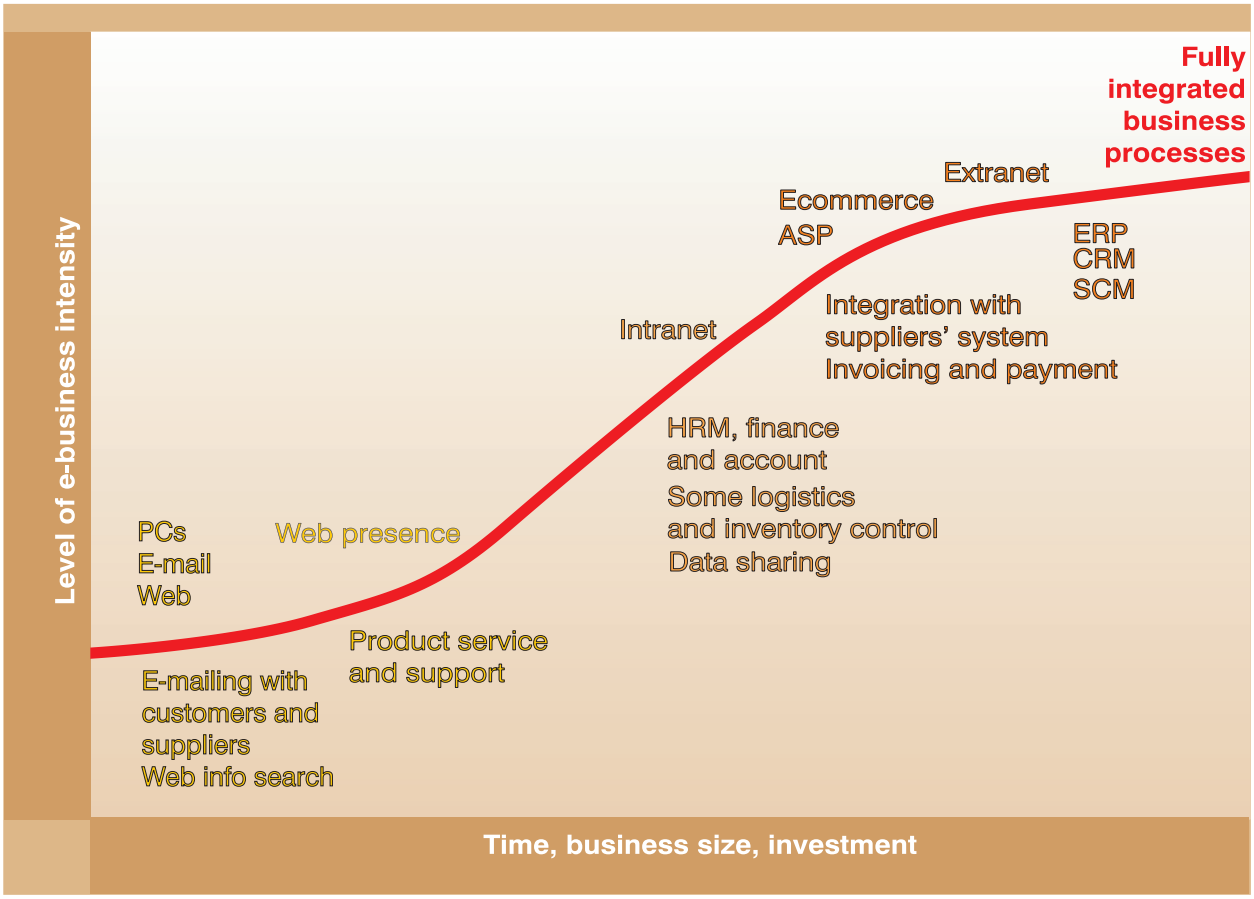
A number of needs were identified, which if met could help SMEs to increase their use of ICTs and the Internet. The most important need with regard to the use of ICTs is the need to train employees. This is followed by (in order of importance) improved connectivity (speed, security etc.), better hardware and software, product compatibility, and consulting on strategy and implementation (chart 2.25). 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 (chart 2.26). 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).

E. 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, getting acess to the Internet was not a major problem for firms – even if connections are mostly slow (dial-up modem). Much more difficult is to fully integrate the companies' business functions using ICTs, and even more so for SMEs in developing countries, where frequently 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 chart 2.27. It uses an S-curve, following an earlier graphical presentation frequently used to illustrate the pattern of ICT developments in countries.[10] A similar approach can be used concerning 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 thus quickly adopted by companies. But putting in place more complex e-business systems, intranets or extranets, and linking up with suppliers' and customers' com-

Chart 2.27
E-Business development



puter systems, require not only technical know-how 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.

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. In Asia, e-commerce sites/portals or e-marketplaces are irrelevant and have not yielded any successes, while in Latin America (in particular Costa Rica) a number of small firms use them for e-commerce activities. Even in developed countries ICT take-up by businesses differs among countries with more or less equal (i.e. good) access to ICTs or level of skills.

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 companies' level of e-business usage. 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 the developing countries, and 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 barrier for Internet uptake is 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 more quickly (and at lower cost) than large companies. This flexibility should provide them with a competitive ede when it comes to the adoption of e-business.

The results of the Latin American and other surveys provide information on how ICTs are used in SMEs. However, in order to evaluate the impact of ICT usage 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 usage 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 provided 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 among 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 to companies for engaging 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.

Annex I

Questionnaire on ICT usage and electronic commerce in SMEs

Modulo A: Información general sobre los sistemas TIC		
A1. ¿La empresa usa computadoras personales (PC),? (Filtro) **A1.1**. ¿Tiene pensado usar Computadoras dentro de los próximos 2 años?	Sí ☐ → ir a A3 Si ☐	No ☐ → ir a A1.1 No ☐
A2. Aunque su empresa actualmente no usa computadoras, ¿usa el Internet en instalaciones externas? **A2.1**. ¿Dónde? (marcar todas las opciones que apliquen)	Sí ☐ → ir a A2.1. Internet Café Casa ☐ Otros ☐ } ir a B2	No ☐ → ir a E1
A3. ¿La empresa usa Internet? (Filtro) **A3.1.** ¿Piensa usar el Internet dentro de los próximos 2 años?	Si ☐ → ir a A4 Si ☐ → ir a B13	No ☐ → ir a A3.1. No ☐ → ir a B13
A4. ¿La empresa usa lo siguiente?	Si	No
E-mail	☐	☐
Extranet[1]	☐	☐

Modulo B: Uso del Internet y de TIC	
B1. ¿Actualmente, cuál es su tipo de conexión al Internet? (Varias respuestas posibles)	
MODEM análogo (Línea telefónica estándar)	☐
ISDN[2]	☐
Conexiones fijas de menos de 2Mbps (xDSL, ADSL, SDSL, etc.)	☐
Conexiones fijas de 2Mbps o más (Frame relay[3], otro servicio de red de banda ancha)	☐
Conexión inalámbrica (satélite, teléfono celular, otros)	☐
Otro (especifique)	☐
No sabe	☐
B2. ¿Para cuáles de las siguientes actividades usa el Internet? (Varias respuestas posibles)	
Correo electrónico	☐
Búsqueda de información	☐
Monitorear el mercado (por ejemplo precios)	☐
Comunicación con autoridades públicas	☐
Servicios bancarios y financieros	☐
Información sobre oportunidades de empleo (reclutamiento y búsqueda)	☐

B3. ¿La empresa tiene un sitio web? (Filtro) **B3.1**. ¿Tiene pensado establecer un sitio web en los próximos 2 años?	Si ☐ → ir a B4 Si ☐ → ir a B7	No ☐ → ir a B3-1 No ☐ → ir a B-7
B4. ¿Con cuáles funcionalidades cuenta el sitio web? (Varias respuestas posibles)		
Facilitar accesos a catálogos de productos, listas de precios, etcétera.		☐

[1] Una extensión segura a Internet que permite a usuarios externos acceder a (partes de) Intranet de la organización.

[2] **ISDN** = **I**ntegrated **S**ervices **D**igital **N**etwork. Es un sistema digital para la transmisión rápida de datos a través de la línea telefónica (cables de cobre).

[3] Servicio de transmisión de voz y datos a alta velocidad que permite la interconexión de redes de área local separadas geográficamente.

Inquietudes / funciones de contacto con la empresa	☐
Soporte posventa	☐
Capacidad de proveer transacciones seguras (por ejemplo a través de “firewalls” o servidores seguros)	☐
Integración con sistemas de Back End[4]	☐
Otro (especifique)	☐

B5 ¿Existe la posibilidad para que sus clientes de paguen en línea los productos? (E-Payment)		Si ☐ ▯	No ☐
B6. ¿Qué porcentaje de sus clientes ha sido obtenido por Internet?		%	
B7. ¿Su empresa entrega algún producto o servicio al 100% digital? **B7.1.** ¿Cuál?		Si☐→ ir a B7.1	Si☐→ ir a B7.1
B8. ¿La empresa compró productos a través de Internet en 2003? (Filtro) **B8.1.** ¿Dónde?	Si ☐ Mercado Virtual (Marketplace) ☐ Sitio Web de tercero ☐	No ☐ → ir a B10	No sabe ☐ → ir a B11
B9. Porcentaje del total de compras en Internet	%	No sabe ☐	
B10. ¿Con qué porcentaje de sus proveedores trabaja usted por Internet?		%	
B11. ¿La empresa vendió productos a través de Internet en 2003? (Filtro) **B11.1.** ¿Dónde?	Si ☐ Mercado Virtual (Marketplace) ☐ Sitio Web de tercero ☐ Propio Sitio ☐	No ☐ → ir a B13	No sabe ☐ → ir a B13
B12. Porcentaje del total de ventas	%	No sabe ☐	
B13. ¿La empresa usa Intranet?[5]		Si ☐ → ir a B14	No ☐ → ir a D1

B14. ¿En su empresa se usan sistemas de computación (o digitales) para lo siguiente?	Si ▯	No
Gestión de la relación con los clientes	☐	☐
Gestión de la cadena de valor	☐	☐
Gestión de conocimiento	☐	☐
Planeación de recursos de la empresa, inventario	☐	☐
Utilización de aplicaciones directamente en Internet a través de un proveedor de servicios	☐	☐
Almacenamiento de (y acceso a) documentos	☐	☐
Manejo de las horas de trabajo	☐	☐
Entrenamiento o educación	☐	☐
Contabilidad	☐	☐

Modulo C: Impacto del uso del Internet y de las TIC en la PYME			
	Si	No	No sabe
C1. ¿Actualmente, el uso de TIC en su empresa es importante?	☐	☐	☐
C1.1. ¿Será importante en los siguientes 2 años?	☐	☐	☐
C2. ¿Tener acceso al Internet es importante para su empresa?	☐	☐	☐

[4] Integración del sitio web con los sistemas de la empresa para el intercambio automático de información de negocios (por ejemplo, con los sistemas de contabilidad e inventario).

[5] Una red de comunicación interna, usando el mismo protocolo que Internet.

	Si	No	No sabe
C3. ¿Tener un sitio web en Internet es importante para su empresa?	☐	☐	☐
C4. ¿Los procesos de la empresa han cambiado por el uso de TIC?	☐	☐	☐
C5. ¿La estructura de la empresa ha cambiado por el uso de TIC?	☐	☐	☐
C6. ¿El uso de TIC ha influido la relación con sus clientes?	☐	☐	☐
C7. ¿El uso de TIC ha influido la relación con sus proveedores?	☐	☐	☐
C8. ¿La oferta (productos y servicios) de su empresa ha cambiado por el uso de TIC?	☐	☐	☐
C9. ¿Está satisfecho con su actual uso de TIC?	☐	☐	☐
C10. ¿Cuánto invertirá en el uso de TIC en los próximos 2 años?	Poco ☐	Mucho ☐	No sabe ☐
Modulo D: Barreras y Necesidades en el uso del Internet y de las TIC en general			
D1. En su opinión, ¿Cuánto influyen las siguientes barreras en el uso de las TIC en su empresa?	Poco	Mucho	No sabe
Costos de las TIC	☐	☐	☐
Software tiene un ciclo de vida muy corto	☐	☐	☐
Oferta de las TIC no satisface las necesidades de la empresa	☐	☐	☐
El personal no tiene conocimientos suficientes	☐	☐	☐
Difícil encontrar y reclutar personal calificado	☐	☐	☐
El personal es renuente al uso de las TIC	☐	☐	☐
Clientes / Proveedores no están listos para usar las TIC	☐	☐	☐
Otro (especifique)	☐	☐	☐
D2. ¿Cuánto influyen las siguientes barreras en el uso del Internet en su empresa?	Poco	Mucho	No sabe
Seguridad (por ejemplo virus)	☐	☐	☐
Tecnología demasiado complicada	☐	☐	☐
Costos de desarrollo y mantenimiento demasiado altos	☐	☐	☐
Pérdida de tiempo de trabajo con navegación irrelevante	☐	☐	☐
Costos altos de la comunicación (conectividad)	☐	☐	☐
Comunicación de los datos lenta o inestable	☐	☐	☐
Clientes no están preparados para el uso de Internet	☐	☐	☐
Otro (especifique)	☐	☐	☐
D3. ¿Qué tan importante considera los siguientes factores para el uso de las TIC o del Internet en general?	Poco	Mucho	No sabe
Capacitación del personal	☐	☐	☐
Consultoría en la estrategia e implementación	☐	☐	☐
Mejores (nuevos) productos de hardware y software	☐	☐	☐
Compatibilidad de diferentes productos	☐	☐	☐
Productos específicos para PYMEs (software)	☐	☐	☐
Mejor desempeño (velocidad, seguridad, etc.) de la conectividad	☐	☐	☐
Acceso a crédito para invertir en las TIC y el Internet	☐	☐	☐
Otro (especifique)	☐	☐	☐

Módulo E: Información de la Empresa[6]	
E1. Nombre y Dirección de la empresa	
E2. Actividad de la empresa[7]	
E3. Nombre del Contacto (entrevistado)	
E4. Cargo en la empresa	
E5. No. de empleados a finales de 2003	
E6. Total volumen de venta (= turnover) en el 2003	

[6] Los datos que se preguntan en este módulo se encuentran en el GoldMine y por lo tanto las preguntas tienen carácter de confirmación.

[7] Según definición debe de ser el dueño de la empresa, o el drector general, o el gerente general. Si no estos no están disponibles, el gerente de sistemas o el gerente de administración pueden responder a la encuesta.

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Notes

1. Early collectors of official statistics on ICT usage by enterprises include Australia, Canada, the Nordic countries, the United Kingdom and the United States.

2. These measurements exclude sectors such as financial services and travel and tourism.

3. Economist Intelligence Unit (2004) and World Economic Forum (2004).

4. For a detailed analysis of business process outsourcing and its potential for developing countries, see chapter 5 of the *E-Commerce and Development Report 2003*.

5. Asia Foundation (2003).

6. http://www.uneca.org/aisi/docs/SCANworkshop/ICT%20PENETRATION%20AND%20USAGE%20IN%20ETHIOPIA2.ppt

7. Ministère de l'Industrie, du Commerce et des Télécommunications, Department du Commerce et de l'Industrie (2003).

8. See www.emarketer.com.

9. http://www.oecd.org/department/0,2688,en_2649_34449_1_1_1_1_1,00.html

10. Industry Canada has presented a graphical presentation of ICT developments in countries based on the S-curve in several of the documents of the OECD Working Party on Indicators for the Information Society (WPIIS). For further discussion, see for example chapter 1 of the *E-Commerce and Development Report 2001*.