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**ICTs and Enterprises
in Developing Countries:
Hype or Opportunity?**

by

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InFocus Programme on Boosting Employment
through Small Enterprise Development
Job Creation and Enterprise Department



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Foreword

This Working Paper is the first in IFP/SEED's series to focus on Information and Communication Technologies (ICTs). While various parts of SEED's work focuses on media such as radio, TV and newsprint, a fresh focus on ICTs was triggered by the preparation of the ILO's World Employment Report (WER) for 2001, entitled "Life at Work in the Information Economy". The research into the potential and challenges of ICTs for enterprises in developing countries was brought together by Michael Henriques, Director of the Job Creation and Enterprise Development Department, and used in various places within the larger document. Since then, the material has been expanded and updated, and is published here as a separate document.

The role of ICTs in the development of small enterprises has been much discussed. This document brings together material from a wide variety of sources, including development agencies, governments and the private sector. In particular, it aims to present current realities, rather than to emphasize what might one day be possible. It is clear that ICTs are transforming many aspects of life for enterprises; many of the impacts will, however, take many years to fully materialize.

So while the potential is truly exciting, it is also very important to be realistic about prospects now, for enterprises in developing countries. The debate is therefore often polarized, between those who expect enterprises to be transformed soon, and others who believe that ICTs are unlikely to have any significant impact on the great majority of people in developing countries, for many years to come. This publication aims to find the middle ground between these two extremes, and to identify ways in which to promote ICT-related opportunities for Decent Work, particularly within small enterprises in developing countries.

Jim Tanburn, as Senior Specialist in SED within IFP/SEED, initiated the preparation of this publication, with guidance from Michael Henriques. Alwyn Didar Singh, an international expert in eCommerce has contributed much additional material and some valuable insights, based on his extensive work in this area for the South Centre, International Trade Centre-UNCTAD/WTO, ILO and other agencies.

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Executive Summary

Information and Communication Technologies (ICTs) have changed the ways in which enterprises work. ICTs in this paper are taken to include particularly Internet-based technologies and mobile telephony, although more traditional forms of communication, such as radio, must not be overlooked. How can these technologies be made relevant to existing and start-up enterprises in developing countries, in ways which do not increase the gap between the rich and the poor? This gap, now being referred to as the 'digital divide' is a cause of major concern, both as it applies between countries, and also within countries.

Some have argued that ICTs cannot possibly benefit poorer people in developing countries, and it is of course true that some ICTs are likely to remain out of the reach of the rural poor, in particular, for many years to come. The Internet is an obvious example, in that most applications require not just literacy, but an ability to speak English. But there are other examples, such as second-generation mobile telephony, which are much more suitable to the needs of the rural poor. Mobile telephones do not require literacy, language skills or even a fixed premises. Payment can be made in small instalments, and the telephone can itself be used for many aspects of business operation; indeed, in these aspects, it mirrors micro-finance to some extent.

But the technology alone is not sufficient. Many other factors must also be in place. One of the key themes of this publication is that governments in developing countries must allow a competitive environment, avoiding in particular the undue protection of traditional telecommunications providers. This is a precondition if ICTs are to find widespread application and acceptance. The lack of a competitive environment explains many of the anomalies currently found in some developing countries. For example, the cost of local calls in many developing countries is particularly high because of the lack of competition, but other communication costs are also often high, for the same reason.

While emphasizing the central role of governments in creating good conditions for ICT adoption, the paper also explores the many roles which the private sector can play; evidence is presented of how quickly and comprehensively the private sector is able to install the infrastructure required, if the right incentives are in place. Illustrations are provided, even for cases where FDI would not have been expected, or where the potential for instability would lead one to expect the private sector to be rather reluctant.

Meanwhile, small enterprises need to communicate, in all aspects of their business operation; high communication costs therefore represent a substantial burden, and incur a major penalty in terms of economic growth. Some estimates of the extent of this penalty are included in the publication. Several other factors are also identified, which have contributed to the continuing high costs of communications in many developing countries. These include a perception that ICTs are only for the elite; this is to some extent self-fulfilling, since the fiscal structures and business models continue to cater for the elite, even though some of the technologies can now be made available at low cost, given the right business model.

In the case of second-generation mobile telephony, and given an encouraging policy environment, the challenge for telecommunications providers is to adopt a low-margin, high-volume business model. Early evidence shows that this can be very profitable, even in rather poor countries, and can make ICTs available even to relatively poor people within those countries. But this requires a leap of faith, in that many telecommunications providers may feel more comfortable with the high-margin, low-volume business model which they had operated with first-generation mobile phones.

Appropriate business models are also important in other ICTs; the spread of the Internet café, for example, has greatly increased access for poor people to the Internet. The private sector in some developing countries, given the right environment, is providing Internet access for just a few cents per hour, and this will have important implications for enterprise development in the longer term, as local language content and awareness generally both increase. On the other hand, the installation of telecentres, using public funds, raises questions of sustainability and scale of outreach, and it is less clear whether that modality represents a way to achieve the outreach desired.

Many examples of innovative applications of ICTs are given, tailored to local circumstances and opportunities. If governments can provide an encouraging and competitive environment, and if the private sector can develop business models which serve all levels of society, then ICTs can deliver real benefits to enterprises, including especially small enterprises, in developing countries.

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1. Introduction

The communication and information revolution, combined with the application of Moore's Law (which predicted that every two years computer chips would have twice the speed and cost half as much) and the increasing competition within the telecommunications sector, have led to the plummeting of global communication cost.¹ The net effect can be summed up as the 'death of distance'.² It's getting to be a smaller and smaller inter-connected world. Who will, and who is benefiting from this new world of ICTs (information and communication technologies)? What impact is this having on the developing world in particular? This working paper attempts to provide a cognitive map of some of the major issues, the benefits and the challenges facing enterprises in developing countries.

Information and communication are both central to business operations. The rate of adoption of ICTs by enterprises in developing countries is therefore crucial, if the benefits of the new digital economy are to be spread widely round the globe. But it is clear that there are no simple answers: the situation is both multi-faceted and changing rapidly. Therefore, it is important to consider first whether the traditional category of 'developing country' is applicable in this context. For this, a framework must be provided, within which the various aspects of ICT adoption by business can be discussed. Finally, it is important to address the common notion that ICTs benefit more the developed countries and the elite in countries, widening the gap between countries on the one hand, and the rich and poor within developing countries, on the other.

It will be argued that within the category of 'developing country', new gradations are emerging. Some countries are grasping the opportunities, and may even be narrowing the digital divide. Other countries are placing barriers in the way of ICT adoption, resulting in the digital divide further increasing. Finally, it is argued that, where those barriers are not in place, ICTs can become an integral part of the daily operations of even very small enterprises in developing countries. Thanks to new technologies and the new emerging business models, the benefits of ICTs and e-Commerce can indeed be made available to large numbers of resource-poor people globally.

1.1 Where and what is a 'developing country', in the context of ICT?

Most developing countries trail far behind developed country markets in the availability and access to the ICT technologies and infrastructure. For example, 65 per cent of households in the world have no telephone, whereas 90 per cent of households in high income countries have a telephone.³ The personal computer ratio per 100

¹ For example, between the early seventies and late nineties, the cost of a three minute telephone call between London and New York fell some fifty times (from around \$14 to 30 cents). Today several phone companies and ISPs (Internet service providers) are offering free local calls and free Internet access.

² A concept propounded in the book entitled, 'Death of Distance', Cairncross, F. (1997).

³ Access to telecommunication is often measured by "teledensity" which gives the number of main telephone lines per 100 inhabitants. About a quarter of the world's countries have a teledensity of less than one and another 47 countries only have between 1.4 to 8.6 main telephone lines per 100 inhabitants. This should be compared with a teledensity of between 27.8 and 68.3 for a group of 46 countries with the highest number of main telephone lines per 100 inhabitants (Source: www.itu.org).

inhabitants is 18 for high-income countries, 2.3 for medium-income and just 0.1 for low-income. Developed countries today have 312 ISPs (Internet Service Providers) per 10,000 people compared to just six ISPs per 10,000 people in developing countries.⁴ Teledensity (main lines per 100 inhabitants) is 48 for developed countries, 10 for middle income and 1.5 for the least developed countries (LDCs). There are also enormous differences in access to telecommunications both between and within developing countries. For instance, while in developing countries a considerable proportion and sometimes the majority of the population lives in rural areas, over 80 per cent of the main telephone lines are located in urban areas. The social and economic divide is now getting “digital”.

This is the macro picture. However, a review of the environments within which enterprises are able to access ICTs quickly shows that the traditional category of ‘developing country’ is not very appropriate. Countries as diverse as Estonia, Malaysia and Costa Rica have earned acclaim for their progress in this area, while other, wealthier countries lag behind.⁵ Some countries in East Asia have made particularly important investments and strategic choices, to ensure that the environment is conducive to the adoption of ICTs by business. Hong Kong and Singapore, for example, now have more secure servers per person than there are in the European Union!

The highest growth in Internet usage by business may currently be in Latin America, where online commerce spending increased 361 per cent in 1998.⁶ Similarly, Internet usage grew by 240 per cent in the Philippines last year. The number of mobile-phone subscribers in Cambodia exceeded the number of fixed lines within a year of introduction, and is now over twice as high; Eastern Europe has the highest growth rates of mobile telephone subscribers in the world. However, McConnell International’s Global E-Readiness Survey⁷ shows clearly that all developing countries continue to have major obstacles to ‘E-Readiness’; it also shows that countries in Africa are least well prepared, but that there are countries in Asia and Latin America which also have problems.

Before considering what these problems might be, it is important to consider first how enterprises in developing countries may benefit from ICTs. In this consideration, a distinction is made between mainstream enterprises in traditional areas, which may adopt ICTs to enhance various aspects of their existing operations, and new enterprises which have some aspect of ICT as their core business.

⁴ Source: ITU, Geneva.

⁵ This scenario is limited not just to developing countries as in developed countries too there are large differences between access and usage of Internet for example between the US, Europe and Japan (in that order) for example.

⁶ ITU, 1999. Challenges to the Network: Internet for Development. Geneva.

⁷ McConnell International, August 2000: Risk E-Business: Seizing the Opportunity of Global E-Readiness. www.mcconnellinternational.com/ereadiness/EReadinessReport.htm

2. ICTs and enterprises

2.1 How do traditional enterprises in developing countries benefit from ICTs?

It is very clear that traditional enterprises in developing countries can benefit tremendously from ICTs; among the most notable areas are savings in communications costs, increased availability of information, affordable global reach, reduced transaction costs, lowered barriers to entry and new sources of revenue. Quantifying these benefits is, however, difficult at this point, since data are sparse and inconsistent. Even estimates of the size of the e-commerce sector globally differ by a factor of 10 or more. Despite such wide variations the fact of the matter remains that all such projections are indicative of the high growth trend of this sector. Interestingly, growth is not just expected to be confined to the developed world and many surveys have projected high growth especially in the developing countries in Asia.⁸

In the absence of hard data however, a consideration of the benefits of ICT adoption in developing countries must therefore rely mainly on macro-economic estimates and illustrative micro-level anecdotes at this time. At the macro-economic level, the benefits are probably massive. Recent econometric studies have found evidence of a causal link between telecommunications development and economic development. For example, McKinsey estimates that adding one new telephone to the network in countries with a GNP per capita of \$100 increases GNP by \$12,000.⁹ The ITU estimates that adding one mobile telephone per 100 inhabitants increases GDP per capita by just under \$1,000.¹⁰ Indeed, some argue that the low rate of telecommunications development is a significant factor in helping to explain Africa's overall slow growth rates. Meanwhile, studies of returns to the Internet in particular have not yet been carried out in developing countries, as the technology is still too new. However, there are strong reasons to believe that returns should be as high or even higher than those of basic telephony.

At the micro level, the overall benefits of ICT access are widely appreciated by enterprises in developing countries. A survey of small enterprises in the Philippines, for example, found that they overwhelmingly ranked communications services as the most important, followed by information services. 74 per cent noted that access to telecom services had definitely increased their business profits.¹¹ Interestingly however, an IFC survey in 1998 revealed that the use of Internet by developing country firms executives was perceived to benefit mostly communications (especially through email) and not marketing.

Because of the important savings which can be made in communications costs by using ICTs, this aspect is often the first to be adopted by enterprises in developing

⁸ Singh, A. D., 1999, *Electronic Commerce: Issues for the South*, South Centre, Geneva.

⁹ World Bank, 2000: Internet Economic Toolkit for African Policy Makers, www.worldbank.org/infodev/projects/finafcon.htm

¹⁰ ITU, 1999: World Telecommunication Development Report: Mobile Cellular World Telecommunication Indicators.

¹¹ Miehlsbradt, Alexandra Overly, March 1999: How to be Demand-led: Lessons for Business Development Service Providers from Information and Communication Services in the Philippines. USAID MBP Paper for Donor Committee Conference, Rio de Janeiro, Brazil. www.ilo.org/public/english/employment/ent/sed/bds/donor/rio.htm

countries. The marginal cost of sending e-mails is almost zero, while the cost of international calls in particular remains very high in many developing countries. For example, a small import-export company in Tanzania now uses e-mails costing 10 cents, and e-mail-to-fax gateways costing \$1, to replace faxes which were costing \$20. As a result, the company has seen its communications bill reduce from over \$500 to \$45 per month.

Similarly, the specific benefits of constant communications through mobile telephones are immediately evident to many enterprises in developing countries; even informal-sector owners of rickshaws and boats in Asia have been observed using mobile phones to find customers. Rural producers in Cambodia are using their mobile phones to maintain regular contact with wholesalers and salespeople in urban centres. In Bangladesh, the *Grameen Bank* has given out loans to women and youth, for purchase of mobile phones that they then offer out at fixed times at mostly rural locations that are today unconnected by existing terrestrial phone links. Interestingly these 'mobile' phone-booths are also converting to be the Bank's promotional platforms for attracting rural folk to some of their other loan schemes. In several African countries too individuals are offering such phone services on roadside pavements and on the move.

Some early indications of the quantitative benefits are also available. For example, a recent survey of small business users of mobile phones in Uganda found that many benefits were cited, including increased sales, increased client base and enhanced contact with staff and suppliers; 36 per cent had saved time, 15 per cent had reduced transport expenditure and 12 per cent estimated that their profits had increased. Similarly, many benefits were traced back to access to mobile telephones in rural Bangladesh; these included increased incomes, higher prices for agricultural produce, lower prices for agricultural inputs, and less spoilage for perishable products due to more precise shipment arrivals.¹²

The Internet in particular makes information available to enterprises at relatively low cost, and is therefore also an early application for enterprises in developing countries. Research typically focuses at first on information about competitors and suppliers, moving later to information about new markets. 79 per cent of enterprises surveyed in Vietnam, for example, were found to be using the Internet for research.¹³ This aspect can be particularly important to enterprises in developing countries, which often lack rich, local sources of information and function in a traditional business environment of extreme secrecy and mistrust.

Affordable global outreach should in principle be a major advantage for enterprises in developing countries, in that they often rely on informal, international networks for marketing, information-gathering and other key functions. These networks may be based on family, religion or ethnicity, and can be quite extensive; ICTs could intensify and expand those networks, in ways which are usually associated with greater commercial success. In practice, however, enterprises in developing

¹² Burr, Chandler, April 2000: *Grameen Village Phone, Its Current Status and Future Prospects*. Open Society Institute for the Hanoi Conference of the Committee of Donor Agencies for SED. www.ilo.org/public/english/employment/ent/sed/bds/donor/hanoi.htm

¹³ Mekong Project Development Facility (MPDF), 1999: *Information Technology Capacity in Vietnamese Private Firms*. Private Sector Discussion Paper number 6.

countries seem to have been slow to take advantage of affordable global reach, for reasons which are discussed more fully below.

On the other hand it could also be argued that so far as the traditional enterprises are concerned, the impact of ICTs on the existing business empires in the South may be even greater than on those of the developed countries. Once the Internet and e-commerce begins to get really exploited it may turn out to be the most influential of forces bearing down on traditional management practices. For one, they threaten the established old business models and practices, which are based on existing networks (for example the Asian 'tycoons'¹⁴ and their connections with Chinese around the world) and on privileged information (usually backed by strong political and bureaucratic connections). Secondly, these technologies allow the rapid rise of new competitors. Thirdly, Internet businesses rely to a much greater extent than old-economy operations on equity funding by venture capitalists or market investors, as well as on stock options as compensation to employees, and it is this bunch that demands more transparency. In many areas of the South where businesses are family owned the shift may be slow but once the trend and reality strikes home the change will be faster and more telling. In fact already the changes and reactions to the new economy is beginning to produce some interesting examples in the developing countries also, both in the private as well as public sector. For example, more online stock trading as a proportion of total transactions is being done in South Korea than anywhere else in the world. *Arvind Textiles*, a leading retailer of textiles in India is converting its very extensive distribution network into Internet kiosks. And as an example in the services area, *Pakistan Telecommunications Ltd.* the state run monopoly solved the problem of inaccurate telephone number listings in hard-copy directories by setting up a 24-hour on-line directory service through the Internet. *ECNet* in Singapore is supplying Internet based supply chain management solutions to large companies and after initial hesitation by the big companies now has scores of large companies as its customers.¹⁵

It is argued elsewhere that ICTs enable enterprises in industrialized countries to extend their supply chains to smaller enterprises in developing countries. Thus, the benefits of globalization may become more widespread, as small enterprises are able to access new and profitable markets. On the other hand, pressures on margins (and perhaps also on conditions of employment) may also have negative effects, and these potential effects need to be examined in greater detail.

Even though discussions of ICTs rightly focus on some of the latest developments in the Internet and mobile telephony, the importance of more traditional and accessible ICTs should not be overlooked, particularly in environments where enterprises cannot easily access commercial information. A recent evaluation of a radio programme aiming at the business market in Uganda, for example, found that 67 per cent of listeners felt that their profits had increased as a result of the programme, while 19 per cent had employed more people as a result.

¹⁴ Leading business giants, mostly of Chinese origin in several Asian countries other than the Indian sub-continent.

¹⁵ ITC, 2000, Elephants learning to surf: E-commerce and the large enterprises, at www.intracen.org/execforum/docs/ef2000/e_brief2000.htm

2.2 *Small and medium enterprises can be principal beneficiaries*

For firms in developing countries, the Internet can be the bridge to overcoming the drawback of distance from developed markets. Not only can it provide cheap and fast links to the developed world but also has the potential of catalysing South-South trade. E-Commerce has the potential for providing a world-wide presence for SMEs (through access, contacts, virtual malls, new supply chains, e-marketplaces etc.) and for enabling suppliers to address market segments that were previously uneconomical and unreachable. Small and medium sized enterprises are potentially the biggest winners from the use of ICTs especially in trade. This is a view that has emerged from the growing body of experience in the last couple of years, especially from the global supply chains that are emerging on the Internet. Access to the Internet is becoming more and more affordable in most developing countries. Using it for business helps reduce marketing, interaction and transaction costs that, for the SME, normally represent a significant portion of overall costs. The Internet also reinforces the SME's natural competitive advantages of *speed* and *flexibility*. And the Internet facilitates access to a series of new market segments to the SME and enables the SME to adapt its marketing approach to each. Since it is predicted that 80 per cent of the growth in e-Commerce will come from business to business transactions (as opposed to business to consumer or business to government), it is here that SMEs and businesses in the South must find their opportunity and future.¹⁶ There are however challenges and dangers that developing countries and their enterprises need to watch for.

For example the same B2B e-marketplaces that provide new opportunities could destroy existing buyer-seller relationships and leave out those enterprises that do not make optimum use of the ICT technologies. Those enterprises that are very dependent on their old networks and traditional ways of doing business could well suffer. Similarly, while traditional middlemen and intermediaries find their role reduced, they are fast getting replaced by the new infomediaries¹⁷ who are emerging as the new power-brokers. Opportunities are many, from virtual malls to virtual shops and virtual marketing. All of these require new skills, new practices and new style of management. SMEs need to use their flexibility and dexterity to adapt and adapt fast.

2.3 *How do new, ICT-based enterprises in developing countries benefit from ICTs?*

ICT-based enterprises can cover a very wide range of activities in developing countries. For example the installing and operating of the required infrastructure can provide opportunities for all sizes of enterprises, from foreign investors to individuals retailing usage of mobile pay-phones by the unit. ICTs and the Internet in particular have also established or created a new type of business transaction itself, i.e. 'digital commerce', where the good or service is distributed in digitized format. The most common examples are music, videos and software supplied on the net, and services

¹⁶ Singh, A. D., 1999, *Electronic Commerce: Issues for the South*, South Centre, Geneva.

¹⁷ The concept entails a power shift from the intermediaries of today to the new power brokers on the Internet tomorrow, where the Internet Service Providers (ISPs) or Portals (search engines and major sites for information that serve as a gateway for users) providing information and links, will begin to provide other services too. Users will be compelled to use such services to sift and find the 'right information' which such 'infomediaries' would provide at a cost and a probable bias for their own preferred sites/services (IBID).

such as stockbroking or financial or medical advice etc. that are transmitted to customers on-line via the Internet (or even by phone or fax). Such enterprises and services in the developing countries have tremendous potential for offering competitive global services.

Business-to-consumer (B2C) opportunities are growing particularly rapidly in Asia. In China, for example, the most popular web site now has 1.3m registered users and 220m page views per month. This puts it broadly on a par with Yahoo in the United States. Another Chinese site, organizing on-line auctions, has hosted over 153,000 auctions to date, with a gross value of over \$12m.

Business-to-business (B2B) start-ups are also becoming evident in some countries. Opportunities in this area include software authoring, back-office work for banks and insurance companies, publishing, medical transcription, data processing, creation of web pages, creation of databases and digitizing of engineering drawings and maps. The Indian software industry is one important example; it has grown at an annual rate of 56 per cent over the last five years, contributing 10 per cent of the growth in India's GDP, and currently generating revenues of nearly \$4 billion per year. 500,000 people are now employed in the industry, 27 per cent of which are women; this proportion has been increasing in recent years.¹⁸

Evidence from Africa is, however, much more anecdotal. In Morocco, for example, a local Internet service provider is digitizing the paper archives of the National Library of France. In Togo, the world's first Internet-based call centre is being set up to provide globally competitive telephone support services for companies with customers in North America.¹⁹ In Senegal, a company employs 30 skilled CAD technicians to do architectural drawing detailing for European clients.

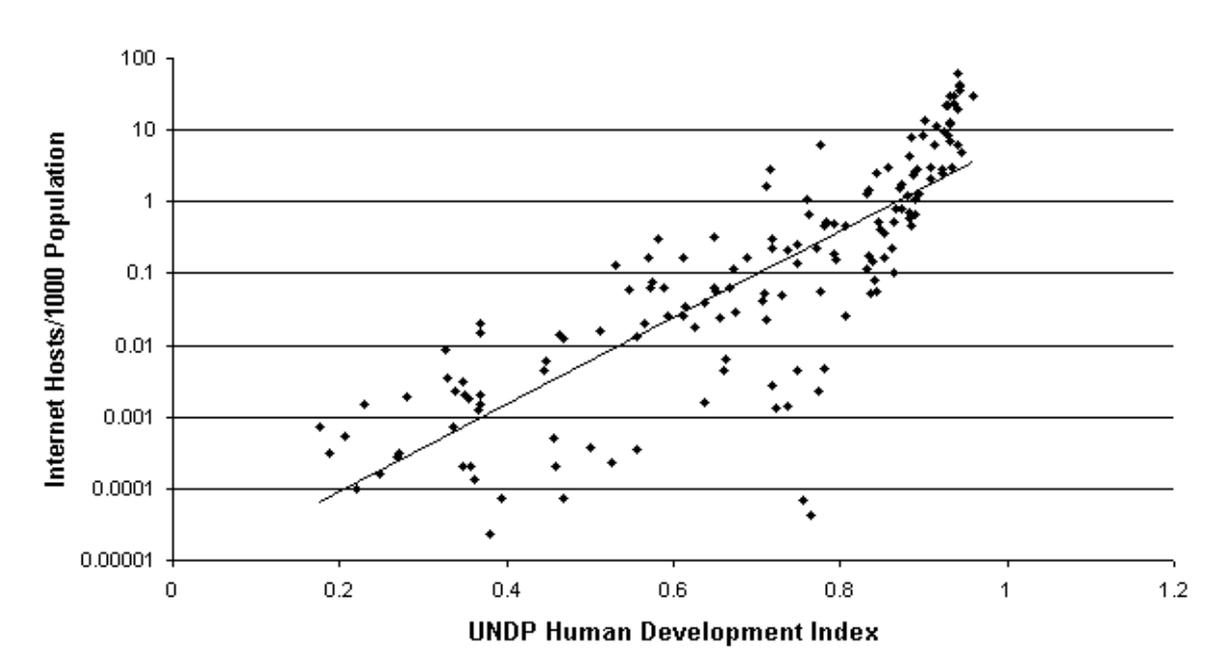
3. ICTs can bring benefits and opportunities for enterprises in developing countries

In summary, it is clear that ICTs can bring very important benefits and opportunities for enterprises, and indeed for whole economies, in the developing world. One may expect, therefore, some correlation between ICT usage and development, and the diagram below does indeed show a close correlation between Internet host density and human development. While this does not in itself prove causality, the connection must nonetheless be very significant. Though the obvious inference is the link between development and penetration of the ICT technologies, the other side of the coin could very well be understood to be the linkage between the prosperous nations and their access to new technologies. It would thus lead to the conclusion that as with every other technological advance, the benefits tend to be derived mostly by the affluent countries!

¹⁸ OECD, 2000:1: Information Technology Outlook 2000
www.oecd.org/dsti/sti/it/prod/IT2000Highlights_e.htm

¹⁹ Faye, Makane, ECA, 2000: A strategy to accelerate African development through the increased use of information and communication technologies. The African Internet and Telecom Summit, Banjul, 5-9 June 2000. www.itu.int/africainternet2000/Documents/doc48_e.htm

3.1 Correlation between hosts per capita and UNDP Human Development Index²⁰



3.2 ICT adoption in developing countries

Despite these extensive benefits and opportunities, enterprises often come relatively late to ICT adoption in developing countries; the first users are more often government agencies, academics and educated personal users. In China, for example, only 2.5 per cent of Internet users identify themselves as small businesses, while in Vietnam, only 1 per cent of local businesses were found to have e-mail addresses. In the Middle East, only 2 per cent of enterprises in the banking and insurance industries were found to be providing Internet access to their employees.²¹

This slow adoption seems primarily to be a question of awareness and exposure, rather than of cost. Even growth-oriented enterprises in the Philippines, for example, were found to be unaware of the benefits of Internet usage, and were therefore reluctant to try it. Similarly, in Botswana, the early adopters of both e-mail and mobile telephony were export-oriented enterprises, with the greatest links to more progressive enterprises and environments.²² Much of the ICT-based enterprise in China and India, referred to above, has relied on returning expatriates, who were more aware than most of their compatriots of the commercial opportunities of ICTs.

As role models, these entrepreneurs probably have an impact on the national economies far beyond that of their individual businesses. However, the converse is

²⁰ Press, Larry, 2000. The State of the Internet: Growth and Gaps. INET 2000 Proceedings. www.isoc.org/inet2000/cdproceedings/8e/8e_4.htm

²¹ DIT, 1998: Middle East Internet User Profile. www.ditnet.co.ae/html/profiles.html

²² Duncombe, Richard, and Richard Heeks, November 1999: Information, ICTs and Small Enterprise: Findings from Botswana. Institute for Development Policy and Management, Working Paper No. 7. www.man.ac.uk/idpm/diwpf7.htm

also true. Countries which do not have role models and champions in ICT adoption suffer disproportionately. For example, Internet service providers (ISP) in various developing countries target enterprises specifically in their marketing strategies, offering e-mail accounts, web page authoring and other important start-up services. In more progressive ICT environments the ISPs have converted to ASPs (application service providers) that offer re-engineering of processes and e-commerce and other software services for advanced web based applications and transactions. Clearly, ICT adoption is going to be slower in countries where these champions do not exist.

Similarly, existing enterprises in many developing countries have not yet been able to capture fully the benefits of ICTs, such as reduced transaction costs, lowered barriers to entry and new sources of revenue, partly because of the famous 'missing middle'. Several developing countries have relatively few medium-sized enterprises. As a result, adoption of information- and function-intensive ICT-based services, such as more sophisticated uses of the Internet and e-commerce, is often limited, at least initially, to large enterprises and enterprises with links overseas, i.e. in international trade.

Slow adoption by enterprises of ICTs brings substantial penalties at both the national and the enterprise level. At the national level, a lack of competitiveness in ICTs can have major impact on economic growth. An IDC study in 1999 revealed that e-commerce capital outflows were higher in the developing world. In Latin America, for example, only 26 per cent of e-commerce purchases are made domestically and in Asia-Pacific 35 per cent; this compares poorly with the United States, where 90 per cent of such purchases are domestic. This would indicate that the higher the development of e-commerce within the region/country, the higher would be the purchases from within. At the enterprise level, market share can quickly be lost, even in those areas most considered to be 'safe'.

4. Conditions required for ICT growth in developing countries

For success in the new "digital economy" and actualizing the potential of ICTs, it is not enough just to have the physical infrastructure. Once the infrastructure is in place, an optimal environment would require the availability of inexpensive computer hardware and software, wide and unrestricted access to Internet at inexpensive rates, reliable electric power, and a banking system supportive of entrepreneurship. What is essential is an '*info-structure*' which encompasses, amongst other requirements, the appropriate legal and financial framework; a political and business environment conducive to its development; and the human resource capacity to participate in it.

In order to understand the digital divide confronting each country, it is important first of all to be aware of the extent of the 'digital challenge' confronting each country. In other words, it is necessary to first assess how the country measures up to the requirements of the new "digital economy". To do this, there are several options. These range from the conduct of a simple test to check the availability and reliability of the Internet in any city or town in the country to significantly more refined tests and gauges. One example of the latter is the self-conducted test developed by the Information Technologies Group at the Harvard University's Center

for International Development (“Readiness for the Networked World” available at www.readinessguide.org). This guide asks questions in five key categories: access; education; society; economy; and policy and then ranks each country.

A “e-business readiness” ranking recently published by the Economist Intelligence Unit²³ provides a revealing indication of the extent of the digital challenge confronting many developing countries.

Most e-ready countries	Middle-level readiness	Lower-level readiness
United States, Sweden, Finland, Norway, Netherlands, United Kingdom, Canada, Singapore, Hong Kong, Switzerland, Ireland, Denmark, Germany France Belgium, Australia, New Zealand, Austria, Italy, Israel	Japan, Spain, Chile, South Korea, Portugal, Argentina, Taiwan (Prov. of China), Thailand, Poland, Hungary, Czech Republic, Malaysia, Greece, Mexico, Brazil, South Africa, Slovakia, Indonesia, Turkey, Saudi Arabia	Bulgaria, Venezuela, Romania, Russia, Ukraine, Philippines, Peru, Colombia, Egypt, India, China, Sri Lanka, Ecuador, Vietnam, Pakistan, Kazakhstan, Algeria, Iran, Nigeria, Iraq

4.1 Factors affecting the speed with which enterprises are able to adopt ICTs

It is therefore vital to explore the reasons for this situation, and to identify specific actions required to prevent the digital divide from increasing. Where feasible, this text adopts the framework suggested in the McConnell International survey referred to earlier, to cover Connectivity, E-leadership, Information security, Human capital and E-business climate. For clarity, the categories are briefly explained below. Relative to the McConnell report, this text provides richer detail about all of these aspects, and adds some features not covered, including international issues such as language and customs tariffs. In line with the concerns of the ILO, it also places particular emphasis on access by poor people and other disadvantaged groups.

4.2 Categories of National E-Readiness (after McConnell International)

Connectivity: Are networks easy and affordable to access and to use?

- Availability of communication services, access centres and networked computers
- Affordability and reliability of network access, including the cost of service.
- Reliability of electrical supply for business-critical computer operations; and the ease of importing and exporting goods and of transporting them within a country.

E-Leadership: Is E-Readiness a national priority?

- Priority given by government to promoting the development of an e-society on a national level.
- Extent of demonstrated progress on e-government.

²³ The ranking combines the EIU’s assessment of the business environment and a “connectivity rating” developed by Pyramid Research, the EIU’s communications division.

- Quality of partnerships between industry and government to improve E-Readiness.
- Level of effort to promote access for all citizens.

Security: Can the processing and storage of networked information be trusted?

- Strength of legal protections and progress in protecting intellectual property rights.
- Extent of efforts to protect privacy.
- Strength and effectiveness of the legal framework to address and prosecute computer crimes, authorize digital signatures, and enable public key infrastructures.

Human Capital: Are the right people available to support e-business?

- Quality of and participation levels in the education system, with an emphasis on efforts to create and support a knowledge-based society.
- Culture of local creativity and information sharing within the society.
- Skills and efficiency of the workforce.

E-Business Climate — How easy is it to do e-business today?

- Existence of effective competition among communication and information services providers.
- Transparency and predictability of regulatory implementation, openness of government, rule of law, and general business risk.
- Openness to participation by foreign investors in ICT businesses.
- Ability of the financial system to support electronic transactions.

5. Connectivity

5.1 Connectivity: Can developing countries afford ICTs?

Developing countries must, first, be connected, and some developing countries have made substantial investments to install national infrastructure; these include China, South Korea, Malaysia, India and Brazil. The general belief that has emerged in developing countries is that without adequate access, they cannot hope to be globally competitive. Therefore in many developing countries a ‘digital rush’ is on to create and broaden the Internet links in and around their nations.²⁴ It may be argued, however, that those countries which have only meagre national resources would be better advised to spend them in areas where only the national government can act, such as enacting and enforcing adequate legislation (discussed in more detail below). For the majority of developing countries, therefore, the question must be asked: can the private sector provide the infrastructure required?

In mobile telephony, the answer seems to be very clearly ‘yes’. Mobile telephony infrastructure has been established with foreign capital, even in those countries which are so poor and risky that investment services do not rate them.

²⁴ ITC, 2000, E-commerce and development, at www.intracen.org/execforum/docs/ef2000/e_brief2000.htm

MobiFon installed a GSM service in Romania within 18 weeks of being awarded the licence. Some companies specialize in this area; Millicom, for example, announced that during 2000, it had won cellular licenses in Sierra Leone and Laos (among other countries).

The inception of the Internet in industrialized countries was based on the concept of public service; while the rationale was more based in military and academic priorities, the result was widespread public access at low cost. Again, given the resource constraints of many developing countries, it may be necessary to turn to the private sector to install the required infrastructure. Unfortunately, however, companies wishing to install Internet infrastructure encounter major administrative and financial hurdles in many developing countries, and it is therefore difficult to say what the private sector would be able and willing to do in this area, given the opportunity and incentive.

The installation of the physical infrastructure is closely associated with the cost of access to ICTs, and indeed this is a major problem in developing countries. The cost of access to the Internet in Africa, for example, is on average five times that in OECD countries. Whether the majority of those costs go to the national telecom provider directly (as call costs) or indirectly (as ISP subscription costs), the end result is the same; access costs are much greater than other elements, such as the cost of computer purchase²⁵ and software, which in any case are expensive by local standards.

Generally speaking, these elevated costs are not a function of the cost of provision; they are, instead, a function of the urge to protect existing telecom providers, which are often at least partially government-owned, and have often enjoyed at least a partial monopoly for a long time. This protection can take many forms, including relatively high prices for local telephone calls, limited access to international lines and Internet backbones, and setting high hurdles for the issue of new telecom licenses.

Thus, it seems increasingly clear that countries pay a high price to protect existing telecom providers. While several agencies (including the World Bank, the ECA and IDRC) have advocated urgent reform in this area, it is clearly complex; high-quality technical assistance may be crucial, if governments are to be able to review the policy options in the light of international experience. Among the most urgent priorities are a reduction in the ISP and telecom license fees, and allowing ISPs to establish wireless data links (even if they do not carry voice traffic).

If liberalization and the allowing of competition can bring down the cost of access, the question still remains as to whether the technology and business models exist, to make ICTs accessible to large numbers of people in developing countries; does the 'e' in e-business stand for 'elite' or 'everyone'?

²⁵ Kelly, Tim, ITU, 2000: Costs and pricing for Internet services. African Internet and Telecom Summit, Banjul, The Gambia. www.itu.int/africainternet2000/Documents/documents.html

5.2 Connectivity: Can ICTs ever be accessible to the majority in developing countries?

In a situation where half the world's population has never made a telephone call, access to the Internet and the benefits of the knowledge-society may need to be offered at the level of village, post office or community centre.

There is a widespread perception that ICTs are only accessible to the wealthy elite, and this can lead to restrictive practices and targeted taxes (whatever the likely economic impact). In Egypt, for example, it only became legal in 1998 for a person to own a second telephone line; similarly, there was some discussion in Kenya a few years ago about the merits of levying a special tax on all international faxes.

These perceptions seem to be largely self-fulfilling. Put another way, liberalization and the advent of competition can greatly increase ICT access for even the smallest enterprises. In Peru, for example, privatization of the two telecom companies led to a six-fold increase in the number of public telephones within five years. Household access among the poorest households increased from near zero to 20 per cent with four years.

Apart from being based on the prevailing regulatory regime, perceptions of ICTs as elitist are also based on experience with outdated technology and business models; future trends are likely to make ICTs accessible to even smaller and more remote enterprises. One technology which has changed considerably is that of mobile telephony; first-generation analogue systems were indeed expensive, but second-generation systems and economies of scale have reduced costs substantially.

Another technology which makes ICTs increasingly accessible is that of smart cards; these cards involve very low transaction costs for the purchaser, and are available in low denominations. A recent survey of business users of mobile phones in Uganda, for example, found that 63 per cent bought cards worth just \$7. Smart cards are also attractive for the phone companies, as the cost of selling them is low, and the advance payment eases cash flow. These advantages of smart cards parallel, in some ways, recent developments in micro-finance, which have shown that very small enterprises are willing and able to pay the full price for services which they value, provided that the transaction costs are low.

As a result, smart cards are very popular in many developing countries. According to Strategis, for example, pre-paid mobile phone services have about 70 per cent of the market in Mexico and Venezuela. Millicom (which specializes in work in developing countries) reported that 91 per cent of its new subscribers globally in 1998 were pre-paid, and some providers, like Millicom Senegal, have moved to an exclusively pre-paid regime.

As ever, care must be taken that women entrepreneurs are not specifically excluded, albeit unintentionally, from access to ICTs. In Bangladesh, for example, it was found that village phones owned by men were almost entirely used by men, whereas about 50 per cent of the users of phones owned by women were other women.

Another important development has been the rapid rise of drop-in Internet centres or cafes, offering ICT services at affordable prices. Africaonline, for example, has franchised 630 'E-touch' Internet centres in 5 African countries, specifically targeting the very small business user and currently serving about 74,000 people. In Senegal, there are over 7,000 private telecentres offering phone and fax services, which are increasingly offering e-mail and other Internet-related services. Red Cientifica Peruana in Peru has franchised 600 Internet centres in Peru, and is exporting the business model to El Salvador, Bolivia, Mozambique and Mauritania. India, which already witnessed the country-wide mushrooming of literally hundreds of thousands of privately run ISD/STD Phone booths offering long-distance phone services, is now seeing their rapid conversion to Internet cafes.

While little is yet known about the exact business-related usage of these Internet centres, it is clear that they are making the technology accessible, at least in principle, to people even at the lower levels of society. New technologies and business models, such as application service providers, low-orbit satellites and wireless application protocol, seem likely to have the combined effect of making ICTs even more accessible to very small enterprises in developing countries in the future, from a technical perspective.

Alternative technologies and strategies to Internet connectivity also need to be researched and experimented with. In some countries connections through TV cable networks is already being done — this is important as in countries like India, the cable boom has resulted in homes having TVs when they do not have a phone. Singapore is testing Internet via electric cabling. This could turn out to be a much cheaper and easier option for developing countries as power cables today far outreach phone lines. Internet via mobile phones is another option available, though still quite expensive.

So one may conclude that, technically, there are no insuperable obstacles to access by the great majority in developing countries to ICTs, at the 'retail' level. There remain, however, a number of very important issues relating to connectivity, and these are touched on below.

5.3 Connectivity: More general issues

Adequate infrastructure for tele-communications (and energy) is and will continue to be an issue of concern for developing countries especially the least developed. For example, according to a study of the World Bank, US\$ 50 billion would be required to bring the average level of African teledensity (main lines per 100 inhabitants) to that of Southern Europe. Such levels of funding are just not available within developing countries. Ultimately the growth and development of the ICTs boils down to the question of resources. Therefore for attracting investment, proactive and supportive policies are essential to reap the benefits of this emerging economic opportunity.

Connectivity for E-business relies on a wide range of inputs which may be taken for granted in industrialized countries, but which may not be present in developing countries. A constant and dependable electricity supply, for example, is a vital ingredient; ready access to computers and associated hardware is another. The lack of adequate fulfilment infrastructure can also be a major problem in many

developing countries, particularly where state-run monopolies are not providing a fast and secure service. Fast and reliable transportation, especially for the export sector, is a must in order to remain competitive. Possibly, the main private-sector courier enterprises in developing countries may move to fill this void.

6. E-Leadership

6.1 E-Leadership: Is E-Readiness a national priority?

Almost every aspect of ICT adoption is affected by the extent to which national governments in particular provide the leadership and direction for e-business; this is particularly true of developing countries, where the pronouncements and attitude of charismatic senior figures carry much weight throughout the country. In terms of pro-active responses, different countries are taking very different approaches in this area. One of the best-known examples is Malaysia, which has committed at least \$12bn to the establishment of a Multimedia Super Corridor (MSC).

This ambitious project is creating incubator facilities over an area about the size of Singapore. In addition to the state-of-the-art infrastructure and cyberlaws, many concessions are offered to ICT-related companies setting up business there, including tax holidays, unrestricted employment of foreign knowledge workers, and a freedom from censorship of the Internet. But perhaps the most important aspect of this whole project has been the high level political support which it has enjoyed.

Similarly in India the larger than life image of the “laptop” Chief Minister of Andhra Pradesh (whose state capital is Hyderabad, now referred to as *Cyberabad*) Mr. Chandrababu Naidu, perhaps best represents the pro-active and aggressive push that government can give to the IT industry in general and to government-private sector partnership in particular. So powerful has been the hype created that in his only visit to India a few months ago, President Bill Clinton chose to go to Hyderabad to meet with him and see the IT revolution first hand. The other Bill — Mr. Gates, also did the same and located in Hyderabad the only Microsoft development centre outside of the US.

From setting up HITECH-city, a massive IT incubating facility with in-built data-connectivity for the software and e-commerce companies located there, to establishing the first ‘Indian Institute of Information Technology’ with the assistance of major global IT players and introducing e-government in the State, Andhra Pradesh has shown the power that state initiatives can wield for the sector.

Few developing countries, however, have seen such single-minded leadership in this area. The style adopted by the Government of South Africa, for example, contrasts markedly with that of Malaysia; a highly participatory process of consultation with several line Ministries has been launched, and is expected to take two years to complete.²⁶

²⁶ Groenewald, Michael, and Dillo Lehlokoe, 1999: Towards an Electronic Commerce Policy for South Africa. INET 99 Proceedings. www.isoc.org/inet99/proceedings/1g/1g_4.htm

In addition to the style of leadership provided, there exists a wide range of possible areas where governments can show leadership. These include progress on e-government, including efforts to automate governmental processes; they also include partnerships with industry leaders to improve the environment for ICT adoption.

6.2 E-governance

Developing countries face a special challenge and responsibility to create a favourable policy environment that allows for the development of ICTs and e-business. In particular, the absence of a competitive environment with respect to telecommunications and ICTs results in higher access costs in some of the least-developed countries. Such services remain, therefore, the preserve of the elite, and are not accessible to low-income people. The first priority in such cases, therefore, is to promote a competitive environment; experience shows that this can be highly effective in improving access.

It can also be argued that governments should subsidize the installation and operation of public Internet terminals, so that particular target groups such as the rural poor can gain access. This may be effective in countries where the governments have the resources and staff to support such initiatives adequately. In many cases, however, careful consideration should be given to maximizing the role played by the private sector from the start, to ensure sustainability in the long term. An experiment in Karnataka in India has the private sector setting up Internet kiosks in rural areas where, besides other internet services, government has given them the permission to compile and give out computerized land record data and certificates to individuals at a fixed cost. This combines a unique public-private partnership that benefits the citizen directly and is a sustainable economic model.

By using the Internet as a tool for e-governance, the environment for e-business development itself is advanced and reinforced. The logic being that in promoting business on-line, governments will facilitate the delivery of information, goods and services. This will then deliver more traffic across data networks which, in turn, will serve to provide the revenues and investment rationale needed to encourage further infrastructure development.

It has been suggested that Governments should in fact act as ‘model users’ by purchasing, testing and using new technologies. Through this governments can stimulate interest and help the growth of ICTs and e-business in general. Governments can demonstrate the effectiveness of the new technologies and in doing so, prompt others to adopt this technology. They can do this by being model users of new technologies and by using the systems to deliver e-government.

E-government implies action and commitment of government and its agencies at two levels:

- a) promotion of the information and communication technologies and especially e-business and,
- b) the adopting of these technologies and all they imply for a completely new type of commitment, open systems and use of the medium of the Internet for government business, citizen interaction and most important, for development.

By its commitment and support government can send very positive signals to investors in the area of ICT and e-business. Once this extends to e-procurement, the benefits to business are multiple. Such measures also ensure that a proactive government promoting e-governance will also be promoting e-business both in terms of the 'hard' infrastructure (telecom and connectivity) as well as the 'soft' areas of e-literacy, e-services and an e-friendly framework for e-business.

7. Security and legal framework

7.1 Information Security: Can the processing and storage of networked information be trusted?

Security of transactions can themselves become a barrier to the growth of e-commerce. The majority of Internet users globally are very concerned about security in e-commerce; in one survey, 67 per cent were found to be very concerned specifically about international business on-line. 85 per cent said that on-line security was a significant or deciding factor.²⁷ Within developing countries, concerns about security can also be a major factor; over 90 per cent of Indonesian Internet users said that they would not transact over the Internet, mainly because of concerns about security.²⁸ Indeed, on-line security seems to be particularly important in Asia where there have been several examples of digital crime.

More so in B2C than B2B, issues of security and privacy are very important and growing. Competition and secure electronic supply chains may convince businesses to go on-line, but this does not hold good for business-to-consumer transactions where concerns about fraudulent suppliers, privacy of personal data including credit card details and security of payments and supply remain real issues. Unless consumers are convinced about the confidentiality, safety and predictability of buying on the Internet, they will probably just use it for information gathering and price checking and then resort to traditional off-line transactions for concluding their purchase. This is particularly true of developing countries where in any case payment arrangements over the Internet may not be available.

One of the most urgent areas to be addressed is in the enactment and enforcement of legislation to cover a wide range of ICT-related issues. These include, for example, legal protections for intellectual property rights and privacy, and the laws required to prosecute computer crimes and authorize digital signatures. Much of this work can only be done by governments, and therefore deserves high priority.

The case of the Love Bug virus, for example, highlighted the lack of legislation in the Philippines to prosecute the author. But the field is also complex and specialized, and seems to lend itself particularly to timely and expert technical assistance. The issue is urgent, as it will take time, even in an ideal situation, to achieve all of the necessary elements; these include, for example, training and equipping lawyers, judges and law enforcement agencies to implement the new

²⁷ GVU, Georgia Institute of Technology, May 1999: 10th WWW User Survey.
www.gvu.gatech.edu/user_surveys

²⁸ Boerhanoeddin, Zuraida, 2000: E-commerce in Indonesia. INET 2000 Proceedings.
www.isoc.org/inet2000/cdproceedings/7c/7c_3.htm

legislation. It is not clear, however, that adequate resources are being devoted to this important area.

7.2 Need for a Legal framework

One of the most important issues that developing countries need to address is to make their legal framework conducive to e-Commerce transactions. The UNCITRAL Model Law on electronic commerce is one such standard framework for resolving the contractual issues and obstacles related to e-Commerce. Several developing countries are considering adopting it or legislating directly themselves (several already have). The basic principle being followed is that of “equivalence of treatment” between paper and electronic communication. This is easiest and quickest done by adapting the existing legal system to an e-Commerce environment.

Countries like Singapore, Malaysia and India today have comprehensive legislation in place. The Government of Tunisia has made a concerted effort to facilitate e-commerce; while the package of measures was rather comprehensive, it seemed unusual for the degree to which it addressed the security and legal issues (including legalization of the electronic means of identification). Apparently, this has established the conditions which have enabled Tunisian e-commerce sites to now export to many industrialized countries.

8. Human capital: Are the right people available to support e-business?

The ICT Revolution depends vitally on *intellectual capital*. If developing countries are to benefit from this new technological and economic boom that the growth of knowledge economy represents, they would need to have in place the single most important ingredient in the whole stratagem, namely, the human resources.

The urgent need for skilled personnel in all aspects of ICT adoption is therefore one of the clearest priorities in most developing countries. As e-commerce develops, more specific skills are going to be required. Even for surfing the Internet for a product or service, basic computer knowledge and familiarity with the Internet is needed. Moreover, extensive language knowledge (especially English) may be an additional requirement. From website designing, to electronic credit management and software and hardware maintenance — all require skills that may not be so easily available in several developing countries. In fact the shortfall in skills is so great, particularly in relation to the training infrastructure, that innovative solutions will be required. Regrettably the high demand for people with ICT skills ensures that publicly-funded training centres, for example, simply cannot afford to retain good instructors in these areas. Competent people are quickly attracted into the private sector, and policy-makers may have to look here, therefore, if they are to cope with the great demand.

For example, a recent survey of IT usage in Vietnamese enterprises found that few people were computer-literate; half of the staff working with computers were found to have received no training at all. Interestingly, 70 per cent of those who had been trained in computer skills had received their training via CD-ROM or the

Internet. This kind of model, drawing on both the technical skills and the distribution networks of the private sector, might go some way to meet the immediate needs. The need to attract expatriates from developing countries back, bringing their skills and networks with them, has already been referred to above, and is another potent approach to meeting the skills 'gap', particularly in ICT-related start-ups.

There is also a huge shift occurring in white-collar jobs globally. Technology is redefining many of these jobs and making them increasingly location-independent. Many firms are establishing call-centres and web-enabled service support centres in developing countries like India, Jamaica and Philippines where costs are significantly lower. Tens of thousands of such jobs are shifting en masse across the globe thanks to innovations by IT-enabled service companies. This represents a huge opportunity for enterprises in developing countries and one which their governments and business need to prepare for and promote.

9. E-Business climate

9.1 E-Business climate: The importance of good governance

Good governance has been on the international development agenda for decades. International and bilateral donors have been insisting on this standard which though not clearly defined, implies that there must be transparency in government decision making, clear procedures and civic participation in the process. While good governance is crucial to development in all sectors, it would be easy to under-estimate its relevance to the adoption of ICTs in business. This is because, where there is no good governance, enterprises must rely on informal systems for many aspects of their day-to-day operations; these informal systems can only be transferred to the formal sector once governance has been improved.

For example, people in business may not be able to rely on national commercial law for protection, either because of corruption or because of the cost and lengthy delays often involved. Similarly, credit may not be available from formal sources, perhaps because of the banking system is highly protected and therefore inefficient, or because loans are distributed on political rather than commercial criteria. Instead, therefore, business people must rely on trust-based relationships, built up through face-to-face business dealings, and these cannot be transferred easily to the Internet.

Similarly, without good governance, any aspect of daily business life may change without notice; trading permits, for example, may be cancelled abruptly and without any apparent justification. Fears of such unexpected government intervention lead people with businesses to adopt a low profile; ICT-based formats are avoided, as they are perceived to be more easily monitored by those in power, therefore possibly leading to greater problems in the future. More generally, an uncertain business environment encourages diversification as a risk-spreading strategy, thereby discouraging the investment and vertical growth which ICTs often require.

All of these factors underline the great importance of good governance generally, if ICTs are to be adopted by business. But there are specific factors of governance which apply particularly to ICTs, and these are outlined below.

9.2 E-Business climate: How protected is the national telecom provider?

ICTs involve the convergence of several industries, each of which has a different history; telecommunications in developing countries, for example, have usually been publicly-owned and regulated, while the computer industry has been privately-owned and unregulated. Broadcasting has had mixed ownership, and has generally been regulated. As these aspects have converged, a coherent approach to ownership and regulation is required.

Since the key to success in the ICT revolution is a wide-spread and reliable telecommunication network, proactive and supportive policies are essential to reap the benefits of this emerging opportunity. Bringing in competition and attracting investment (often foreign) into this crucial capital and technology-intensive area can contribute significantly to improved services and lowering of costs.

Historically, most developing countries still have fixed-line operators with quasi-monopolies and at least partial state ownership. These entities can be expected to resist the erosion of their revenue streams, in any way they can. In Asia and Latin America, most markets have been effectively liberalized, meaning that traditional telecom providers are now having to contend with much more nimble new entrants from the private sector, and are generally losing market share in consequence. In Africa, however, state-owned telecom providers are often not under such pressure to become competitive.

Ironically, the recent auctions of 3rd-generation bandwidth has raised more revenues in some countries than the profits of many state-owned telecommunications providers in the developing world, showing how increased competition need not mean reduced government income. Alternatives to 3G auctions, such as ‘beauty contests’, risk the worst of both worlds (i.e. low government revenues, reduced competition, as arguably occurred in South Africa).

So governments continue to place administrative and financial hurdles in the path of ICT investors, as mentioned above, thereby discouraging the establishment of the infrastructure which developing countries so urgently need. While examples can probably be identified from many countries, two recently-published ones are summarized below, one from Tanzania and one from Bangladesh.

A company called Adesemi raised \$11.5m to establish a network of 650 wireless payphones in Dar-es-Salaam; unfortunately, however, it was forced into liquidation shortly after its launch. While several factors were cited in explaining this, one of the main ones related to difficulties with licensing; the national phone company wrote to Adesemi, after it had installed its equipment, to say that the license was not valid because it had been signed by the wrong authority within the phone company. This problem delayed the actual launch of the network by almost two years, incurring major unforeseen costs.²⁹

²⁹ Maddy, Monique, 2000: Dream Deferred: The Story of a High-Tech Entrepreneur in a Low-Tech World. Harvard Business Review, May-June 2000.
www.hbsp.harvard.edu/products/hbr/mayjun00/R00307.html

Similarly, Grameen Telecom was launched in 1996 with an initial capitalization of \$120m. It aimed to install 40,000 mobile telephones in rural Bangladesh by 2002, lending owners the funds required to purchase the mobile phone. By mid-2000, however, it had only installed about 1,000 phones. Compared with an existing level of 400,000 telephone sets in the country, and a total population of 120 million, this seems rather slow. It is attributed, at least in part, to major hurdles at the national level, for example, in securing a connection to the fixed-line grid, and in having adequate access to the international gateway.³⁰

9.3 E-Business climate: The financial system and electronic transactions

E-commerce requires a financial and banking framework that allows for electronic payments and transfers. This would include requirements for certification of documents, electronic signatures, confidentiality and privacy. Developing countries need to put in place both the electronic network (between financial institutions) as well as the legal framework to allow for such transactions. Banking laws and regulations thus need to be adjusted to the new formats and requirements.

The ability of the financial system to support electronic business covers many aspects. In general, however, the evolution of e-commerce is following a similar sequence to that followed in industrialized countries, namely with an initial focus, at least domestically, on B2C. As a result, difficulties in paying on-line have been relatively well documented.

In China, for example, 42 per cent of Internet users have credit cards, but most of these are non-international, non-convertible cards. Many retailers still insist on seeing other identification before accepting these cards. Internationally-accepted credit cards have only been available to those individuals or businesses that are able to open accounts in foreign currency, and often require very large deposits of more than \$200,000.³¹ As a result, only 5 per cent of Internet users in China have purchased on-line.³²

Similarly, in India and Czech Republic, it has only been possible to authorize credit card payments with a faxed or hard-copy signature. But creative solutions to this problem are being found by the private sector. In India, for example, firms have set up Internet kiosks, where customers can surf the net, paying at the counter of the kiosk in cash for the goods they have ordered on-line.³³ Similarly, in the Czech Republic, a mobile phone company is providing a prepaid service for shopping on-line.

Nonetheless, substantial difficulties remain in this area for most developing countries. The guidelines issued by Visa to its merchants in August 2000 illustrate some of the challenges. Among other precautions, merchants must install a firewall,

³⁰ Burr, Chandler, *op. cit.*

³¹ Männistö, Laura, ITU, March 1999: Electronic Commerce in Asia. Presentation to Forum on Asia and the Future of the World Economic System, London. www.itu.int/ti/papers/ecom/18Marweb.pdf

³² iamasia.com, 24 July 2000: Survey Shows 6.4 Million Internet Users in Taiwan. www.iamasia.com/presscentre/presscentre.cfm

³³ Singh, Alwyn Didar, May 2000.1: Background paper for ITC Executive Forum on “Export Development in the Digital Economy” (draft), Geneva.

keep security patches up-to-date, encrypt stored and transmitted data, use and regularly update antivirus software, and regularly test security systems. In many developing countries, it is relatively difficult to find the technical support required to meet all of these requirements. It is clear, therefore, that more sophisticated financial infrastructure may not be available in some countries for several years to come.

9.4 E-Business climate: Political censorship

Concerns of security create responses of control. Some of the reasonable and valid concerns about the Internet may include serious affronts to human values such as child pornography and incitement to racial hatred, as also consumer protection, the defence of intellectual-property rights and taxation. There is however a very thin line between freedom and control on the Internet. Stifling freedom of expression can sometimes stifle freedom of entrepreneurship and thus smother the new opportunities in the digital economy. In the developing countries, for example, India stands out as a very successful example in the digital economy. As the world's largest democracy it does not attempt to police the Internet. China, some of the Middle East states, even Singapore still have very strict censorship laws in place. These could effect future growth.

Reluctance by national governments to 'lose control' can also act as a brake on liberalization, and increase the effective costs of access very substantially. For example, recent closures of web sites in China for posting "counter-revolutionary content" are said to be costing the nascent industry billions of dollars in investment capital. As if to acknowledge the importance of this issue, Malaysia has offered freedom from censorship on the Internet as a key concession to foreign investors.

9.5 E-Business climate: Raising the capital required for ICT-based start-ups

The rapid growth in ICT-based start-ups in industrialized countries has been largely driven and supported by venture capital. This in turn depends on stock markets which function well, and fiscal regimes which encourage such investments. In many developing countries, these are not totally in place. Traditionally in developing countries, financing has come from either banks or stock market listings, neither of which are entirely suitable for new, high-risk Internet start-ups that have yet to launch commercial operations. After the recent stock market crash of Internet company share prices, capital has become particularly shy of the ICT enterprises. To address this requirement, developing countries need to set up or encourage venture capital funds, dedicated to the ICT industry, perhaps through public financial institutions. They also need to create a supportive environment for investments in the sector. In China, for example, foreign investment may even be considered illegal; certainly, flotation involves so many administrative and legal hurdles that Internet start-ups may be forced to look abroad, for investors and even for flotation.

In addition to the many issues faced at the national level, there are several issues which may be particularly important at the international level. Two are touched on below: language and customs tariffs.

10. International issues

10.1 International issues: Language

English is not only the language of the Internet but also of the knowledge and information repositories based mainly in the North. It is recognized as the universal language of business and therefore perforce e-business. The Internet's U.S. origin is evident in the dominant language of the Net as well as in the genesis of most existing sites. Language therefore remains a major barrier to usage of ICT by business in many developing countries. In 1998, almost half of respondents in a survey in China cited the lack of adequate Chinese language content as a hindrance to adoption. In the Middle East, 40 per cent of users could not read Arabic text on their browsers, either because they were using a non-Arabic operating system, or they did not know how to configure their browsers and operation systems correctly. Over 90 per cent of web pages linked to secure servers are still in English. Only in December 1999 did it become possible to register domain names in alphabets other than the Roman one.

Now, however, the proportion of non-English pages seems set to increase rapidly, with Forrester Research predicting that the majority of online sales will take place outside the United States by 2004. A survey by Vilaweb (a Catalan site) found that only 68 per cent of web pages are now in English, with European languages (mainly German, French and Spanish) accounting for 18 per cent, Japanese 6 per cent, Chinese 4 per cent. In addition to individual initiatives to make the Internet more polyglot, technology may again make life easier. On-line translation services are already available (e.g. babel.altavista.com) although for the time being not in every major language.

Nonetheless, English-speakers have been favoured, as the first-movers, and Government initiatives to address this problem therefore seem especially urgent, if the benefits of ICT are to reach the poorer levels of society; English is rarely spoken at these levels in most developing countries.

10.2 International issues: WTO issues including Customs tariffs

The ICT revolution and e-Commerce are creating a new digital economy where several of the technological issues and standards are being created and determined by transnational corporations especially in the telecom world. This is resulting in the locus of much policy making registering a shift from government to private business. This perhaps finds its best example illustrated in the growing importance of the WTO. There is little doubt that e-commerce is an important and major issue for world trade and there are several aspects of it that need to be further studied especially from the point of view of their implications for the developing world.³⁴

There are three major issues that are under discussion at the WTO and covered by its work programme through the three councils on goods, services, TRIPS and development,

- a) the question of agreeing to a permanent 'stand-still' on the customs duty imposition position,

³⁴ IBID.

- b) the question of classification of e-commerce, either as a good, service or something else from the standpoint of the existing WTO agreements, and
- c) the question of protecting IPRs (Intellectual property rights) on the Internet.

There has been considerable debate about customs duties for items traded and delivered over electronic networks such as the Internet. While most countries have supported a moratorium on such duties, some developing countries have opposed it, on the grounds that 'zero duty' favours industrialized countries, since they produce the bulk of electronically-delivered products and services. This contrasts with the fact that many developing countries face protectionist barriers on their main exports, such as agricultural commodities.

E-commerce blurs the distinction between a good and a service as products and services can be delivered electronically. This matters because WTO rules treat goods and services differently. Goods tend to be subject to tariffs; services are not, but trade in services is limited by restrictions on "national treatment"³⁵ or quantitative controls on access to foreign markets. So the rules that will be devised for electronic commerce may affect the choice between physical and digital methods of trade. E-commerce is still developing and emerging and therefore it cannot be limited and classified by the existing WTO definitions of goods or services. E-commerce and especially digital commerce could possibly be covered by either of the two definitions or agreements or it may need to be seen as something incorporating elements from both and yet be something different. This still needs to be decided by the member states.

So far as IPRs are concerned, there are two issues. The first concerns the management of the Internet addresses, which essentially means exercising whatever marginal control there is over the medium. This relates to the administration of the "domain names"³⁶ system, which is important from both a policy and procedural perspective. The principal players in this are the Internet Corporation for Assigned Names and Numbers (ICANN), and the Domain Name Supporting Organization (DNSO) that take the few central decisions concerning protocol or for allocating Internet addresses or domain names. These are important issues with the latter having very strong commercial implications for the Trademarks issue. Not only is the question of their protection an issue, but conflicts arise between them and Internet 'domain names', which, though designed to serve as addresses, have acquired a further significance as business identifiers. Also developing countries need to be represented on these bodies.

The second is that concerning the protection of IP rights over the Internet. The growth of the Internet requires that governments and the private sector to develop and implement an appropriate mix of regulatory, contractual and technological measures, and ensure adequate public awareness of the role of copyright and related rights in the information society. This would on the one hand provide protection to local industries in global markets and on the other, spur investment and growth by providing a safe and legal environment.

³⁵ "National treatment" in this context means the giving of equal treatment to international based service providers compared to domestic.

³⁶ Domain names are the people-friendly form of Internet addresses (which are actually numbers) designed for computers to recognize the address of a particular site on the network.

11. The future

11.1 The future: Concerns of Development and Development assistance

The information and communication technologies can be a real tool for development and help improve the livelihood of millions across the globe, by linking up remote regions and bringing together scientists, administrators, managers and people into projects and programmes to promote economic and social development.

Optimum utilization of ICTs for development remains not only a far away dream for most developing countries but one for which they still remain unsure and unconvinced about diverting scarce resources for. Convincing developing countries of the need to do so and helping formulate strategies for implementing such programmes requires the sharing of success stories and best practise between countries and by international agencies.

In this context development agencies face two major challenges:

- (a) to ensure that developing countries benefit from this new technology; and
- (b) to use ICTs in a way that promotes development.

The influence of ICTs on enterprises in developing countries is changing very rapidly, and development assistance will also have to adapt. In particular, it seems that the traditional model of intervention at the micro-level, in order to demonstrate and encourage replication, may be less productive than work with those governments which are interested to liberalize and to put in place the necessary legislation and other infrastructure.

One example of development assistance which is relatively widespread is that of telecentres: this is the ‘incubator model’ — buildings with ICT infrastructure, with or without business development services, and situated so that they are accessible to disadvantaged groups. The sustainability of these telecentres has been questioned by some, and it would presumably be logical to explore as far as possible how the private sector can collaborate in such provision, particularly since the private sector is already so active in this area. International agencies and governments need to be proactive in this area especially to counter against the emerging ‘digital divide’ by targeting the poorer and rural areas, especially in developing countries, in order to provide for minimum access and training.

In general, innovative solutions are required, which enable the private sector to provide whatever it can, and to use public funds in creative and carefully-targeted ways. The possible areas where urgent attention is required are too numerous to recapitulate here, but the essential message is that liberalization, and the promotion of competition in ICT provision, ensures widespread access and opportunity. Governments pay an increasingly high price for impeding these developments, and the pace of change is such that opportunities lost may never be regained. There is therefore an urgent need for practical and potent measures to address the constraints faced in many developing countries, and the increasingly high profile given to this topic, for example the G8 Digital Opportunity Task Force, is an encouraging development.

But this document has shown that change is needed at many levels, and that the importance of that change is still not often appreciated. It will probably be necessary, therefore, to think in terms of a carefully managed change process which might include three major stages. First, the Awareness or E-wareness must be built: this must include carrying out the necessary research to fill knowledge gaps, and there are still many such gaps with respect to enterprises in developing countries.

Secondly, Interest must be built, particularly among the innovators and early adopters in government; even the information available already shows that ICTs are vital to economic growth; their benefits can spread to most levels of society, given the opportunity. Conversely, the penalties for countries which lag behind will be enormous. Thirdly, support will be needed to support Decision-making in favour of an ‘adoption’ action, and finally, support will be needed to translate that decision into Action. Given the very real resistance and inertia in the system, as outlined above, and the limited resources available for development assistance, such a systematic approach is probably the only one which will yield meaningful results.

11.2 The future: Technology

This text is a ‘snapshot’ of the issues and situation as the new millennium opens. Many technological changes are already on the horizon, and any or all of them may change the situation entirely. It therefore seems appropriate to conclude with a brief overview of today’s hot prospects:

- Today engineers and software developers have demonstrated that even dumb machines, embedded with computer chips could communicate wirelessly or via the Internet, with each other or with distant similarly connected computers and services. These are the information appliances of the future, connected through ICT technologies.
- Voice-over-IP seems likely to bring down international telecom costs dramatically; this is already possible from some developing countries, such as Mozambique.
- Broadband Internet access³⁷ via satellite will be offered shortly; 429 satellites are currently being launched, to give global outreach. Access speeds will be 2,000 times faster than today’s analogue modems; however, access costs may also be high.
- Mobile Internet access may hold great promise for developing countries, whether through wireless application protocol (WAP) or its successors; WAP-enabled handsets may soon be available for as little as \$50. A WAP service has recently been launched in Brazzaville, Congo. Once the 3G (Third generation) mobile services are established, access will be much faster and possibly cheaper.
- Delivery of the Internet to the TV may also be particularly relevant to developing countries; there are four times as many TVs in developing countries as there are telephone lines.
- Application Service Providers (ASPs) may allow users to access the latest software and applications at low cost.

³⁷ The US Federal Communications Committee (FCC) has defined broadband as supporting speeds in excess of 200 kbps, which is approximately four times the speed of access through a normal phone.

11.3 *The future: The new economy*

The very definition of success is changing in the new information economy. As technology changes so fast there is always the possibility that some competitor may be about to introduce a product or service that will destroy the³⁸ market for the earlier success story. Such worries about rapid obsolescence has been preventing most investors from acquiring new technology stocks. However the situation dramatically changed a few years ago and suddenly the ‘tech-stocks became very sought after. This resulted in a unique model of business where your present profit margins and results did not determine your value but the market’s speculation of your future potential did. Recent dramatic fluctuations in the stock markets and particularly the falling (or correcting as some say) NASDAQ exchange (the major stock index in the US for technology companies), however show that the earlier cautious attitude has returned. According to some commentators several ICT firms welcome this shakeout in the market as they believe that it would be better for ICT and the new economy as only the better firms will survive.³⁹ This scenario is being played out in developing countries too and their governments have to consider the question of norms and rules for venture capital (especially since so much direct assistance has traditionally been provided by the public sector in these countries) as well as for the stock exchanges.⁴⁰ The bottom line however is that despite rough economic times and stock-market upheavals in 2000 didn't stop e-Commerce, thanks to the power consumers have found online. This power will push e-Commerce forward regardless of what happens to the US or the world economy in the near future.

12. In Conclusion

This paper has shown that ICTs if correctly used for development can be a major instrument to ensuring future sustainable economic growth. The profound impact of these technologies on the economies and societies of the globe will no doubt improve economic efficiency, competitiveness and profitability of the enterprises using them and therefore lead towards the evolution of the information society. ICTs, the Internet and especially electronic commerce affect the business environment at national, regional and global levels, and generate major opportunities, and new challenges, for market growth and development of jobs, industries and services. Unfortunately there are dangers here too. The existing trends towards economic polarization can be worsened through digital advantage and developments and growth can get concentrated where the info-structure is best developed. Consequently, co-ordinated efforts are essential in order to secure the economic benefits of these technologies for both the information “rich” and the information “poor”.

³⁸ International Herald Tribune, April 15-16, 2000, Paris.

³⁹ IHT, 24th April 2000, Internet firms profess to welcome a shakeout, IHT, Paris.

⁴⁰ ITC, 2000, Emerging business models in the digital economy, at www.intracen.org/execforum/docs/ef2000/e_brief2000.htm

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