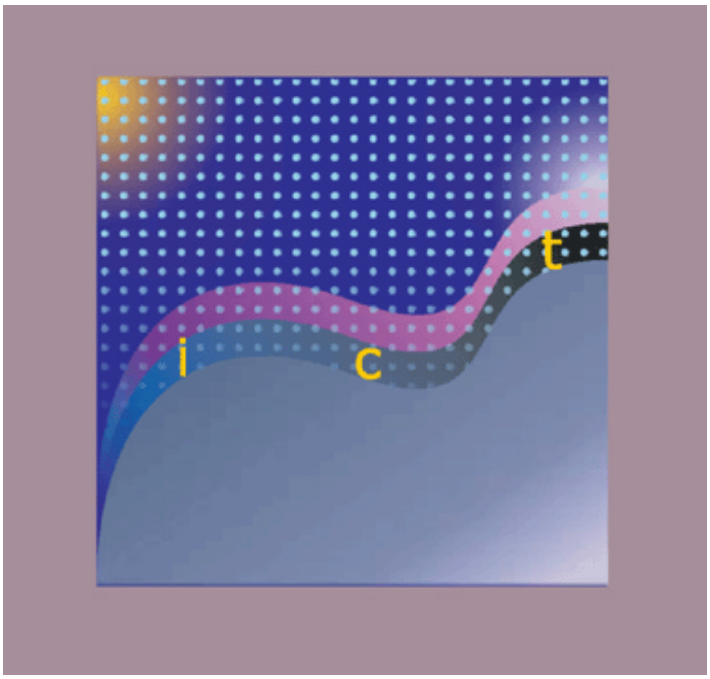
UNCTAD/SDTE/ECB/2

United Nations Conference on Trade and Development

E-COMMERCE AND DEVELOPMENT REPORT 2002

CD Version prepared by the UNCTAD secretariat



United Nations
New York and Geneva, 2002

Note

Symbols of United Nations documents are composed of capital letters with figures. Mention of such a symbol indicates a reference to a United Nations document.

The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area, or of its authorities, or concerning the delimitation of its frontiers or boundaries.

The Executive Summary of this Report can also be found on the Internet at the following address:

http://www.unctad.org/ecommerce/

UNCTAD/SDTE/ECB/2

Foreword

E-commerce is one of the most visible examples of the way in which information and communication technologies (ICT) can contribute to economic growth. It helps countries improve trade efficiency and facilitates the integration of developing countries into the global economy. It allows businesses and entrepreneurs to become more competitive. And it provides jobs, thereby creating wealth.

But knowing that an instrument is powerful is not enough to ensure that it will be put to the best possible use. We need to understand how it works, and how and when it should be used, and find creative ways to put this knowledge into practice, disseminate it widely and maximize its power. Towards that end, the *E-Commerce and Development Report 2002* provides factual information and analysis covering a range of topics that will influence the expansion of e-commerce in developing countries. The Report also identifies the policy and business options available to developing countries, and makes practical proposals for maximizing the contribution of e-commerce to economic and social development.

If the world is serious about achieving the Millennium Development Goal of halving the number of people living in extreme poverty by the year 2015, ICT must figure prominently in the effort. Everyone – governments, civil society, private sector businesses – has a vital stake in fostering digital opportunity and putting ICT at the service of development. Yet despite commendable efforts and various initiatives, we are still very far from ensuring that the benefits of ICT are available to all. The digital divide is as wide as ever, with billions left unconnected. I hope this report contributes to the efforts of the international community to seize the extraordinary opportunities of the digital revolution.

Kofi A. Annan
Secretary-General of the United Nations

Acknowledgments

The *Electronic Commerce and Development Report 2002* was produced by a team led by Zhongzhou Li, Officer-in-Charge of UNCTAD's Division for Services Infrastructure for Development and Trade Efficiency, and coordinated by Yusuf Kalindaga, Officer-in-Charge of the Electronic Commerce Branch. The following UNCTAD staff members participated in the preparation of this publication: Cécile Barayre, Pilar Borque Fernández, Dimo Calovski, Angel González Sanz, Rouben Indjikian, Lorenza Jachia, Carlos Moreno, Susan Telstcher and Haijuan Yu.

The UNCTAD team wishes to express their recognition to the following consultants who provided background material for specific chapters of the Report: Christopher Gibson, Charles Goldfinger, Cristian Huggle, Swasti Mitter, Frank Nikolla, Jean-Christophe Perrin, G. Russel Pipe. The contribution of experts who submitted papers on e-finance to events organized by UNCTAD and which have been used in the relevant chapter is also acknowledged.

The cover of the Report was designed by Diego Oyarzun Reyes, and the text was edited by Graham Grayston, Talvi Laev and Chris Macfarquar.

Contents

List of Boxes

List of Charts

Chart Page

List of Tables

Table Page

List of abbreviations

A

ABA	American Bar Association
ABoC	Agricultural Bank of China
ABS	Australian Bureau of Statistics
ADR	Alternative Dispute Resolution
AFTLD	African Top Level Domains
AOL	America On Line
AP	accounts payable
APC	Association for Progressive Communications
APEC	Asian-Pacific Economic Cooperation
APTLD	Asia Pacific Top Level Domain Forum
AR	accounts receivable
ARPANet	Advanced Research Projects Agency Network
ASYCUDA	Automated System for Custom Data
ATM	automated teller machine

B

BIAC	Economic and Industrial Consultative Committee of OECD
BNDES	Brazilian Development Bank
BOC	Bank of China
BPM5	IMF 5th Balance of Payment Manual
BPO	Business process outsourcing
BRAC	Bangladesh Rural Advancement Committee
BSCH	Banco Santander Central HispanoAmericano
B2B	Business to Business
B2C	Business to Consumer

C

CA	Certificate Authority
CAPROSOFT	Cámara de Productores de Software
CBC	Construction Bank of China
CCIPT	China Council for the Promotion of International Trade
CCRTU	China Central Radio and Television University
ccTLDs	Country Code Top-Level Domains
CDMA	Code Division Multiple Access
CEF	Caixa Economica Federal
CENAT	Centro de Alta Tecnología
CENTR	Council of European National Top-Level Domain Registries
CFCC	China Financial Certificate Center

CFO	chief financial officer
CGE	Computable general equilibrium
CIECC	China International Electronic Commerce Center
CLS	continuous linked settlement
CMB	China Merchants Bank
CMU	Carnegie Mellon University
CNAP	Cisco Networking Academy Program
CNNIC	China Internet Network Information Center
COD	Cash on Delivery
COFACE	Compagnie française d'assurance pour le commerce extèrieur
CRS	Computer Reservation System
CSRC	China Security Regulatory Commission

D

D&B	Dun and Bradstreet
DMCA	Digital Millennium Copyright Act (ICT Information and Communication Technologies
DMO	destination management/marketing organization
DNS	Domain Name System
DP	digital products

E

EBOPS	Extended balance of payment services
EBPP	electronic bill payment and presentment
ebXML	Electronic Business using eXtensible Markup Language
ECE	United Nations Economic Commission for Europe
EDI	Electronic Data Interchange
EDIFACT	Electronic Data Interchange for Administration, Commerce and Transport
EIPP	electronic invoice payment and presentment
ERP	enterprise resource planning
EU	European Union

F

FAQ	frequently asked questions
FDI	foreign direct investment
FTAA	Free Trade Area of the Americas
FTC	Federal Trade Commission of the United States

G

GAC	ICANN Government Advisory Committee
GATS	General Agreement on Trade in Services
GATT	General Agreement on Tariffs and Trade
GBDe	Global Business Dialogue in Electronic Commerce
GDI	Gender Development Index

GDP	gross domestic product
GDS	global distribution system
GE	General Electric
GEF	Global Electronic Finance
GIS	Geographical information systems
GNP	gross national product
GPRS	General Packet Radio Service
GTAP	Global Trade Analysis Project
GTFNet	Global Trade Finance Network
gTLDs	Generic Top-Level Domains
G3	Third generation mobile communications technology, ITU specification
G8	Group of 8

H

HCOPIL	Hague Conference on Private International Law
HSBC	Hong Kong Shanghai Bank
HTML	hypertext mark-up language

I

IANA	Internet Assigned Numbers Authority
IBM	International Business Machines
ICANN	Internet Corporation for Assigned Names and Numbers
ICBC	Industrial and Commercial Bank of China
ICC	International Chamber of Commerce
ICP	Internet Content Provider
ICT	Information and Communications Technologies
IDB	Inter-American Development Bank
IDC	International Data Corporation
IDN	Internationalized Domain Name
IETF	Internet Engineering Task Force
IFC	International Finance Corporation
IGC	International Gate Way
IIPA	International Intellectual Property Alliance
ILPE	Internet Law and Policy Forum
IMF	International Monetary Fund
INNs	International Non-propietary Names
IP	Internet Protocol
IPO	Initial Public Offer
IPRs	Intellectual Property Rights
ISP	Internet Service Provider
ISTAT	Italian National Statistical Institute
IT	information technology
ITAA	Information Technology Association of America
ITU	International Telecommunication Union

K

KNSO	Korean National Statistical Office

L

LACTLD	Latin American & Caribbean Country Code Top Level Domain Organization
L/C	letter of credit
LDC	least developed country

M

MFN	most favoured nation
MII	Ministry of Information Industry
MLES	UNCITRAL Model Law on Electronic Signatures
MoE	Ministry of Education
MoFTEC	Ministry of Foreign Trade and Economic Cooperation
MPS	Ministry of Public Security
MULTIMOD	Multi-region econometric model

N

NASSCOM	National Association of Software and Service Companies
NATLD	North America Top Level Domain Organization
NGOs	Non-governmental organizations
NTO	national tourism office

O

ODR	Online Dispute Resolution
OECD	Organisation for Economic Co-operation and Development

P

PBoC	People's Bank of China
PKI	Public Key Infrastructure
POS	point of sale
PROCOMER	Promotora del Comercio Exterior de Costa Rica
P2P	Peer-to-peer

R

R&D	research and development
RCA	Revealed comparative advantage
RDPR	Restrictions Dispute Resolution Policy
RTGS	real –time gross settlement

S

SAR	special administrative region
SAT	State Administration of Taxation
SBEM	Softbank Emerging Markets
SLD	Second-Level Domain
SMS	Short Message Service
SME	small and medium size enterprise
STP	straight through processing
SWIFT	Society for World Interbank Financial Telecommunications

T

TCP/IP	transmission control protocol/Internet protocol
TLD	Top-Level Domain
TRIPS	Agreement on Trade-Related Aspects of Intellectual Property Rights

U

UCP	Uniform Customs and Practice for Documentary Credit
UDRP	Uniform Domain Name Dispute Resolution Policy
UN/CEFACT	Centre for the Facilitation of Procedures and Practices for Administration, Commerce and Transport of the United Nations Economic Commission for Europe
UNCITRAL	United Nations Commission on International Trade Law
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific, and Cultural Organization
UNU-INTECH	United Nations University Institute for New Technologies
URL	Uniform Resource Locator
USBOC	United Bureau of the Census

V

VAT	value-added tax
VMM	Virtual Microfinance Market
VoIP	Voice-over-Internet Protocol
VSAT	Very Small Aperture Terminal

W

WAP	wireless application protocol
WCT	Cooperation Treaty
WIPO	World Intellectual Property Organisation http://www.wipo.org
WMS	World market share
WSIS	World Summit on the Information Society
WTDR	World Telecommunication Development Report
WTO	World Trade Organisation http://www.wto.org

X

XML	Extensible mark-up language

EXECUTIVE SUMMARY

1. E-commerce around the world: A brief Status Report

In contrast with the weak performance of several key developed and developing economies in recent months and the difficulties experienced by the information technology (IT) sector, Internet use and particularly electronic commerce have continued to grow at a fast pace since the publication of the *E-Commerce and Development Report 2001*.

The number of Internet users worldwide is expected to reach 655 million by the end of 2002. Developing countries accounted for almost one third of new Internet users worldwide in 2001. In most of them, however, Internet penetration rates remain very low. As for e-commerce, the following table presents three estimates of global online sales. In the most optimistic forecast, e-commerce would represent about 18 per cent of worldwide business-to-business and retail transactions in 2006.

Worldwide E-Commerce: some Estimates and Forecasts (Billions $)

Source	2000	2001	2002	2003	2004	2005	2006
Forrester			2,293.50	3,878.80	6,201.10	9,240.60	12,837.30
IDC	354.90	615.30				4,600.00	
Emarketer (B2B only)	278.19	474.32	823.48	1,408.57	2,367.47		

Regional perspectives

Africa

Internet connectivity has improved in Africa. The number of dial-up subscribers grew by 30 per cent in 2001 and now stands at about 1.3 million. Incoming Internet traffic represents 1 gigabyte per second, while outgoing traffic is around 800 megabytes per second. However, only 1 in 118 Africans has Internet access, and only 1 in 440 has access if the five countries with the most users are excluded from the calculation. Cost remains an extremely high barrier. Business-to-business (B2B) outside South Africa remains almost negligible. However, B2B opportunities have been identified in the online and offline services sectors. In the business-to-consumer (B2C) sector, handicrafts and products and services targeting Africans outside their home countries seem to dominate.

Latin America

E-commerce is highly concentrated in four relatively developed Internet markets (Argentina, Brazil, Chile and Mexico). Overall, between 50 and 70 per cent of Latin American enterprises in the formal sector are estimated to have access to the Internet. The Internet is widely used for business contacts and information-gathering, but only a minority of enterprises carry out online transactions. Large transnational corporations, notably in the automotive sector, are playing a key role in the development of online B2B transactions, especially in Brazil and Mexico. Banking is another sector in which B2C providers in the region, particularly in Brazil, have developed a competitive edge. Brazil has also made significant progress in business-related e-government applications.

Asia and the Pacific

It is in this region that e-commerce is spreading most quickly among developing countries. The region's enterprises, particularly in manufacturing, are exposed to pressure from customers in developed countries to adopt e-business methods and are investing to be able to do so. China's population of Internet users is already the world's third largest. The transformation of this great potential into an actual e-commerce market may not happen at the same pace. Logistical difficulties such as insufficient transport networks represent a serious hurdle to B2B development, as they make it difficult for companies to realize the potential gains of increased efficiency in their supply chains.

Countries with economies in transition

Fast growth in both B2B and B2C e-commerce is expected in the Central and Eastern European countries with economies in transition. However, e-commerce in transition economies is not likely to reach 1 per cent of global e-commerce before 2005. While the more technologically advanced nations in Central Europe and the Baltic have relatively high rates of digital literacy and are laying the foundations for the development of e-commerce activity, others (particularly in the Balkans, the Caucasus and Central Asia) remain far behind.

North America and Western Europe

In the most advanced markets e-commerce growth seems to have been little affected by the prevailing poor economic conditions. B2B e-commerce in 2001 constituted at most 2 per cent of all B2B transactions in the United States and much less in Europe, but the share of online transactions in total B2B sales is growing quickly on both sides of the Atlantic, and it is estimated that in the next two to four years it will approach 20 per cent, representing a massive shift of business operations towards the online environment. Enterprises will focus on e-business tools for procurement, supply chain operations, business process outsourcing and, to a certain extent, e-marketplaces. In the case of B2C e-commerce, persistent growth during the economic slowdown could indicate that, rather than being a maturing activity, online retailing is still in a growth phase even in those economies where it took off earlier. Although even in the United States the share of B2C e-commerce in total retail sales remains modest (below 3 per cent), it has progressed significantly more in a number of sectors, in some of which online sales already represent up to 18 per cent of total sales. Some of these sectors, such as software, travel and tourism services and music, could represent good opportunities for developing-country suppliers.

E-commerce and development: the international dialogue

The effects of Internet-induced changes in the global economy and their implications for developing countries will depend to a significant extent on factors that policy-makers, business players and other stakeholders can influence. Policies must be designed, articulated in coherent e-strategies and implemented in partnership with all the relevant players to ensure that the new opportunities for creating, transforming, applying and exchange information and value are used to improve the productivity of developing economies and their enterprises. The process of designing the strategies that can make e-commerce a force for development must necessarily include an international component that supports national efforts by ensuring that the developmental perspective is present in a meaningful way in the multiple international discussions of the Internet, information and communications technology (ICT) and the organization of their economic applications. A close relationship between national e-commerce strategies and international cooperation would be greatly facilitated by the emergence of a common understanding of the fundamental elements of e-commerce strategies for development, specially if, as seems desirable, ICT is to be mainstreamed into official development aid programmes.

2. The Domain Name System and Issues for Developing Countries

Domain names have evolved very rapidly into a common feature used to identify a website's location while at the same time expressing the name, brand or other identifying features of the person, business or organization using the domain name. As the use of information and communications technology (ICT) and e-commerce spreads in developing countries, domain names are expected to become important for commercial and non-commercial uses in these countries.

The development of a national domain name system (DNS) infrastructure is an important means of facili-

tating the online exchange of information in developing countries and thus creating a valuable resource for communication, education and business. At the same time, however, domain names and the DNS present a complex array of commercial, technical, policy and legal questions which highlight many of the cross-border issues presented by the Internet and e-commerce. Developing countries need to understand these issues and formulate responses that are appropriate for the country's online community, satisfying relevant legal, cultural, economic, language and other dimensions.

Policy decisions are required in relation to developing countries' national country code top-level domains (ccTLDs), which foster not only ease of registration of domain names but also overall confidence in the ccTLD space. There is no single model for structuring a ccTLD that would meet the needs of all countries or territories. In developing countries, ccTLD administrators can develop appropriate policies to meet the needs of their community, with the overall goal of promoting access to and use of the Internet. In particular, authorities in developing countries should be aware of the architecture and functioning of the DNS so that they can establish a reliable DNS environment to ensure that predictable results are achieved when a user enters a domain name. It is important that the overall structure of the DNS market within a country provide a competitive environment, at least at the registrar level. One key decision is whether the ccTLD should be structured more openly so that anyone, even non-residents, can register, or whether to reserve the ccTLD exclusively for local residents and companies. CcTLD administrators in developing countries can enhance domain name registration practices by (i) ensuring that standard agreements exist for domain name registrants setting out their rights and obligations; (ii) ensuring equal treatment of all eligible registrants requesting domain names; (iii) making the policies and procedures of the ccTLD available on the Internet for public inspection; (iv) establishing a clear policy for maintaining registrants contact information, and for protecting their privacy; and (v) establishing a dispute resolution policy.

Increasing amounts of information are becoming available to developing country experts to assist in formulating an appropriate approach for management of the ccTLD. Developing-country ccTLD managers should become involved in the relevant forums for exchanging information about and participating in the DNS; information about ccTLD organizations is provided in this chapter.

The Internet Corporation for Assigned Names and Numbers (ICANN) is a central player in the management of the DNS, with its governance and coordinating functions extending to many areas of importance. While it has achieved a number of important milestones, it has not been able to avoid continuing questions concerning its structure, its basis for legitimacy, its sources of funding and its international representativeness. Unlike a treaty-based organization, ICANN was established as a private-sector organization with responsibility for coordinating the DNS in a number of key areas. ICANN has been funded through the registries and registrars participating in the global DNS and has introduced the concept of "accreditation" for companies seeking to offer registry and/or registrar services for the generic top-level domains (gTLDs) in the DNS. One issue of special concern to developing countries is that most ccTLD administrators have yet to sign any formalized agreement with ICANN. Such an agreement would define rights and responsibilities, including funding commitments.

A reform process is underway for ICANN. For developing countries, the reform of ICANN is an important issue because it gives these countries a renewed opportunity to engage in the ICANN process, either directly or through their regional ccTLD organizations so that their perspectives, requirements and international diversity are duly taken into account.

Domain names have generated a number of legal issues, key among them the tension arising from conflict between domain names and the system for protecting trademark rights. Relying on trademark law, a company can develop goodwill in connection with its brand and expect that the brand will be protected from infringement, while consumers will similarly be protected from deceptive practices. Domain names were launched into the commercial space in a manner that largely disregarded this aspect of the intellectual property system. The automatic process for registering a domain - first used for the gTLDs but now commonly applied also in many ccTLDs - created conditions that permitted a flood of registrations of popular names. A positive consequence of this approach is that it has presented a low entry barrier for the many new entrants into e-commerce, including businesses in developing countries. At the same time, however, the disconnect between the DNS and the trademark system has given rise to practices such as the bad-faith registration by third parties of trademarks as domain names in order to take unfair advantage of the marks.

After a somewhat painful transition period in which trademark owners and domain name registrants, and

various other stakeholders, have battled to draw the lines that should delimit fair as opposed to abusive practice, the situation is much improved today. The avoidance of such disputes is an objective being pursued, albeit not without problems, in the implementation of the new gTLDs (e.g. .biz and .info). More significantly, the implementation and acceptance of an international dispute resolution system, the Uniform Domain Name Dispute Resolution Policy (UDRP), which applies to registrations in the gTLDs and in some ccTLDs, has allayed concerns. The UDRP was adopted by ICANN in late 1999, and since then more than 6,000 cases have been filed under the procedure.

The UDRP is administered by multiple dispute-resolution service providers applying a uniform procedure. This uniformity works to enhance a general understanding of the UDRP, which is of benefit to all parties, be they in developed or developing countries. The UDRP sets out bright-line criteria for determining whether a domain name registration should be considered abusive, and the scope of the remedies relates only to the status of the domain name registration. The cost of bringing a claim under the UDRP is reasonable even for parties in developing countries. The complainant is normally required to cover the costs of the procedure, unless the respondent has demanded a three-member panel, in which case the parties share the extra costs of the panel.

The UDRP has met with widespread international acceptance. Complainants entrusting cases to the procedure include businesses from every sector of commerce, including many smaller enterprises and individuals from various countries, and the parties filing or defending cases have come from more than 70 countries on every continent. At the same time, a number of criticisms have been lodged against the UDRP, including that it promotes forum shopping among the dispute-resolution service providers and that the decisions themselves are inconsistent and sometimes poorly reasoned. These criticisms have engendered responses in the ongoing discussions concerning the UDRP, including the suggestion that an appeals mechanism be established. It is important that developing countries become involved in the current UDRP debate and in the discussions taking place as to whether protection should be provided in the DNS for categories of identifiers other than trademarks, such as personal names, geographical indications or trade names, to name a few.

3. Gender, E-commerce and Development

While there is little doubt about the role of information and communication technologies (ICT) and e-commerce in driving the global economy and reshaping existing business structures, many are concerned about issues relating to the "digital divide" and the risk of excluding a large part of the population, especially in developing countries. In this context, attention is increasingly being paid to the question of whether women are benefiting as much as men from the new technologies, or whether the digital revolution reinforces existing gender inequalities in the job market and other parts of the economy.

Enhancing business opportunities for women entrepreneurs

ICT and e-commerce are attractive to women entrepreneurs (who in many developing countries account for the majority of small and medium-size enterprise owners), allowing them to save time and money while trying to reach out to new clients in domestic and foreign markets. Success stories in business-to-consumer (B2C) retailing or e-retailing are heard from all developing-country regions, demonstrating how women have used the Internet to expand their customer base in foreign markets while at the same time being able to combine family responsibilities with lucrative work. However, in spite of the publicity given to e-retailing, its scope and spread in the poorer parts of the world have remained small, and especially women working in microenterprises and the informal sector are far from being in a position to access and make use of the new technologies. Moreover, B2C e-commerce is small compared to business-to-business (B2B) e-commerce and thus only benefits a small number of women.

Creating new employment in IT-related services

New job opportunities created by ICT through outsourcing in the services sector look promising for women, who form a significant share of the workforce in the IT-enabled industries in developing countries, notably in Asia, but increasingly also in Africa and Central and Latin America, where new IT-related services are being created. These women are engaged in activities such as data processing and storing, tran-

scription services, responding to customer call or claims processing. Some of these activities are carried out through teleworking, from a distant site such as a community center or from home. Home-based teleworking offers women the opportunity to earn an income while taking care of family responsibilities. On the other hand, it hampers their career prospects and therefore seems to be attractive to only a limited number of women, such as those in childbearing age wishing to remain economically active.

Identifying the barriers

Women often face greater barriers than men in getting education and training that can equip them with computer literacy, foreign language proficiency and business skills. In the developing parts of the world, parents tend to give priority to the education of male rather than female children. Women also often find it more difficult to engage in new forms of self-employment created by ICT, such as running telekiosks or cyber-cafes if they do not have the same access as men to family property or institutional financing. Women make up the majority of the rural poor in the developing countries, and in the countryside access to ICT infrastructure is less available than in urban areas. Given their increased responsibilities at home, they have less time to access the technologies outside their homes or to enhance their command of the IT, language and other skills required by the information economy. Few women work in the higher-skilled segments of the IT-enabled industry, and even those in lower-skilled areas are often hard to retain once they enter childbearing age and social and cultural norms prompt them to leave their jobs and attend to the young and elderly.

Mainstreaming gender in ICT policy-making

Policy-makers will have to play a key role in creating an environment favourable to the participation of women in the digital economy. Education is the most important policy intervention for improving the ability of girls and women in developing countries to participate in the information society. Apart from ensuring equal access for girls and boys to primary and secondary schooling, policies should promote women's access to business and technical education, especially at tertiary levels. Other key policy interventions should focus on providing women with access to Internet infrastructure and technologies, financial capital and e-business and IT-enabled employment opportunities. Improving women's access to Internet technologies requires extensive infrastructure building to bring basic telecommunications in rural and peri-urban areas, which are currently underserved in many developing countries. This should include common facilities such as telecentres and telephone shops that offer public Internet services and are located in venues women frequent, such as markets, places of workship, health clinics, schools and post offices.

4. M-Commerce

M-commerce is often defined as the buying and selling of goods and services using wireless handheld devices such as mobile telephones or personal data assistants (PDAs).

In the last four years, growth in the number of mobile telephone users worldwide has exceeded fixed lines, expanding from 50 million to almost one billion in 2002. This fast growth stems from the cost advantage of mobile infrastructure over fixed-line installation and from the fact that mobile network consumers can simply buy a handset and a prepaid card and start using it as soon as the first base stations are in place, without having to open a post-paid account.

The introduction of wireless communications has also brought wireless data services, essential to conducting m-commerce, to many developing countries. If the convergence of mobile and fixed Internet and information and communication technologies continues, first access to the Internet for a significant part of the world will be achieved using mobile handsets and networks. Wireless technologies have made inroads even in relatively low-income areas, where prepaid cards allow access to people who cannot have a prepaid subscription because of billing or creditworthiness problems. Developing Asia is the leader in this area with Latin America showing slower adoption of wireless technology amid predictions for strong acceleration in the coming years. Africa has more than 20 million mobile device users, and by the end of 2001, twenty-eight African nations had more mobile than fixed subscribers. In many least developed countries, more mobile users have been added during the last few years than fixed lines during the entire history of fixed lines' operations.

M-commerce applications are already seeing everyday use. Worldwide m-commerce revenues are forecast to totally nearly $50 billion in 2002. Western Europe and North America should lead in the next three years. However, sales in the Asia-Pacific region and the rest of the world are expected to rise significantly to almost 40 per cent of the global $225 billion in m-commerce revenues forecast for 2005. Overall, business-to-consumer (B2C) transactions will be far more numerous than business-to-business (B2B) ones in m-commerce.

The main areas of m-commerce use are in text messaging or SMS (short messaging service), micro-payments, financial services, logistics, information services and wireless customer relationship management. Text messaging has been by far the most successful m-commerce application in developing countries, where rates of low fixed-line connectivity and Internet access have made it an e-mail surrogate. Operators in China and other Asian developing countries are gearing up for m-commerce applications for financial services in particular. However, difficulties in making electronic payments and concerns over the security and privacy of transactions are limiting the conduct of m-commerce, which may have to await third-generation wireless technologies and fully Internet-enabled handsets.

A number of government actions such as liberalizing the telecommunications market, licensing new mobile operators or creating an independent regulatory body would help establish a fair and competitive market for m-commerce. National governments should promote the adoption of authentication, security and data privacy policies and regulations. Finally, improving connections to the Internet backbone remains vital if m-commerce is to fully realize its promise of connectivity for all.

5. The IT industry, e-business and development

The information technology (IT) industry is one of the world's largest industries and accounts for 22 per cent of developing countries' exports. The UNCTAD secretariat undertook a survey of the most important IT companies in order to explore the role that foreign investment in the IT industry can play in facilitating the adoption of e-business by the local business sector in developing countries and more generally the potential contribution of the IT industry to economic growth.

The 35 respondent companies had a cumulative turnover of $413 billion. While this number represents half of worldwide IT production, it includes revenue from sources other than IT, because many of the companies are in different sectors and do not report or disclose their turnover from IT products separately.

The survey showed that IT companies are comparatively heavy users of e-commerce. Many of the subsidiaries of the IT companies in the developing countries are also using e-mail and have a website, but comparatively few engage in more complex e-business operations such as offering online catalogues, receiving online orders and handling online payments. The great majority of respondents reported that e-commerce had facilitated the set-up and operation of developing countries' ventures. IT investment from multinationals might make an important contribution to increasing e-commerce in these countries, boosting data traffic on the Internet and hence potentially bringing about cost reductions in telecommunication services.

IT investment in developing countries has also appeared to have positive effects on the local productive sector, which is significantly involved in the production process of the multinationals. The companies also reportedly had a focus on increasing the competences of their local workforce.

These positive findings have to be weighed against the fact that the IT multinationals' investment in developing countries is still heavily concentrated in South Asian and South-East Asian countries; even more so than investment from industries which are more dependent on the availability of natural resources. IT investment for research and development – which offers the best opportunities for transfer of technology – is even more heavily concentrated in these regions.

On the other hand, a local IT industry can also facilitate the adoption of an e-business culture by the local business community. For example, when the business sector starts adopting new information and communication technologies in its operations, it relies heavily on local or locally available IT expertise in order to fully realize all the efficiency gains that the Internet makes possible at the level of a single firm as well as at the level of the industry and of the country's production system as a whole.

The localization of existing software and the creation of open-source software for the benefit of the local business sector, government and civil organizations can also constitute an initial entry strategy for software companies from developing countries, which can then build up export capacity targeted at regional markets. These business opportunities are at the borderline between IT production and IT use, and thus they simultaneously provide new markets for local IT companies and enhance the local business sector's capacity to engage in e-commerce.

To ensure that these opportunities are fully exploited, governments can play an active role by creating a nurturing environment for e-business through the adoption of a national e-strategy developed with the participation of all relevant stakeholders. Such a strategy should take into account issues such as telecommunications and access, the legal framework for e-commerce, awareness raising, training and community involvement. An important part of the national e-strategy might be to ensure that local industry can make choose the operating system and applications that best suit its needs, with a full understanding of the issues at stake. Awareness campaigns, training programs and the adaptation of university curricula may be needed to ensure that the local IT industry as well as the local business sector can take full advantage of the opportunities offered by open-source software.

6. E-Finance for Development: Global Trends, National Experiences and SMEs

E-finance resources, know-how and operational experience are concentrated within a limited number of large number of large companies headquartered in OECD countries. They provide key elements of infrastructre, networks, systems and applications. They operate globally in terms of sourcing and selling their products and services, and the emerging economies are the natural extension of their outreach. At the same time, a number of financial institutions in developing countries are trying to find their own niche and have launched their own e-finance initiatives in areas such as banking, payments and trade finance, some with a specific focus on small and medium-size enterprises (SMEs).

As an information-intensive industry, finance has seen its business processes profoundly changed by the Internet. In developed countries, online banking, for instance, already represents between 5 and 10 per cent of total retail banking transactions. An effect of these changes has been the emergence of global online banking and payments platforms. So far, those platforms have tended to focus mainly on the needs of global corporations. For developing countries it is essential that thepayment and settlement services for their SMEs, operated by banks in developing countries, be integrated into these global systems. Careful consideration should be given to the issue of interoperability between global and local e-finance platforms.

Global trade trade and information platforms present a somewhat different challenge. While they explicitly cover developing countries and SMEs, their full benefits will not materialize unless both the quantity and the quality of information about SMEs are enhanced. Thanks to the Internet, this can be done at a relatively low cost, but it remains a complex task. Hence the need for closer cooperation with and between existing credit information companies in developing countries as well as the creation of such services in countries where they do not yet exist.

While possibilities for technological leapfrogging exist in e-finance, it is not certain that they are widespread. E-finance offers opportunities for quicker deployment and better coverage than the traditional approaches to financial systems development; at the same time, it also increases the complexity of the underlying systems and applications. For developing and transition countries, the challenge ahead will be to build up capacities, particularly local expertise to manage these complex systems.

Lessons from global e-finance experiences

Four basic misconceptions were frequently present in the business strategies employed in the earlier stages of the development of e-finance. First, while the Internet can reduce financial transaction costs, these gains have often been exaggerated or misinterpreted. Second, while it is cheap and quick to create a basic website, designing and implementing a fully functional, industrial-strength application capable of securely accommodating a large number of complex transactions and huge variations in volume is a complex and protracted undertaking. Third, rather than eliminating possibilities for intermediation, the abundance of information, opportunities and relationships created by the Internet

increases the need for new intermediation structures and mechanisms. Fourth, contrary to the view that e-business would revolutionize the financial industry and destroy the incumbent "dinosaurs", the evolution of e-finance clearly demonstrates the advantages of established financial services suppliers, as long as they have the capacity to evolve and to embrace the new approaches and technologies.

E-finance challenges for SMEs

Numerous SME-oriented e-finance initiatives by banks and other financial service providers are under way in developing countries. Some positive signs are already visible, including a high level of acceptance of technology by customers and financial institutions; the presence of many innovative approaches; and initial tangible results in terms of market access and revenue generation. However, most projects have not yet been deployed on a large scale. It is therefore too early to determine which ones are likely to be most successful and provide "best-practice" benchmarks to be replicated in other countries. Nevertheless, experiences to date allow the identification of the following key challenges:

Adapting global technology to local requirements: While Internet technologies are global and standardized, their applications can and must be adapted to local circumstances. Distinctions between proximity and remoteness remain highly pertinent, even if the distance becomes virtual rather than geographical. The need to localize financial solutions is even stronger in e-finance for SMEs, which for the most part operate within a limited geographical area. Furthermore, their characteristics, size, financial structure and sectoral mix can vary considerably even within the same country or region.

Strengthening public support: Most e-finance developments have taken place through the interplay of competitive market forces, with limited public-sector intervention. In the case of e-finance for SMEs, public-sector intervention is more frequent. The majority of developing-country SME success stories in relation to e-finance were largely due to initial public-sector support which was flexible and proactive and relied on co-operation with the private sector.

Creating adequate regulatory and institutional frameworks: Developing countries need to take a proactive role in developing a robust, flexible regulatory framework for e-commerce and e-finance. It is equally important to ensure effective coordination of government agencies, industry associations and other facilitators. E-finance and e-commerce will succeed only if they create a stable physical and virtual infrastructure of trust, shared by all parties concerned, including public authorities, local and foreign entrepreneurs, financial services providers and customers and, last but not least, SMEs.

Mainstreaming SMEs towards e-finance: Improved tax regimes and simplified regulations as well as other support measures will permit SMEs to move into the formal economy. This will include comprehensive reporting on their assets and liabilities and hence allow them to be listed in Internet-based credit information databases. SMEs will also be encouraged to adopt online banking and payments as part of their everyday business practices, while as trusted clients they may start receiving financing for and eventually investment in their online trade activities. This is true not only for the overwhelming majority of SMEs in developing countries but also for SMEs in developed countries.

7. E-Commerce and the Publishing Industry

Publishing is one of the most important channels for disseminating knowledge. Consequently, improvements or expansions in publishing lead to further creation and dissemination of knowledge and in turn to increased economic and social development. Publishing is also a business activity that creates income and employment for publishers, publishing distribution channels and libraries in many countries.

Publishing is a large industry covering a wide range of products such as books, newspapers and periodicals. Available data indicate, for example, that world trade in printed matter and literature totalled around $26 billion in 1998. However, this figure does not include all publications actually produced and circulated around the world. Publishing is currently a fast-growing industry and is largely concentrated around a few large, global publishing houses, all of which are located in developed countries, though small-scale publishing enterprises are widespread around the world.

E-publishing comprises technology and business models that involve the production, maintenance, archiving and distribution of documents (books, newspapers, journals, etc.) in electronic form and/or

by computer. E-publishing uses technology that provides new publishing opportunities and can be used by individuals and small enterprises. It allows publications to reach a global readership at minimal cost. The result is to enable enterprises in developing countries to compete with established publishers, although initially they may need to rely on niche markets, especially at the national and regional levels. Also, e-publishing allows more individuals to get their works published than is true of print publishing.

An examination of electronically published newspapers, scholarly journals and books shows that they share many features such as delivery format, capabilities and pricing models. Publishers generally offer parallel print and electronic versions of the same publications, although some publish electronic-only versions as well. While parallel or dual publishing has some advantages, it tends to be very expensive and presents publishers with a dilemma, since electronic-only publishing may not necessarily be a viable business model.

There are a variety of pricing models for e-publications, especially for journals and newspapers, including providing a free electronic version for readers, providing the electronic version free to print subscribers, selling the electronic version to print subscribers for an extra charge, selling single articles, and so on. Journal publishers also use site licenses.

While e-publications are generally cheaper to distribute than print publications, when other fixed costs and development costs are taken into account, e-publishing may be as costly as or even more costly than print publishing, at least in the short run.

Because of low levels of Internet and computer connectivity and also low levels of print publishing, developing countries have lagged behind developed ones in publishing and using e-publications. Recognition of the value of e-publishing in developing countries has led to a variety of national and international initiatives aimed at promoting e-publishing and access to e-publications in developing countries. Some of the initiatives are similar to the marketing strategies used by publishers in developed countries. Publishers and users of publications in developing countries may find some of the initiatives to be useful sources of support and opportunities for co-operation when formulating their own e-publishing strategies.

The economic importance of intellectual property rights, including copyrights, coupled with the widespread development of digital technologies, has encouraged national, regional and international authorities to adapt their legislation to the digital age. A number of countries have enacted national legislation and ratified international treaties to secure copyright protection. However, bringing national laws on copyright into line with the WTO Agreements and WIPO Internet Treaties and providing effective enforcement of these laws has proved difficult, in particular for developing countries. Due to the complexity of intellectual property laws and their enforcement, developing countries still lag behind in this respect and need further assistance in order to comply with their multilateral commitments.

A wide array of strategies are available to the various stakeholders. Publishers can choose between training their own staff members to can handle the new technology and contracting out the work. An other important issue is whether to publish online only or adopt the “parallel” model of print publishing combined with electronic publishing. Choosing the appropriate mix of online and offline distribution channels can influence earnings. The pricing models used should reflect the nature of the publication - audience size and profile, its subject matter and its frequency of publication.

Institutional users may need to know how to negotiate licenses with publishers and create and/or join buying consortia. Rationalizing purchases by mixing e-publications and printed materials, as well as choosing between overlapping e-publications (e.g. e-journals and e-books with the same content) can lead to substantial savings. Once content is acquired, it needs to be circulated. Given the existing e-book technology and the cost of related hardware, libraries may need to operate a “dual” system combining printed and digital information with the associated tasks of digital archiving and training of library staff members and readers in the use of e-published materials.

Governments can make wider use of e-publishing to provide leadership by example and can encourage educational institutions to provide training in e-publishing. Governments should address the issues of deposit of electronic publications in national repositories or archives and provision of fiscal incentives such as tax exemptions or reductions for e-publications. Financing can be directed to public and academic libraries to enable them to launch initiatives for accessing and archiving electronic publications. Clear guidelines regarding copyright laws are essential. Finally, Governments can promote regional co-operation among publishers as well as among libraries and raise public awareness regarding the advantages of electronic publications.

8. E-Insurance

E-insurance, broadly defined, is the application of Internet and related information technologies to the production and distribution of insurance services. The insurance sector plays an important role in a country's economic success. Its main objective is to provide financial stability to individuals, organizations and businesses. However, it is also an important investor. Furthermore, insurance is needed for successful trade and commerce. Insurance improves the creditworthiness of trading partners and can reduce the risk of failure for start-ups and small and medium-size enterprises.

In 2000, insurance companies worldwide wrote $2,444 billion in direct premiums. In other words, the equivalent of 7.8 per cent of global GDP was used to purchase insurance products. During the same year, insurance companies in developing countries generated premiums worth $209 billion, representing 8.5 per cent of global insurance premiums. Of total global insurance premiums, about 1 per cent could qualify as e-insurance. However, the majority of the $100 billion global reinsurance business is traded using electronic media, and there are estimates that by 2005 e-insurance will gain 5 to 10 per cent of market share in personal lines insurance. The corresponding figure for Europe is 3 to 5 per cent. Developing countries do not participate to e-insurance in any meaningful degree.

The efficiency effect of applying e-commerce technology in insurance would be twofold. First, it would reduce the need for administration and management. Second, direct sales to clients could be used to reduce the cost of commissions paid to intermediaries. Since insurance penetration in developing countries is only half of that in developed countries, e-insurance efficiency gains may contribute to growth in insurance spending in developing countries.

The information-intensive nature of insurance will eventually enable it to become a full-fledged e-business provided that efficiencies are passed on to consumers. However, the industry is still trying to determine the optimal business models to follow. Information technology may bring about changes in the value chain, and definitions of best practice will change as well. Analysis must not exclude the costs of online client acquisition and retention, and marketing, in particular if the insurer is embarking on an intensive e-commerce venture.

E-insurance faces three serious challenges. The first is to redefine the relationships between insurers and their agents and brokers. The second is to bring existing pre-Internet computerized data systems out of the back office and online, onto the World Wide Web. Further, outsourcing IT development and maintenance warrants careful examination and consideration of the economies of scale involved in IT deployment. The third challenge is to interface the business process of insurance to a fully functional website given the fact that most existing customers are unlikely to make frequent repeat visits to a site.

For the insurance industries of developing countries, adopting e-insurance will most likely be spurred from abroad. Business relations with international reinsurers may be a first impulse. The entry and local incorporation of foreign personal lines insurers which then transplant tried and tested e-insurance operations may become another motivating factor. Commercial insurance may be the last to be affected by e-insurance practices; however, this is a broad generalization, and insurers must carefully scrutinize market developments. Cross-border sales of personal lines have not yet reached significant levels.

As an important financial sector, insurance requires prudential supervision and regulation. In the context of e-insurance this means that the power of the Internet should be harnessed to improve consumer protection, education and awareness building. Government supervisors and regulators should use information and communication technologies and the Internet to receive and process periodic financial reports. National insurance supervisors can use Internet technologies to communicate among themselves and coordinate activities related to prevention of fraud and money laundering.

9. Export Performance and E-Services

Information and communications technologies (ICT) and e-commerce have been particularly influential in the services industries. The Internet makes it possible to sell a variety of services – for example, airline tickets, financial or insurance products, customer support, data-processing services or legal, health, education or software services – around the clock and from anywhere in the world. This form of commerce is profoundly reshaping many of the existing services industries and creating new services as related technologies develop. This has resulted in an increase in cross-border trade, allowing companies to outsource activities and services to more cost-effective locations or access new clients in foreign markets. As a result, an increasing number of companies, including many from the developing world, are directing their efforts towards becoming more competitive in their services exports.

"Dynamic" export services and "rising stars"

Available statistics on international trade in services demonstrate that between 1990 and 2000 developing countries' services exports grew faster than those of developed countries, especially in services that experienced above-average growth rates on the global market. These "dynamic" export services are to a large extent services that can easily be provided electronically - so-called e-services. Computer-related services were the most dynamic export service during this period, growing at an average annual rate of 31 per cent (at 58 per cent in the developing countries) and gaining 23.3 per cent in market share.

An analysis of export competitiveness in e-services reveals that developing countries' global market share is still minor and few of them have a comparative advantage in the export of e-services. But many developing countries are gaining world market share in the export of, for example, communication services, financial services or royalty services. "Rising stars" (i.e. the most competitive exporters) are mainly developed and transition economies, but include a few developing countries. However, given the high growth rates in a number of developing countries, their share among the rising stars is expected to increase in the near future.

Computer-related services exports from developing countries

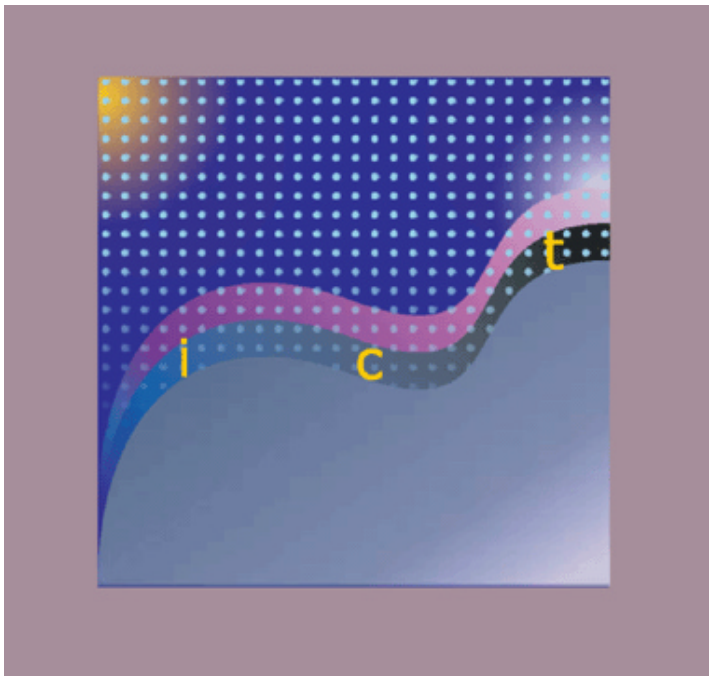
Examples from two countries that have developed their computer-related export services, Costa Rica and India, demonstrate that e-services can contribute significantly to enhancing export competitiveness. In Costa Rica, software services exports as a share of total services exports have increased from almost 0 per cent to over 3 per cent in just three years. India's IT services exports have almost doubled in two years and currently account for more than 16 per cent of total exports and 8 per cent of all foreign exchange earnings. Given the extraordinary growth rates of these e-services exports, the latter figure is expected to reach 30 per cent by 2008. Despite considerable differences between the two countries, they have been successful in developing their domestic IT capacities and IT-related export sectors. Both countries have an educated workforce, IT know-how, long experience in high-tech development, contacts in their major export markets and a good reputation abroad. In addition, they have received large amounts of foreign capital for the establishment of the domestic IT sector.

As ICT and e-commerce spread, e-services will also grow. Business process outsourcing will play an increasingly important role for developing countries. In the near future, more and more traditional industries located in developed countries, including the retail, energy, transportation and manufacturing sectors will outsource parts of their services. This will trigger an increase in international trade in services, as most of these business processes will be outsourced to foreign providers. These human-capital-intensive services offer a major opportunity for developing countries with abundant cheap labour to develop their exports in certain e-services.

Policy measures to support exporters of e-services should focus on increasing market access in e-services for exporters from developing countries, as well as addressing a number of domestic obstacles related to technology, payments, infrastructure (telecommunications) and standards.

Part One

E-COMMERCE AND DEVELOPMENT: SOME CROSS-SECTORAL ASPECTS



Chapter 1

E-COMMERCE AROUND THE WORLD: A BRIEF STATUS REPORT

Since the E-Commerce and Development Report 2001 was issued last November, the United States, the world's largest e-commerce market, has experienced a mild recession. The performance of the other major developed economies has been poorer than expected and several emerging-market economies in East Asia and Latin America have had negative growth rates. Global economic growth in 2001 fell to 1.3 per cent, as against 3.8 per cent in 2000. The rate of growth of international trade also slowed down significantly. In particular, the exports of developing countries, which had grown at a rate of 14 per cent in 2000, grew by only 1 per cent in 2001.[1]

When the evolution of global e-commerce in 2001 is assessed, this less than bright macroeconomic picture must be considered alongside the effects of the crisis in the dotcom industry and the fall in information technology (IT) spending in several important markets. For example, 2001 was the first year since 1985 in which worldwide personal computer (PC) shipments decreased. Against this background, the fact that the number of hosts networked in the Internet, the number of people using the latter around the world and the value of goods and services traded online keep growing at a rapid pace seems to confirm the view that the changes effected by the Internet in business, government and many other aspects of society stem from long-term considerations.

A. Global connectivity and online trade

The measurement of people's access to the Internet and the use they make of it remains far from perfect. The problem is particularly acute when it comes to quantitative information about e-commerce in developing countries, where internationally comparable, freely accessible figures are especially scarce.[2] Nevertheless, even if discrepancies in terms of absolute levels exist even among the most reliable sources, a trend towards a rapid increase in the relevant magnitudes is apparent. The Internet continues to grow rapidly

According to the International Telecommunication Union (ITU), the number of Internet users worldwide stood at 500 million people at the end of 2001. This represents 115 million more than at the end of 2000 (or about a 30 per cent increase).[3] The ITU forecasts that at the end of 2002 the global number of Internet users will have grown to 655 million, which would represent a yearly rate of growth of around 31 per cent.[4] In other words, more than 150 million people, roughly the equivalent of a country like the Russian Federation, or 2.5 per cent of the world's population, would be joining the numbers of Internet users every year. Owing to differences in definitions and methodologies, other sources provide slightly different figures; table 1 provides an overview of various estimates of Internet demographics at the end of 2001 and forecasts for 2002. A figure of 500 million current Internet users around the world would therefore seem to be a safe estimate.

Table 1
Estimates of Internet users worldwide (millions)

Source	2001	2002
ITU	500.07	655 (forecast)
Nielsen//NetRatings	498.20	
IDC	497.70	
Nua.com 5[5]	527.57	580.78 (May)

Source: ITU (2001), ITU (2002), Nielsen//NetRatings (2002a), IDC (2002a), Nua.com (2002).

The number of Internet users rises in developing countries

Table 2 uses ITU figures for 2000 and 2001 to show the geographical distribution of the growth in the Internet population:

Table 2
Internet users (thousands), 2000 - 2001, by region

Region	2001	2000	Increase	% change
Africa	6 738	4 601	2 137	46.4
South Africa	3 068	2 400	668	27.8
Egypt	600	450	150	33.3
Kenya	500	200	300	150.0
Morocco	400	200	200	100.0
Tunisia	400	250	150	60.0
Others	1 770	1 101	669	60.8
Latin America & Caribbean	**26 320**	**19 331**	**6 989**	**36.2**
Brazil	8 000	5 000	3 000	60.0
México	3 636	2 712	923	34.0
Chile	3 102	2 537	565	22.3
Argentina	3 000	2 500	500	20.0
Peru	3 000	2 500	500	20.0
Venezuela	1 300	950	350	36.8
Colombia	1 154	878	276	31.4
Others	3 128	2 253	875	38.8
North America	**156 323**	**136 700**	**19 623**	**14.4**
United States	142 823	124 000	18 823	15.2
Canada	13 500	12 700	800	6.3
Asia	**157 779**	**108 231**	**49 547**	**45.8**
Japan	57 900	37 200	20 700	55.6
China	33 700	22 500	11 200	49.8
Republic of Korea	24 380	19 040	5 340	28.0
Taiwan Province of China	7 820	6 260	1 560	24.9
India	7 000	5 500	1 500	27.3
Others	26 979	17 731	9 247	52.2
Europe	**144 410**	**108 339**	**36 071**	**33.3**
Germany	30 000	24 000	6 000	25.0
United Kingdom	24 000	18 000	6 000	33.3
Italy	16 000	13 200	2 800	21.2
France	15 653	8 500	7 153	84.2
Spain	7 388	5 387	2 000	37.1
Netherlands	5 300	3 900	1 400	35.9
Sweden	4 600	4 048	552	13.6
Russian Federation	4 300	3 100	1 200	38.7
Poland	3 800	2 800	1 000	35.7
Others	33 369	25 403	7 966	31.4
Oceania	**8 505**	**7 635**	**870**	**11.4**
Australia	7 200	6 600	600	9.1
New Zealand	1 092	830	262	31.6
Others	213	205	8	3.9
World	**500 074**	**384 837**	**115 237**	**29.9**

Source: ITU (2002) and UNCTAD calculations. Totals may not add up because of rounding of decimals.

The data show that a growing share of new Internet users are in developing countries. Overall, developing countries accounted for almost one third of new Internet users worldwide in 2001. In the most developed markets penetration is nearing saturation levels as the numbers of those who do not plan to get Internet access in the near future seem to have stabilized.[6] Therefore, the growth in the share of developing countries will continue. Already Asia, excluding Japan and the Republic of Korea, added almost 21 million new users to the Internet in 2001, more than North America. Recent data from sources other than ITU would put the number of Internet users in China at 56.6 million, thus making China the second largest Internet population in the world in absolute numbers.[7] Another study predicts that by 2005 there will be 941.8 million Internet users in the world, or almost twice as many as at the end of 2001, and that the largest number of users will be concentrated in Western Europe and Asia/Pacific (excluding Japan).[8]

In spite of the encouraging increase in the number of users, penetration rates in most developing countries remain very low. On the basis of ITU estimates, the percentage of the world's population using the Internet at the end of 2001 should have been around 8 per cent, that is 30 per cent higher than the 6.4 per cent that the ITU calculated at the end of 2000, but still far below the 50 per cent and above penetration rates in the most advanced countries. Table 3 provides information about these percentages for each region, and how they changed between 2000 and 2001. Details are provided for the countries with the largest absolute numbers of users.

Table 3
Internet users per 10,000 people, 2000-2001, by region

Region	2001	2000	% change
Africa	**85**	**59**	**43.4**
South Africa	701	549	27.5
Egypt	93	71	31.1
Kenya	160	65	145
Morocco	131	70	86.3
Tunisia	412	261	58.1
Others	29	18	56.7
Latin America & Caribbean	**497**	**373**	**33.5**
Brazil	464	294	57.7
México	349	274	27.1
Chile	2 002	1 658	20.8
Argentina	800	675	18.6
Peru	1 149.7	974	18.0
Venezuela	527.8	393	34.3
Colombia	269.6	207	30.0
Others	293	214	36.8
North America	**4 932**	**4 469**	**10.4**
United States	4 995	4 507	10.8
Canada	4 353	4 130	5.4
Asia	**437**	**303**	**44.3**
Japan	4 547	2 931	55.1
China	260	174	49.7
Republic of Korea	5 107	4 025	26.9
Taiwan Province of China	3 490	2 810	24.2
India	68	54	25.5
Others	248	166	49.3

Table 3 (*continued*)

Region	2001	2000	% change
Europe	**1 805**	**1 359**	**32.7**
Germany	3 642	2 918	24.8
United Kingdom	3 995	3 012	32.6
Italy	2 758	2 304	19.7
France	2 638	1 443	82.8
Spain	1 827	1 343	36.1
Netherlands	3 292	2 439	34.9
Sweden	5 163	4 558	13.3
Russian Federation	293	211	38.9
Poland	984	725	35.8
Others	1 151	882	30.6
Oceania	**2 772**	**2 511**	**10.4**
Australia	3 723	3 445	8.1
New Zealand	2 807	2 167	29.6
Others	280	274	1.7
World	**823**	**641**	**28.4**

Source: ITU (2002) and UNCTAD calculations. Totals may not add up because of rounding of decimals.

E-commerce is also growing in developing countries, but more slowly than the number of Internet users

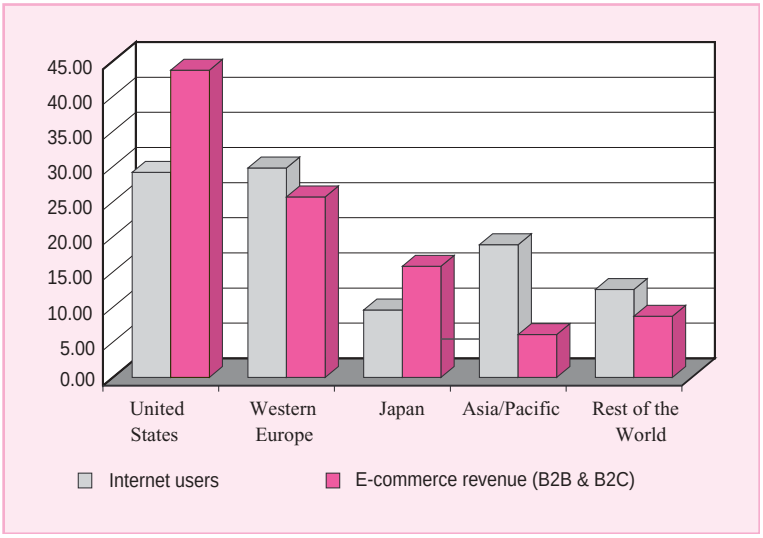
The fact that more and more people are using the Internet, which is a prerequisite for the expansion of e-commerce, is not necessarily an indication of the existence of such expansion or of its pace. Some estimates of the numbers of Internet users count anyone (including, for instance, children) who has had access to the Internet in the previous 30 days. A much higher frequency of access is necessary in order to acquire the familiarity and generate the confidence that are needed in order to become an e-commerce practitioner. Particularly in the case of those engaged in business-to-business (B2B) e-commerce, the order of magnitude of their use of the Internet cannot be of some hours per month, but of hours per day. Indeed, when asked about the use they make of the Internet, people rarely mention e-commerce as a frequent online activity. In a survey of 12 countries, e-mail was the only Internet activity in which more than 50 per cent of respondents in every country surveyed had been engaged in the previous six months.[9] It is safe to assume that in developing countries the proportion of Internet users who are also e-commerce practitioners is lower than average, owing of course to lower per capita incomes but also to other well-known factors such as low credit card usage, lack of relevant products or services or poor logistics and fulfilment services.

It seems that the gap between developed and developing countries in terms of access to and use of the Internet is smaller than the one in terms of e-commerce volumes.[10] Chart 1 illustrates this point.

Table 4 provides a summary of three different sets of forecasts and estimates of worldwide e-commerce released by Internet research firms. The last column shows the implicit compound annual growth rate of e-commerce that results from each of them, calculated using the first and last year for which data from the relevant source are included in the table. To put those figures into perspective, it may be noted that the world's total exports of merchandises and commercial services amounted to $7.43 trillion in 2001.[11] In the most optimistic forecast of the three examples below, the volume of e-commerce sales would be equivalent to about 18 per cent of global sales in 2006.[12]

The differences between forecasts are remarkable. However, while the estimates and forecasts of the absolute levels of e-commerce for a given year can vary by a maximum factor of 2.8 times, the expected rates of growth move in a narrower band, with the highest value 17 percentage points above the lowest. Compounded even over a relatively short span of time, such differences in growth rates yield massive differences in absolute figures, but all three of them represent extremely rapid increases in global e-commerce volumes.

Chart 1
Shares of world Internet users and e-commerce revenue



Source: IDC (2002a).

Table 4
Some estimates and forecasts of worlwide e-commerce (billions of dollars)

	2000	2001	2002	2003	2004	2005	2006	CAGR*
Forrester			2 293.50	3 878.80	6 201.10	9 240.60	12 837.30	53.81%
IDC	354.90	615.30				4 600.00		66.93%
eMarketer**	278.19	474.32	823.48	1 408.57	2 367.47			70.80%

Sources: eMarketer (2002a), Forrester (2001), IDC (2002a) and UNCTAD calculations.

** CAGR: compound annual growth rate; ** B2B only.*

Forrester (2001) disaggregates its forecast at the national level. Table 5 shows an elaboration of this information in order to indicate the respective weights of developed and developing regions in global e-commerce, as well as the variations in the expected rates of growth. Although the share of developing countries in total world e-commerce is predicted to grow by about 45 per cent, in absolute terms the share will still remain at 6.7 per cent. The overwhelming share of the developing countries' participation in global online trade is forecast to be concentrated in Asia and the Pacific region, with the shares of the remaining developing regions staying below 1 per cent. In this scenario, the annual compound rate of growth of total e-commerce in the developing countries in Asia and the Pacific is expected to be very close to that of the developed countries of Asia. The other developing regions would have very high rates of growth, although from low starting points. Thus, the value of online trade in developing countries, although modest in comparison with the global figures, would amount by 2006 to more than 180 per cent of the lowest estimates of world e-commerce in table 4 for 2002.

Table 5
A forecast of total e-commerce (B2B and B2C)
(Billions of dollars)

Region	2002	%	2006	%	CAGR (%) 2002-2006
Developing Asia and Pacific	87.6	3.8	660.3	5.1	65.7
Latin America	7.6	0.3	100.1	0.8	90.5
Transition economies	9.2	0.4	90.2	0.7	77.0
Africa	0.5	0.0	6.9	0.1	91.1
Total developing countries	**104.9**	**4.6**	**857.5**	**6.7**	**69.1**
North America	1 677.3	73.1	7 469.0	58.2	45.3
Developed Europe	246.3	10.7	2 458.6	19.2	77.7
Developed Asia and Pacific	264.8	11.5	2 052.1	16.0	66.8
Total developed countries	**2 188.4**	**95.4**	**11 979.7**	**93.3**	**53.0**
World total	**2 293.5**		**12 837.3**		**53.8**

Source: UNCTAD elaboration of data from Forrester (2001).

Totals may not add up because of rounded decimals.

B2B predominates over B2C but remains small in developing countries

It is well known that e-commerce takes place essentially between enterprises, so that B2B amounts to around 95 per cent of all e-commerce in most estimates. As usual in e-commerce quantification, sources disagree in their forecasts of absolute B2B volumes, but they coincide in pointing to intense growth in the next few years. Table 6 summarizes several such forecasts. The annual rates of growth they imply range between 81.5 per cent and 54.4 per cent. In the slowest-growth prediction, (Forrester, 2001), growth by region would be fastest in Asia and the Pacific (109 per cent increase between 2000 and 2005), followed by Western Europe (91 per cent) and North America (68 per cent).

Table 6
Some global B2B estimates and forecasts
(Billions of dollars)

	2000	2001	2002	2003	2004	2005	2006
Forrester	-	-	2 160	3 675	5 904	8 823	12 275
IDC	282	516	917	1 573	2 655	4 329	-
eMarketer	278	474	823	1 409	2 367	-	-
Gartner Group	433	919	1 929	3 632	5 950	8 530	

Sources: Forrester (2001); all others as cited in eMarketer (2002a).

Table 7, which presents Forrester's B2B scenario, shows that while the shares of developing countries in both B2B and B2C global e-commerce are expected to remain small in the medium term, the former could remain significantly much weaker, with the proportion between B2B and B2C being 2.5 times smaller in the developing regions than in North America. This would be consistent with the experience of early adopter countries, where B2C was the engine that moved commerce onto the Internet in the very first phases, to be replaced later by B2B, which, using Electronic Data Interchange (EDI), was the only e-commerce modality in pre-Internet times.

Table 7

Forecast B2B and B2C in 2006, by region[13] (Billions of dollars)

	B2B	%	B2C2	%	B2B/B2C
North America	7 127	58.1	211	37.5	34
Asia/Pacific	2 460	20	185	33	13
Western Europe	2 320	18.9	138	24.6	17
Latin America	216	1.8	16	2.9	13
Eastern Europe	84	0.7	6	1.1	13
Africa and Middle East	69	0.6	5	0.9	13
Total	**12 275**	**100**	**562**	**100**	**22**

Source: Forrester (2001).

Decimals have been rounded.

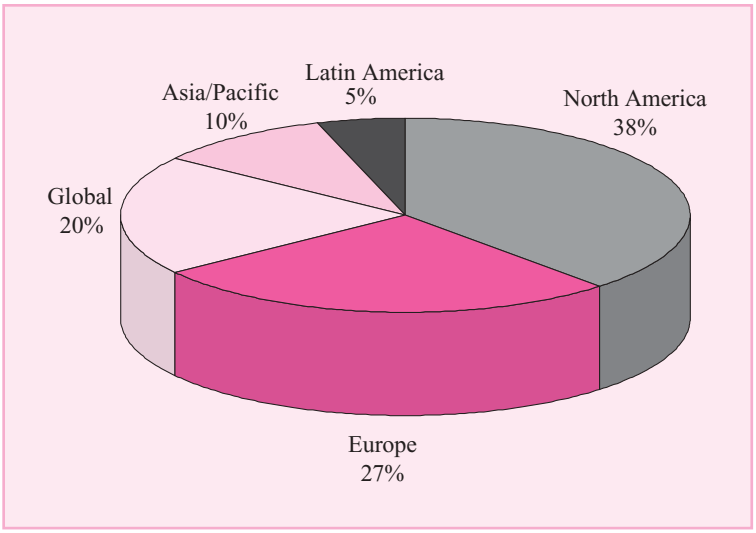
For as long as B2B does not take off in developing countries, e-commerce volumes there will remain negligible. The adoption of B2B e-commerce by the enterprises of developing countries will be intimately linked with their capacity to integrate themselves into regional and global supply chains. At the enterprise level, this requires being able to meet technological and organizational challenges. At the country level, the digital and the physical sides of their economies will have to be much better connected, because – except in the services sector – B2B e-commerce has almost as much to do with traditional, physical infrastructure (ports, railways, roads), logistics services and trade facilitation measures that are essential for supply chains to work as it does with ICT infrastructure. Foreign direct investment flows and the linkages between local producers and transnational corporations will be other important determinants of the growth of B2B e-commerce in developing countries.

Facilitating the take-off of B2B in developing countries is important because of the opportunity for growth that it represents. After all, if e-commerce matters for development it is not because it is a fancier or more convenient way to go shopping: e-commerce matters because it allows enterprises to generate efficiency gains at all the stages of their production and distribution processes. It is these gains, made essentially through the adoption of B2B and e-business practices, that count for development, because they translate into improved competitiveness for enterprises and higher levels of productivity, and hence incomes for the economy as a whole.

B2B electronic marketplaces or exchanges in their various forms (private, independent or consortia-backed) used to be seen as one of the major factors of change in this area. Their evolution in the last few months seems to confirm the view expressed in UNCTAD (2001) – that although their potential benefits can be considerable, many enterprises, especially in developing countries, may find them elusive for some time. This point is illustrated by chart 2, which presents information from a worldwide survey of e-markets that was conducted in 2001, and confirms the limited presence of developing regions in the e-market sector.[14]

Adapting business processes and technology to this new environment takes time and money. For instance, the necessary steps such as standardizing procedures and data definitions among the various players involved can be a time-consuming exercise in fragmented industries. However, as e-market operators refine their business models, for instance by addressing issues of confidentiality and price transparency, and also as leading enterprises attract their smaller partners into e-markets, it is to be expected that these systems will continue to absorb a growing share of global B2B sales. If the logic of simply buying and selling in a pure exchange environment evolves towards a more comprehensive concept of full collaboration among enterprises along the entire supply chain, the gains that many enterprises in developed countries (by some estimates, up to 80 per cent of those that have moved their purchase function online) seem to be achieving from online procurement of indirect goods can be spread more generally and reach higher levels.

Chart 2
Primary regions served by surveyed public exchanges, 2001



Source: Booz Allen Hamilton and Giga Information Group as cited in eMarketer (2001c).

Even though online procurement and, on a larger scale, supply chain management can cut costs dramatically if accompanied by the necessary organizational changes, they are far from being the only ways in which B2B e-commerce can enhance the competitiveness of an enterprise. Thus, a B2B trend that is gaining momentum in the more advanced markets is the deployment of demand-chain IT solutions. In 2001, when the economic environment encouraged enterprises to examine their IT outlays more closely, sell-side e-commerce solutions seemed to be among their top spending priorities in the area.[15] The purpose of these efforts is to enhance the efficiency of the interaction between a company with existing customers and/or the various players along its distribution channel and to enable it to reach a larger number of potential customers. Web-enabled demand-side applications help companies achieve these objectives through a wide range of possibilities, such as new, more valuable services for customers based on online availability of information, economically viable product customization, better understanding and predictability of customer needs and behaviour, or making it possible to work online with smaller customers at a reasonable cost.

B. Regional perspectives

Connectivity is slowly improving in Africa, but e-commerce remains limited

With local Internet connection now available in all African capital cities the possibilities (in terms of connectivity) to engage in e-commerce have markedly improved, at least for the minority of Africans who live in the continent's major urban centres. In 18 countries calls to access the Internet are now charged at local rates. Legal monopolies in Internet service provision have almost disappeared, although de facto Internet service provider (ISP) monopolists still operate in several of the smaller markets. The number of dial-up subscribers grew by 30 per cent in 2001 and now stands at about 1.3 million. Incoming Internet traffic represents 1 gigabyte per second, while the outgoing is around 800 megabytes per second.[16] According to Intelsat, its data traffic from Africa grew by 30 per cent in 2001 and is expected to overtake voice traffic by 2005.[17]

In spite of all these positive developments, the gap in the availability of the basic infrastructure for e-commerce between developed and developing countries is largest in Africa. Table 2 showed that while in the most advanced countries half of the population uses the Internet,[18] only 1 in 118 people can do the same in Africa and only 1 in 440 when the five countries with the most users are excluded from the calculation. Although mobile telephony has expanded extremely rapidly across the continent, it does not yet offer an alternative, for the purpose of connecting to the Internet, to the scarce fixed lines. Cost considerations also remain a very considerable obstacle to access to the Internet. The average cost of using a local dial-up account in Africa for 20 hours a month is about $68 per month, including local call time but not line rental charges.[19] Since the World Bank estimates that the gross income per capita for sub-Saharan Africa in 2000 was $470, it is clear that for the vast majority of Africa's population it is utterly impossible to pay such access costs.

For the few who can use the Internet, the experience in terms of speed and stability is often very different, and much more inadequate for e-commerce purposes, than that of users in other regions. Given the cost and low speed of connections e-mail is even more important for African users than in the rest of the world; many turn to web-based free providers based in developed countries for this service, even if this means longer connection times. The reason for this seems to be concerns about privacy and the long-term survival prospects of local providers.

Very few updated statistics or even estimates of e-commerce volumes in Africa are available, except for South Africa. Some forecasts put total e-commerce in Africa at $0.5 billion in 2002, concentrated almost exclusively in South Africa, and predict that it will grow to $6.9 billion by 2006, with South Africa generating $6.1 billion and Egypt almost all the rest. In this scenario, Africa's share in global e-commerce by 2006 would represent 0.05 per cent of global online trade.[20] Given the comparatively low level of integration of African enterprises into international trade and the continent's pattern of exports, it is not surprising that B2B outside South Africa remains almost negligible. However, B2B opportunities have been identified in the online and offline services sector.[21]

In spite of the extremely low volumes involved, anecdotal evidence of African e-commerce success stories in the B2C sector is amply available.[22] As is to be expected in view of the low levels of income and connectivity on the continent, exports represent the vast majority of online trade in Africa. Among these, handicrafts and products and services targeting Africans outside their home countries seem to dominate.[23] As for the most mature e-commerce market on the continent – South Africa – retail online sales remain at low levels. According to data released in May 2002, B2C sales in South Africa in 2001 amounted to only $16 million, which represented 0.1 per cent of total retail sales in that country.[24]

Latin America makes progress but faces sharp divides[25]

E-commerce in the Latin American region is highly concentrated in four relatively developed Internet markets (Argentina, Brazil, Chile and Mexico), which together account for more than two thirds of the number of Internet users in the region[26]and, according to some estimates, 85 per cent of all paid dial-up Internet accounts.[27] While Internet access providers in these markets are starting to introduce satellite services and broadband access, the problems faced by the majority of the other countries in the region remain very basic and relate to problems such as low fixed-line penetration.

In the four countries mentioned above (and in other smaller markets, especially in the Caribbean area), enterprises, or at least those in the formal sector, are reasonably e-commerce aware, and the situation is improving rapidly in other countries in the region (Colombia and Peru). Overall, between 50 and 70 per cent of Latin American enterprises are estimated to have access to the Internet, and by the end of 2001 virtually all companies with 200 or more employees were expected to have a website.[28] However, for most enterprises being aware of e-commerce does not immediately lead to their actually engaging in it. E-mail is widely used for business contacts and market information is gathered through web services, but only a minority of enterprises carries out online transactions. The use of e-business applications for customer relationship management, supply chain management or enterprise resource management is not widespread.

In January 2001 it was estimated that B2B transactions in Latin America had reached $2.85 billion in 2000.[29] Given the relatively large volume of intra-industry trade in the region, B2B e-commerce is expected to continue to expand rapidly. The same study forecast $67 billion in B2B e-commerce revenue in the region in 2004; as indicated in table 5 above, Forrester (2001) predicts that by 2006 the figure will have grown to

$215.7 billion (1.8 per cent of global B2B e-commerce), up from $18.1 billion in 2002.

Large transnational corporations, notably in the automotive sector, are playing a key role in the development of online B2B transactions, especially in Brazil and Mexico. In Brazil, the largest e-commerce market in the region by far,[30] the adoption of both B2B and B2C practices has been spearheaded not by dotcom start-ups but by traditional players seeking to diversify their distribution channels and to improve the efficiency of their supply chain operation. For instance, in 2000 Volkswagen's Brazilian subsidiary reported $5 billion in purchases made through its online procurement system, which links it with over 500 suppliers directly involved in production activities and some 3,000 in all.[31] Locally owned Brazilian players, especially banks and retail chains, are also keen adopters and promoters of B2B e-commerce. Finance and government-related e-commerce applications such as tax collection, information gathering and procurement[32] are among the other major e-commerce sectors in Brazil.

With regard to B2C, the region has experienced robust growth in recent years. eMarketer (2001a) estimated B2C e-commerce in Latin America at $724 million in 2000. According to Boston Consulting Group, retail sales in Latin America reached $1.28 billion in 2001, more than doubling the $540 million estimated for 2000.[33] Of the total retail e-commerce in the region, 54 per cent ($906 million) would be accounted for by Brazil; Mexico's online retail sales would amount to $134 million, Argentina's to $119 million and Chile's to $45 million. Strong growth was expected for almost all these markets in 2001 and 2002, the exception being Argentina, where retail e-commerce is expected to have very little, if any growth at all, in 2002.[34]

Some aspects of B2C e-commerce in Latin America differ from the patterns observed in more consolidated markets. For instance, online car sales, which have not taken off elsewhere, represent the largest e-retail item in Latin America at an estimated $504 million in 2001 with the Brazilian subsidiary of the French car-maker Renault expecting to sell 15,000 cars (20 per cent of its total sales) online in 2002. Consumer auctions ($203 million), travel ($140 million) and computer hardware and software ($139) are the other individual items each amounting to over $100 million per year.[35] As a curiosity, online groceries sales, at $79 million, are the only sector in which the share of online sales in total sales in Latin America (especially in Argentina and Brazil) is similar to that of the United States. Another sector in which B2C providers in the region, particularly in Brazil, have developed a competitive edge is banking. For instance, Brazil's largest private bank, Bradesco, was among the first five banks in the world to offer Internet services. Another Brazilian bank, Unibanco, was the first to introduce the first virtual credit card in the world in cooperation with Mastercard.[36]

There are no surprises as to the major obstacles to the expansion of retail e-commerce in the region, which are the same as in other developing regions: low Internet penetration rates, inadequate payment systems, poor fulfilment systems and low-quality customer service. On the other hand, significant progress has been made in the region in terms of awareness creation as evidenced by the large proportion of formal-sector enterprises with Internet access and the development of a legal framework for e-commerce as illustrated by the fact that all major economies in the region have undertaken legal changes to accommodate e-commerce.

As in other developing regions of the world, an issue whose implications for the future of e-commerce are not yet clear is the effect of widespread access to mobile telephony. In several Latin American markets mobile telephony users already outnumber fixed-line subscribers. Some analysts believe that Internet access through handheld devices could reach the same levels as PC-based access by 2005 and thus make up for the region's low fixed-line penetration.[37] Whether this would be feasible and would have an impact on e-commerce volumes without changes in the technological basis and the business models remains unclear.

Asia and the Pacific lead in the adoption of e-commerce among developing countries

Demographic weight alone could be enough to explain the leading position of the Asia/Pacific region in the spread of e-commerce in developing countries: at current rates, the region is adding close to 50 million new Internet users a year. This is more in absolute terms, and relatively faster than any other region of the world. But other factors come into play besides sheer demographics. Enterprises, particularly in the manufacturing sector, are more integrated into intra regional and global trade flows than those of other developing regions. This means that they are more exposed to pressures from their customers in developed countries to adopt e-business methods and are investing to be able to do so. New broadband technologies are being deployed faster in some middle- and high-income

countries in the region than anywhere else. For example, the world's top three markets as regards the number of digital subscriber lines (DSL) per 100 people are the Republic of Korea (10.95), Hong Kong, China (5.56) and Taiwan Province of China (4.83). In all, 46 per cent of all DSL in the world at the end of 2001 were in the Asia-Pacific region.[38] Finally, governments across the region, both at the national level and in the context of regional forums such as the Association of South-East Asian Nations (ASEAN) and the Asia-Pacific Economic Cooperation (APEC), have taken a proactive role in the promotion of e-commerce, adapting the legal and regulatory framework, embracing e-government and implementing e-awareness and education plans.[39]

Given its massive size and potential, the evolution of e-commerce in **China** will be determinant for the region's and, in the medium term, for global e-commerce volumes.[40] A report by the China Internet Network Information Center (CNNIC) released in January 2002 confirms the recent rapid growth of the Chinese Internet population (almost at the rate of 50 per cent in 2001), the concentration of users in the major urban centres and in the coastal provinces (while the Internet penetration rate is 10.4 per cent in the Guangdong region, it is as low as 0.2 per cent in Quinghai province), and an improvement in the number of women and people with lower education levels who access the Internet.[41] China's Internet population, already the world's third largest,[42] is well placed to become the largest online population in the region in the near future, even if infrastructure problems and per capita income levels will keep penetration rates low. The transformation of this large potential into an actual e-commerce market may not happen at the same pace. According to CNNIC (2002), more than two thirds of Chinese Internet users have yet to make their first online purchase. Of those who have done so, only about one third said they were "quite satisfied" or "satisfied" with the experience.

Logistical difficulties such as insufficient transport networks represent a serious obstacle to B2B development, as they make it difficult for companies to realize the potential gains of increased efficiency in their supply chains. Another commonly cited obstacle to B2B in mainland China is the emphasis that the traditional business culture places on strong personal relationships. However, this does not seem to have prevented other Chinese-culture markets from adopting e-business practices. Whatever the case may be, forecasts of B2B volumes diverge significantly. While some sources put it at as much as $6 billion for 2002 and point to strong growth bringing the figure to nearly $22 billion by 2004,[43] other estimates paint a much less optimistic picture – for them, from a low base of $600 million, B2B e-commerce in China would amount to only $9.6 billion in 2006.[44]

Japan, which for the time being still ranks as the country with the largest Internet population in Asia, experienced strong growth in e-commerce sales in 2001 despite the poor overall performance of the economy. According to data from the Electronic Commerce Promotion Council of Japan, online sales grew by 58.4 per cent in 2001 and reached a total value of $264.5 billion, of which 96 per cent was in the B2B sector.[45] Other estimates put the total e-commerce volume in Japan at a more modest level, predicting that it will amount to only $186 billion in 2002.[46] Recent growth in e-commerce in Japan seems to have been strongest in sectors such as chemical and industrial machinery and paper and office goods, although information technology goods and the automotive industry remain predominant. In the B2C sector growth was strongest in clothing, leisure and travel services, and real estate. Overall, however, e-commerce volumes remain comparatively low considering the high levels of disposable income, the exception being Japan's lead in the adoption by consumers of some mobile Internet services. Broadband access is also growing at a rate of about 300,000 new subscribers per month (1.5 million subscribers were reported as of January 2002), which should bring the total number to 5 million at the end of 2002. The rapid growth of DSL service may have been stimulated by the Government's "e-Japan strategy", which aims at providing high-speed access for at least 30 million households and ultra high-speed for another 4 million in the next five years.

Although absolute volumes remain modest, e-commerce growth in 2001 and in the first quarter of 2002 in the **Republic of Korea** was dramatic. The most recent data available for 2002 from the National Statistical Office show year-on-year increases in e-commerce sales of 83.4 per cent (April), 89.2 (March), 84.9 (February) and 89.8 (January). This would represent total online sales of $1.04 billion in the first quarter of 2002.[47] These figures do not capture most of B2B trade in the country. In contrast, other forecasts go as high as $29 billion for total e-commerce in 2002, rising to about ten times that amount by 2006.[48] Contributing to this will be the fact that the Republic of Korea has the world's highest penetration of broadband technologies (as of May 2002 there were over 8.5 million DSL subscribers or 18 per cent of the population).[49] A number of factors seem to be playing an important

role in the rapid deployment of this technology,[50] including proactive government policies supporting the laying of a dense optic fibre network in the major urban centres, the high density of the Republic of Korea's residential patterns which facilitated the establishment of "last mile connections", and intense competition between operators, resulting in affordable subscription costs.

India, whose Internet population is expected to be second only to China's by 2006, remains a small e-commerce market, which is estimated at half the volume of China's, or about a total of $300 million for 2002.[51] As in most other countries, e-mail is the favourite application of India's seven million Internet users,[52] who are worried about the security of online payments and do very little online shopping. As in other developing countries, PC and telephone penetration rates are very low and competition among ISPs is limited. B2B volumes are concentrated in the automotive sector and in banking and financial services. However, India has developed a successful industry in IT and in the IT-enabled services sector, whose potential annual e-commerce sales have been estimated at $10 billion.[53] Chapter 5 examines the prospects and challenges of this industry in developing countries and its potential contribution to the development of e-commerce.

A summary of the situation and potential evolution of e-commerce in a number of **other Asian developing countries**, based on Forrester (2001), is provided in table 8. According to this estimate, these countries would generate 2.5 per cent of global online trade in 2002 and 3.2 per cent in 2006.

Table 8
Total e-commerce (B2B and B2C) in selected Asian countries and territories (2002-2006, billions of dollars)

Country/Territory	2002	2006	CAGR (%)
Hong Kong, China	15.6	98.8	58.6
Indonesia	0.1	1.6	100
Malaysia	1.7	18.4	81.4
Philippines	0.1	1.4	93.4
Singapore	10.5	66.4	58.6
Taiwan Province of China	29	223.8	66.7
Thailand	0.2	2.9	95.1
Combined total	**57.2**	**413.3**	**63.9**

Sources: Forrester (2001) and UNCTAD calculations.

Decimals have been rounded. CAGR: compound annual growth rate.

Rapid growth but very modest volumes in countries with economies in transition

Rapid growth in both B2B and B2C is expected in the Central and Eastern European countries with economies in transition. However, even with annual rates of growth of 90 per cent, given the very low baseline from which they are starting it is unlikely that e-commerce in transition economies will reach 1 per cent of global e-commerce before 2005. Table 9 shows two estimates of the evolution of e-commerce in transition economies.

Table 9
Estimates of the evolution of e-commerce in transition economies (Billions of dollars)

Source	2001	2002	2003	2004	2005	2006	CAGR
IDC*	1.25	-	-	-	-	23	79%
Forrester**	-	9.2	17.9	33.7	56.6	90.2	76.9%

Sources: IDC, as cited in eMarketer (2002e); Forrester (2001).

** IDC data refer to the Czech Republic, Hungary and Poland (B2B only).*

*** Forrester data refer to the Czech Republic, Hungary, Poland, the Russian Federation, Slovakia and Ukraine.*

The landscape of Internet penetration and of e-commerce adoption in the region offers strong contrasts. While the more advanced reformers, such as the Czech Republic, Estonia, Slovenia and to some extent Hungary or Poland have relatively high rates of digital literacy and are putting in place the foundations for the development of e-commerce activity, others (particularly in the Balkans, the Caucasus and Central Asia) remain far behind. In the short term the differences between these two groups of transition economies are likely to deepen as the more advanced countries accede to the European Union. Their accession should result in improved competition in the telecommunications sector and an enhanced regulatory framework for e-commerce. Even in the best-positioned countries there are differences in access between urban and rural areas.

Together with low per capita incomes, relatively expensive telecommunications, lack of trust due to delays in the development of an adequate legal framework and underdeveloped payments and credit systems are commonly cited obstacles to the development of e-commerce in these countries.

Nevertheless, countries in the region can count on a number of favourable factors that may contribute to

the enhancement of their capacity to benefit from information and communications technologies (ICT) applications and particularly e-commerce. For instance, in the Russian Federation, a number of B2B trading platforms have been developed as a response to the preponderance of exportable commodities in its economy and the importance of Internet-generated efficiency gains in small-margin markets such as commodities.

The high levels of general education prevalent in many countries in the region, and in particular the relative abundance of workers with advanced IT skills, could be another source of competitive advantage for the region. The proliferation of Linux server software in some of the Baltic countries is an example of how companies are benefiting from opportunities to access low-cost, high-performance technologies that can be absorbed only in the presence of an adequate level of IT skills in the workforce.

Growth continues in North American and Western European markets

In both Western Europe and North America, e-commerce growth seems to have suffered little as a result of the prevailing poor economic conditions.

In the United States, according to the Department of Commerce, B2C e-commerce grew by 19.3 per cent in the first quarter of 2002 compared with the same quarter of 2001. In the same period total retail sales (online and offline) increased by 2.7 per cent. As a result, online sales represented 1.3 per cent of total retail sales, almost twice the 0.7 per cent they represented when the Department of Commerce first produced e-commerce estimates in 1999.[54]

Given that the figures compiled by the Department of Commerce exclude some important items in B2C commerce, such as airline tickets, it may be useful to complement its data with other sources. For instance, in a sample of 11 estimates by private research firms the median estimate of the total value of B2C e-commerce in the United States in 2001 was $53.1 billion.[55] Estimates for 2002 are around $70 billion, which would mean an increase of over 30 per cent compared with 2001.[56]

In Europe, B2C volumes remain considerably smaller, and are estimated at around $ 20 billion in 2001.[57] Various forecasts predict that by 2005 the value of European B2C will be between 5 and 10 times that amount.[58] A positive influence in the development of European B2C was the arrival of the "physical" euro at the beginning of 2002, which may be making it easier for consumers to benefit from enhanced price transparency in cross-border B2C sales in the euro area. On the other hand, the European market in several B2C sectors remains fragmented because of cultural and/or linguistic barriers and differing consumer preferences.

It has been argued that the growth in B2C during an economic slowdown can be attributed to consumers looking for bargains. It seems more likely that the figures show that rather than being a maturing activity, online retailing is still in a phase of intense growth even in those economies where it took off earlier. Even though the growth in the number of Internet users is slowing down, users are becoming more inclined to engage in e-commerce. In the United States, at the end of 2001, 58 per cent of Internet users had made purchases online, compared with 51 per cent a year before. The amounts spent by online consumers are also growing: the average online expenditure per person in the end-of-year season is estimated to have grown by 18.8 per cent between 2000 and 2001, from an average of $330 to $392.[59] Other B2C estimates, covering online orders for the first quarter of 2002, are lower ($127 per average online order) but also show growth (5.3 per cent) compared with the equivalent figure from 2001.[60] Growth in Western Europe is slower and only 17 per cent of consumers are buying online, although another 18 per cent use the Internet to gather information before making a purchase.[61]

Another positive sign for B2C e-commerce in the United States, particularly after the loss of credibility experienced by many dotcom projects, was the fact that 56 per cent of online retailers managed to make a profit in 2001, while only 43 per cent had done so in 2000. Reducing expenses, particularly in marketing, was crucial to the improvement of profitability. Customer acquisition costs were reported to have fallen from $29 in 2000 to $14 in 2001.[62] The good results of "clicks-and-bricks" retailers seem to confirm the better competitive position of business models that combine the efficiency gains of online operations with the logistical and direct contact advantages of an offline presence.

Although even in the United States the weight of B2C in total retail sales remains modest (below 3 per cent in the most optimistic assessments), it has progressed significantly more in a number of sectors, in some of which online sales already amount up to 18 per cent of total sales. Some of these sectors, such as software,

travel and tourism services, and music, could represent good opportunities for developing country suppliers.

It is in the area of B2B that, in spite of the great difference in the amounts traded online in Europe and in the United States, with B2B volumes being about seven times larger in the United States than in all the developed countries of Europe combined, the implementation of e-business strategies in European companies will more closely follow, both in time and in modalities, the patterns established by their North American counterparts.

Forrester (2001) forecasts that 26 per cent of sales in the United States, mostly B2B, will be traded online by 2006, and European online sales are predicted to amount to 19.3 per cent of total sales. Other studies predict that European B2B will represent 21 per cent of all European commerce between companies as early as 2004.[63] Such growth would involve a massive transfer of transactions to an online environment, considering that online B2B in 2001 was, at most, 2 per cent of all B2B transactions in the United States and much less in Europe. The gap between online B2B purchasing penetration rates in the United States and those in Europe are predicted to decrease by 30 per cent, although this will still mean that online B2B purchasing will be only 5 per cent of all European B2B, while in the United States it will amount to 33 per cent.[64]

In terms of industries, financial services, electric and electronic equipment industries, other business activities[65] and transport, retail, metal and machinery, chemicals and petroleum, postal and telecom, vehicles and pulp and paper industries are among those in which the percentage of online B2B purchasing is expected to become higher by 2004.[66]

Both in the United States and in Western Europe the potential savings generated through e-business tools for procurement, supply chain operations, business process outsourcing and, to a certain extent, e-marketplaces will attract attention and investment in B2B. In e-procurement, the focus will probably move from indirect goods, where the limits to potential benefits may be reached earlier, to the acquisition of inputs directly used in the productive process. Successful e-procurement implementation is reported to result in savings in lead times of up to 30 per cent and reductions in transaction processing costs of up to 25 per cent.[67] As mentioned before, the demand-chain aspects of B2B operations, such as customer relationship management tools, are becoming more important items in the IT budgets of large companies in developed countries.

In 2001, European companies spent a much larger share of their IT budgets on e-business solutions than did their United States counterparts, thus starting to close the transatlantic gap in the implementation of e-business.[68] Not only was European e-business expenditure larger, but also (according to the companies themselves) it was the result of different motivations. While for North American managers the main objectives of their e-business projects in 2001 were to ensure customer loyalty, to improve productivity and to reduce costs, for European companies it seems that acquiring new customers was by far the first priority in their e-business projects.[69]

C. E-commerce and development: the international dialogue

The previous sections attempted to show that the process of Internet-generated global economic changes did not slow down with the global economy in 2001. Although technology is the engine that drives this process, it is people's decisions and attitudes that set its direction. Whether the outcome will be an increase or a reduction in the capacity of developing countries to close the gaps that separate them from the industrialized world will therefore depend to a not inconsiderable extent on factors that policy makers, business players and other stakeholders can influence. These include, for instance, the e-business environment or the promotion of a proactive attitude towards organizational change. In practical terms, policies must be designed, articulated in coherent e-strategies and implemented in partnership with all the relevant e-players to ensure that the new possibilities to create, transform, apply and exchange information and value are used to improve the productivity of developing economies and their enterprises.

A participatory approach, at both the national and international levels, to the development and implementation of e-commerce strategies seems essential for their success. If such multi-stakeholder approaches are the key to the long-term success of development strategies in general, their importance is even greater in an area such as e-commerce. Creating awareness at the political level or adopting a state-of-the-art regulatory framework will be sterile unless the prospective e-commerce practitioners perceive these strategic elements and the objectives they serve as relevant and

appropriate to their needs, interests and capacities. The concept of the Internet as a separate, self-regulated community free from government intervention has not survived its confrontation with the realities of commercialization. Yet there is some truth left in the vision of the Internet as a frontier where government action, while necessary and desired, will be more likely to succeed if it relies on the support of the pioneers who first cleared the land, such as the volunteers that developed open-source code or the non-governmental organizations that brought telephones to areas that telecommunications monopolists had left unattended. This can only be achieved if e-commerce strategies are developed through a consultative process that allows the involvement of all the relevant players in the private sector and the civil society.

The process of designing the strategies that can make e-commerce a force working for development must necessarily include an international component. Each national Government has the responsibility of defining, in a dialogue with the other domestic stakeholders, the areas where they feel change must be undertaken, and the pace at which they wish to implement it in order to respond to the challenges of competition in the digital economy. The international community can support these efforts by ensuring that the developmental perspective is present in a meaningful way in the multiple international discussions about the Internet, ICTs and the organization of their economic applications. It should also assist interested developing countries in the formulation and implementation of their national e-commerce strategies for development by mobilizing resources and contributing to the sharing of experiences.

The role of e-strategies in broader national development strategies has attracted growing interest in several international forums where the issue of the global digital divide is being addressed, such as the G-8's DOT Force and the ICT Task Force launched by the Secretary-General of the United Nations in November 2001.[70] Thus, the Plan of Action adopted by the G-8 in Genoa in 2001 included as its first action point "to help establish and support developing country and emerging economy national e-strategies".[71] Ensuring that the benefits of ICT are available to all is also one of the key goals that the international community set itself in the Millennium Declaration.[72] As part of the action undertaken by the United Nations towards the achievement of these goals, its ICT Task Force has identified the provision of assistance to developing countries in designing national and regional ICT strategies as one of its medium-term goals and has set up a working group to that end.

A close relationship between national e-commerce strategies and international cooperation would be greatly facilitated by the emergence of a common understanding of the fundamental elements of e-commerce strategies for development, especially if, as seems desirable, ICT is to be mainstreamed into official development aid programmes. That is a major objective of the intergovernmental policy dialogue that is currently taking place in UNCTAD in the field of e-commerce both in Geneva and through a series of high-level regional workshops in the field. Contributing to greater awareness and better understanding of the issues at stake for developing countries is also the objective of the E-Commerce and Development Report 2002.

Notes

1 UNCTAD (2002).

2 See, for example, a discussion of the issue of Internet access and activity measurement in Minges (2000). The problems of the measurement of e-commerce in developing countries were discussed in UNCTAD (2001).

3 International Telecommunication Union (2002).

4 International Telecommunication Union (2001).

5 In May 2002 the breakdown by region was as follows: Africa, 6.31 million; Asia/Pacific, 167.86 million; Europe, 185.83 million; Middle East, 5.12 million; Canada and United States, 182.67 million; Latin America, 32.99 million. See Nua.com (2002).

6 At least as far as PC-based access to the Internet is concerned. Other forms of Internet access still show large growth potential in developed countries.

7 Nielsen//NetRatings (2002b).

8 IDC (2002a).

9 Nielsen//NetRatings (2002c).

10 IDC (2002a).

11 WTO (2002).

12 Forrester (2001).

13 The classification of countries in regions used by the source does not coincide with the one normally used by the United Nations. Forrester (2001) adds data for Mexico in its North American aggregates. For the purpose of this chapter, Mexican figures are included in Latin America.

14 Booz Allen Hamilton and Giga Information Group (2001).

15 eMarketer (2001c).

16 The information about Internet connectivity, costs and usage patterns in Africa is taken from Jensen (2002).

17 ITWeb.co.za (2001).

18 Other estimates put this figure at over 60 per cent.

19 Jensen (2002).

20 Forrester (2001).

21 Descriptions of the situation and prospects for e-commerce in Africa can be found in UN Economic Commission for Africa (2001) and UNCTAD (2000).

22 See, for example, the African cases in the survey of e-commerce in the LDCs contained in chapter 9 of UNCTAD (2001).

23 Part of e-commerce B2C targeting expatriate Africans may not be increasing the export capacity of local producers, as some of the goods and/or services sold to them may be replacing direct monetary transfers to their relatives and are consumed locally by them.

24 World Wide Worx (2002).

25 See Hilbert (2001) for an overview of the main e-commerce issues in Latin America.

26 ITU (2002a).

27 Yankee Group (2001).

28 Hilbert (2001).

29 eMarketer (2001a).

30 Estimates of the relative weight of Brazil in Latin American e-commerce vary. It is safe to assume that it represents at least 50 per cent of e-commerce in the region.

31 Bastos (2001).

32 In January 2002 the federal government of Brazil announced savings of $208 million thanks to its use of e-government services. Its portal, Rede Governo, gives access to some 1,500 services.

33 Boston Consulting Group (2001a).

34 According to a report by the Argentinean consulting firm Price & Cooke, quoted in wired.com in March 2002, the growth in Internet users in Argentina would fall to one-digit figures in 2002. See wired.com (2002).

35 Boston Consulting Group (2001a).

36 United States Commercial Service (2001).

37 wired.com (2001).

38 eMarketer (2002c).

39 See, for example, the e-ASEAN Task Force website at http://www.e-aseantf.org/ for information about national and regional initiatives in the areas of e-commerce, legislation, awareness creation and human resources development.

40 For a more detailed discussion of e-commerce in China see UNCTAD (2001).

41 CNNIC (2002).

42 Or the second largest, by some estimates.

43 eMarketer. (2001b).

44 Forrester (2001).

45 Electronic Commerce Promotion Council of Japan (2002).

46 Forrester (2001).

47 National Statistical Office of the Republic of Korea (2002).

48 Forrester (2001).

49 *Korea Times* (2002).

50 eMarketer (2002c).

51 Forrester (2001).

52 India's National Association of Software and Service Companies (NASSCOM) calculates that the number of active subscribers as of March 2002 was only 1.5 million.

53 According to a 2002 joint study of NASSCOM and McKinsey; see NASSCOM (2002).

54 United States Department of Commerce (2002). Figures are not seasonally adjusted.

55 The estimates had been made at different times between late 2000 and March 2002 by Jupiter Media Metrix, Datamonitor, Cyber Dialogue, eMarketer, Forrester, ComScore, Yankee Group, GartnerG2, Giga Information Group, Boston consulting Group and IDC. See eMarketer (2002d)

56 eMarketer (2002d) and Forrester 2001.

57 See IDC (2002 b) or European Information Technology Observatory (2002).

58 See a table setting out forecasts by several research companies at www.emarketer.com/ereports/europe_ecom/welcome.html.

59 Information Technology Association of America (2002).

60 *E-commerce News* (2002).

61 Cap Gemini Ernst &Young (2002).

62 Boston Consulting Group (2002).

63 Boston Consulting Group (2001b).

64 Boston Consulting Group (2001b).

65 These include business services, real estate leasing and sales, machinery leasing, private health services and recreational services.

66 Boston Consulting Group (2001b).

67 Boston Consulting Group (2001b).

68 According to a study by the consulting firm Accenture, the gap between Europe and the United States in the adoption of e-commerce technology amounted to 12 months as of mid-2001. See eMarketer (2002b).

69 Computer Sciences Corporation (2001).

70 See www.unicttaskforce.org.

71 See www.dotforce.org/reports.

72 See General Assembly resolution A/RES/55/2 of 18 September 2000, available at www.un.org/millennium/declaration/are552e.pdf.

References

Bastos Tigre P (2000). *Aspectos Estratégicos da Política Comercial Brasileira: Inserção no Comércio Eletrônico Global*. November 2000. Available at www.aladi.org/NSFALADI/SITIO.NSF/INICIO.

Booz Allen Hamilton and Giga Information Group (2001). B2B Exchanges. Future Hopes, Current Doubts. Downloadable at no cost from ww.gigashop.gigaweb.com.

Boston Consulting Group (2001a). *BCG/VISA Study: Latin American Online Retailing to Reach $ 1.28 Billion in 2001*. 13 November. Press release available at www.bcg.com.

Boston Consulting Group (2001b). Incumbents Take the Initiative: Harnessing the Power of Business-to-Business E-Commerce in Europe. Report available at www.bcg.com.

Boston Consulting Group (2002). *Online Sales in 2001 Generated Profits for More Than Half of All U.S. Retailers Selling Online.* Press release dated 12 June. Available at www.bcg.com.

Cap Gemini Ernst & Young (2002). Searching for the Global Consumer: A European Study of Changing Lifestyles and Shopping Behaviour. Available at www.cgey.com.

China Internet Network Information Center (2002). Semiannual Survey Report on the Development of China's Internet (January 2002). Available at: www.cnnic.net.cn/develst/rep200201-e.shtml.

Computer Sciences Corporation (2001). CSC's 14th Annual Critical Issues of Information System Managements Survey. Available at www.csc.com/aboutus/content/publications.shtml.

E-Commerce News (2002). *E-commerce Goes On A Roll*. 26 April. Available at boston.internet.com/news/article.php/1016561.

Electronic Commerce Promotion Council of Japan (2002). *Summary of the Market Research on Electronic Commerce 2001*. 19 February. Available at www.ecom.or.jp/ecom_e/index.html.

eMarketer, Inc. (2001a) *Future Looks Bright As 40.8 Million Users Will Be on Line in Latin America by 2004*. 19 January. Summary available at www.e-marketer.com.

eMarketer, Inc. (2001b). *China's B2B Market Revisited*. 15 May. Available at www.emarketer.com/analysis/easia/20010515_asia.html.

eMarketer, Inc. (2001c). *The Decade Ahead for E-Business.* 26 December. Available at www.emarketer.com/analysis/ebusiness/20011226_ebiz.html.

eMarketer, Inc. (2002a). *The E-Commerce Trade and B2B Exchanges Report.* March. Executive summary available at www.emarketer.com.

eMarketer, Inc. (2002b). *European Companies Closing The E-Business Gap.* 8 May. Available at www.emarketer.com/analysis/world_regions/20020508_wr.html.

eMarketer, Inc. (2002c). *Asia Leads DSL Marketplace*. 13 June. Available at www.emarketer.com/analysis/world_regions/20020613_wr.html?ref=ed.

eMarketer, Inc. (2002d). *Retailers Getting The Internet Right.* 13 June. Available at www.emarketer.com/estatnews/estats/ecommerce_b2c/20020613_shop.html?ref=ed.

eMarketer, Inc. (2002e). *E-commerce In Eastern Europe*. 1 May. Available at www.emarketer.com/*analysis/world_regions/20020431_wr.html.

European Information Technology Observatory (2002). *Despite Economic Slowdown ICT Market in Europe Grows by 5.1% in 2001, and by 5.4% in 2002.* Press release dated 28 February. Available at www.eito.com.

Forrester Research Inc. (2001). *Global Online Trade Will Climb to 18% of Sales.* Brief dated 26 December. Available at www.forrester.com/ER/Research/Brief/0,1317,13720,FF.html.

Hilbert M (2001). *Latin America on Its Path to the Digital Age: Where Are We?* ECLAC. Serie Desarrollo Productivo N. 104. United Nations Publication, sales no. E.01.II.G.100 Santiago de Chile.

IDC Research (2002a). *Western Europe Pulls Ahead of United States.* E-newsletter dated 3 January. Available at www.idc.com/getdoc.jhtml?containerId=ebt20020103.

IDC Research (2002b). Internet Usage and Commerce in Western Europe 2001-2006. Summary available at www.idc.com/getdoc.jhtml?containerId=fr2002_04_19_115126.

Information Technology Association of America (2002). *Holiday 2001 Online Shopping Results: Traffic Up 50 Per Cent Compared With Last Year, Reports Jupiter Media Matrix*. Available at http://www.itaa.org/isec/pubs/e20021-07.pdf.

International Telecommunication Union (2001). Key Global Telecom Indicators for the World Telecommunication Service Sector. Available at www.itu.int/ITU-D/ict/statistics/at_glance/KeyTelecom99.html.

International Telecommunication Union (2002). Internet Indicators: Hosts, Users and Number of PCs, 2000 and 2001. Available at www.itu.int/ITU-D/ict/statistics/

ITWeb.co.za. (2001). *Africa's Data on the Increase.* 20 November. Available at www.itweb.co.za.

Jensen, M. (2002). The African Internet: A Status Report. February 2002. Available at www3.sn.apc.org/africa/afstat.htm.

Korea Times (2002). *Korea No. 1 Country in Broadband Internet Usage.* 30 May. Available at www.hankooki.com/kt_tech/200205/t200205301720524511O.htm.

Minges M (2000). *Counting the Net. Internet Access Indicators.* INET 2000 proceedings. Available at www.isoc.org/isoc/conferences/inet/00/cdproceedings/8e/8e_1.htm.

NASSCOM (2002). *NASSCOM-McKinsey Report Predicts Robust Growth for Indian IT Services and IT Enabled Services Industry.* Press release dated 11 June. Available at www.nasscom.org/mediaroom/press_rls.asp?PRCode=265&Type=PR.

National Statistical Office of the Republic of Korea (2002). Cyber Shopping Mall Survey April 2002. Available at www.nso.go.kr/eng.

Nielsen//NetRatings (2002a). *Nielsen//NetRatings Report a Record Half Billion People Worldwide Now Have Home Internet Access.* Press release dated 7 March. Available at www.Nielsen-netratings.com/pr/pr_020307_hongkong.pdf.

Nielsen//NetRatings (2002b). *Nielsen//NetRatings Finds China Has the World's Second Largest At-Home Internet Population.* Press release dated 22 April. Available at www.nielsen-netratings.com/pr/pr_020422_eratings.pdf.

Nielsen//NetRatings (2002c). *Nielsen//NetRatings Finds E-Mail is the Dominant Online Activity Worldwide.* Press release dated 9 May. Available at www.nielsen-netratings.com/pr/pr_020509_eratings.pdf.

Nua.com (2002) How Many On Line? Survey. Available at www.nua.com/surveys/how_many_online/index.html.

UNCTAD (2000). *Building Confidence: Electronic Commerce and Development.* United Nations publication, sales no. E.00.II.D.16, Geneva and New York. Available at www.unctad.org/ecommerce/ecommerce_en/docs_en.htm.

UNCTAD (2001). *E-Commerce and Development Report 2001*. United Nations publication, sales no. E.01.II.D.30, Geneva and New York. Available at www.unctad.org/ecommerce/docs/edr01_en.htm.

UNCTAD (2002). *Trade and Development Report, 2002*. United Nations publication, sales no E.02.II.D, Geneva and New York. Available (in part) at www.unctad.org/en/pubs/ps1tdr02.en.htm.

United States Commercial Service (2001). International Market Insight: E-commerce and Internet Services in Brazil. 30 March. Available at www.usatrade.gov/website/website.nsf.

United States Department of Commerce (2002). *Retail E-Commerce Sales In First Quarter 2002 Were $9.8 Billion, Up 19.3 Percent From First Quarter 2001, Census Bureau Reports.* Press release dated 30 May. Available at www.census.gov/mrts/www/mrts.html.

United Nations Economic Commission for Africa (2001). Electronic Commerce in Africa. E/ECA/DISD/CODI.2/23. Addis Ababa, 7 August. Available at http://www.uneca.org/eca_resources/Conference_Reports_and_Other_Documents/disd/codi/docs/doc23EN.pdf.

Wired.com (2001). *Latin America: The mobile World.* 25 January. Available at www.wired.com/news/technology/0,1282,41309,00.html.

Wired.com (2002). *Argentine Economy a Net Loss*. 26 March. Available at www.wired.com/news/business/0,1367,51294,00.html?tw=wn_ascii.

World Trade Organization (2002). *WTO Annual Report 2002*. Geneva. Partially available at www.wto.org/english/res_e/booksp_e/anrep_e/anrep02_chp_2_e.pdf.

World Wide Worx (2002). *The Goldstuck Report: Online Retail in South Africa 2002*. Press release dated 24 May. Available at www.theworx.biz/retail02.htm.

Yankee Group (2001). Guide to Latin America's ISP Markets. Report dated 2 July. Executive summary available at www.yankeegroup.com/custom/research/report_overview.jsp?ID=6952.

Chapter 2

THE DOMAIN NAME SYSTEM AND ISSUES FOR DEVELOPING COUNTRIES

A. Introduction

The E-Commerce and Development Report 2001 provided a survey of key legal and regulatory issues arising with the development of e-commerce. As part of that broad review in chapter 6, the Report briefly addressed the issue of domain names,[1] providing in particular a jurisdictional analysis of the Anticybersquatting Consumer Protection Act enacted in the United States in November 1999,[2] and considering also whether the domain name dispute resolution procedure adopted by the Internet Corporation for Assigned Names and Numbers (ICANN)[3] – entitled the Uniform Domain Name Dispute Resolution Policy (UDRP)[4] – provides a useful model more generally for alternative dispute resolution (ADR) or online (ODR) procedures.

This chapter seeks to provide more in-depth information concerning the development and functioning of the Domain Name System (DNS) and the use of domain names, while giving attention in particular to background, policies, initiatives and issues of relevance for developing countries. Even though the aim of this chapter is to provide a more thorough treatment, it cannot hope to cover all of the relevant information and issues of interest concerning domain names. Readers who wish to obtain additional information are referred to a number of useful resource sites on the Internet.[5]

The focus on domain names and the relevant concerns that have surrounded their emergence leads to a study of the various commercial, technical, regulatory and legal issues that have arisen more generally with the emergence of e-commerce and the increasing use of open communications networks such as the Internet. Unlike the telecommunications sector, which has historically been subject to international[6] and State regulation of the large (often State-operated) telephone system operators, the DNS has followed a very different path to development.

The rapid growth in use of the Internet has led to increasing importance being placed on the DNS as a secure and reliable general-purpose communications infrastructure. Yet the DNS, particularly in its earliest stages, has not been subject to centralized regulation through international treaty or otherwise, nor has its development been marked by the initiatives of large enterprises such as telecommunications operators.[7] Instead, a key characteristic of the DNS, like the rest of the Internet, is that it functions through distributed computer networks largely under independent control, yet adhering to common technical protocols. Its rapid development has taken place at a time when self-regulation, rather than legislated international norms, is widely favoured in the "Internet space". Moreover, a new generation of technology companies and Internet engineers, which have acted as a significant moving force behind the Internet's development, have brought new perspectives and ideas to the policy discussions and debates on various issues. All of these elements together present a new and often confusing array of commercial, technical, legal and regulatory issues.

Developing countries attempting to build up their own national infrastructure to support increasing Internet use need to be aware of the multifaceted issues that may confront them. As many developing countries have already come to realize, the development of a national DNS infrastructure, including operative business model, technology and relevant domain name registration policies, could provide an incentive to citizens, local businesses and others to consider registering in the national top-level domain (e.g., such as ".br" for Brazil or ".th" for Thailand). This in turn would serve the goal of ultimately expanding online exchange of communications and information, and creating new channels for commerce.

B. Domain names: Coming into the mainstream

Domain names have evolved from an obscure technical detail of an experimental network into a well-known and widely used feature of the modern Information Society. As with a number of other typical e-commerce terms which would not have been commonly understood just 10 years ago, except perhaps among a small group of Internet engineers, the term "domain name" is now widely used in many countries and in different languages.[8] Many people generally know what a domain name is and how it can be used. Use of the term, however, is not universal but reflects the same demographics as correspond more generally to the penetration of ICT and e-commerce worldwide.[9]

Hand in hand with this increasing recognition of domain names, registrations of the latter have grown at a rapid rate. As of the first quarter of 2002, just over 30 million domain names had been registered worldwide,[10] compared with only 645 in July 1991 and 150,000 in late 1995.[11] The weekly volume of new registrations in 1999 was about 21,000,[12] and the number of domain name registrations overall is continuing to grow.[13] This growth has recently been fuelled by the addition of new top-level domains (such as .biz or .info), discussed below.

1. Domain names and early Internet communication

(a) Defining a domain name

As background, we can review the specific meaning of the term "domain name". Strictly speaking, an Internet domain is the name of a specific host that maintains a website and related sub-sites. A domain name consists of a string of alphanumeric ASCII characters, separated by periods, which is used to find a host on a network. For example, typing www.unctad.org into an Internet browser's address box and pressing the return key will bring a user to the UNCTAD website. In addition, every host on the Internet has a unique address, which is a string of numbers called its "IP address", just like a telephone number. The IP address, like the domain name, is usually expressed in dot notation, consisting of a numerical sequence that contains as many as 12 numbers in 4 blocks, separated by periods, e.g. 128.121.4.5.[14] Thus, each domain name can be mapped against a unique IP address. Domain names were established because, with the increase in the number of Internet hosts, it became difficult to log on using long and difficult- to- remember IP addresses. The process of looking up the specific host's IP address that corresponds to the entered domain name is called "name resolution".

The infrastructure and technology used for name resolution is the Domain Name System. The DNS allows network users to easily locate and connect to host computers around the world. Technically speaking, the DNS can be described as a distributed, replicated, data query service chiefly used on the Internet for translating specific domain names into their underlying Internet Protocol (IP) numbers, which serve as the routing addresses for specific host computers located on the network.

Of course, domain names, as discussed below, have also taken on a second, overriding and non-technical function, serving as common business and personal identifiers.[15] This function is much more in line with the widely held understanding of a domain name, particularly as its technical functions are, as with so many other user-friendly computer applications, invisible to the user. Thus, with the explosion of interest in the Internet following the advent of the World Wide Web domain names have come to be considered a valuable part of many companies' brands.

Domain names can be expected to continue to play an important role in business and for other non-commercial, public or personal purposes. This is particularly true since a domain name effectively serves, at one and the same time, as a branding or identification device for a business, an organization or a person, and as the functional mechanism to locate its website. The domain name has thus evolved to present a novel and potent characteristic by combining these two features into one user-friendly label. As the use of ICT and e-commerce spreads in developing countries, these same powerful features should serve to give domain names equal relevance for both commercial and non-commercial uses in those countries. As discussed below, policy decisions are required in relation to the national country code top-level domains (ccTLDs) in order to foster not only ease of registration of domain names but also overall confidence in the relevant ccTLD space so that domain names can be as useful as possible.

(b) The Internet's early development[16]

The early users of the Internet consisted largely of a group of volunteers and academics, some of whom received funding from the United States Government. These pioneers experimented with establishing communications between the computers connected to their networks. In 1969, when the Internet's predecessor, the Advanced Research Projects Agency Network (ARPANet), was established, it consisted of just four host computers connected to the network. It was small enough that the users generally knew how to locate and communicate with each other; identification of the network's computers did not cause difficulties.

Dr. Jon Postel, a computer scientist at the University of Southern California's Information Sciences Institute (ISI), is regarded as a pivotal figure in the development of the Internet's address system. For many years, he played a central role in the technical management and administration of the Internet, acting as director of the Internet Assigned Numbers Authority (IANA), again a United States financed entity. He was one of the small group of computer scientists who created the ARPANet, and worked on the development of early Internet protocols and standards.[17] The Request for Comments (RFC) 1591, authored by Dr. Postel in March 1994, addresses the "Domain Name System Structure and Delegation" and is regarded as having set out the basic principles for the DNS. Dr. Postel's early stewardship of the Internet address system is credited with providing the foundations to enable the fast-growing high-speed international communication network to eventually connect computers throughout the world.

In 1974, a further key technical advance was the development of a new host-to-host-protocol, introduced by two other Internet engineers, Bob Kahn and Vint Cerf, called the Transmission Control Protocol (TCP). It was designed to meet the needs of an "open" architecture network (as compared with a closed, private computer network) and eventually, in 1978, it was broken into two parts, TCP, which was charged with breaking up and reassembling the data messages sent across networks, and IP (Internet Protocol), which was charged with the routing of the data. The standard, now central to Internet communications, thus became known as TCP/IP.

Next in the development of the DNS, in 1983, another engineer, Paul Mockapetris of ISI, created a naming system which mapped IP addresses to easily remembered names. Each computer was allocated to a unique domain name and the computer's IP address would be converted into this name, and vice versa. When the user typed in the name, it would be automatically changed to the appropriate IP address and the corresponding computer on the network could be located. Furthermore, under the new system, no single machine maintained information on all the host machine names. Instead, each administrator maintained the information on its own hosts, and a central authority kept records on the location of this information, thus establishing the distributed nature of the system.

The Domain Name System had been created.

Following these formative developments, Network Solutions Inc. (NSI), a privately owned company located in Virginia in the United States, was contractually given the right by the United States Department of Commerce to register domain names on behalf of the public.[18] In 1995, NSI was allowed to begin to charge a fee for DNS registrations. NSI registered domain names in what are known as the generic Top Level Domains (gTLDs) on a first-come-first-served basis. The first seven of these gTLDs, established in 1984, are well known: .com, .org, .net, .gov, .edu, .mil and .int.

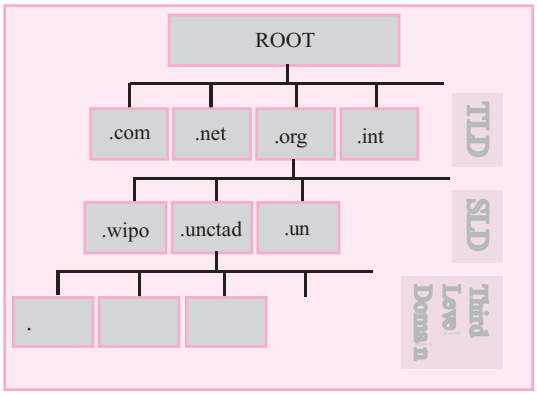
In response to a United States Department of Commerce White Paper published in 1998, the Internet Corporation for Assigned Names and Numbers (ICANN) was created the same year. Regarding the management of the DNS, ICANN's core mission is to continue the work of IANA, although in a more formalized and globally representative framework in order, in its own words, "to ensure the views of all the Internet's stakeholders are taken into account in carrying out this public trust".[19] In consequence, ICANN assumes responsibility for overseeing the technical coordination of the DNS. As part of this function, it approved the introduction of seven new gTLDs in November 2000, namely .aero, .biz, .coop, .info, .museum, .name and .pro.

As domain names have become increasingly important for a variety of uses, new legal issues have presented themselves, the most important of which is the potential conflict between domain name registrations and trademark rights. This issue is addressed fully below, and represents a significant recent chapter in the history of the DNS.

An obvious yet important aspect of this brief DNS history, relevant even today as discussions continue

through ICANN on how to implement an international structure for oversight of the DNS, is that much of the early critical planning and work took place in the United States, sometimes with government assistance. This United States influence continues to be strong, as reflected for example in the geographical placement within the United States of most of the strategic DNS "nameservers", which are important to the overall functioning of the DNS (see below). While the United States Government has facilitated efforts to secure more international participation and input into decisions concerning the DNS, developing countries should be encouraged to become more involved so that their concerns and requirements in relation to the DNS can be heard and advanced.

Chart 3
Authority concept of the DNS



(c) Functioning of the DNS

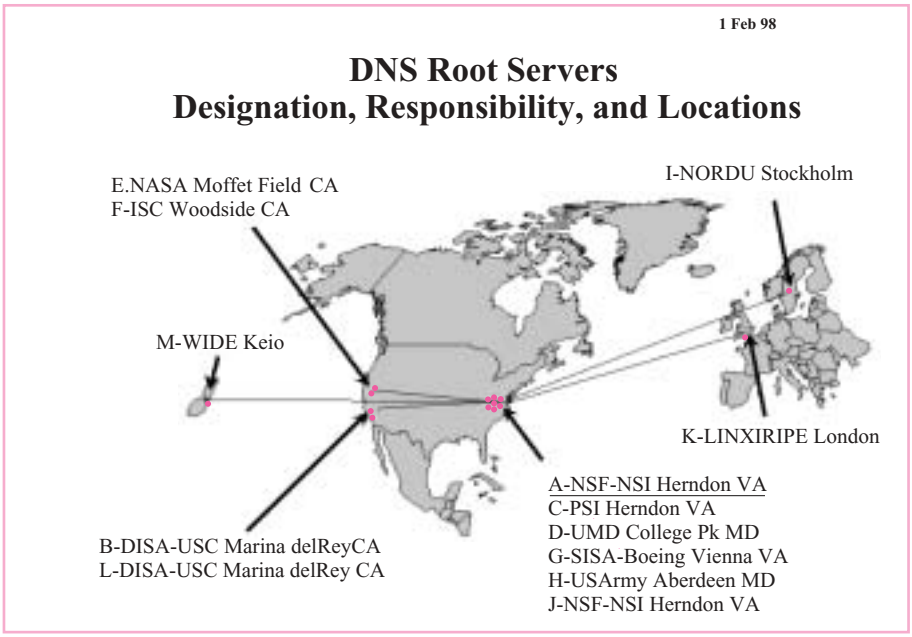
When the DNS was introduced, an extremely important concept was the dividing of the single list (managed by ISI) into hierarchical layers or "domains", thus introducing at one and the same time the concepts of authority and decentralized functioning. Under this system, higher-level domains have authority over the sub-domains beneath them. For example, in the (fictional) domain of www.ecommerce.unctad.org, the .unctad domain would have authority over .ecommerce. This domain concept can be expressed by means of an inverted tree diagram, in which everything is subordinate to the "Root" (see chart 3) and each sub-domain is subordinate to the domain above it. Keeping in mind the authority concept, domain names are read from right to left. In the example of www.ecommerce.unctad.org, the .org constitutes the so-called top-level domain (TLD); .unctad is called the second-level domain (SLD); and .ecommerce constitutes the third-level domain. This designation of levels is the same irrespective of the level's content. Thus, the SLD can represent the name of the business, organization, individual or something else. Rules applicable to the higher-level domain are usually to be incorporated into the next sub-level, along with any rules which that sub-level may introduce.[20] This allows for the decentralized (by sub-domain) administration of the DNS. Practically, this has permitted the creation of a private system of management for the DNS, in which obligations can be imposed by contract from one domain level to the sub-domain.

From a technical perspective, at the heart of this DNS system are 13 special computers, called root servers, which are the ultimate technical infrastructure of the DNS and are of major importance for the functioning of the Internet. They are coordinated by ICANN and are distributed around the world, with ten located in the United States, two in Europe and one in Japan (see chart 4). All 13 contain the same vital information – this is to spread the workload and back each other up. The root servers contain the IP addresses of all the TLD registries – both the global registries such as .com or .org, and the country-specific registries such as .fr (France) or .cn (China). This is critical information; if it is not 100 per cent accurate or if it is ambiguous, it might not be possible to locate a website on the Internet.

The "A" root server constitutes the most important authority of the system. It is operated by Verisign. This A-Server contains the authoritative copy, stating which nameservers hold the relevant information for each of the top-level domains. The authoritative copy is the one that all other root servers trust to be authentic and contains the most complete and most updated list (the so-called zone file) of the TLDs. This is why the other root servers, which are operated by several independent organizations,[21] direct their requests to, and copy their information from, the A-Server.[22]

This technical structure shows that the DNS, while working with a decentralized infrastrucure and administration, is nevertheless based on a root server system which has a centralized and authoritative hierarchy. The system has been designed to ensure predictable look-up results from anywhere on the Internet, a concept known as "universal resolvability". It is a critical design element of the DNS. This is similar to the telephone system: when a telephone number is dialled, it rings at a particular location because there is a central numbering plan ensuring that each telephone number is unique. If telephone numbers or domain names

Chart 4
Authoritative root server system



were not globally unique, phone calls or e-mail intended for one person might go to another. Without uniqueness, both systems would be unpredictable and therefore unreliable.[23]

In this context, it is worth noting that some private companies have recently introduced new gTLDs which can be accessed by "alternative roots". They are not tied into the single A-root hierarchy discussed above, although some operators claim they are being unfairly excluded. Problems can be caused by these alternative roots, including lack of reliability. Those purchasing domain names in these pseudo-TLDs may not be aware of the consequences arising from lack of universal resolvability. As noted above, if the DNS must make a choice between two identical domain names with different IP addresses (i.e. one in the A-root system and one registered under an alternative root), the DNS would not function properly. These problems are insignificant so long as the alternate roots remain very small; however, if they should ever attract many users, the problems would become much more serious, and could affect the stability and reliability of the DNS.[24]

Authorities in developing countries should be aware of the architecture and functioning of the DNS, so that they can make appropriate choices in relation to international policy, as well as implementation of national policy. Each country should be concerned about establishing a reliable DNS environment, so that predictable look-up results can be achieved by entering a domain name, just as dialling a telephone number should permit completely reliable contact. Adhering to universal resolvability will promote confidence in online communications, allowing countries to take full advantage of the Internet as a resource for information, education and commerce.

More information explaining the operation of the DNS is provided in annex A.

2. Top-level domains TLDs : Generic and country code TLDs, and new multilingual variations

As noted, the DNS operates on the basis of a hierarchy. Although there is no difference functionally, the top layer consisting of TLDs is divided into two categories: generic TLDs (gTLDs) and country code TLDs (ccTLDs). Both gTLDs and ccTLDs are an integral part of the Internet infrastructure, promoting global interoperability in the DNS.

(a) gTLDs

The gTLDs are top-level domains which are not associated with any country, territory or geographical area. Therefore, policy and planning decisions regarding

their operations generally do not fall within the purview of a particular Government, but are left to the particular sponsoring organization or registry operator, acting under the auspices of ICANN.[25] As noted above, initially there were seven gTLDs, three of which are "open" or unrestricted (.com, .net, .org) and the other four of which are restricted (.edu, .gov, .mil and .int). In November 2000, seven additional gTLDs were introduced by ICANN, notably, .aero, .coop, .biz, .info, .museum, .name, and .pro. Thus far, five of the new gTLDs are operative and accepting domain name registrations.[26]

The gTLDs commonly use extensions to denote the purpose intended for the TLD. The .com TLD is intended for commercial entities, .edu is reserved for educational purposes, .net is for computers of network providers and .org is for charity or non-profit organizations. However, today, only the .int (international organizations), .gov (United States Government) and .mil (United States military) domains follow strictly their original restricted policies for registration. As for the others, the limitations have never been enforced and their categories have become blurred with time. The .com TLD, favoured by many as the domain name registry of choice because of its wide name recognition, has evolved into a catch-all premium registry.

The newly introduced gTLDs also follow registration policies based on function and are intended to be limited to certain groups of individuals, companies or organizations.[27] The .biz domain is reserved for business or commercial purposes, whereas .name is limited to use by individuals. Registration for the .pro TLD will be limited to professionals – accountants, lawyers and physicians. The .aero, .coop and .museum TLDs are reserved for the air transport industry, cooperatives and museums, respectively. The only new gTLD that is intended to be used in a completely unrestricted manner is .info. However, only the future will show whether the registration limitations of the other TLDs are in fact applied rigorously. In this context, it is interesting to note that the registry operator for the new ICANN-accredited .biz TLD has implemented a Restrictions Dispute-Resolution Policy (RDRP), under which any third party may file a complaint about the registration or use of a domain name which is in violation of the domain name registration restrictions.[28]

Table 10 sets out the gTLD, sponsoring organization and restrictions, if any, applicable to the 14 gTLDs.

The seven new gTLDs were introduced in order to expand the generic name space available for registra-

Table 10
Sponsored gTLD agreements

gTLD	Open/restricted	Sponsor
.aero	Reserved for members of the air transport industry	Société Internationale de Télécommunications Aéronautiques (SITA)
.biz	Restricted to businesses	NeuLevel, Inc.
.com	Open	VeriSign Global Registry Services
.coop	Reserved for cooperative associations	Dot Cooperation LLC
.edu	Reserved for degree-granting educational institutions of higher education	Educause
.gov	Reserved for the United States Government	US General Services Administration
.info	Open	Afilias Limited
.int	Reserved for organizations established by international treaties between Governments	IANA .int Domain Registry
.mil	Reserved for the United States military	US DoD Network Information Center
.museum	Reserved for museums	Museum Domain Management Association
.name	Reserved for individuals	Global Name Registry
.net	Open	VeriSign Global Registry Services
.org	Open	VeriSign Global Registry Services
.pro	Reserved for certified professionals	RegistryPro, Ltd

tion of new domain names, and to promote competition in gTLD registration activities. While .info or .biz may be considered similar in design to the existing open gTLDs (i.e. .com, .net and .org), the others such as .aero, .coop and .museum introduce a new element of differentiation, which can serve as an instrument for sending signals to the Internet user while advancing the policy objectives of these registries.

As new gTLDs are introduced, developing countries have an opportunity to take advantage of the new name space becoming available, although certain commentators have suggested that many of the useful names in the .com TLD have already been registered. Groups in developing countries may also, in the future, wish to sponsor new gTLDs that would support their own objectives, in view of the market-signalling power that a TLD can exhibit.[29] Of course, the ccTLD space, discussed below, is the natural starting point for serving the national goals and policies of each country. Furthermore, the new space and dimensions that will be brought into being by enabling the registration of multilingual domain names (discussed below), which reflect the linguistic diversity of Internet users, mean that the potential resource space for domain names, even in the existing gTLDs, is greater than many may have previously believed.

(b) Country code top-level domains

Country code TLDs (ccTLDs) are two-letter domains – such as .ag (Antigua and Barbuda), .lk (Sri Lanka), .pa (Panama) and .sn (Senegal) – which correspond to a country, territory or other geographical location. They bear two-letter codes based on the official list maintained by the International Organization for Standardization (ISO) in its International Standard 3166. In that connection, ICANN, in its role of coordinator of the delegation of codes for ccTLDs, issued a resolution in September 2000 reaffirming that

> "alpha-2 codes are delegable as ccTLDs only in cases where the ISO 3166 Maintenance Agency, on its exceptional reservation list, has issued a reservation of the code that covers any application of ISO 3166-1 that needs a coded representation in the name of the country, territory or area involved."[30]

Currently, there are 243 ccTLDs.

The rules and policies for registering domain names in the ccTLDs vary significantly. Although these domains were originally envisioned as being limited to domestic use,[31] the registration policies of various ccTLDs have evolved differently. The registry for each ccTLD sets its own policies for domain name registration. Some ccTLDs are reserved for use by citizens or local entities within a particular country,[32] while others are operated in an open and completely unrestricted manner. In fact, there are approximately 80 open ccTLD registries, in which any organization or person can register a name generally on a first-come-first-served basis. Thus, for example, domain names can be registered by anyone in the .to, .tm or as. ccTLDs, corresponding to Tongo, Turkmenistan and American Samoa respectively.

Generally speaking, the ccTLD registries are operated by local administrators in each country. Initially, these administrators were usually drawn from technically skilled personnel, sometimes associated with an academic institution. Today, the administrators of ccTLDs come from the private sector or educational institutions, while others are under governmental control.

It is not uncommon that for certain ccTLDs the local administrator has introduced functional categories similar to those available in the gTLDs, but residing at the level of the second-level domain (SLD) in the DNS. The registration of a domain name by an interested person, therefore, takes place at the third-level domain. For example, the registry for the United Kingdom's .uk ccTLD space,[33] Nominet.UK, has implemented the following SLDs in which domain names can be registered by users:

- ac.uk (reserved for academic institutions, e.g. www.oxford.ac.uk for Oxford University);
- *co.uk* (reserved for commercial enterprises – the largest SLD under *.uk*);
- *.gov.uk* (reserved for the United Kingdom Government);
- *me.uk* (open to individuals);
- *org.uk* (open to non-commercial organizations);
- *net.uk* (reserved for Internet service providers);
- *ltd.uk* and *plc.uk* (reserved for registered company names only);
- *sch.uk*. (reserved for schools).

In Sweden, as another national ccTLD example, certain periodical publications can be registered under the

press.se SLD, while private individuals can register a domain name under the pp.se SLD.[34]

Early on, any agreement between the ccTLD operators and IANA (as the organization providing technical oversight of the DNS) to implement coordinated policies for the Internet was informal at best. In many instances, although IANA had introduced a designated two-letter country code into the A-root, there were continuing disagreements about who should be the authorized administrator of a particular ccTLD.[35] As the Internet has spread and grown in commercial importance, many commentators, businesses, Governments and users of the Internet have concluded that a more formal set of agreements should be established.

One of ICANN's principal activities thus has been to work with the other organizations involved in the Internet's technical coordination to formally document their role within the ICANN process and their (and ICANN's) commitments to implement the policies that result. This focus has resulted in agreements between ICANN and a number of different DNS players, including VeriSign, formerly Network Solutions, which operates the .com, .net and .org TLDs; the companies responsible for operating the new 'unsponsored' TLDs (.biz, .info and .name); the organizations establishing the 'sponsored' TLDs (.aero, .coop and .museum); over 150 ICANN-accredited registrars; the regional Internet registries; and the Internet Engineering Task Force.

Since 2000, ICANN has also been working with managers of ccTLDs to formalize and document their relationship with it. These relationships can be more complex, because of the varying circumstances (in terms of type of organization, policies, language, culture, legal environment and relations with Governments) of different ccTLDs and the organizations that operate them. The ICANN Government Advisory Committee (GAC), an ICANN advisory body composed of representatives of Governments, has been instrumental in this area. Through several communiqués provided to the ICANN Board of Directors, the GAC has established the following positions:

- The Internet naming system is a public resource and the management of a TLD Registry should be in the public interest.

- Accordingly, no private intellectual or other property rights should inhere in the TLD itself or accrue to the delegated manager of the TLD as the result of such delegation.

- The delegation of a ccTLD Registry (to a particular operator/manager) is subject to the ultimate authority of the relevant public authority or Government.

These positions were formalized in a GAC document entitled "Principles for Delegation and Administration of Country Code Top Level Domains", which was published in February 2000. This document provides, in the relevant part, that:

> "The delegee of a ccTLD is a trustee for the delegated domain, and has a duty to serve the residents of the relevant country or territory in the context of ISO 3166-1, as well as the global Internet community. . . Its policy role should be distinguished from the management, administration and marketing of the ccTLD. These functions may be performed by the same or different entities. However the delegation itself cannot be sub-contracted, sub-licensed or otherwise traded without the agreement of the relevant government or public authority and ICANN."

ICANN recently introduced a "Model ccTLD Sponsorship Agreement", which aims at regulating the rights and obligations between ICANN and ccTLD administrators, and also defines the role of the governmental authority in the ccTLD environment.[36] For ICANN's part, the Sponsorship Agreement provides that ICANN will maintain a stable, secure and authoritative database of relevant information about ccTLDs maintained in the "Authoritative Root-Server System". Thus, for a particular ccTLD, the Authoritative-Root Database will contain all relevant information to ensure its proper technical functioning, including information about the ccTLD sponsoring organization (with administrative and technical contacts) and certain other technical information (i.e. regarding the ccTLD nameservers). The ccTLD sponsoring organization, on the other hand, agrees to use its best efforts to operate the ccTLD in a stable and secure manner, so that domain names registered within the ccTLD are reliably resolved for users throughout the Internet. As regards the relevant governmental authority, the Sponsorship Agreement mainly emphasizes its responsibility for the public interest on behalf of the Internet community in the country in question, and coordinating in relation to the ccTLD administrator's management of the ccTLD.[37]

Importantly, the Sponsorship Agreement would also require ccTLDs to make a financial contribution to ICANN's cost of operations. For example, an appendix to the Agreement provides that for the year ending 30 June 2002, the maximum fixed annual contribution is $5,000, with this amount set to automatically increase by 15 per-cent on 1 July of each year.[38] It may be increased by a greater amount if new or revised ICANN policies are established. The appendix further provides that the total amount of fees paid by all TLD sponsors and registry operators that have sponsorship agreements with ICANN cannot exceed the annual cap of $5,500,000, but this annual cap will also increase by 15 per-cent each year. For developing countries, particularly with ccTLD registries in which there are very few domain name registrations, these fee obligations to ICANN can represent a significant financial burden.

Aside from the ICANN Sponsorship Agreement, other issues for ccTLDs concern the environment for competition in respect of domain name registry and registrar services. These services may be structured quite differently, depending on the particular policies in the country concerned. Registry services relate to organizing, managing and administering the ccTLD name space – including the central authoritative database for the ccTLD and associated public query services – in a secure and reliable manner. Registrar services, on the other hand, are directed towards interacting with customers, offering these "registrants" services for registering their domain names in the ccTLD.

In Germany, for example, the administrator of the .de ccTLD[39] in addition to being the operator of the registry, offers services as a domain name registrar. However, the administrator actually recommends that users register their domain names with other registrars and only offers its registration services at a price which is less competitive than the prices offered by other registrars in Germany. Some ccTLD administrators act as both the sole registry and registrar for the relevant country domain space, especially in those countries where domain names have not yet proved to be so popular. Still other ccTLD administrators, as in Germany, have announced their intention of introducing a more competitive environment for domain name registration activities within their ccTLD. This is the case for the government-owned Singapore Network Information Centre (SGNIC), administering the .sg ccTLD. Currently, SGNIC maintains the registry for .sg and is also the only organization acting as registrar to accept domain names registrations in this ccTLD. Soon, however, other companies will be invited to become accredited registrars, thus competing at the registrar level for domain registration business in Singapore. SGNIC will, however, maintain control of the registry.[40]

Given the technical requirements, it is widely accepted that it would be extremely difficult, and would put DNS reliability at risk, to introduce competition at the level of registry services for a particular TLD. Thus, two different entities should not share registry services for a given TLD. However, competition among registrars is now common. As noted above, there are more than 150 ICANN-accredited registrars competing around the globe to accept domain name registrations and offer related services in the gTLDs. Further information about the market for domain name registration services is provided in section B.3 below.

In developing countries, ccTLD administrators can develop appropriate policies that meet the needs of their community, satisfying any relevant legal, cultural, economic, language or other requirements. There is no single model for structuring a ccTLD that would fit the needs of all countries or territories. The policies for each ccTLD should be carefully formulated with all of these particularized factors in mind, with the overall goal of promoting access to and use of the Internet. In order to illustrate the different registration policies that may be implemented by different ccTLDs operators, the policies developed for the Republic of the Congo (.cg) are briefly highlighted in box 1.

As a further example of new developments in this area, the European Union on 30 April 2002 published a new Regulation to "implement the .eu country code Top Level Domain (ccTLD) within the Community".[41] The .eu ccTLD was first proposed as part of the EU's e-Europe initiative to accelerate the development of electronic commerce.[42] The EU believes that the new .eu ccTLD will "accelerate the benefits of the information society in Europe as a whole", and, in particular, provide greater visibility for the EU Internal Market on global information networks, while increasing choice and competition.[43] Furthermore, it is viewed as a positive factor that the infrastructure accompanying the implementation of the .eu ccTLD, including DNS nameservers and the registry database for .eu, will be located in the EU and will therefore "affect the topology and technical infrastructure of the Internet in Europe".[44] It is envisaged that the European Commission will establish a fair selection procedure to designate the entity that will act as the registry for .eu. The Regulation also specifies that the

Box 1

Republic of the Congo (.cg) ccTLD

The administrator for the *.cg* ccTLD is the Network Information Center (NIC) of the Republic of the Congo. It has posted its registration policies on the web at www.nic.cg. The *.cg* NIC serves both as the registry and the registrar for domain names registered in this space. It has established the following policies:

- Registration is free of charge for the citizens or lawful residents of Congo (may require copy of passport or residence permit to be produced).
- A company or non-governmental organization registered and operating in the country will also qualify for free domain name registration services.
- Legal institutions, government ministries, churches and other authorities of Congo have the highest priority with regard to the right to free domains.
- Foreign entities are not precluded from registering in the *.cg* ccTLD; however, these entities are charged a registration fee. The fee is currently 550 Swiss francs for the first year, and 350 Swiss francs for each year thereafter.
- While domain names may be registered directly in the SLD under *.cg* (e.g. unctad.cg), the domain name must have a minimum of three characters. Two-letter domain names may be registered only with special authorization.
- The – *gov, net, edu, ac, com, co, int, mil* - sub-domains are considered restricted.
- The use of the misleading suffix *.cg* is strongly discouraged: users are reminded that .CG stands for the Republic of the Congo and for nothing else.

registry will operate on a non-profit basis and will not itself act as a registrar. The .eu initiative is a relevant example for developing countries of how a ccTLD can be implemented, even on a regional basis, to broadly promote the objectives of increased Internet usage and e-commerce activity, as well as regional recognition and integration.

Additional resources for operating a ccTLD registry are becoming more widely available for the managers of ccTLDs. Developing countries can take full advantage of these materials as they determine their own policies. For example, the ccTLD Constituency of ICANN, a group representing ccTLD administrators in the ICANN process, has produced "Best Practice Guidelines for ccTLD Managers".[45] The Guidelines provide that (a) ccTLD registries should ensure that there are standard agreements for domain name registrants setting out the expectations and obligations of each party; (b) ccTLD Managers should be fair to all eligible registrants requesting domain names; (c) policies and procedures may vary from country to country owing to local customs, cultural values, local policies, law and regulations; (d) the policies and procedures for the use of the ccTLD should be made available for public inspection; (e) ccTLD Managers should have a policy on privacy and that policy should be published; and (f) ccTLD Managers should define and publish their domain name dispute resolution policies and procedures in consultation with the Local Internet Community (making judgements in relation to disputes between third parties and domain name registrants is outside the scope of the ccTLD Manager's duties).

The World Intellectual Property Organization (WIPO) has also published a useful guide, the "WIPO ccTLD Best Practices for the Prevention and Resolution of Intellectual Property Disputes".[46] This statement of best practices is intended to establish a set of minimum standards for the protection of intellectual property in the ccTLDs, particularly in respect of open ccTLDs (i.e. ccTLDs in which there are no restrictions on the persons or entities registering). The WIPO Best Practices focus on three elements:

- *Registration agreement*: a prerequisite for the proper management of a ccTLD is that the rights and obligations of the domain name registrant and the ccTLD administrator should be reflected in a formal registration agreement.

- *Contact details*: the collection and making available of domain name registrant contact details is

important for facilitating informal steps or initiating formal procedures aimed at redressing intellectual property infringements.

- *ADR:* ADR procedures for resolving disputes between domain name registrants and trademark owners can provide an efficient, fair and inexpensive approach.

WIPO has also established a comprehensive "WIPO Ecommerce ccTLD Database", which contains links to 243 ccTLDs and provides information about their registration agreements, WHOIS services and alternative dispute resolution procedures.[47]

One further development of significance to ccTLDs is the formation of regional ccTLD groups, which have developed over the last several years as a resource for ccTLD managers and to more effectively voice concerns that regional ccTLDs operators may have. Developing countries may find that the information and contacts available to them through these organizations will be extremely helpful. A number of them also participate actively in the ICANN process.

The African Top Level Domains (AFTLD) project, for example, was established for ccTLD registries in Africa and the Middle East to cooperate and engage in concerted action on issues of common concern. The AFTLD website provides further information.[48] AFTLD lists its objectives as follows:

- Representing the interests of the African ccTLDs, including the neighbouring islands around the African continent;
- Promoting communication and cooperation between ccTLDs' managers;
- Informing the African Internet community about the ICANN process through an awareness and outreach programme; and
- Providing a common address where information about African ccTLDs can be obtained.

Box 2 provides information about relevant ccTLD organizations and forums.

These resources, as well as others, show that an increasing amount of information is becoming available to developing country experts to assist in the formulation of an appropriate approach for management of a country domain space. Information concerning registration policies, as well as model implementation agreements, can also be found online, through the ICANN website.[49]

Box 2

TLD forums

• African Top Level Domains (AFLTLD)	www.aftld.org
• AfriDNS	www.afridns.org
• Asia Pacific Top Level Domain Forum (APTLD)	www.aptld.org
• Latin American & Caribbean Country Code TOp Level Domain Organization (LACTLD)	www.lactld.org
• North Amercian Top Level Domain Organization (NATLD)	www.natld.org
• Council of European National Top-Level Domain Registries (CENTR)	www.centr.org
• International Association of Top Level Domains	www.iatld.org
• World Wide Alliance of Top Level Domain-names	www.tld.org

(c) Multilingual ("internationalized") domain names

A new development, which stands side by side in importance with the expansion of the gTLD space and the continuing development of ccTLDs, is the emergence of multilingual or "internationalized domain name" (IDN) technology. This refers to DNS technology that will allow Internet users – for example, those whose native language is not English[50] – to use lan-

guage character sets other than the Latin (also described as Roman) ASCII set,[51] which is today the only set (including letters, numerals and hyphens) that can be used for domain names. Thus, with the implementation of IDN technology, domain names will be able to be expressed, for instance, in Arabic characters.[52] There are several commercial initiatives under way to make domain names available in character sets other than the Latin ASCII.[53] Meanwhile, a key standards-setting body for the Internet, the Internet Engineering Task Force (IETF), is actively discussing the appropriate technology and protocols which should be adopted as a standard in this area.[54]

These new developments have an obvious relevance for developing countries. There is broad recognition that IDNs offer the potential to increase Internet use for a significant segment of the world's population, whose native language is written in non-Latin scripts. For example, a person in China, rather than searching for a term in the English language (using the Latin ASCII script) to express an identity, brand or concept in a domain name, can use the IDN technology to choose a domain name in a Chinese character script. When implemented, the IDN technology will make possible the natural logic of allowing one to express oneself in one's own language, while also bringing new registration space to the DNS.

These IDN developments have been followed closely by ICANN. It has established an Internationalized Domain Names (IDN) Committee. The ICANN Board of Directors, in a resolution dated 25 September 2000, recognized "that it is important that the Internet evolve to be more accessible to those who do not use the ASCII character set". The resolution emphasized, however, that

> "the internationalization of the Internet's domain name system must be accomplished through standards that are open, non-proprietary, and fully compatible with the Internet's existing end-to-end model and that preserve globally unique naming in a universally resolvable public name space."

More recently, on 16 April 2002, ICANN took the additional forward-looking step of publishing a "Discussion Paper on Non-ASCII Top-Level Domain Policy Issues".[55] This paper is intended to begin the discussion of issues relevant to the introduction of new TLDs which, like the IDN domain names discussed above, may themselves appear in a non-Latin-character script. In time, for example, we may expect that a non-ASCII TLD, consisting of Japanese characters semantically associated with the recognized geographical unit of Japan (.jp), could be introduced into the DNS. As the Discussion Paper states, the ICANN IDN Committee's

> "current thinking focuses on extending to the IDN namespace existing policies and concepts for the creation of ASCII generic TLDs (gTLDs) and ASCII country-code TLD (ccTLDs), which have been developed and refined over time, while giving due consideration to additions and variations in policy to take into account unique factors related to the use of non-ASCII characters within the DNS."[56]

In addition, the Committee has generally agreed that the core purpose for introducing non-ASCII TLDs "would be to make the DNS service easier to use for Internet users whose native languages include non-ASCII characters."[57]

These new developments for the DNS are timely. The Internet is rapidly evolving from its predominantly English language roots to reflect the creativity, expression, communication and business interchange which occurs in other languages. It is estimated that by 2007, Chinese will be the most common language used on the Internet. Such a development would merely reflect the nature of communications prevailing offline, in which 92 percent of the world's population speaks a primary language other than English.[58]

While it is likely that it will still take time, the roll-out of IDN technology should provide significant benefit to developing countries, increasing the intuitive use of domain names and improving navigation of the Internet. As discussed above, there should also be opportunities to introduce new IDN top-level domains, which may become very popular within certain regions or countries. The policies to be associated with these new TLDs, as discussed in section B.2(b) above concerning ccTLDs, can be developed in a manner which is appropriate to the relevant governmental, legal, cultural or other requirements.

3. Competition in domain name registration services

ICANN has accredited a geographically diverse set of approximately 150 companies as competitive domain name registrars for the gTLDS (specifically for .aero, .biz, .com, .info, .name, .net and .org).[59] About 80 of them are currently operating to receive domain name registrations, while others are accredited but have not

yet commenced operations. A complete listing of accredited organizations is available on the ICANN website.[60]

It is important that the overall structure of the domain name services market provide a competitive environment for companies offering services. The first-come first-served, highly automated and efficient nature of the registration system has allowed the tremendous growth that has taken place, while acting as the means of preserving universal connectivity on the Internet.[61] Initially, however, just one company, Network Solutions, acted as both the registry and registrar for the popular .com, .net and .org gTLDs. Thus, Network Solutions was a single historical provider, which had enjoyed a monopoly granted by the United States Government over new domain name registrations and renewals.[62]

With the separation of functions between registry and registrar, and the changes that have been brought about through the ICANN process over the last few years, the situation has evolved significantly, as noted above with the introduction of competition among registrars. At the same time, however, it is a widely held view that the registry function in the DNS for each TLD presents a natural monopoly situation (i.e. administering the centralized and authoritative database for the particular TLD), which cannot, from a technological perspective, be shared among competing companies. Thus, while some level of competition can be achieved among the registries for different gTLDs, there cannot be two companies to operate the database and carry out administrative functions for a particular TLD. The separation of the registry from the registrar functions has permitted competition at the registrar level among companies accepting domain name registrations from end-customers. Nevertheless, as more companies have become involved – some operating as TLD registries, others acting as registrars, and still others assuming both functions – the environment for competition within the DNS has become more complex. This is an area in which continued vigilance and oversight are required.

(a) ICANN accreditation

In order to become accredited by ICANN, a prospective registrar must satisfy a number of business, financial and technical requirements. These requirements are described in detail on ICANN's website.[63] The company must complete and submit an ICANN Registrar Accreditation Application, pay a non-refundable $2,500 fee and eventually sign a Registrar Accreditation Agreement with ICANN. The technical capabilities, for example, should be designed to ensure security and continuity, irrespective of whatever might happen to a particular registrar's business – this is vital to the stability of the Shared Registration System. Once accredited, the company will be required to pay annual accreditation fees of $4,000 for the first and $500 for each additional TLD in which it will be accepting domain name registrations. It will also be required to pay quarterly fees representing a contribution to ICANN´s operating costs, which will be based on the registrar´s share of overall domain name registrations in the TLDs for which it is accredited. An applicant will be required to demonstrate that it has capital of approximately $70,000 or otherwise show that it has the financial resources necessary for carrying on the business.

An organization seeking to begin registrar operations will also be required to enter into several contracts with the operators of the gTLD registries. One of the reasons for this is the licensing of the proper technology (software) to allow interoperability between the registrar and registry operators. In addition, the registrar will be required to comply with various rules and requirements established by the registry operator (i.e. imposed through the chain of contracts mentioned above). For example, in dealing with VeriSign, the core agreement is the Registry-Registrar-Agreement (RRA).[64] This contract provides that registrars will pay VeriSign $6 for each domain name registration and annual renewal. The registrar will also be required to provide payment security, which is used to secure the registrations that the registrar performs each month.[65]

It is only after a prospective registrar has met all these requirements that it is allowed to begin operations. Thus, the technical, legal and financial requirements are not insignificant. The system appears to be working for the 80 registrars already in operation; however, if the volume of new domain name registrations as well as renewals declines, new stresses may be imposed on the system. Organizations which have been accredited by ICANN but are still not actually operating may be weighing the pros and cons of beginning registration services, in view of the additional costs that this step entails.

(b) Price competition for domain name registration services

In order to evaluate the competitive system for registrars, it is useful to review domain name market infor-

mation, as well as the prices that customers are being charged to register domain names.

Concerning the first issue, recent statistics show that the overall market volume for domain name registrations in the gTLDs (including multilingual domain names in the VeriSign test-bed) peaked in October 2001 at approximately 30,700,000 registrations, and has recently decreased to just under 30 million, despite the introduction of new gTLDs.[66] The slight decrease in total registrations, while not encompassing registration activity in the ccTLDs, is considered to be caused by a drop-off in the rate of new registrations, a smaller number of renewals and fewer defensive registrations.[67] The initial "boom" period for the domain name industry, which we have witnessed over the last five years, may now be waning.

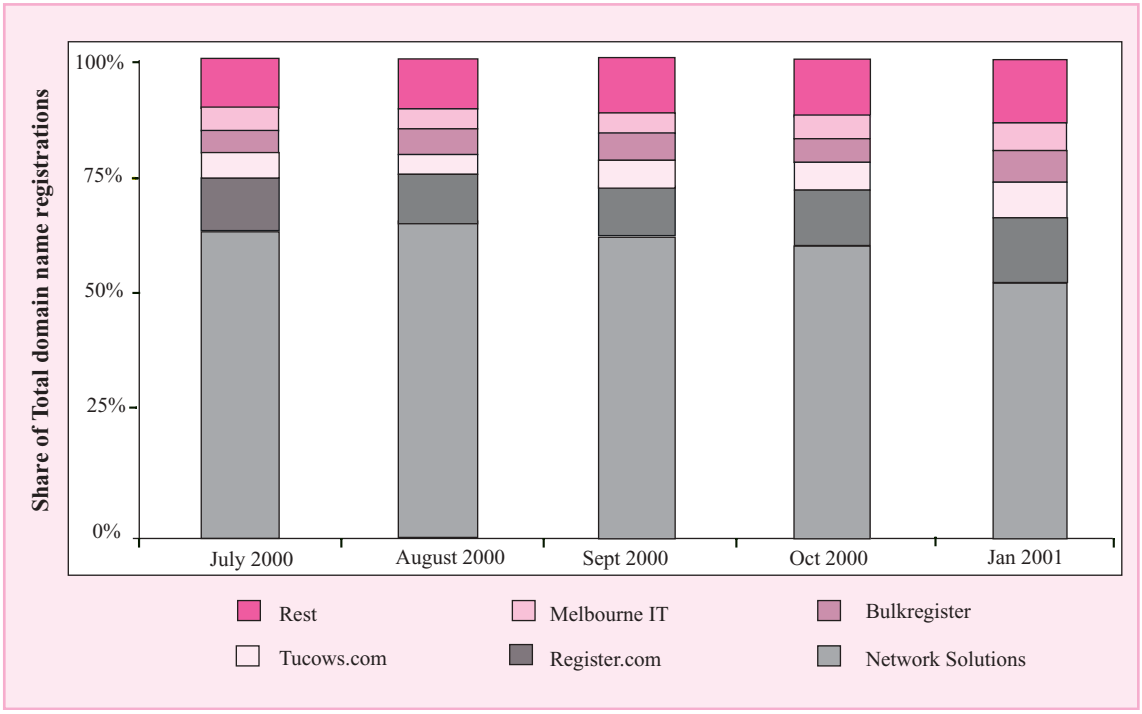
With respect to the restructuring that has taken place in the market for gTLDs – that is, introducing competition among domain name registrars – there have been significant results. VeriSign/NSI's share of total domain name registrations in the gTLDs decreased from approximately 70 per cent of the market as of July 2000 to 50 per cent in January 2001 (chart 5), and further recent falls have also been noted.[68]

In contrast, other ICANN-accredited registrars have gained a greater foothold in the market. For example, Register.com's share increased over the same period, with an approximate share of 15 per cent in January 2001.

Regarding the prices charged by registrars to their customers, there are significant differences. The accredited registrars have implemented various business models in relation to their domain name registration activities. Some registrars concentrate only on domain registration or parking services, while others focus on marketing a more complete service, including hosting. Hosting the domain name can include, for example,

Chart 5

Share of total domain name registrations



Source: copyright: Matthew Zook (2001).

also providing data storage space for a web presence or e-mail services. These registrars might not charge the user for the registration of the domain alone because they are charging instead for an overall service. There is also no shortage of "free" domain hosting services which usually require the user to include advertising on its website. Finally, some registrars offer periodic discounts, others offer volume discounts, and still others offer their registration services only to wholesalers.

With these variations in mind, the prices for registration of a domain name in the gTLDs may start at as low as $9 per year, which is similar to the amount that

accredited registrars must pay to VeriSign for each domain name registered in the .com, .net or .org TLDs. Most, however, can be found to charge between $15 and $35.[69] In the ccTLD context, the fees for registration similarly reflect a range of prices. At one end of the spectrum, as in the case of the .cg ccTLD for Congo, registration of a domain name may be free of charge to citizens or lawful residents; at the other end, there are countries where registration can be relatively expensive, such as Togo, where a two-year registration costs $270.

Table 11

Registrar charges, selected registration services in the .com domain (15 June 2002)

Registrar	$ Country	domain/year
NSI/VeriSign	US	35***
Register.com	US	35*
TUCOWS.com	CA	10**
BULKREGISTRER.com	US	10***
Melbourne IT	AU	35***
Go Daddy	US	9***

** Service includes e-mail address and three web pages.$*
*** Whole registration service.*
**** Members only, one time registration fee $79.*
Source: Icann.

While the domain name registration process appears to be increasingly competitive, there are other areas, such as registry services, where competition is now being introduced, but only in the form of new gTLD registries as alternatives to the .com, .net and .org gTLDs operated by VeriSign. As noted above, there may not always be a strict separation of registry and registrar functions, and this too can lead to competition concerns in relation to whether a given registry, which may also act as a registrar for its TLD, will obtain any unfair advantage, particularly when it has agreements with other companies that are also acting as registrars to receive registrations in the same TLD.

Domain names have increased considerably in market value. A whole new industry of intermediaries has emerged to appraise domain names, in some cases using the appraisal to resell the names directly, while in other cases providing the appraisal to a third party.[70] One way may question whether companies that act to merely snapup and resell popular domain names at

Table 12

Registration fees, selected African ccTLD registration services in geographical order from North to South

ccTLD	Country	Appr. $ Domain/year Initial registration fee
.ly	Libyan Ara Jamahiriya	500*
.sn	Senegal	free
.mr	Mauritania	free
.gh	Ghana	50
.ke	Kenya	200
.ug	Uganda	50
.mw	Malawi	140

** Registration of third-level domains available at cheaper rate.*
Source: Alridns.org

premium add any value to the industry or to consumers. Aside from some of the legal (e.g. intellectual property) issues that can arise in the context of domain name resales, however, there can be other concerns. For example, registrars, attracted by the high prices that have been paid for certain domain names, may seek to identify high-value names and take them or otherwise exclude them from the first-come-first-served registration process, in order to sell them at a much higher price to interested customers. A well-designed competitive system seems to be the best way to avoid any such activities. The operation and control of the registry is of major importance in this context: any retired or deactivated domain name must be subject to the random and competitive registration process in which all accredited registrars participate on a fair and transparent basis.

Table 13

Highest reported prices for domain names

Business.com	11/99	$7 500,000
AltaVista.com	07/99	$3 250,000
Loans.com	01/00	$3 000,000
Wines.com	09/99	$3 000,000
Autos.com	12/99	$2 200,000
Express.com	12/99	$2 000,000
WallStreet.com	04/99	$1 030,000
eFlowers.com	02/99	$1 000,000
Forsalebyowner.com	01/00	$835,000
Drugs.com	08/99	$823,456
Cinema.com	02/00	$700,000

Source: domainstuffetc.com

C. The role of ICANN

Frequent reference has been made throughout this chapter to ICANN, the Internet Corporation for Assigned Names and Numbers. ICANN has become a central player in the management of the DNS, with its governance and coordinating functions extending to many areas of importance for the global Internet infrastructure. However, while it has taken a number of important measures and achieved a number of important successes, it has not been able to avoid continuing questions concerning its structure, basis for legitimacy and authority, funding and international representativeness.

ICANN was formed in 1998 as a private sector initiative to assume responsibility for overseeing the technical coordination of the DNS. There was a sense at that time that the growing international and commercial importance of the Internet necessitated the creation of a technical management and policy development body that was more formalized in structure, more transparent and accountable, and more reflective of the diversity of the world's Internet communities; this contrasted with the early ad hoc and voluntary efforts to coordinate the functions of the DNS. Rather than establish an international treaty-based organization, which might have been the means used in the past to create an entity with oversight of a global medium, a new model was followed. Internet management has generally been based on the principles of non-interference, self-management and self-regulation. In keeping with this trend, ICANN was set up as a non-profit, private sector corporation[71] formed by a coalition of the Internet's technical, business, academic and user communities. ICANN has achieved recognition and received regular input from a number of governments, including those serving on the ICANN Government Advisory Committee (GAC).[72] Nevertheless, it continues to face calls for reform, which consistently raise fundamental questions as to its legitimacy, representativeness, the scope of its authority and appropriate processes for formulating policy.

ICANN states that it has the "objective to operate as an open, transparent, and consensus-based body that is broadly representative of the diverse stakeholder communities of the global Internet".[73] In a phased process with assistance from the United States Government, which funded much of the early development of the DNS, ICANN has been assuming responsibility for coordinating the stable operation of the Internet in four key areas:

- The Domain Name System (DNS);
- The allocation of IP address space;
- The management of the root server system; and
- The coordination of protocol number assignment.

As discussed above, ICANN has been funded through the registries and registrars participating in the global DNS. While maintaining a small staff and a volunteer Board of Directors,[74] ICANN has worked to achieve consensus for its policies through a representative structure composed of three supporting organizations – the Domain Name (DNSO), Address (ASO) and Protocol Supporting Organizations (PSO). Each of these organizations has its own membership and, collectively, they are intended to represent the interests of a broad cross-section of the global Internet's business, technical, academic, non-commercial and user communities. Among ICANN's achievements since 1998, it has developed and launched the system of competitive registrars, implemented a Uniform Dispute Resolution Policy (UDRP) to deal with domain name disputes (discussed below) and introduced seven new gTLDs. On the technical side, ICANN has performed the IANA address allocation and protocol numbering functions and taken over the operation of one of the DNS root name servers.

Despite this progress over the last four years, the critical questioning concerning ICANN's proper role and organization surfaced again earlier this year. The work of the three supporting organizations, and particularly the DNSO, has not proceeded smoothly, but has been accompanied by a constant set of challenges. On 24 February 2002, the President of ICANN, Dr. Stuart Lynn, posted a report entitled "ICANN – The Case for Reform". This was followed by another one, published on 10 March 2002 and entitled "Toward a Statement of the ICANN Mission". In his report, Dr. Lynn emphasized that ICANN, despite its progress, still faces serious issues:

"ICANN is still not fully organized, and it is certainly not yet capable of shouldering the entire responsibility of global DNS management and coordination. ICANN has also not shown that it can be effective, nimble, and quick to react to problems. ICANN is overburdened with process, and at the same time underfunded and understaffed. For these and other more fundamental reasons, ICANN in its current form has not become the effective steward of the global Internet's naming and address allocation systems

as conceived by its founders. Perhaps even more importantly, the passage of time has not increased the confidence that it can meet its original expectations and hopes".

The report grouped ICANN's major problems into three categories: too little participation by critical stakeholders (across the full range of infrastructure operators, major users and national Governments); too much focus on process; and too little funding to support quality services.

Among particular concerns, and an issue that has special relevance for developing countries, the report noted that most administrators of ccTLDs have yet to sign any formalized agreement with ICANN, such as the Model ccTLD Sponsorship Agreement discussed above, which would define the rights and responsibilities of each party. To date, only two countries – Japan and Australia – have signed these sponsorship agreements.[75] Most other ccTLD administrators have cooperated with ICANN policies only on a voluntary and informal basis. The ccTLD constituency group within ICANN has advanced its own model contract for ICANN's consideration, to which ICANN has not agreed. Reflecting ongoing tensions in this area, the ccTLDs, as a group, have further contended that they should have standing to form their own ICANN supporting organization, to be considered on an equal footing with the DNSO, ASO and PSO – as opposed to the current situation in which ccTLDs are only one constituency within the DNSO.

In June 2001 at ICANN's meeting in Stockholm, the ccTLDs voted unanimously to withdraw from the DNSO and to form a new supporting organization, the "ccSO".[76] Discussions continue within ICANN concerning the proper recognition, role and level of participation of ccTLDs within ICANN. The circumstances involving ccTLDs within ICANN, including contribution to ICANN's funding, are clearly among the issues that must be considered in any ICANN reform effort. ICANN must properly address the role of ccTLDs, and make further outreach efforts while at the same time respecting the ccTLDs independence. ICANN must continue to find measures that will secure their voluntary participation in the ICANN system.

Dr. Lynn's report indicated that structural reform, not mere tinkering, was needed to overcome the problems he identified:

> "I have concluded that ICANN needs reform: deep, meaningful, structural reform, based on a clearheaded understanding of the successes and failures of the last three years. If ICANN is to succeed, this reform must replace ICANN's unstable institutional foundations with an effective public-private partnership, rooted in the private sector but with the active backing and participation of national governments."

He also recommended a more professional, more broadly representative and more expert Board of Directors, which must be given explicit responsibility for managing the policy development process, and must seek to work more closely with Governments in doing so. He suggested new procedures for nominating Board members. At the same time, he stressed that ICANN should remain an organization that seeks to identify and implement consensus solutions, while being led by the private sector, not Governments.

Following the President's report, the ICANN Board established a Committee on ICANN Evolution and Reform. This Committee has instituted a consultation process, calling for comments on a number of key issues, including:

- What should ICANN's mission be?
- Are the issues raised in the report a correct perception of the problems facing ICANN?
- Assuming that structural and procedural reforms are necessary in order to ensure that ICANN carries out its mission, what transition mechanisms or approaches should be used to migrate from the status quo to the future environment?[77]

Particular topics to be considered by the Reform Committee include:

- ICANN's at-large membership and participation;
- The appropriate means and level of participation by Governments;
- Funding levels and mechanisms;
- Proper ICANN policy-formulation bodies (i.e. the proper constitution and role of supporting organizations and other advisory committees);
- A nominating committee for the Board.

Recently, the former chairperson of the ICANN Board of Directors, Esther Dyson, acknowledged that ICANN is "mired in disputes about authority, accountability and openness". She has suggested that "the US Commerce Department should step in to establish standards to adjudicate disputes if ICANN is unable to solve matters in the next six months".[78] A number of civic groups, led by the Media Access Project, are even calling for the United States Government to reconsider its 1998 selection of ICANN as a private, non-profit organization to take over responsibilities for the DNS. Meanwhile, a Senate committee held hearings in June, and the investigative arm of the Congress has questioned ICANN's legitimacy and effectiveness.[79]

As of the date of this Report, the ICANN reform process continues. At its meeting in Bucharest in June 2002, the ICANN Board approved a "Blueprint for Reform" which recommends a new management structure and procedural change for ICANN.[80] The Board requested that the ICANN Evolution and Reform Committee (ERC) oversee the detailed implementation of the Blueprint. Among the priorities listed was to "devise and incorporate specific measures to ensure, to the extent feasible, geographic and cultural diversity in all parts of ICANN structure".

The ERC has moved forward very quickly with its work on reform. A number of status reports on all aspects – including ICANN's mission and core values, structure, accountability and funding – have been put forward.[81] The ERC will make available its final recommendations in October 2002, to be considered by the ICANN Board at its meeting in Shanghai on October 27-31, 2002.

For developing countries, the reform of ICANN is an important issue, one which should be closely followed. ICANN remains a key institution for coordinating the technical management of the DNS, and a forum where developing countries can become more involved and learn more about the DNS. However, the important questions of reform must be carefully addressed, so that ICANN can build a new mandate and refocus its efforts. Although not a treaty-based organization, ICANN seeks to serve a similar role, managing the DNS as a public good for all. Developing country representatives, acting at a governmental level and at the level of the ccTLD manager, can provide important input on issues involving ICANN's mission, participation of stakeholders and methods for formulating policy. Importantly, developing countries can contribute their views on what mechanisms might best serve to promote international participation and a more international outlook for ICANN.

ICANN, although short of funds, has made outreach efforts towards developing countries. For example, it has held a number of its public meetings during its four years of existence in developing countries, including Chile, Egypt, Ghana and Uruguay. Meetings in 2002 are due to take place in Romania and China. ICANN, however, has not had the resources to be able to operate in more than one language (i.e. English), nor has it established any working groups specifically responsible for promoting and expanding a general understanding of the DNS and ICANN's activities in developing countries. New initiatives by developing countries could promote changes in these and other important areas. At the same time, it is clear that there is presently insufficient funding for ICANN to financially assist in the participation of delegates from developing countries.

As this discussion demonstrates, ICANN and its mandate continue to evolve. Developing countries, either directly or acting through the regional ccTLD organizations described above, should engage in the ICANN process so that their perspectives, requirements and diversity are taken into account.

D. Domain names and legal issues: The relationship between the DNS and intellectual property rights

Domain names have generated a number of legal issues, aside from the contractual arrangements discussed above which establish a chain of agreements defining rights and responsibilities among the DNS players. Foremost among such other issues is the tension arising from conflict between domain names and the existing legal system for protecting trademark rights. The registration and the use of trademarks, which create an exclusive legal right for an owner to use a mark, have fostered confidence in national and international markets by allowing marks to be uniquely associated with a particular company or brand, and by protecting both the public and the mark owner from fraud and deception. Relying on trademark law, a company can develop goodwill in its brand and expect that it will be protected from infringing imitators. At the same time, consumers can gain confidence in particular companies or brands and be protected from the same deceptive practices. Trademarks are important in both developed and developing countries.

Domain names, as we now understand, were launched into the commercial space in a manner that disregarded the existing intellectual property system. A simple, quick and largely automatic process for registering a domain name through a website, first utilized for the gTLDs .com, .net and .org but now commonly applied in many gTLDs and ccTLDs, created conditions for a wave of registrations of popular names. And the domain name registrars – the companies actually registering the names – had every incentive to allow these registrations to continue, thus creating a veritable money machine for their businesses. One positive consequence of this highly automated approach to domain name registrations is that it has presented a low entry barrier for the many new entrants to the e-commerce marketplace, including businesses in developing countries, as they could cheaply and easily register a distinctive name corresponding to their business or brand name. At the same time, however, a group of self-styled "entrepreneurs" have registered thousands of names through automated websites, including generic words as well as names corresponding to trademarks, in order to sell the registration to third parties at a profit. Where a trademark is involved, this has become known as the practice of **cybersquatting**.

Unlike the quick and automated approach for registering domain names, the intellectual property system is administered by public authorities on a territorial basis, creating rights within the territory concerned, in particular for trademarks in relation to certain categories of goods or services. Obtaining a national trademark from the relevant public authority remains a slow and more costly process. The complete disjunction between these two systems has thus given rise to practices that include the deliberate, bad faith registration of trademarks as domain names in order to sell the domain names to the owners of those marks, or simply to take unfair advantage of the reputation attached to the marks.

The incentives for this type of practice existed in particular early on because:

(a) The domain name registration system is based on a simple first-come-first-served practice;

(b) There were no rules in the system that would prevent the "resale" of the names at any price; and

(c) There were no clear legal precedents indicating that the targeting of trademarks through registration of a domain name was an unlawful practice.

All of this, of course, has changed dramatically, although not without passing through a somewhat painful transition in which trademark owners and domain name registrants, and various other stakeholders involved in the Internet, have battled to draw the lines that should apply to delimit fair as opposed to abusive practice.

While the earliest legal precedents establishing fair versus abusive practice were decided in the courts, a significant contribution was made in a study carried out by the World Intellectual Property Organization (WIPO), based in Geneva, entitled "The Management of Internet Names and Addresses: Intellectual Property Issues".[82] WIPO was requested by its member States in July 1998 to study the intellectual property issues associated with domain names and develop relevant recommendations. This study, also known as The Report of the WIPO Internet Domain Name Process ("WIPO Report"), was published in April 1999 after an international consultation process. It proposed a number of recommendations to ICANN on methods for dealing with these and other intellectual property issues arising out of the registration of domain names. The recommendations included:

- **Best practices:** the adoption of improved, standard practices for registrars, in particular in relation to enhanced registration agreements with domain name holders and requiring that they supply accurate contact details. Where it is shown that contact details are inaccurate and do not enable contact with a domain name holder, the registrar should have the right to cancel the domain name registration. This recommendation was implemented through the accreditation requirements established for registrars by ICANN. One of the other legal issues – aside from intellectual property – that arises as a result of the availability of contact details for domain name registrants is concern for protection of privacy, which is discussed below.

- **Exclusions for famous and well-known marks:** it was recommended that, because famous and well-known marks have been a special target of cybersquatters, a mechanism could be introduced whereby the owner of such a mark can obtain an exclusion in some or all gTLDs, prohibiting anyone other than such owner from registering it as a domain name.

This recommendation was never taken up by ICANN.

- **Controlled introduction of new gTLDs:** it was recommended that any new gTLDs should be introduced cautiously and slowly, permitting assessment from the perspectives of stability of the Internet and the intellectual property community. In fact, ICANN has implemented seven new gTLDs, as described above. It has sought to implement a careful and robust process for the implementation of these new TLDs. Nonetheless, their implementation has been accompanied by problems.

- **Administrative dispute resolution procedure:** it was recommended that a mandatory dispute-resolution policy be adopted under which registrants in all gTLDs submit to a uniform administrative procedure for trademark disputes arising out of the registration of their domain names. Following on from this recommendation, ICANN adopted the Uniform Domain Name Dispute Resolution Policy (UDRP), which is discussed at length below.

Of these four WIPO recommendations, the proposal for a new and international dispute resolution policy – the UDRP – has had the greatest significance in the DNS. Before discussing the UDRP, however, it will be useful to review four primary methods by which disputes involving domain names can be resolved: (a) negotiation between parties; (b) mediation; (c) arbitration or similar administrative procedures; and (d) litigation.

There are many circumstances in which, although a claimant might have a strong legal position, it would nevertheless be more practical to buy the name from the registrant at an agreed price. For example, so long as the cost of purchasing the name is cheaper than the alternative means of seeking to obtain the name, practical negotiation might be preferred. This approach can also be less risky than awaiting an uncertain adjudicated decision, and may be a first step before such other measures are contemplated. Mediation, on the other hand, has not generally been perceived as a suitable solution for domain name disputes, particularly when the registration is considered to be abusive. It can, however, be useful to parties disputing in good faith who are unable to come to an agreement among themselves, but are nevertheless willing to negotiate with the assistance of an independent neutral – i.e. the mediator – to find a mutually acceptable solution. Nominet UK, the operator and registry for the .uk ccTLD, provides informal mediation services for domain name disputes as a preliminary step before escalating the dispute to Nominet's own adjudicated dispute resolution procedure, the Nominet Dispute Resolution Service, which is modelled on the UDRP.

Procedures modelled on arbitration are proving to be perhaps the most effective way of resolving domain name disputes. As noted below, the UDRP follows an arbitration model of semi-private adjudication, although the decisions in these cases are publicly posted. For many individuals and entities, this arbitration model is a feasible and cost-effective method for resolving disputes in a short period. This may be particularly true for businesses and individuals from developing countries. Litigation, in contrast, is generally considered to be the most expensive and lengthy process for resolving a domain name dispute. This is due to court procedural requirements and deadlines, and the likely need to hire local counsel, as well as possible congestion in certain court systems. These factors can combine so that a dispute will drag on for many months at significant cost to the parties involved. High costs can be a disadvantage to businesses and individuals in developing countries. The cost of dispute resolution procedures becomes a key element, among several others, in evaluating the fairness of an international system for resolving domain name disputes.

Finally, it should be noted that various mechanisms have been established to avoid disputes before they arise, such as limited pre-screening prior to registration, or "sunrise" periods during which only trademark owners can register – for example, Afilias established a sunrise period for the .info TLD.[83] Although a laudable objective for avoiding disputes, these efforts have themselves generated further issues and consequences.[84]

1. Uniform Domain Name Dispute Resolution Policy (UDRP)

The UDRP was adopted by ICANN and went into effect on 1 December 1999, applying to domain name registration in the gTLDs. Modelled on recommendations made by WIPO, it provides trademark holders with an administrative mechanism for the resolution of disputes arising out of the bad-faith registration and use by third parties of Internet domain names corresponding to their trademarks.

When it was introduced there was some uncertainty as to whether the new UDRP procedure would be widely used by trademark holders to assert their rights. In particular, during the consultations of the WIPO Domain Name Process, some comments were received from groups at both ends of the debate spectrum – that is, representatives of trademark holders as well as Internet groups asserting the rights of domain name holders – to the effect that the creation of a new international forum for resolving such disputes might not gain the trust of these parties and would therefore not be extensively used. However, on 2 December 1999, the first day after the UDRP was adopted, the answer to this uncertainty gradually started to become clear. The WIPO Arbitration and Mediation Center received the first domain name complaint filed under the UDRP, and some six weeks later, a panellist appointed by the WIPO Center decided that the domain name at issue, http://worldwrestlingfederation.com, was to be transferred to the complainant, the World Wrestling Federation Entertainment, Inc.[85] For parties from developing countries, the UDRP offers an internationally accessible dispute resolution forum, but as with any legal procedure, parties must be well informed about their rights as well as about the requirements of the procedure itself.

Since the commencement of the UDRP approximately two and a half years ago, more than 6,100 cases have been filed under the procedure. This is a significant number of disputes to be submitted in a short time to a new forum applying new procedures. While most commentators have expressed positive views concerning the UDRP, there have been issues raised by some, which are discussed below, about the overall fairness of the procedure, particularly as regards domain name registrants.

(a) Review of the UDRP procedure

ICANN introduced the UDRP and an accompanying set of procedural Rules,[86] and further determined that multiple dispute-resolution service providers, which ICANN would periodically accredit, would administer the uniform procedures. As a result, trademark holders can submit complaints to the following dispute-resolution providers for disputes involving domain names that have been registered by an ICANN-accredited registrar:

- Asian Domain Name Dispute Resolution Centre (ADNDRC), approved effective 28 February 2002, with offices, in Beijing and Hong Kong (China);[87]
- CPR Institute for Dispute Resolution (CPR), approved effective 22 May 2000,[88] located in New York;
- eResolution (eRes), approved effective 1 January 2000; no longer accepting proceedings commenced after 30 November 2001 and now out of business;
- National Arbitration Forum (NAF), approved effective 23 December 1999,[89] located in Minneapolis;
- World Intellectual Property Organization (WIPO), approved effective 1 December 1999[90], with its office in Geneva.

As indicated above, the ADNDRC is the provider most recently approved by ICANN, and it will offer enhanced accessibility to the Asia-Pacific community.

The UDRP procedure is a uniform procedure, which means that the same rules for decisions and procedures are to apply no matter which of the dispute resolution providers handles a complaint. This uniformity also works to enhance a general understanding of the UDRP, which can be of benefit to all parties wherever they are located, be it in developed or developing countries. The procedure is optional for trademark owners: they may choose to use the UDRP or they may go to court. Domain name registrants, by contrast, must agree in their registration agreement to submit to the UDRP procedure, once a complaint has been filed concerning a domain name registered by them. The UDRP is limited to cases of bad-faith registration and use. Cases between parties alleging competing legitimate rights to names are therefore excluded.

For a complaint to be successful under the UDRP, the complainant must establish that the following three cumulative criteria are satisfied:

(a) The domain name is identical or confusingly similar to a trademark or service mark in which the complainant has rights;

(b) The registrant of the domain name has no rights or legitimate interests in respect of the domain name; and

(c) The domain name has been registered and is being used in bad faith.[91]

The complainant must demonstrate and prove that all three of the above elements are present.[92] Further

guidance as to what constitutes evidence in bad faith registration and use of the domain name[93] is provided in the UDRP. These illustrative circumstances include the following:

(a) The registrant has acquired the domain name primarily for the purpose of selling, renting or otherwise transferring it to the complainant who is the owner of the trademark or service mark, or to a competitor of the complainant, for valuable consideration in excess of the "out-of-pocket" costs directly related to the domain name;

(b) The registrant has registered the domain name in order to prevent the owner of the trademark or service mark from reflecting the mark in a corresponding domain name, provided that a pattern of such conduct is evidenced;

(c) The domain name has been registered primarily for the purpose of disrupting the business of a competitor; or

(d) The domain name has been registered primarily for commercial gain through creating the likelihood of confusion.

In defence of its registration, a domain name holder – referred to as the respondent under the procedure – can demonstrate its rights or a legitimate interest in a domain name by presenting evidence that:

(a) Before any notice to the respondent of the dispute, the respondent used, or prepared to use, the domain name or the name corresponding to the domain name in connection with a bona fide offering of goods or services;

(b) The respondent has been commonly known by the domain name, even if the trademark or service mark rights have been acquired; or

(c) Legitimate non-commercial or fair use of the domain name, without intent to divert consumers or tarnish the trademark or service mark for commercial gain, is being made.[94]

A respondent can further allege "reverse domain name hijacking" that is, that the complaint was brought in bad faith, i.e. primarily to harass the domain name holder. If the panel agrees, it may declare in its decision that the complaint was brought in bad faith and constitutes an abuse of the administrative proceeding.

To begin a case under the UDRP, the complainant must submit a complaint to one of the

ICANN-approved dispute resolution service providers. Model forms for the complaint (and response) are available from each service provider through its website. The complainant must specify whether the dispute is to be decided by a single- or three-member panel. If the complainant requests a single-member panel, the respondent has the right to indicate in its response that it would choose to have the dispute decided by a three-member panel instead.[95] The fee for a single-member panel is paid entirely by the complainant – this is an important cost factor built into the design of the UDRP.[96] However, if the complainant has elected to have the dispute decided by a single-member panel and the respondent requests a three-member panel, the respondent is then required to pay half of the applicable fee for the three-member panel.[97]

Once the service provider has received the complaint and confirms that it complies with the requirements of the UDRP and the service provider's supplemental rules, it is then forwarded to the respondent.[98] The respondent must provide a response to the complaint within 20 days.[99] If the respondent fails to respond, the panel will decide the case on a "default" basis, reviewing only the information and evidence furnished by the complainant.[100] Following receipt of the response (or after the 20 day period has elapsed), a decision should be issued by the panellist two weeks later, unless there are exceptional circumstances.

The UDRP procedure is relatively simple because the remedies available are restricted to:

- Transferring the domain name registration;
- Cancelling the domain name registration; or
- Rejecting the complainant's claim, in which case the domain name registration remains with the respondent.

Monetary damages in particular are excluded under the UDRP, as is the award of any costs associated with the procedure.[101]

Once a UDRP decision is notified by the dispute resolution service provider to the registrar that handled the registration of the domain name in dispute, that registrar is obliged to implement the decision. This required enforcement, for example to transfer the domain name registration from the respondent to the

complainant, will take place ten days after the panel decision has been notified, unless the respondent files a court case against the complainant within that period and provides a copy of the court complaint to the registrar. By assuming the key role under the UDRP of implementing decisions notified to them, registrars reap a significant benefit: they avoid being joined directly as parties in the dispute itself. Questions of direct or indirect infringement are no longer of serious concern to registrars, so long as they carry out their responsibilities within the ICANN system and, in particular, under the UDRP. The direct enforcement of UDRP decisions by registrars also lightens the burden on parties located internationally to obtain the intended result under the procedure without needing to go to court merely to enforce a UDRP decision.

(b) Responsibilities of UDRP dispute resolution service providers

One of the significant challenges faced by the dispute resolution service providers implementing the UDRP has been not only to achieve acceptance of this novel administrative procedure, but also to encourage parties to use the procedure in an online manner. Given the nature of the disputes (i.e. who has rights to a particular domain name that is to be used as an Internet address), it is reasonable to assume that parties will have some technical sophistication and access to technology. At the same time, however, consideration must be given to the likely international spread of the parties using the UDRP system, many of whom might speak different languages and operate in different business and legal cultures, and some of whom would face significant technical bandwidth constraints. These are real concerns which test the effectiveness of the procedure, particularly for parties located in developing countries.

The service providers addressing these challenges have had to adopt approaches that are appropriate for the broadest possible constituency – some have done a better job than others. Since the process takes place online, the dispute resolution provider's website itself should be extremely reliable, meeting the requirements of an audience that requires international access and service. In addition not only the UDRP procedures but also the dispute resolution providers' administrative services should be broadly transparent. Thus, a provider's website should present the procedure as largely self-explanatory by providing complete information, including the source documents, guides, model forms, notices of pending cases and full texts of published decisions. The accredited dispute resolution providers have so far done a good job of meeting these aims. Furthermore, the website, if at all possible, should provide this information in a multilingual presentation to meet the needs of parties around the world – the ADNDRC and WIPO for example, provide services and information in languages other than English. Finally, with respect to technology, the provider's systems should use only commonly available tools, such as a website accessible using the common browsers, e-mail with attachments in multiple formats, and support and answers to questions by telephone, when necessary.

(c) Analysis of the UDRP

It is remarkable that the international forum established by the UDRP, and the online dispute resolution services offered thereunder, both of whose viability was questioned early on, have met with widespread and international acceptance. Complainants entrusting their cases to the UDRP now include internationally recognized businesses from every sector of commerce. Moreover, many smaller enterprises and individuals from different countries have also used the UDRP. Reflecting the international reach of electronic commerce, the parties filing or defending cases have come from more than 70 countries on every continent. Under the ICANN Rules, procedures have been conducted mostly in English, but also in Spanish, French, German and Japanese, with other languages to follow.

The use of electronic communications has allowed parties to participate according to their own schedule, rather than concern themselves with rushing a paper submission to the court-house steps. The automatic enforcement of decisions by accredited domain name registrars, once the required 10 day period has passed, avoids the need to seek enforcement of UDRP determinations in national courts. These measures, combined with the uniform set of procedural rules providing the framework under the UDRP, enable the dispute resolution service providers to administer cases from beginning to completion – on average, within two months of the filing of the complaint. The decisions are posted on the Internet by ICANN and the dispute resolution providers. The success of the UDRP so far owes much to the efficiency of these procedures and to the direct enforcement of the resulting decisions.

The international procedure also avoids the need to hire local counsel and to understand the local court rules and procedures (often a necessity in international

litigation). The UDRP itself lays down the three criteria for decision, and allows panellists in particular cases to make reference to any rules or principles of law that may be deemed relevant. A party can choose to represent itself, or to be represented by a lawyer who is able to carry the case from its commencement to decision. Travel is not required in order to prosecute a case: the procedure envisages that physical in-person hearings will be held only in the case of an exceptional matter, and so far it appears that no hearings have been held for any of the cases filed.

The relative simplicity of the system also extends to the schedule of fees. As noted above, the costs of the procedure are borne by the complainants (unless the respondent requests a three-member panel), who pay a fixed amount that covers both the dispute resolution providers' services and the remuneration of the administrative panel. This element is important, and takes into account the fact that domain name registrants might not be in a position to cover substantial expenses associated with the procedure. The actual level of the fee depends on the number of domain names joined in a single dispute and on whether the case is to be decided by a single-member or three-member panel. The procedure appears to result in significant gains in efficiency while enabling a reduction in costs.

Perhaps in the light of this increased efficiency, one may ask whether the UDRP accords with accepted notions of due process for all the parties concerned. This is obviously an important question, and one that has been the subject of debate, particularly in the light of certain well-publicized decisions, among those following developments for this new administrative forum. Complainants have prevailed in approximately 80 per cent of the decided cases, securing the transfer of the domain name(s) in question.[102] This high rate of decisions favourable to the complainants has also raised questions among commentatoors.[103] A number of commentators have voiced concerns about the UDRP, which are summarized in box 3.

Box 3

Critique of UDRP

- The system is said to promote forum shopping by complainants among the accredited dispute resolution service providers.[104]
- Respondents are given insufficient time to respond (i.e. the 20-day period for filing a response).
- Panel composition (i.e. a one- or three-member panel) is a factor influencing case outcomes. Single-panel cases constitute approximately 90 per cent of the total caseload, while three-member panels comprise the remaining 10 per cent. Complainants win approximately 80 per cent of the time where a single panellist is appointed, compared with 60 per cent when a three-member panel is responsible for the decision.
- There is a lack of transparency regarding appointment of panellists in single-member cases.
- The decisions themselves are inconsistent and sometimes poorly reasoned.
- There is an absence of quality control mechanisms – i.e. appeal – built into the system.

These concerns have elicited thoughtful responses in the ongoing discussions concerning the UDRP. A significant study by the Max Planck Institute addressed a number of these concerns, including that the system "might be misused by rightholders, in particular big companies, in order to obstruct the selection and use of domain names by small business and private parties".[105] The Max Planck study found that:

> "as a matter of principle, the UDRP is functioning satisfactorily. No major flaws have been identified in the course of the evaluation".[106]

At the same time, the study confirmed that "considerable differences exist with respect to the outcome of decisions handed down" by one of the providers, eResolution, as compared with the National Arbitration Forum and the WIPO Arbitration and Mediation Center. Another commentator has explained that this difference could be due to the larger number cases in which three-member panels have acted to issue decisions administered by eResolution.[107] One would normally expect these cases to be more highly contested and not the outcome of non-contested default proceedings.

The Max Planck study identified four areas in which application of the UDRP was unclear and where further consideration could be given:

- The conditions under which a domain name is found to be "confusingly similar" with a trademark;
- Measures to be taken in order to safeguard the interests of free speech;
- Rules concerning the burden of proof and the standards to be applied in the assessment of the parties' contentions; and
- The possibility of an appeal against UDRP decisions and how this could be incorporated in the UDRP framework.

Forum selection: With respect to the issue of forum selection raised above, it is clear that most complainants choose to submit their claims to the WIPO Center. A number of factors, other than the "win" percentage, can be important in explaining this choice. WIPO was the first accredited provider in the UDRP system, and provides an useful presentation of information on its website. Until recently, WIPO was the only dispute resolution service provider outside North America, and it offered its services and administered its cases in a number of different languages. It was responsible for the First Domain Name Report, which led to the adoption of the UDRP, and this factor too could be influential as regards the trust that has been placed in WIPO, not to mention the fact that it is a United Nations specialized agency. Its member States have been fully supportive of its role in administering domain name cases.

At the same time, the UDRP was indeed designed to give the complainant the choice of provider when submitting a claim. One might ask whether this was a wise policy, but it is not too dissimilar to other dispute resolution contexts, in which the plaintiff chooses the forum in which it will seek to prosecute its case. One commentator recently addressed these issues as follows:

> "The UDRP procedure is far from perfect, but it is not unfair. No fair minded person could honestly believe that a provider would risk its reputation by selecting panellists who would decide cases in a predetermined way. No panellist could hope to uphold her reputation, if she were to find for one party regardless of the law or the facts. Indeed, such conduct would be so transparent that users would lose all confidence in the process. Clearly, this has not happened."[108]

High rate of success among complainants: With regard to complainants' high rate of success, it should be considered that UDRP cases are submitted by complainants to any of the providers on the basis of an assessment of whether the complainant believes it has a good chance of success. There is a key element of 'self-selection' at the outset, which should also be viewed as responsible, at least in part, for the rate of success among complainants in general. The factual dispute centring on whether a domain name registration should be considered abusive presents a relatively uncomplicated set of circumstances, compared with the multidimensional factual disputes that can arise in other contexts of commercial litigation or arbitration. The UDRP itself excludes any consideration of monetary damages. Furthermore, the UDRP sets out bright line criteria for decisions about which factual circumstances will be considered an abusive registration, which prospective complainants can review before deciding whether to file a case. This greatly simplifies the situation, and also accounts for the fact that so many of the UDRP cases are uncontested and proceed on a default basis.

Given the clearly stated UDRP criteria for abusive registration, and the growing collection of precedents which are available for review online, a legal adviser can counsel a client against filing a case under the UDRP if the factual basis for cybersquatting is not apparent. As noted above, the adviser may propose, for example, that negotiation to purchase the name is a more realistic approach, and a safer course overall in terms of managing the trademark owner's rights. This self-selection among the cases that are filed is an important element in the analysis of UDRP decisions and the prevailing high rate of success.

Time limit for response: It is also said that the UDRP imposes difficult time limits for respondents to be notified of, and to have time to respond to, a complaint brought against them. Developing countries may be affected by this in that there may be language barriers or difficulty in accessing the Internet to read e-mails and find out about a complaint, or understand the procedure in time. However, the UDRP states that the 20-day period may be extended either in exceptional cases or if parties mutually agree to extension.[109] The appropriate time for allowing the respondent to submit a response must be weighed against the overall time frame of the procedure – which is 45-60 days. Within this context, an additional

5-10 days for the response, given that it is the single submission to be provided by the respondent, may be appropriate.

UDRP appeals: The UDRP does not have an appeals mechanism. Part of the reason for this is to maintain the entire process of resolving domain name disputes as a fast, cost-effective and efficient process, which in turn makes it a more widely accessible system. The cost of filing a claim under the UDRP is currently reasonable on an international basis, even for parties in developing countries. If an appeals system is added in to the system, it may improve the quality of the decisions, but it will also add to the expense for many who might then have almost no other affordable way of filing a legitimate claim (this extra expense, however, might be limited to the appeal level only). Determining the proper constitution of an international appeal panel would also be a very difficult task. At present, given that the UDRP is an administrative procedure – as opposed to a binding arbitration – parties retain the right to take a case to the national court system.

Summary: To put these issues in context, several of the basic features of the UDRP must be re-emphasized. First, the UDRP establishes an international forum in which parties around the world now have equal and improved access to an inexpensive dispute settlement mechanism for resolving their domain name disputes. The scope of the UDRP is narrowly circumscribed to those cases brought by a party that can demonstrate the required three elements:

- That the domain name is identical or confusingly similar to a trademark in which that party has rights;
- That the domain name registrant has no rights or legitimate interests in the domain name; and
- That the domain name has been registered and is being used in bad faith.[110]

Each of these elements, as noted, must be proved by the complainant. The UDRP establishes a specialized set of procedures, tailored to the facts of a domain name dispute, and uses accredited dispute resolution service providers, who in turn draw from their rosters of expert neutrals to select panellists. The development of the facts and records for a case is based on a single submission from each of the parties, unless a panellist chooses to request additional information (and there is no guarantee that a panellist will exercise his or her discretion to do so). Furthermore, the scope of the remedies under the UDRP excludes monetary damages and relates only to the status of the domain name registration. The complainant is normally required to cover the costs of the administrative procedure, unless the respondent has demanded a three-member panel, in which case the parties will share the extra costs of the panel. Finally, a complainant or domain name registrant is free to go to court either before or after the UDRP proceedings. If court proceedings are initiated within ten days of a UDRP decision, the status of the domain name in question will remain undisturbed (i.e. in the hands of the domain name registrant) until the completion of the court procedures.

Under these circumstances, it can be considered that the administrative system established by the UDRP survives the scrutiny of any due process concerns. The procedures and their implementation are appropriate to the nature of the disputes covered, and the degree of finality accorded to them. The UDRP also marks the first attempt to deal with cybersquatting in a systematic and internationally effective manner. Not surprisingly, therefore, the UDRP has received widespread attention. This is true for the legal and trademark community, and also for the general media.

The area of domain name disputes is but an early example of the emerging types of disputes that will arise as electronic commerce expands internationally. Linked through a series of contracts, all of the relevant players in the domain name system, including the technical company that enables access, have certain responsibilities under the dispute settlement procedure. Once a complainant chooses to join the procedure by submitting a complaint, the mechanics of the system are in place to guide the parties to a quick and fair result that will be automatically enforced. An administrative system such as the UDRP represents a pragmatic solution for disputes in the international marketplace of electronic commerce, avoiding the concerns and uncertainties associated with traditional litigation in national courts. This model can be used for dispute resolution in the ccTLDs, and can be of significant advantage to parties in developing countries.

2. Future legal issues for domain names

Intellectual property issues continue to receive attention in the DNS. The Final Report of the WIPO Internet Domain Name Process acknowledged that its recommendations targeted only the most serious problems caused by the conflict between domain

names and trademarks, and that other issues would require further consultation.[111] In July 2000, WIPO convened the Second WIPO Internet Domain Name Process to address domain name and intellectual property issues where continuing uncertainty remains, including recommendations on the bad faith, abusive, misleading or unfair use of:

- Personal names;
- International non-proprietary names (INNs) for pharmaceutical substances, of which there are more than 8,000;
- Names of international intergovernmental organizations (IGOs);
- Geographical indications, indications of source or geographical terms; and
- Trade names.

The Report of the Second WIPO Process, published in September 2001, found generally that the international legal framework for the protection of these identifiers is not as developed as that for the protection of trademarks. The Second Report was therefore more reserved in recommending international solutions. For example, in certain countries protection exists for geographical indications and trade names, but there is no international system applied in a relatively uniform manner. Moreover, with respect to personal names and the names of geographical localities, no clear protection exists when these terms are used outside commercial channels (and thus fail to qualify independently for trademark protection). The Second Report suggests that the international community still needs to decide whether it wishes to address these insufficiencies, in order to establish a legal basis for dealing with those practices that might be considered unacceptable.

The WIPO Second Report did recommend, however, that a mechanism be established to protect INNs against identical domain name registrations, and also that an administrative dispute-resolution procedure, similar to the UDRP, be established so that an IGO could bring a complaint when a domain name was creating a misleading association between the domain name registrant and the IGO in question. In this respect, it is possible for the Second WIPO Report – which also discusses the prospect of an international treaty –to have a significant impact. Developing countries can have input into these issues, as the Second Report is still being considered by a committee of WIPO member States.

Finally, the Second WIPO Report also addresses a subject that is increasingly relevant today in view of the recent attention given to Internet privacy issues. It recommends that domain name registration companies in the existing and future gTLDs (e.g. .com, .net and .org as well as the newly approved gTLDs – .aero, .biz, .coop, .info, .museum, .name and .pro) should be required to provide accurate and publicly available WHOIS data about domain name registrants, subject to such users being clearly informed (and giving informed consent) about which data will be collected, the purposes for which it will be collected, and the uses to which it may be put, such as consumer protection, law enforcement and IP protection. Privacy issues inevitably arise when the details of a domain name registrant are sought even for legitimate purposes such as IP enforcement. A responsible approach to these issues, adopted by a ccTLD and made publicly available for inspection, can enhance confidence in national ccTLDs.

E. Concluding remarks and policy recommendations

The development of a national domain name system (DNS) infrastructure is an important means for enhancing the online exchange within developing countries, thus creating a valuable resource for communication, education and business. At the same time, however, domain names and the DNS give rise to a complex array of commercial, technical, policy and legal questions which typify many of the cross-border issues presented by the Internet and digital commerce. Developing countries need to understand these issues and formulate responses that are appropriate for the country's online community, satisfying relevant legal, cultural, economic, language and other dimensions. They should also promote public awareness and education about the DNS and the opportunities and benefits it offers.

Policy decisions are required in relation to the ccTLDs of developing countries, ones which foster not only a more relevant registration of domain names but also an overall confidence in the ccTLD space. The policies for ccTLDs should be carefully formulated, taking into account appropriate legal, cultural, economic and linguistic requirements. Developing countries' ccTLD administrators should improve domain name registration practices through clear agreements setting out the

rights and obligations of the parties, ensuring fairness to all eligible registrants requesting domain names, and establishing a clear policy for maintaining contact details of registrants, availability to third parties and privacy. Developing country ccTLD managers should become involved in the relevant forums available for exchanging information and participating in DNS policy-making.

It is recommended that developing countries also become involved in the ICANN reform process, as it provides a renewed opportunity to provide input about their perspectives, requirements and diversity, and to promote modalities for ICANN's work that better address the needs of their constituencies. Furthermore, they should consider establishing cooperative relationships so as to increase their capacity to deal with and influence the current debate. In doing so, developing countries would take advantage of the work and progress in relation to domain names and intellectual property, including the establishment of dispute avoidance and dispute resolution policies.

Further to ICANN's adoption in 1999 of an international dispute resolution system, namely the Uniform Domain Name Dispute Resolution Policy (UDRP), it is also recommended that developing countries become more involved in the current UDRP debate and in the discussions about whether protection should be provided in the DNS for categories of identifiers other than trademarks, such as personal names, geographical indications and trade names.

Notes

1 *See E-Commerce and Development Report 2001*, at pp. 107-110.

2 The Anticybersquatting Consumer Protection Act, amending Section 43 of the Trademark Act of 1946, 15 U.S.C. ß1125(d).

3 Complete information about ICANN is available through its website at www.icann.org and further discussion is provided below.

4 The Uniform Domain Name Dispute Resolution Policy is posted on ICANN's website at www.icann.org/udrp/. Further information and analysis concerning the UDRP are provided below.

5 Information concerning domain names and country domains in particular is available at the following websites:

- Internet Corporation for Assigned Names and Numbers (ICANN): www.icann.org;
- ICANN ccTLD information: www.icann.org/cctlds/;
- International Telecommunication Union (ITU) Multilingual Domain Names: www.itu.int/mdns/resources/index.html;
- World Intellectual Property Organization (WIPO) Domain Names information: http://ecommerce.wipo.int/domains/index.html;
- Legal information concerning the Uniform Domain Name Dispute Resolution Policy: www.udrplaw.net/;
- Activist observer group to ICANN at www.icannwatch.org/.

6 The International Telecommunication Union (ITU) located in Geneva, Switzerland, is an international organization within the United Nations system where Governments and the private sector coordinate global telecom networks and services. See the ITU website at www.itu.int.

7 The United States Government, acting through the Department of Commerce, has provided oversight of Internet and DNS developments, particularly when technical management issues were being dealt with by the Internet Assigned Numbers Authority (IANA). It has, for several years, been working as discussed below to transfer supervisory functions to ICANN.

8 "Noms de domain" in French and "nombres de dominio" in Spanish.

9 The term has started to appear in some but not all dictionaries. For example, *The American Heritage Dictionary of the English Language* (4th ed., Houghton Mifflin Company) provides the following definition: "A series of alphanumeric strings sepa-

rated by periods, such as *www.hmco.com*, that is an address of a computer network connection and that identifies the owner of the address". The Concise Oxford dictionary (10th ed., Oxford University Press) states that a "domain" is "a distinct subset of the Internet with addresses sharing a common suffix".

10 See the statistics maintained by NetNames International Ltd. at www.domainstats.com.

11 Mueller (2000a).

12 WIPO (1999, para.9).

13 See for example the statistics at www.zooknic.com/Domains/counts.html for the growth *of* com/net/org/edu domain names, and the statistics at www.denic.de/DENICdb/stats/domains_fancy.html for the growth of the German top-level domain ".de".

14 See Howe (1993-2001). For an even more technical definition, see the IANA website (www.iana.org/ipaddress/ip-addresses.htm) which states that "Internet Protocol (IP) addresses . . are 32-bit numbers often expressed as 4 octets in "dotted decimal" notation (for example, 192.168.45.230)".

15 See note 11.

16 For a detailed publication on the history of the DNS, see Rader (2001).

17 He served as editor of an important series of more than 2,400 Requests for Comments (RFCs) from 7 April 1969 (the date of its inception) until his death in October 1998. RFCs are the definitions of the protocols and policies of the Internet, see Rader (2001).

18 See www.netsol.com. Verisign acquired Network Solutions Inc. (NSI), the operator of the .com, .net and .org gTLDs, in March 2000.

19 See ICANN, *ICP-3, A Unique, Authoritative Root for the DNS*, 9/7/01, at www.icann.org/icp/icp-3.htm.

20 See, for example, General Rules for the United Kingdom's .uk top-level and second-level domains at www.nic.uk/rules/rup2.html.

21 Of the 12 root servers that draw data directly from the "A" root server, seven currently are owned by the United States Government or operated by its contractors. For a more detailed analysis of who operates the root servers, see l Froomkin (2000).

22 See Diana Cabell, *Learning Cyberlaw in Cyberspace, at* ww.cyberspacelaw.org/cabell/index.html.

23 See InterNIC FAQs at www.internic.net/faqs/authoritative-dns.html.

24 Among these new pseudo-TLDs are the *.ltd*, *.shop*, *.law*, *.love* and *.kids* domains, as well as *.web*. See, for example, www.new.net and www.web.net.

25 In practice, however, the United States Government reserves the *.gov* and *.mil* gTLDs for its exclusive use. The *.gov* TLD is operated by the United States General Services Administration The *.mil* TLD is reserved exclusively for the United States military and is operated by theUnited States Department of Defense Network Information Center.

26 For example, the *.coop* gTLD opened its registration service on 31 January 2002. *See* www.cooperative.org/news/latest_news.asp?id=26. The operating entities for the *.pro* and *.aero* gTLDs are still not accepting registrations.

27 See www.iana.org/gtld/gtld.htm.

28 See www.neulevel.com/aboutnl/faqs.html.

29 As discussed below, developing countries may wish to sponsor a new multilingual TLD, particularly as the technology becomes available to make such internationalized TLDs a realistic possibility. See section B.2(c).

30 No new ccTLD will be accepted into the common A-root system unless it appears on this list; see www.iana.org/cctld/cctld.htm. See also the website of the International Organization for Standardization, which describes how the list is updated regualrly by the ISO Maintenance Agency, at www.iso.org/iso/en/prods-services/iso3166ma/index.html.

31 See W. W. Fisher and S. Mendrey, *Domain Names and Trademarks*; *at* http://eon.law.harvard.edu/h2o/property/domain/main.html.

32 See, for example, policies for Italy, Japan and the Republic of Korea; see Fisher and Mendrey.

33 See Nominet's web site at www.nominet.uk. The Nominet.UK rules are listed at www.nominet.org.uk/rules.html.

34 See www.iis.se/regulations.shtml.

35 Difficult questions sometimes arise concerning who should be the proper ccTLD administror, or even whether a particular country code should be delegated. See the website of the Internet Assigned Numbers Authority (IANA), which contains reports on noteworthy delegation and redelegation matters. (www.iana.org/cctld/cctld.htm). See, for example, the report of considerations concerning the delegation of *.ps* for Palestine, at www.iana.org/reports/ps-report-22mar00.htm.

36 A copy of latest version of this agreement, dated 31 January 2002, is available *at* http://www.icann.org/cctlds/.

37 See section 1.7 of the Sponsorship Agreement.

38 See Attachment F to the Sponsorship Agreement.

39 See the website for DENIC eG at http://www.denic.de.

40 See Newsbytes, *Singapore plans competition in domain name registration*, *at* www.newsbytes.com/cgi-bin/udt/i...le?client.id=newsbytes&story.id=172137.

41 See Regulation (EC) No. 733/2002 of the European Parliament and of the Council on the Implementation of the .eu Top Level Domain, 22 April 2002. *Official Journal of the European Communities*, L113/1 (30 April 2002).

42 The e-Europe initiative was endorsed by the European Council at its meeting in Lisbon in March 2000.

43 Regulation (EC) No. 733/2002, at Preamble.

44 Id.

45 See "Best Practice Guidelines for ccTLD Managers", 10 March 2001, at www.icann.org/cctlds/cctldconst-4th-best-practices-10mar01.htm.

46 See the "WIPO ccTLD Best Practices for the Prevention and Resolution of Intellectual Property Disputes", at http://ecommerce.wipo.int/domains/cctlds/bestpractices/bestpractices.html.

47 See the 'WIPO Ecommerce ccTLD Database' at http://ecommerce.wipo.int/databases/cctld/output.html.

48 See African Top Level Domains (AFTLD) Project at www.aftld.org/.

49 See, for example, the ICANN ccTLD web page at www.icann.org/cctlds/.

50 Despite the Internet's origins in the United States, it is currently estimated that by 2003 two thirds of all Internet users will be non-native English speakers. See "WIPO Briefing Paper: Internationalized Domain Names – Intellectual Property Considerations" at http://ecommerce.wipo.int/domains/international/pdf/paper.pdf; see also www.walid.com/en/docs/index.shtml.

51 ASCII is the American Standard Code for Information Interchange, and is the most prevalent format for text files used in computers networks. In an ASCII file, each alphabetical, numerical or special character is represented with a 7-bit binary number (a string of seven 0s or 1s). See Joint ITU/WIPO Symposium on Multilingual Domain Names at www.itu.int/itunews/issue/2002/01/joint.html.

52 As noted in the WIPO Briefing Paper, (see note 50), DNS mapping technology has functioned thus far using only Latin characters that are used to write in a number of languages, including English, French, German, Italian and Spanish.

53 On 20 June 2001, VeriSign (previously Network Solutions), the operator of the *.com* registry, announced that it would provide full functionality for the registration of internationalized domain names for nearly 80 per cent of the world's Internet users. VeriSign has since introduced an Internationalized Domain Name Testbed, which allows users to register domain names in any script supported by Unicode. In November 2000, a company known as Walid introduced technology enabling the registration of domain names using the Hindi language. With this technology, Hindi speakers will be able to register Internet domain names using Hindi characters, and users will be able to access WorldWide Web content using those Hindi-language domain names. A resource page addressing IDNs, including a list of IDN solution providers, is maintained by the ITU at www.itu.int/mdns/resources/index.html.

54 See www.ietf.org. A working group within the IETF has the objective of specifying the requirements for internationalized access to domain names and formulating a standards track protocol based on those requirements.

55 The Discussion Paper states that "as part of its charter, the ICANN IDN Committee is tasked with anticipating the policy issues that would arise if and when ICANN confronts demonstrably deployable non-ASCII TLDs".

56 See ICANN website for IDN Committee, at www.icann.org/committees/idn/.

57 See ICANN IDN Committee Discussion Paper on Non-ASCII Top-Level Domain Policy Issues at http://www.icann.org/committees/idn/non-ascii-tld-paper.htm.

58 Statistics provided by Walid, Inc. at www.walid.com (November 2001).

59 These registrars are located in many countries, such as Australia, Barbados, France, India, Italy, Japan, Jordan, Kuwait, New Zealand, Norway, Philippines, the Republic of Korea, Spain and Switzerland.

60 See the ICANN website for a listing of accredited registrars, at www.icann.org/registrars/accredited-list.html.

61 WIPO (2001b).

62 See ICANN website concerning DNS background and competition for domain name registration, at www.icann.org/general/background.htm#4.

63 See ICANN's Instructions for Completing Shared Registry System Registrar Accreditation Application, at http://www.icann.org/registrars/instructions.htm. For example, to prepare an application, the applicant will need to collect the company's financial information, including bank statements and insurance certificates, if available; audited annual reports if you are a publicly traded company; or other documents to demonstrate that the business has adequate working capital and commercial general liability insurance. With respect to technical information, the applicant will be required to describe current (or proposed) technical capabilities to provide SLD registration services, electronic back-up of registration data from customers, security for all registration information and continued SLD name use for SLD holders in the event the company goes out of business or ceases to operate as an accredited registrar.

64 A copy of the RRA is available at www.verisign-grs.com/registrar/dotcom/forms/rras.pdf.

65 The minimum payment security must be equal to at least the number of anticipated monthly registrations, multiplied by the number of years (minimum one year and maximum of ten years) and by the $6 registration fee. The amount of the payment security will depend upon the registrar's business plan, and a registrar may be required to increase the payment security if registration levels are consistently above the level covered by the current payment security. One further requirement linked with monetary issues is the so-called Security Instrument. This is a financial guarantee that would be employed by the registry if faced with a third-party claim in which the registrar did not indemnify VeriSign, as required by the RRA. The Surety Instrument must be for in the amount of $100,000.

66 Up-to-date information concerning the domain name market is available from Zooknic Internet Intelligence at www.zooknic.com.

67 A "defensive registration" is a registration made by a user, often a trademark owner, who has no intention of using the registered name – perhaps because the user already has its own primary dotcom domain name – but nonetheless registers it to prevent others from taking it.

68 See "Analysts worried about VeriSign's domain biz" CNET (June 3, 2002) at http://news.cnet.com/investor/news/newsitem/0-9900-1028-19995061-0.html?tag=ats, referring to a monthly report of SnapNames.com, in which Verisign's database declined by more than 900,000 names in April 2002 alone.

69 All numbers are drawn from Annex B, in which 61 ICANN-accredited registrars are compared regarding their end price for the registration of a *.com* domain name for one year; see also *Online Domain Generators: Market Research Report* at http://domaingenerator.s5.com/report.htm. The sum of $35 was the price originally set that VeriSign could charge under its Cooperative Agreement with the National Science Foundation and later with the United States Commerce Department.

70 There are a number of companies that offer "domain name appraisal" services. See Lee Hodgson, *Domain Appraising – The Domain Name Fair Value Game*, at http://ecommercebase.com/printTemplate.php?aid=266.

71 ICANN is actually a registered non-profit corporation established in the United States under California law. The idea was that a private sector body would be more like the Internet itself: more nimble and efficient, able to react promptly to a rapidly changing environment, and, at the same time, open to meaningful participation by stakeholders developing policies

through bottom-up consensus. See *President's Report: ICANN – The Case for Reform*, 24 February 2002, at www.icann.org/general/lynn-reform-proposal-24feb02.htm..

72 Information about the GAC is available at www.icann.org/committees/gac/.

73 See ICANN Fact Sheet at www.icann.org/general/fact-sheet.htm.

74 ICANN's 19-member volunteer Board of Directors, has been constituted from a set of specialized technical and policy advisory groups, and through open, worldwide online elections.

75 See details about the Sponsorship Agreements for Japan and Australia at www.icann.org/cctlds/.

76 See the web page for the World Wide Alliance of Top Level Domains, ccTLD Constituency of the DNSO, at www.wwtld.org/. The CommuniquÈs and Position Statements listed at www.wwtld.org/communique/ provide a review of the interactions between ccTLDs and ICANN.

77 See web pages on the ICANN site for the Committee on ICANN Evolution and Reform, at www.icann.org/committees/evol-reform/links.htm.

78 See *World eBusiness Law Report* (2002).

79 See *Miami Herald*, International Edition, 24 June 2002, p. 3B.

80 The Committee on ICANN's Evolution and Reform has published the "Recommendations for the Evolution and Reform of ICANN" available at www.icann.org/committees/evol-reform/recommendations-31may02.htm.

81 See ICANN's website pages devoted to the ERC at www.icann.org/committees/evol-reform/links.htm.

82 See WIPO website at http://ecommerce.wipo.int.

83 See, for example, Afilias Sunrise Period and Challenge Procedure at www.afilias.info/register/dispute_resolution/sunrise_challenge_overview.

84 The First WIPO Report, at paragraph 47, noted that many commentators in the WIPO Domain Name Process suggested that ""the starting point should be the avoidance, rather than the resolution, of conflicts".

85 See a copy of Decision D1999-0001 at http://arbiter.wipo.int/domains/cases/1999/d0000-0199.html.

86 See ICANN's website for information about the UDRP, at www.icann.org/udrp/.

87 See the website of the Asian Domain Name Dispute Resolution Centre at www.adndrc.org/adndrc/index.html. ADNDRC is a joint venture between the Hong Kong International Arbitration Centre and the China International Economic and Trade Arbitration Commission.

88 See the website of CPR Institute for Dispute Resolution at www.cpradr.org/ICANN_Menu.htm.

89 See the website of the the National Arbitration Forun at www.arbforum.com/domains/.

90 See the website of the World Intellectual Property Organization at http://arbiter.wipo.int/domains/.

91 See UDRP, para. 4.a, at www.icann.org/udrp/udrp-policy-24oct99.htm.

92 See ICANN Policy, section 4(a)(i)(ii)and(iii), at www.icann.org/dndr/udrp/policy.htm.

93 Ibid., section 4(b).

94 Ibid., section 4(c) (i)-(iii).

95 Ibid., section 5(iv).

96 Ibid., section 6(b).

97 Ibid., section 5(c). If the complainant requests a single-member panel and the respondent does not object, the provider alone assigns a single panellist from its roster to the case. Ibid., section 6(e). If a three-member panel is selected, one panellist is selected from the list of candidates provided by the complainant and the respondent. The third panellist is appointed by the provider from a list of five candidates submitted by the provider to the parties, the selection from among

the five being "made in a manner that reasonably balances the preferences of both Parties". Ibid., section 4(b) (iv). The typical approach is to allow each party to strike out up to two names from the list of five.

98 Ibid., section 4(a).

99 Ibid., section 5(a).

100 Ibid., section 5(e).

101 Id., para. 4.i.

102 The procedure also has a high rate of settlement; agreements between the parties have been reached in approximately 20 per cent of the filed cases.

103 See Geist (2001); Mueller (2001b); Stewart (2001).

104 WIPO and NAF attract the largest number of complaints and e-Resolutions attracted the lowest share of cases. Despite the highest fees, as of July 2001, WIPO had 58 per cent of the UDRP caseload as compared with 34 per cent for NAF and only 7 per cent for eResolution.

105 Kur (2001).

106 Id., at p 72

107 Donahey (2001).

108 Ibid.

109 See UDRP Rules, section 5(d).

110 See UDRP, para. 4.a.

111 See WIPO Final Report, Executive Summary.

References and bibliography

Donahey M (2001), *The UDRP – Fundamentally Fair, But Far From Perfect* (online at www.dnso.org/clubpublic/nc-udrp/Arc00/doc00002.doc).

Froomkin, M. (2000) *Wrong Turn in Cyberspace*, at http://personal.law.miami.edu/~froomkin/articles/icann-main.htm.

Geist M (2001), *Fair.com? An Examination of the Allegations of Systemic Unfairness in the ICANN UDRP*, online at http://aix1.uottawa.ca/~geist/geistudrp.pdf

Howe D (1993-2001) *The Free On-line Dictionary of Computing.*

Joint ITU/WIPO Symposium on Multilingual Domain Names, at http://www.itu.int/itunews/issue/2002/01/joint.html.

Kur A (2001), *A Study by the Max-Planck Institute for Foreign and International Patent, Copyright and Competition Law*, in cooperation with the Institute for Intellectual Property Law and Market Law, University of Stockholm, and the Institute for Information Law, Technical University of Karlsruhe.

Mueller M (2000a) 'Technology and Institutional Innovation: Internet Domain Names', *International Journal of Communications Law and Policy*, 5, Summer, at http://www.ijclp.org/5_2000/ijclp_webdoc_1_5_2000.html.

Mueller M (2000b), *Rough Justice: An Analysis of ICANN's Uniform Dispute Resolution Policy*, http://dcc.syr.edu/roughjustice.htm

Rader RW (2001)., *The History of the DNS*, at www.whmag.com/content/0601/dns.

Regulation (EC) No. 733/2002 of the European Parliament and of the Council on the Implementation of the .eu Top Level Domain, 22 April 2002. *Official Journal of the European Communities* L113/1 (30 April 2002).

Stewart IL (2001). 'The Best Laid Plans: How Unrestrained Arbitration Decisions Have Corrupted the UDRP', *Federal Communications Law Journal*, vol. 53, April , pp. 511-532.

"WIPO (2001) ccTLD Best Practices the Prevention and Resolution of Intellectual Property Disputes", at http://ecommerce.wipo.int/domains/cctlds/bestpractices/bestpractices.html.

WIPO (2001a) Briefing Paper: Internationalized Domain Names – Intellectual Property Considerations, at http://ecommerce.wipo.int/domains/international/pdf/paper.pdf; see also http://www.walid.com/en/docs/index.shtml.

WIPO (1999). *The Management of Internet Names and Addresses, Final Report of the WIPO Internet Domain Name Process,* at http://wipo2.wipo.int/process1/report/finalreport.html#II

WIPO (2001b), *The Recognition of Rights and the Use of Names in the Internet Domain Name System, Report of the Second WIPO Internet Domain Name Process, at* http://wipo2.wipo.int/process2/report/pdf/report.pdf

ANNEX I

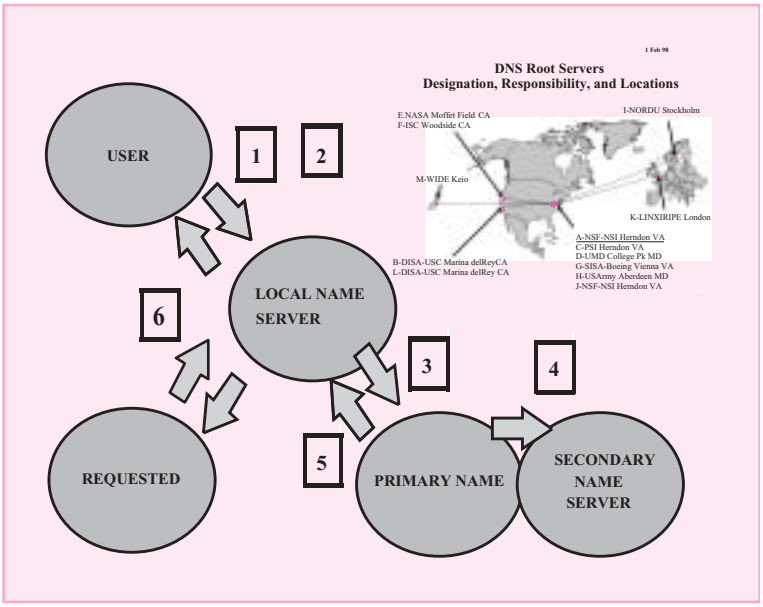
Overview of the DNS

This annex describes the basic method by which a domain name functions to direct users to a specific web site. For purposes of illustration, reference is made to the common situation, in which a user seeks to access a site on the World Wide Web (www) using the Internet browser on the user's computer.

1. After the domain name is typed into the respective input field, the first step is that the browser will send a request to a local nameserver to "resolve" the IP address of the specified web site. The local nameserver is therefore also called a DNS resolver. They are located strategically with Internet Service Providers (ISPs) or in other institutional networks.
2. As a second step, the DNS resolver will issue a request to a "root" domain nameserver, which will return the IP address of the primary and secondary nameservers responsible for the TLD (e.g., .com) of the requested web-site.
3. The DNS resolver will then contact the primary server of that TLD, where the IP address information is held in a database, and the primary server would satisfy the request from the DNS resolver.

Chart 6

DNS Resolving



4. In case the primary nameserver would not be available, the DNS resolver would contact the secondary nameserver which would also hold the corresponding information.
5. In either case, the DNS resolver would return to the user's browser with the IP address for the requested domain.
6. Using that IP address, the browser would then contact directly the requested web site and, finally, the web site information would be sent to the DNS resolver and could be accessed by the user.

This process can often be performed while skipping some of the steps listed above. DNS resolvers routinely download and copy (or cache) the information contained in the root servers. They also store for a period the IP addresses that have been resolved recently. Using this cache, the DNS resolver is often able to satisfy the request without contacting the root server. In fact, the cache function is essential on the Internet for reasons of performance. The root servers could not properly handle billions of requests a day and, if they were required to do so, it

ANNEX II

Registrar Prices for Domain Name Registration
Status as of 15/06/02

Source concerning information Registrar/Country/URL:

http://www.icann.org/registrars/accredited-list.html

LEGEND:

*: two year minimum registration

**: two domain registrations minimum

35(35): 35 = prices 15/06/02; (35) = price September/October 2001

URL: URL could not be accessed on the date of last visit (15/06/02)

not yet: registrar does not yet offer registration services (15/06/02)

no rg-s: registrar does not offer "pure" registration services, mainly because company only offers "package" services which include domain name registration services

wsale: wholesale only

lang.: no information because web side is run in language other than English/French/Spanish

hosting: registrar only offers hosting services, no "pure" registration services

.info/.pro:registrar only offers registration services for these TLDs, not for .com domain

members:members only; need to lock in

all prices are the prices for one year and also of the first year of registration

all USD prices are approx. (< 10 USD the exact prices are listed)

all web-sides last visited on 15/06/02

no special offers are listed

Registrar Prices for Domain Name Registration (.com only)

Registrar	Country	appr. US$ domain/ year[1]	URL
! AholaNIC LLC	United States	17*	www.alohanic.com
#1 Domain Names International, Inc. dba 1 dni.com	United States	URL(35)	www.1dni.com
@Com Technology LLC	United States	not yet	www.AtComTechnology.com
007Names, Inc.	United States	15	www.007names.com
1 eNameCo	United States	17(17)	www.eNameCo.com
123 Easy Domain Names, Inc. dba Signature Domains	United States	35(15)	www.signaturedomains.com
123 Registration, Inc. d/b/a 123registration.com	United States	35(35)	www.123registration.com
1stDomain.Net, a division of G+D International LLC	United States	25*(25)	www.1stdomain.net
2Day Internet Limited dba 2day.com	New Zealand	not yet	registrar.2day.com
A Technology Company, Inc. dba namesystem.com	Canada	12(15)	www.namesystem.com
AAQ.COM, Inc.	United States	.info	www.aaaq.com
Abacus America, Inc. d/b/a Name4ever	United States	20(20)	www.names4ever.com
ABR Products Inc. dba Nitin Networks	United States	35	names.nitin.com
Abu-Ghazaleh Intellectual Property (AGIP)	Jordan	no rg-s	wwww.agip.com
Active ISP ASA	Norway	35	www.activeisp.com
Address Creation	United States	15(15)	www.addresscreation.com
Adgrafix Corporation	United States	15	www.adgrafix.com
Alice's Registry, Inc.	United States	35(35)	www.ar.com
All West Communications, Inc. DBA AWRegistry	United States	35(35)	www.awregistry.com
Alldomains.com	United States	35(35)	www.alldomains.com
America Online, Inc.	United States	no rg-s	www.aol.com
Amercian Domain Name Registry	United States	-	
Antelecom, Inc.	United States	20	www.antelecom.net
Arsys Internet, S.L. dba soloregistros.com	Spain	30	www.soloregistros.com
Ascio Technologies, Inc.	Denmark	no rg-s	www.ascio.com
BB Online UK Limited	United Kingdom	18(18)	www.nominate.net
Blueberry Hill Communications, Inc. d/b/a 4Domains.com	United States	25	www.4domains.com
BrookMyName SAS (formerly Worldnet)	France	30	www.bookmyname.com
British Telecommunications (BT plc)	England	no rg-s	www.bt.com
BulkRegister.com	United States	wsale.	www.bulkregister.com
C I Host, Inc.	United States	URL	www.cihost.com
Capital Networks Pty Ltd.	Australia	20(20)	www.totalnic.net
CASDNS, Inc.	United States	25	www.CASDNS.net
Catalog.com	United States	35(35)	www.catalog.com
Centergate Research Group, LLC	United States	no rg-s	www.centergate.com
Central Registrar dba Domainmonger.com	United States	17	www.domainmonger.com
Computer Data Networks dba Shop4domain.com and Netonedomains.com	Kuwait	22(20)	www.shop4domain.com
CORE Internet Council of Registrars	Switzerland	no rg-s	www.corenic.org
Corporate Domains, Inc.	United States	.info	www.corporatedomains.com
Cronon AG Berlin, Niederlassung Regensburg	Germany	wsale.	www.cronon.org
CSL Computer Service Langenbach GmbH d/b/a joker.com	Germany	12(24)	www.joker.com
Cydian Technologies	United States	15	www.Cydian.com
Deutsche Telekom AG	Germany	no rg-s	www.dtag.de/katalog-online/domain

[1] prices listed in brackets indicate the price Sep/Oct 01.

Registrar	Country	appr. US$ domain/ year[1]	URL
DevelopersNetwork.com., Inc. dba DomainInvestigator.com	Canada	15	www.DomainInvestigator.com
Direct Information Pvt Ltd d/b/a Directi.com	India	8.50	www.directidomains.com
Dodora Unified Communications, Inc.	United States	no rg-s	www.dodora.net
Domain Bank, Inc.	United States	35(35)	www.domainbank.com
Domain Intellect Pty Ltd.	Australia	no rg-s	www.domainintellect.com
Domain Registration Service, Inc. dba dotEarth.com	United States	12*(10)	www.dotEarth.com
Domain The Net Technologies Ltd.	Israel	lang.	www.DomainTheNet.com
Domaininfo AB, aka domaininfo.com	Sweden	25*(25)	www.domaininfo.com
Domain-It!, Inc. dba Domain-It!	United States	35*	www.domainit.com
DomainName, Inc.	United States	30	DomainName.com
DomainPeople, Inc.	Canada	35(35)	www.domainpeople.com
DomainPro, Inc.	United States	.pro	www.domainpro.com
DomainProcessor.com, a division of Funpeas Media Ventures, LLC	United States	20	www.DomainProcessor.com
DomainRegistry.com.Inc.	United States	30(30)	www.DomainRegistry.com
DomainSite.com, Inc.	United States	13(13)	www.domainsite.com
DomainZoo.com, Inc.	United States	20(20)	www.domainzoo.com
DomReg Ltd. dba ATLNTD.com	Russia	lang.	www.atlntd.com
Dotster, Inc.	United States	15(15)	www.dotster.com
Eastern Communications Company Limited	China	URL	www.reg.eastcom.com
Easyspace Limited	United Kingdom	25(17)	www.easyspace.com
Echo, Inc.	Korea	lang.	www.domainrg.com
eMarkmonitor Inc. dba Markmonitor	United States	wsale	www.markmonitor.com
eNom, Inc.	United States	30(30)	www.enom.com
EPAG Enter-Price Multimedia AG	Germany	18*(25)	www.epag.de
Equitron Inc. d/b/a DomainNameRegistration.com	United States	35*	www.domainnameregistration.com
ExtremeNames.com	United States	URL	www.extremenames.com
Gabia, Inc.	Korea	lang.	www.name7.com
Gal Communication (CommuniGal) Ltd.	Israel	13	www.galcomm.com
Gandi SARL	France	URL(12)	www.gandi.net
GKG.NET, INC. (Formerly GK Group L.L.C.)	United States	9.99(10)	www.gkg.net
Global Media Online Inc. d/b/a Discount-Domain.com and Onamae.com	Japan	lang.(35)	www.interg.or.jp
GlobalHosting, Inc. d/b/a SiteRegister	United States	not yet	www.siteregister.com
Globedom Datenkommunikations GmbH, d/b/a Globedom	Austria	wsale.	www.globedom.com
Go Daddy Software, Inc.	United States	8.95(9)	www.godaddy.com
Future Media Network	Japan	lang.	www.fm-net.ne.jp
HANGANG Systems, Inc. dba Doregi.com	Korea	14	www.doregi.com
HiChina Web Solutions Limited	China	URL	www.net.cn
Hosting-Network, Inc.	United States	not yet	www.hosting.network.com
I.D.R Internet Domain Registry LTD.	Israel	12	www.idregister.org
iHoldings.com, Inc. d/b/a DotRegistrar.com	United States	15**(14)	www.DotRegistrar.com
IKANO Communications, Inc.	United States	no rg-s	www.ikano.com
INAMES Corp.	Korea	URL	www.i-names.co.kr
InnerWise, Inc. d/b/a ItsYourDomain.com	United States	15(15)	www.itsyourdomain.com
InterAccess Co.	United States	-	*now* www.hosting.com
Interactive Telecom Network, Inc.	United States	not yet	ww.domaindomain.com
Intercosmos Media Group, Inc.	United States	15(15)	www.directnic.com

Registrar	Country	appr. US$ domain/ year[1]	URL
Interdomain S.A.	Spain	30	www.interdomain.org
Internet Domain Registrars d/b/a Registrars.com	Canada	-(35)	*now* www.verisign.com
Internetplaza City Co., Ltd	Korea	lang.	www.inplaza.net
Internetters Limited	United Kingdom	34*	www.internetters.com
Key-Systems GmbH d/b/a domaindiscount24.com	Germany	12(12)	www.domaindiscount24.com
Korea Information Certificate Authority, Inc. dba DomainCA.com	Korea	no rg-s	www.domainca.com
Marksonline, Inc.	United States	no rg-s	www.marksonline.com
Melbourne IT Ltd trading as Internet Names Worldwide	Australia	35(35)	www.melbourneit.com
Mobilcom City Line d/b/a topnet AG	Germany	no rg-s	www.topnet.de
Mr. DomReg.com Inc.	Canada	25(25)	www.mrdomreg.com
Namebay	Monaco	12(12)	www.namebay.com
NameEngine, Inc.	United States	no rg-s	www.nameengine.com
NameScout Corp.	Barbados	25*	www.namescout.com
Namesdirect.com, Inc.	United States	30(30)	www.namesdirect.com
Namesecure.com, Inc.	United States	15(35)	www.namesecure.com
Namezero.com, Inc.	United States	20	www.namezero.com
Net Searchers International Limited	United Kingdom	no rg-s	www.netsearchers.com
NetBenefit plc aka NetNames	United Kingdom	49*(35)	www.netnames.co.uk
Netblue Communications Co., Ltd.	Korea	lang.	www.domainshock.com
Neteka Inc. dba namesbeyond.com	Canada	18	www.namesbeyond.com
Netpia.com, Inc.	Korea	lang.	www.ibi.net
Network Solutions, Inc. Registrar	United States	35(35)	www.networksolutions.com
New Dream Network, LLC dba Domainitron.com	United States	25	www.domainitron.com
Nominalia Internet S.L.	Spain	34(37)	www.nominalia.com
Nordnet	France	35	www.nordnet.net
Omnis Network, LLC	United States	15(20)	www.omnis.com
OnlineNIC, Inc.	United States	wsale.	www.onlinenic.com
OVH	France	8.90	www.ovh.com
pair Networks, Inc. d/b/a pairNIC	United States	19	www.pair.com
Parava Networks, Inc. d/b/a RegistrateYa.com and nAAme.com	United States	35(35)	www.parava.net
pAsia, Inc.	Taiwan	lang.	www.pasia.com
Philippines Registry.Com, Inc.	Philippines	35*	www.Philippineregistry.com
Polar Software Limited d/b/a signdomains.com	India	9.95	www.signdomains.com
Primus Telecommunications Pty Ltd trading as PlanetDomain and PrimusDomain	Australia	15(35)	www.planetdomain.com
PSI Japan	Japan	15(67)	www.psi-domains.com
PSI-USA, Inc.	United States	no rg-s	www.psi-usa.com
R & K Global Business Services d/b/a 000Domains.com	United States	14	www.000domains.com
Register.com, Inc.	United States	35(35)	www.register.com
REGISTER.IT SPA	Italy	35	we.register.it
RegistrarsAsia Pty Ltd	Australia	39	www.registrarsasia.com
Registration Technologies, Inc.	United States	15	www.RegistrationTek.com
Research Institute for Computer Science, Inc.	Japan	lang.	www.rics.co.jp
SafeNames Ltd.	United Kingdom	35	www.safenames.net
Schlund+Partner AG	Germany	hosting	www.schlund.de
Secura GmbH	Germany	30(60)	www.domainregistry.de
Shaver Communications, Inc.	United States	no rg-s	www.web2010.com
SiteName Ltd.	Israel	13	www.sitename.com

Registrar	Country	appr. US$ domain/ year[1]	URL
Stargate Communications, Inc.	United States	14(16)	www.stargateinc.com
Talk.com, Inc.	United States	no rg-s	www.talk.com
The NameIT Corporation d/b/a AITdomains.com	United States	19(19)	www.aitdomains.com
The Registry at Info Avenue d/b/a IA Registry	United States	13(15)	www.IARegistry.com
TierraNet Inc. DBA DomainDiscover	United States	25*(25)	www.domaindiscover.com
TLDs Inc. d/b/a SRSplus	United States	wsale.	www.srsplus.com
Today and Tomorrow Co., Ltd.	Korea	URL	www.tt.co.kr
Total Web Solutions Limited Trading as TotalRegistrations	England	12(12)	www.totalregistrations.com
Transpac	France	no rg-s	www.oleane.net
Triara.com S.A. de C.V.	Mexico	no rg-s	www.triara.com
Tucows Inc.	Canada	hosting	www.tucows.com
Tuonome.it.srl	Italy	15	www.tuonome.it
Universal Registration Services, Inc. dba NewDentity.com	United States	members	www.newdentity.com
USA Webhost	United States	15	www.usawebhost.com
Venture.com Inc. dba DomainCity.com	Korea	not yet	www.domaincity.com
Virtual Internet Plc.	United Kingdom	15(25)	www.vi.net
Wild West Domains, Inc.	United States	not yet	www.wildwestdomains.com
Wooho T & C Ltd., d/b/a rgnames.com	Korea	lang.	www.rgnames.com
Xin Net Corp., Ltd.	China	lang,	www.chinadns.com
Yesnic Co., Ltd.	Korea	18(18)	www.yesnic.com

Chapter 3

GENDER, E-COMMERCE AND DEVELOPMENT

A. The relevance of gender

The role of new information and communication technologies (ICT) and e-commerce in driving the global economy is widely recognized: ICT and the Internet reach many people, have a wide geographical coverage and are efficient in terms of time and cost. They facilitate access to markets, commercial information, new processing technologies and knowledge. But do women have equal access to these new technologies and the Internet? Does e-commerce enhance business opportunities for women, especially in the developing countries? What are some of the promising new employment opportunities for women in the ICT sector, or does it replicate patterns of inequality elsewhere in the job market? And what are the main barriers women have to overcome to participate actively in the digital economy?

These questions are increasingly being addressed by women's advocacy groups and non-governmental organizations (NGOs) working at the grass-roots level in both developed and developing countries, as well as by the international community in general. Among the international organizations, the International Telecommunication Union (ITU) has taken a leading role in bringing the gender dimension into the debate on the digital divide and ICT policy making.[1] Through its Working Group on Gender Issues, and in cooperation with other UN bodies, it is actively working towards integrating the gender perspectives into the World Summit on the Information Society (WSIS), to be held in Geneva (2003) and in Tunis (2005).

Much of the work done at the international level is focusing on how ICT can become a tool for the advancement and empowerment of women, including in areas such as education and training, health, participation in public life and the productive sphere. This chapter will identify the economic opportunities created for women in the developing countries through the use of ICT and e-commerce, as well as the barriers they face when entering the digital economy. Central to this debate is the recognition that the digital economy poses opportunities as well as challenges for women that are different from those for men, based on their different roles and positions in the family and society. For example, ICT and e-commerce work well for women entrepreneurs (who in many developing countries account for the majority of owners of small, medium and micro enterprises), allowing them to save time and costs while trying to reach out to new clients in domestic and foreign markets. As this chapter will show, new job opportunities created by ICT through outsourcing in the services sector are also benefiting women, who account for significant shares of the workforce in the information technology (IT)-enabled industry in developing countries.

On the other hand, women often face greater barriers than men in receiving education and training that can equip them with computer literacy, foreign language and business skills. In the developing part of the world, parents tend to invest more in the education of the male rather than the female child. Women also often find it more difficult to engage in new forms of self-employment created by ICT, such as telekiosks or cybercafes if they do not have the same access as men to family property or institutional finance. Women make up the majority of the rural poor in the developing countries, where access to ICT infrastructure is less available than in urban areas. Given their increased responsibilities at home, they have less time to access the technologies outside their homes or to enhance their IT, language or other skills required by the information economy. Few women work in the higher-skilled areas of the IT-enabled industry and even those in lower-skilled areas are often hard to retain once they become of childbearing age and social and cultural norms prompt them to leave their jobs and attend to the young and elderly.

This chapter will address these issues in more depth. Section B will critically examine the extent to which e-commerce and ICT provide women with new economic opportunities as small business owners or in ICT-related employment, such as call centres, teleworking or back-office remote/offline work. Section C will focus on one of the key factors affecting women

in the digital economy: skills and training. It will explore what kinds of skills are required by the digital economy and which skills women need to acquire in order to fully participate in the economic and employment opportunities offered by ICT. Section D will address other constraints that women may face, such as access to technologies, availability of finance, foreign languages and cultural obstacles. Section E will provide some conclusions and recommendations for including gender issues in ICT policy-making.

Unfortunately, there is very little research and documentation on the impact of ICT and e-commerce on women in the developing countries. Whatever data and statistics exist, they are often not disaggregated by gender. Nevertheless, this chapter makes an effort to draw from the existing literature and provide as many examples as possible that will give insights into the opportunities and challenges faced by women in the digital economy. Most of the examples cited in this chapter are taken from the Asian region. This is partly explained by the research done so far on the subject, which is heavily focused on Asia, and partly by the fact that certain IT-enabled services have grown exponentially in the Asian region, many of which employ a large number of female workers.

B. Digital opportunities for women

Information and communication technologies provide a number of new job opportunities for women, or businesses opportunities of which women could avail themselves. This section will explore some of these opportunities by looking first at the possibilities which e-commerce could offer to small women business owners, and second at how ICT could create new employment opportunities for women through teleworking and IT-enabled services, both of which employ a significant proportion of female workers.

1. Women as small business owners

E-commerce offers some attractive possibilities for small business owners in the developing countries' business-to-consumer (B2C) or retail sector, many of the enterprises in which are owned by women. Numerous examples have been cited as digital opportunities for women entrepreneurs along the models of telecentres in Senegal and Morocco, phone shops in Ghana, Internet cafes or kiosks in Thailand and Malaysia, and the Grameen Phone in Bangladesh. The latter has been cited as a successful example of women entrepreneurship, where financing from the Grameen Bank allows women to buy cellphones and provide mobile pay phone services in their shops or local markets at a mutually agreed mark-up with Grameen Telecom.[2] These IT-enabled businesses have the advantages of low capital and skills requirements (see section D.3).

Aside from telephony services, women's handicrafts could also be developed using B2C, although difficulties in terms of marketing and management skills, and supply and delivery logistics need to be addressed. A number of success stories concerning B2C endeavours are to be found in South Asia, Latin America, Africa and the Middle East. In India, an e-marketplace called IndiaShop eliminated the middlemen in the selling of saris. One woman allegedly sold a silk sari she tailored for $ 1,100, a price that is way above an average Indian's annual income.[3] In Peru, a nationwide network of housewives called Tortasperu, which is involved in baking confectioneries sold over the Internet, showcased lucrative work for women at home taking care of children yet providing the country with much needed foreign exchange.[4] Ethiopia has opened a gift shop that sells, using the Internet, traditional Ethiopian costumes, food items and spices produced by women.[5] Finally, handmade products made by women artisans in Egypt, Jordan, Lebanon, Morocco and Tunisia are sold through a virtual shop called Elsouk.[6]

These digital opportunities are particularly significant for women in Asia, considering that women head 35 per cent of small and medium-sized enterprises (SMEs) (Brisco, 2002). It has been reported that in China women initiate about 25 percent of new business start-ups and in Japan four out of five small business owners are women. The main advantage of the Web for small home-based businesses is the information and networking opportunities that would make these endeavours profitable rather than marginal. As Brisco (2002) observes, "The ability of women to earn income at home while raising a family – with the technology to communicate inexpensively with customers around the world, and handle accounting and order processing online – is adding to the attraction of the Internet for women".

Despite these success stories in e-retailing, it will be necessary to evaluate carefully in which segments of e-commerce women's opportunities lie. Women's prospects depend primarily on the trading strength of the countries concerned. In spite of the publicity given to

e-retailing, its scope and spread in the poorer parts of the world have remained small. As discussed earlier in this report (see chapter 1), the volume and value of B2B (business-to-business) trade and commerce far exceed the volume and value of B2C worldwide.

It is also important to remember that women usually sell commodities such as garments or handicraft products, the delivery of which cannot take place online. In such cases, the use of the Internet is confined to advertising, ordering and possibly collecting payments; hence women have to develop strategies to build consumers' confidence in the quality of their goods. The limited evidence available so far shows that some women have also found a market niche in the buying and selling of information rather than tangible goods. In addition to the example of the Grameen Phone cited earlier, women in India and Malaysia use online delivery of their services as freelance journalists to newspapers and other publishers (Mitter, 2001).

2. ICT-enabled services

More promising opportunities for women lie in the B2B segment of e-commerce. The advances in computer and communication technologies have made it possible to transfer digitized data online when there is an adequate supply of infrastructure and bandwidth. Through the use of networking technologies, large amounts of information can be transported at very low cost from the companies' core offices to satellite or subcontracting units. This possibility has led companies to externalize and decentralize non-core sections of business operations to distant and often cheaper locations. The targeted sites are usually the ones that offer the promises of a cheap, skilled computer- and English-literate workforce.

This phenomenon explains why companies in OECD countries outsource service operations to countries such as India or Malaysia (Ng, 2001; Gothoskar, 2000). The International Data Corporation (IDC) estimated that spending on IT outsourcing had reached $ 56 billion in 2000 and would exceed $ 100 billion by 2005.[7] There has been some evidence of companies in developing countries outsourcing operations within the country as well as to other developing countries where wages are even cheaper. Some of the Indian companies, for example, look towards Nepal for the requisite workforce at times of peak demand, particularly from abroad. In Malaysia, subcontracting or outsourcing takes place primarily within national boundaries.

There is a relationship between the availability of a skilled, English-speaking female workforce and where outsourcing normally happens. From this, one can also propose the hypothesis of the existence of a relationship between the availability of a skilled female workforce and foreign direct investment in information processing work in the developing countries. The software services sector in countries such as India and the Philippines could support this hypothesis. The salary differences between the United States and India, or the Philippines, for similar skills are considerable.[8] Yet these differences cannot fully explain the absence of relocation of software services to countries such as Bangladesh or Uganda where salaries are even lower. In addition to the requisite skills, the success of replicating the experience of India or Philippines depends on creating the right policy framework (ESCAP, 2001).

Software and IT-enabled services could be export-oriented as in the case of India and the Philippines; they could also be domestically oriented as is in the case of Malaysia, China and Brazil. The global expansion of those services has broadened the job prospects of women in new areas. The limited statistics that we have so far indicate that women in some of the Asian and Latin American countries occupy more than 20 per cent of professional jobs in software services. This figure is higher than in any other field of engineering (Arun and Arun, 2002; Ng, 2001, Mitter, 2000, Gaio, 1995).

Recent research and projections have indicated that the prospects for women lie more in the IT-enabled services than in software services. The worldwide demand for IT-enabled services or business process outsourcing (BPO) is expected to grow at a dramatic rate in the coming decade, reaching $ 611.4 billion by the year 2005.[9] India hopes to capture a large share of this newly created market. With revenues of $ 870 million from IT-enabled services in 2000-2001 and an annual growth rate of 66 per cent, it currently has the potential to address 38 per cent of that market.[10] Again, there are no gender-disaggregated statistics on employment arising out of these outsourced IT-enabled services from the developing world. According to the Deputy Director of the Confederation of Indian Industries (CII), in India at least 40 per cent of these newly created jobs are given to, and taken by, women.[11]

Remote services or IT-enabled services largely consist in the relocation of back-office operations.[12] One has to be cautious about the future, however, given that there are various types of back-office services requir-

ing different levels of skills from women and men. The increasing trend towards outsourcing by major American and European corporations entails jobs ranging from those at the lower end of the skills level where women are mostly employed, such as data entry and data capture, to those at the higher end such as software programming, geographical information systems (GIS) and systems analysis. There is a discernible trend towards hiring women for operations that require less complex skills (box 4).

Box 4

Gender structure in back-office services (India)

Routine: requiring basic skills – **women predominate**

- Data capture and processing
- Customer call centres – for routine queries, order taking and referrals
- Hotel or rental car reservations
- Virtual service centres (e.g. home delivery pizza companies)

Discretionary: requiring technical training and problem solving – **women predominate**

- Data verification and repair (e.g. optically scanned documents)
- Claims processing
- Mailing list management
- Remote secretarial services
- Customer call centres – account queries and after-sales support

Specialized: requiring specific expertise and managerial authority – **men predominate**

- Accounting, bookkeeping, payroll processing
- Electronic publishing
- Website design and management
- Customer call centres – problem/dispute resolution
- Technical transcription (e.g. medical, legal)
- Medical records management
- Technical online support
- Indexing and abstracting services
- Research and technical writing

Source: Adapted by Swasti Mitter from I.T. Information Technology, vol. 11, no 2, December 2001, EFY Enterprises Pvt Ltd, New Delhi, p. 29.

Box 4, as well as other research carried out in India, indicates that women are concentrated in those areas that need routine or discretionary skills (Mitter and Sen, 2000), whereas women are less visible in specialized areas of back-office operations. It is worth monitoring this gender differential as the next round of technological changes, for example in the areas of voice recognition and image processing by computers, may make some of these skills less saleable in the international market. For the benefit of the women and for augmenting or retaining the competitive advantage of countries, policy makers need to ensure that women receive the same opportunities and encouragement to acquire skills that could equip them for more complex and specialized jobs.

The Outsourcing Institute, which developed the Outsourcing ICT Index for the United States based on a survey of buyers and sellers, has observed a changing pattern of areas being outsourced to Internet and intranet services such as network management, data centre management, and end-user support and web hosting, owing to the increase in e-commerce activi-

ties.[13] Thus, if women are to increase their share in the above services, they have to be increasingly exposed to and trained in Internet skills, in contrast to the early phase of the ICT-related task of assembling electronics, as found in Asia and Latin America.

Teleworking: home-based or institution-based?

The outsourcing or externalizing of business processes to distant units within or across the national boundary could range from satellite offices, such as call centres, to homes of employees or vendors or to offices of customers or clients. With the computer and a modem, a woman can be connected to the head office and can perform her professional work from a distant site such as a neighbourhood centre or her own home. This is possible as long as her work involves storing, processing, retrieving and delivering digitized information. This new mode of working is known as teleworking and has received much attention, particularly in the context of women's career prospects.[14] The use of ICT in itself can, in theory, offer a solution that is attractive both to women and to the corporate sector interested in retaining skilled women employees (box 5).

Box 5

Changing modes of working could be of benefit to the corporate sector

I look forward to the potential of teleworking for retaining our highly trained, highly skilled women employees in business during their childbearing and childbearing stage. In my organisation, we value women's skills and contribution and regret if they have to leave their profession because of the inflexibility in demands made on their time. Perhaps teleworking could find the solution whereby women can keep in touch with the changing technology and perform at least some of the functions from home.

Source: Speek delivered by F.C. Kohli, Vice President of the Tata Consultancy Services, Mumbai, India, at the Final Workshop on Teleworking and Teletrade in India; organized by UNU-INTECH, Maastricht, and the National Centre for Software Technology, Mumbai, December 200.

"Tele" implies distance and teleworking refers to ICT-mediated distant work. The term covers both home-based work or telecommuting and institution-based work as carried out in call centres, neighbourhood centres or satellite offices.

Home-based teleworking could, in theory, enhance the participation of women in the digital economy as it allows a certain flexibility in both the timing and location of work (Mitter, 2000; Mitter and Efendioglu, 1997). Women with caring responsibilities at home welcome this flexibility, but not without reservation. Whereas some women appreciate the opportunities that teleworking brings, the majority fear that the home-based work will deprive them of the status of working women and hinder their professional or business efficiency (boxes 6 and 7).

Box 6

Some women enjoy teleworking

Exteacher Rani, who majored in the Tamil language, taught for oneyear, got married, and had a child in 1996. Because she could not obtain any domestic help, she resigned from the teaching profession to take care of her child. She is now teleworking from home, working as a Tamil translator for a multimedia company. She stresses that she is working because she loves to, rather than for the money. She is disciplined in her work and meets deadlines. Rani, who owns her own computer and printer, is happy teleworking as it saves time and energy. "Other things can be done at the same time; there is more control in my work and it is more flexible. I would not have chosen to work if I could not do it from home."

Source: Mitter (2001, p.23).

Box 7

Other women feel concerned

Due to the prevailing notions that home-based work is essentially women's work, it is likely that companies adopting telework systems would prefer women. Women, too, might be tempted to opt for telework as it enables them to manage their multiple roles effectively. While the system provides women with the possibility of managing their homes and earning a living, there is a danger that their contribution to society will remain invisible. It would not change their existing gender inequity in the home or the prevailing stereotypes that domestic work is essentially women's work.

Source: Mitter (2001, p. 23.)

Surveys of home-based teleworking carried out in Mumbai and Kuala Lumpur revealed that women had a preference for institution-based teleworking as in call centres (home-based teleworking accounted for only 1.0 and 0.35 per cent respectively). According to Ng and Khoo (2000), in Malaysia, "interviews with women's groups indicated that the (institution-based) centres, commercial and state sponsored, may be the ideal site for externalised work that will allow women (and men) to combine work with collective childcare facilities; enable women (and men) with peer groups and thus allow them to acquire and improve their tacit skills; and provide facilities for state and corporate sector supported vocational training in the field of computer literacy".

Managerial concerns may also explain the low prevalence of home-based teleworking in India and Malaysia. In a survey of management perception of teleworking in Malaysia, most respondents reported that in Malaysian culture face-to-face interaction was essential (Ng, 2001). In India too, research revealed a cautious attitude on the part of management towards home-based teleworking. In the financial sector, for example, companies find it prudent to outsource work to call centres rather than to teleworkers.

In institution-based teleworking it is easy to monitor and supervise employees in the traditional way, whereas widespread implementation of home-based teleworking will require a fundamental shift in the culture of management from direct supervision to a basis of trust. For self-employed and freelance workers, home-based teleworking will involve self-management and time management skills. It is important for women to acquire these skills in order to avoid being distracted by household chores or over working while teleworking from home.

There is no uniformity in the preference for types of telework among women in the developing countries. Age and stage of life are key factors in moulding women's choice regarding the type of telework. In Mumbai, while young women work in call centres or offices of foreign airline companies in the export processing zones, older women, with young children, opt for and receive home-based telework. Companies such as Datamatics – a rapidly growing software house – receive assignments from their international clients (box 8). In turn, they pass these to women teleworkers who work from their homes, mostly online and with their own computers. These home-based teleworkers comprise a wide range of women: housewives, doctors, lawyers and chartered accountants. All that they have in common is that they had to give up regular employment at some stage for the sake of their families. Teleworking gives them a welcome and much-needed opportunity to be in touch with the world of work. Yet it is difficult to ensure that these women can progress, with adequate access to training and childcare, to high value-added jobs (Mitter, 2000).

The experience of Malaysia is similar. "The case studies in software, as well as in printing and publishing, indicate that some women often opt for and find satisfaction in home-based work, either as freelancer or as employees. This happens in a particular phase of their life cycle, especially when there are inadequate child care facilities" (Ng and Khoo, 2000). The provision of childcare thus remains a key issue in recruiting, retaining and retraining women in the new economy, as it was in the old economy.

Box 8

Management perception of teleworking (India)

The case of Datamatics, India

Teleworking was introduced in Datamatics in 1990 with 10 teleworkers. Over the last nine years the number of teleworkers has grown to 600, mainly owing to enhanced telecom facilities and network infrastructure.

Datamatics prefers women teleworkers, though the prerequisites for applying for the job are quite strict. However, a recent advertisement placed by Datamatics received an overwhelming response and they received more than 3,000 applications. The company has devised a unique method to monitor the work carried out by the teleworkers. Each type of work is given to two or more people who are unaware of each another. The company uses a software package that compares the completed work submitted by the teleworkers with the original in order to identify if there are any mistakes. Work that is found to be 100 per cent accurate is accepted. Hundred per cent redundancies are built into the system. This method of scrutinising has been found very effective over the years.

Source: Gothoskar (2000, p. 2287).

Call centres

With regard to institution-based telework, call centres have received much attention from policy makers, donor agencies and UN bodies. In some countries, such as India, Malaysia, the Philippines and Jamaica, call centres have already proved to be a success in allowing women to participate in the digital economy.

The proportion of women employed by call centres varies from 40-70 per cent (Gothoskar, 2000; Ng, 2001). They tend to be between 20 and 25 years of age and in most cases this is their first job. In view of the projected growth of these call centres, women are likely to benefit at least numerically from this segment of e-commerce.

However, the question of sustainability needs to be addressed. There are risks of a reduction in demand for outsourcing call centre services to developing countries resulting from the improvement of voice recognition by computers.[15] In addition, changes in technology may alter the volume and the nature of call centre service provision. Instead of providing a central base for teleworking, call centre services may be provided virtually, supported by fast data communication linkages among a network of home-based teleworkers. Again, the deployment of web-based technologies may reduce the market for call centre service provision. In banking, for example, customers may conduct their own transactions. In this new environment, instead of focusing on a single task, institutions such as call centres or satellite offices will be engaged in multidimensional tasks. Women therefore need to have access to appropriate training and lifelong education in order to retain their share in this changing market.

Second, there is a prospect of "burn out" syndrome. As Ng (2001) reports, "While most call centre workers expressed job satisfaction, there were also complaints about how stressful the job was. One reason given was the highly competitive environment as incentives are given to top performers in call success rates (for example, in debt collection efforts), implying reprimands and threats of dismissals for low success rates. These employees have to deal most civilly with their recipients many of whom tend to be abusive or even hysterical. While the call centre industry has the ability to provide young women with the means of entry into the banking sector, the danger lies with it being a dead-end job, with limited career promotion prospects."

For women, call centres located on the outskirts of cities reduce the need to commute; for the management they offer the possibility of adequate supervision for ensuring quality control. Call centres, by decentralizing business and work, bring new opportunities for women, away from the city centres, to be included in the B2B segment of e-commerce.

C. Capacity building: rationale for a "gender lens"

The previous examples have demonstrated that ICT and e-commerce can create a number of promising economic opportunities for women in developing countries. They have also pointed to the various obstacles that need to be addressed in order to enhance women's participation in the information economy. One of the most important impediments to women's engaging in ICT-enabled employment possibilities relates to skills and training and will be considered in this section.

Assessing the parity between women and men in the digital economy is a complex task. As table 14 shows, in the software sector, women in Malaysia are becoming numerically almost as visible as men. However, they are generally clustered in the low-skilled end of the hierarchy with little prospect of career progression, while male workers dominate the technical and managerial occupations.

Table 14

Employment pattern of software services companies in Malaysia in 1999

Company	Co. A*		Co. B		Co. C		Co. D		Co. E		Co. F		Co. G		Co. H		Co. I		Co. J		Total	
Level in organization	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Management	17	0	12	3	10	0	8	5	1	0	7	6	3	0	3	3	1	0	1	0	63	17
Executive	37	22	45	25	12	7	32	18	0	0	6	1	12	5	18	4	23	0	45	6	230	88
Non-executive																						
Technical	7	0	9	0	0	0	58	4	0	0	6	0	0	0	0	0	0	0	0	0	80	4
Administrative	3	17	0	11	0	3	6	20	0	0	0	0	0	0	0	2	10	0	3	1	22	54
Clerical	27	109	0	0	0	0	7	12	0	1	0	3	0	0	0	0	0	0	0	0	34	141
Dispatch	0	016	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Total	91	164	66	39	23	10	111	59	1	1	19	10	15	5	21	9	34	0	49	7	430	304

Source: Ng (2001, p. 115).
M = male; F= female
Notes:
1. Management includes directors, managers, consulting managers and assistant managers.
2. Executive includes systems analysts, analyst programmers, executives, network specialists, consultants, Internet technicians, engineers, project leaders, project team leaders, finance personnel and accountants.
3. Non-executive is divided into two categories:
   i) Technical – technical writers, computer operators and conversion operators;
   ii) Administration – administrators/supervisors, support coordinators, executive assistants, secretaries and receptionists; clerical (data entry clerks and clerical staff); and dispatch.

* Company A has a total of 92 full-time employees and 163 contract staff (11 supervisors and 152 clerks).

Why is there such an uneven distribution of male and female employees across ICT-related occupations and what could be done to address this? The training policies in developing countries are in theory gender-neutral. In practice, however, they are often geared to the life cycle and aspirations of men. Women, particularly of childbearing age, find it difficult to cope with the training given either by employers or by private sector institutions. The drop-out rate for women even in the high-skilled software services sector has been alarming, even in areas where there is a need for trained personnel (Arun and Arun, 2002; Ng, 2001). A survey undertaken in the software industry in Kerala, India, documents how women themselves settle for a less demanding position in order to have more time for their family and to maintain the overall quality of life (see box 9).

1. Worldwide demand and supply of ICT-related skills

The major ICT markets are now faced with a serious shortage of IT skills. IDC (2000) estimated a total of 3.7 million IT jobs in 2000 (excluding people who used some IT expertise in their main functions). In

Box 9

Reasons for women leaving highly paid jobs: Examples from software companies in Kerala, India

Normal working hours were eight hours per day for six days a week. However, employees from all categories felt that they spent more time than this in the work place, largely because of tight project deadlines and the need to put in extra hours to meet those deadlines. Both men and women with children and with other domestic responsibilities found these market-driven work practices to be stressful, particularly as teams worked in an extremely competitive way to finish projects before deadlines.

However, the stress of work–life balances seemed to fall disproportionately on female rather than male software staff. For example, around 82 per cent of women felt that domestic responsibilities were affected by longer working hours, whereas only 69 per cent of men felt the same. Respondents reported that, when someone was sick at home, it was women who typically took time off from work. Similarly, many women discontinued software work on becoming pregnant or having children as no support was provided, and they were unable to undertake roles both in the home and the workplace without such support.

Some mothers who gave up careers in software development had continued to try to make use of their skills by taking up more flexible jobs such as teaching in computer training institutes. For those women who continued (or began) working in software after having children, familial support was the major factor enabling continuity of work.

Source: S. Arun and T.Arun (2002, p.4).

2004, the total vacancies for IT positions are predicted to reach 2 million, but the demand and supply for IT workers will be unevenly distributed. Worldwide the skills gap will reach 28 per cent of demand by 2004, with the highest shortage in Latin America (63 per cent), Europe/Middle East and Africa (40 per cent), followed by North America (26.5 per cent) and Asia/Pacific (12 per cent). In absolute figures, IDC estimates the IT labour shortage to be highest in Europe/Middle East/Africa with 1 million, followed by Latin America (425,000), Asia/Pacific (300,000) and North America (235,000). According to IDC, the demand for IT skills will grow highest in the Asia/Pacific region, but as the supply also grows at higher rates, the skills gap will not be as dramatic as in other regions. In fact, the supply of IT skills is the highest worldwide in the Asian region, and is expected to total 2.2 million professionals by 2004 (up from 590,000 in 2000). Asia/Pacific would account for 47 per cent of the global supply of IT professionals in 2004. Brazil, the United States and Germany are expected to be the countries needing most IT professionals by 2004 (705,000), followed by the United Kingdom (175,733), China (136,765) and Mexico (118,848).

Although many technology workers were laid off in the United States after the dotcom crisis of 2000, the demand for IT workers has increased again in 2002: according to a survey by the Information Technology Association of America (ITAA), there may be as many as 600,000 unfilled IT jobs in 2002.[16]

The implications of this prevailing trend in demand for IT skills outstripping their supply are promising for women. For one, women's labour force participation rates have been increasing in developing countries. In East Asia, North-East Asia and South-East Asia, women constitute more than two fifths of the labour force; in China, women's labour force participation is nearly three fourths (Brisco, 2002). Secondly, the shortage of skills in developed countries such as the United States and even in Europe has led many corporate executives to outsource IT work to developing countries, thus offering many digital opportunities for women's employment in the ICT sector (see previous section). Finally, the Internet has the potential to empower women business owners in Asia and other developing regions and could therefore ensure a level playing field for women and men.

2. Activities and skills required by the ICT corporate sector

In order to enhance women's participation in e-commerce at all levels, it is important to identify areas of expertise needed by the corporate sector for e-com-

merce in developing countries. This is particularly so as ICT-related trade in services has led to a dichotomy between ICT-focused and business-focused activities.

For the purpose of monitoring and facilitating women's entry into key occupations, it could useful to consider the various core activities for conducting e-commerce. IDC divides ICT services industries into two categories (see annex 1 for complete list of categories of the ICT services industry): (a) IT activities primarily targeting information systems and technology-enabled processes; and (b) business activities primarily targeting business processes along the value chain (e.g. primary activities such as manufacturing, marketing and sales and services; and support activities such as procurement and logistics, human resource management, and research and development).

The potential implications for women of this distinction between information technology activities and business activities could be enormous. Many business activities and corporate functions, especially back-office support operations such as typing, scheduling, filing or communications, are now becoming ICT-based and it is women in many, if not all, corporate entities who carry out these functions. Thus, women should learn these required ICT skills to prevent bottlenecks from occurring in the corporate infrastructure. In addition, this framework could be used for benchmarking women's progress, or the lack of it, in key areas of activities related to e-commerce.

3. Few women in high-skilled jobs

Given the scenario of a prevailing IT skills shortage and the increasing trend towards business activities and corporate functions becoming IT-based, another manifestation of the gender digital divide is the lack of adequate representation of women in the higher echelons of IT-related jobs. Few women are actual producers of information technology as Internet content providers, web designers, software programmers or computer troubleshooters (Hafkin and Taggart, 2001).

In the United States, females comprise a minority in mid to upper-level IT-related jobs, notwithstanding the fact that 50 per cent of Internet users in the country are women (Taggart and O'Gara, 2000). For instance, only 9 per cent of engineers, 28.5 per cent of computer programmers and 26.9 per cent of systems analysts in the United States are females. Women, however, reportedly constitute the majority (85 per cent) of data entry workers. Moreover, there are gender disparities in the salaries between men and women in IT in the United States. According to Taggart and O'Gara, women in IT career jobs earn 67 per cent of what their male counterparts earn. It is to be expected that this disparity would be much wider in developing countries. The authors cite the profile of women trainees in an ICT school in Brazil, which shows more enrolment in word processing courses that would prepare these women for support and secretarial positions. In contrast, the networking or programming courses are predominantly attended by their male counterparts, who would thus obviously be equipped for higher-paying jobs and more remunerative IT career paths. The authors suggest therefore that trends in access to and use of IT are not sufficient indicators for the equitable participation of women in the information society. Instead, what should be looked at is how women use the Internet and what skills they are equipped with, as these would determine their role in and contribution to the digital economy.

In order to meet the impending skill shortages in critical areas, women must therefore be prepared for careers at all levels of the ICT sector, from data entry to software design, network management and IT entrepreneurship. In considering how ICTs and the Internet could benefit women economically and socially, policy-makers should think beyond women selling their crafts via the web, to women selling their skills as website designers, network managers or IT services consultants.

4. Gender differentiation in IT education and training

Women in developing countries do not yet find it easy to obtain suitable jobs or income-generating work in the fields of network management, web design or software development, because they are not equipped with the necessary skills. The explanation does not necessarily lie in discrimination against women in centres of education and training in developing countries. In developing as well as in developed countries, there are difficulties in attracting and retaining women in ICT training and education. An example used by Taggart and O'Gara (2000) from the experience of Cisco's international Networking Academy Program (CNAP) provides some answers to why women's participation in IT training has been minimal (box 10).

Box 10

Women's participation in IT education and training

Cisco Networking Academy Program (CNAP) is an international training program that teaches students to design, build, and maintain computer networks. The CNAP curriculum is offered in over 70 countries and taught through web-based modules facilitated by on-site instructors in secondary schools, technical colleges, universities, and non-governmental organizations. Minimum education requirements are an eighth grade reading and math level. Recent data indicate that overall, 22% of CNAP students in emerging market countries are female. As a result of Cisco's interest in expanding the number of women in CNAP, Cisco Systems is supporting the Academy for Educational Development to conduct research on female participation in the CNAP in order to develop strategies for increasing female enrolment and completion.

Students and instructors in Cisco's program voice a common message that once women are in the programme, they excel, and in fact perform better than male students.

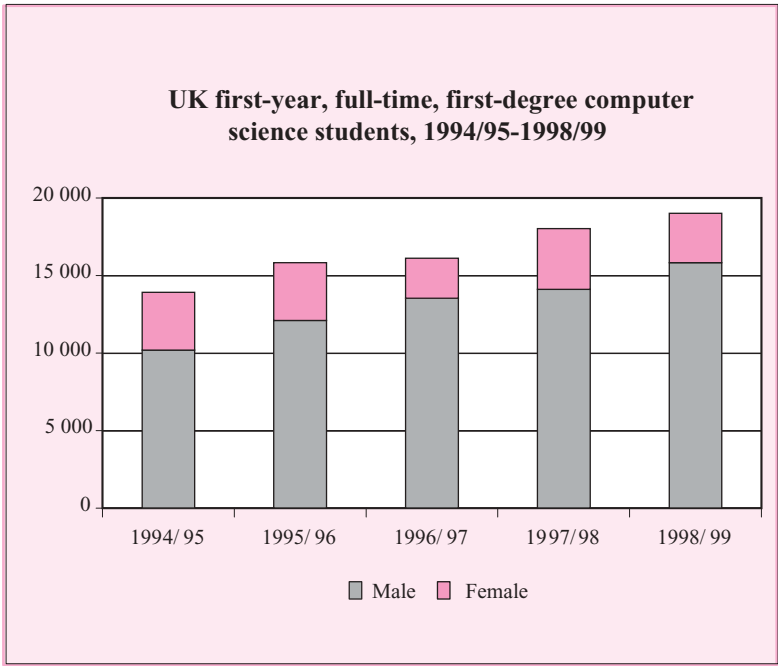
Source: Taggart and O'Gara (2000).

It is not a foregone conclusion that the experiences of developed countries are going to be replicated in the developing ones, where the choice of career and employment opportunities for women is more limited. The IT enrolment gender profiles for the United Kingdom and the Philippines shown in charts 7 and 8 provide a number of interesting insights.

Female enrolment in IT courses is lower in both countries. However, in the Philippines, where employmentand career prospects are more limited than in the United Kingdom, opportunities for overseas work depict a higher proportion of women graduating in ICT. While women lag behind their male counterparts in ICT enrolment, they are ahead of males in terms of

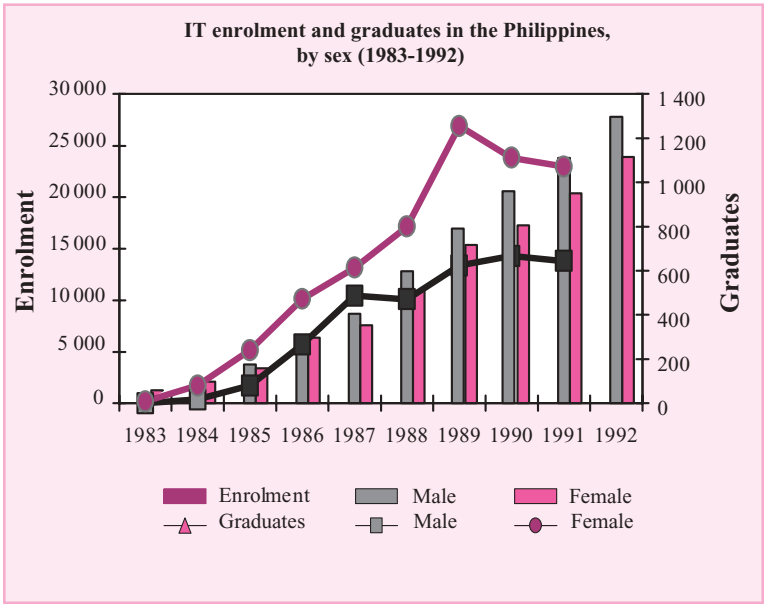
Chart 7

Gender profile of enrolment in IT courses in the United Kingdom, 1994/95-1998/99



Source: Connor et al. (2001).

Chart 8
Gender profile of IT enrolment and graduates in the Philippines, 1983-1992



Source of raw data: Commission on Higher Education, Department of Education, Culture and Sports, Philippines.

the number of computer graduates. The large gap between enrolment and graduation figures in the Philippines, for men as well as for women, is accounted for by the fact that students often find it difficult to continue with training because of its high cost, which is privately borne. In the United Kingdom, as cited by Connor et al. (2001), there is even a declining trend in the percentage of female computer science graduates – 21 per cent in 1998/1999 as compared with 22 per cent in 1994-1997 (Millar and Jagger, 2001).

To increase the number of women in the IT education and training tracks, computers and the Internet should be integrated early on into school curricula to encourage girls to pursue science and mathematics courses. Greater awareness of how ICT skills could lead to a wide range of careers for women will attract them into the ICT field. A study conducted by the Carnegie Mellon University in the United States indicates that early exposure to science and technology could change women's perceptions of IT programmes (box 11).

Box 11
Carnegie Mellon University on attracting women into IT programs

Research by the Carnegie Mellon University (CMU) in the U.S. indicates that adapting science and technology curricula may change women's perceptions of IT programs and consequently, attract more girls and women to this field. For example, CMU's research showed that female computer-science students were more interested than male students in the "context" of computing. 44% of women interviewed, vs. 9% of the men students, link their interest in computers to other arenas. They emphasized the importance of "doing something" with their skills and "connecting computer science to 'real-world problems.' "

Other U.S.-based research has similar findings, drawing the conclusion that "insuring science and technology are considered in their social context…may be the most important change that can be made in science teaching for all people, both male and female." As a result of their research, CMU has adapted their curriculum by, among other strategies, integrating non-science disciplines into their computer-science program and offering a computer science course in which students work with community non-profits to apply their skills to community issues. After 4 years, the number of females enrolled in the computer-science program at CMU increased from 8% in 1995 to 37% in 1999. This idea is not new. Experiential education theory has familiarized us with the notion that learners may respond more favorably to a subject when it is taught with practical application to the 'real world' context. Yet, when applied to IT training, these findings offer some new strategies for expanding the number of girls and young women pursuing science and technology education and careers.

Source: Taggart and O'Gara (2000).

D. Other factors affecting women in the digital economy

Apart from skills and training, there are a number of other constraints that prevent women from fully engaging in the opportunities created by the digital economy. These obstructing factors, described below, are essentially access to Internet technologies, availability of credit or financing, the language of the Internet and other social and cultural barriers.

1. Access to Internet technologies

Many researchers and policy makers have expressed concern that inequality in access to Internet technology will increase the existing polarity between countries as well as between groups within a country. In such discussions on the digital divide, gender issues have received attention. The ITU (1999) gave a timely warning on impending cyber sex discrimination, since it viewed cyberspace as a predominantly male area where the technical and managerial roles are assumed by men. Its World Telecommunication Development Report 2002 (WTDR) portrays a different and more optimistic future. The spread of very small aperture terminal (VSAT) technology and mobile telephony has considerably narrowed the teledensity gap between the developed and developing world.[17] Also, the third-generation mobile telephone promises to bring networking technology in a cost-effective way to women who are not privileged, even in the rural areas.

Access to infrastructure alone, in the absence of access to market and skills, will not enhance participation in e-commerce.[18] Human resource development issues that focus on technical and marketing skills should perhaps feature as prominently as infrastructure in a policy framework. The cost of infrastructure, however, is likely to remain a major issue for both women and men, particularly in the poorer countries. In Bangladesh, for example, the cost of a computer equals nearly two years' salary for a professional person, and a modem costs more than a cow (Mitter, 2001).

The collective use of telephone and Internet facilities to some extent helps, or might help, traditionally disadvantaged groups, such as women, to overcome the challenges of infrastructure constraints. The use of cyberkiosks and Internet cafes are examples of collective use facilities that come from the market-oriented private sector. Telecentres present possibilities of collective use with subsidies and support from donor agencies and the public sector.

Concerns about bandwidth are often overlooked in the discussion of collective use. To conduct e-commerce in a sustainable and efficient way, it is not enough to have connectivity – the right amount of bandwidth is also needed. Developing countries generally lag behind the developed ones in a dramatic way in terms of access to bandwidth. According to the ITU (2002), there is an uneven distribution of bandwidths among countries – for example, the 400,000 citizens of Luxembourg between them have more international Internet bandwidth than Africa's 760 million citizens. Given their position in the economy and in society in poorer parts of the world, it is likely that women more than men will have problems in having access to adequate bandwidth necessary for conducting e-commerce. This is an issue that policy makers should be concerned with.

The gender digital divide

Disaggregation of Internet usage by gender is difficult to obtain, especially from developing countries, and if available the data are not very reliable and comparable. However, even if the figures are not reliable, the numbers of women Internet users are very likely to be small in developing countries, considering that statistics that are not even disaggregated by gender show already a very small or insignificant proportion of Internet access for the entire population. Some preliminary indicators provided by Hafkin and Taggart (2001) show that of the total number of Internet users in 2000, women accounted for 22 per cent in Asia, 38 per cent in Latin America and 6 per cent in the Middle East. No figures were given for the African region as a whole. These data were based on marketing studies compiled by e-commerce consulting firms (table 15).

What is borne out by these statistics is the apparent absence of a correlation between female Internet users and female GDP[19], female literacy, or the percentage of female technical and professional employment, as well as of gender empowerment as represented by the Gender Development Index (GDI).[20] As explained by the authors of the study, these figures support their hypothesis that women Internet users in developing countries come mainly from the educated, urban elite, and are hence not representative of women in the entire country.

Home access to the Internet in many developing countries is a rare phenomenon. The woman lawyer referred to in box 12 is an example of women professionals in developing countries who encounter diffi-

Table 15

Women's Internet usage in selected countries

Country	Women as % of Internet users, 2000	Total women Internet users in 000s	Total number Internet users in 000s	Internet users as % of total population	Population in 000s	Female prof. & tech. workers as % of total	Female literacy rates	Female GDP per capita ($)	GDI rank 1/174
United States	51.1	83 479	170 280	60	283 800	53.1	99	23 540	3
Philippines	51.0	76.5	150	0.6	77 726	65.1	94.3	2 510	65
South Africa	51.0	645.6	1 266	4.2	42 835	46.7	83.2	4 637	84
Brazil	43.0	1 075	2 500	2.1	169 807	63.3	83.9	3 813	67
Croatia	42.0	63	150	4.3	4 672	n.a.	96.4	3 557	50
Mexico	42.0	567	1 350	2.5	98 553	45.2	87.9	4 594	48
Estonia	38.0	57	150	14.1	1 421	66.8	99	4 236	49
Russian Federation	38.0	4 560	12 000	1.8	146 861	n.a.	98.8	3 503	61
Zambia	37.5	1.13	3	0.2	9 461	31.9	67.5	753	125
Uganda	31.5	4.73	15	0.1	22 167	n.a.	35	944	131
China	30.4	6 840	22 500	0.7	1 265 530	45.1	74.5	2 485	79
India	23.0	115	500	0.2	983 377	20.5	39.4	902	112
Poland	18.7	295.6	1 581	5.4	38 607	61.2	99	5 061	40
Ethiopia	13.9	0.83	6	0.1	58 390	n.a.	29.2	349	172
Slovakia	12.0	60	500	13.0	5 393	59.7	99	6 366	39
Czech Rep.	12.0	48	400	6.8	10 286	54.1	99	7 952	34
Senegal	12.0	0.90	7.5	0.3	9 723	n.a.	24.8	1 253	127
Lithuania	10.0	7	70	2.9	3 600	67.5	99	3 323	55
Jordan	6.0	3.7	60.8	1.8	4 435	n.a.	81.8	1 429	n.a.

Source: Hafkin and Taggart (2001).

culties in accessing the Internet not because they do not own computers but simply because they do not even have telephone lines, which is a basic Internet infrastructure. Unlikely to have computers at home, most women in developing countries also cannot afford to use public access sites. User fees charged for Internet access at public venues may not be affordable for women, who are generally less able than men to pay fees (averaging $1 to $3 an hour) (Hafkin and Taggart; 2001).

Box 12

Accounts of difficulties in accessing basic Internet infrascruture

A woman lawyer in Uganda recognises the importance of international Internet connectivity for information, support and advocacy, but has not been able to afford or obtain a separate phone line. To use e-mail, she drives 20 kilometers to the University library, presents a copy of the information to be sent either in manuscript or diskette, and pays one US dollar per page to send a message and 50 US cents per page to receive a message. She has to wait two days to pick up replies, but most e-mail she sends never arrive at their destinations, because the addresses are keyed in wrongly by the library personnel.

Source: Huyer (1997).

When women do have access in developing countries, it is usually in the workplace. This creates a dichotomy between the use of ICT by women as tools of production (e.g. routine office work, data entry, programming) and tools of communication (e.g. creation and exchange of information). As to the latter, women working for non-governmental organizations have used the Internet mainly for political advocacy to protect women's rights and women's causes ranging from domestic violence issues to sexual slavery.

2. Availability of finance

Apart from access to infrastructure and education (skills), lack of capital is the third key obstacle facing women (especially women entrepreneurs) wishing to engage in e-commerce and e-business. To start up ICT-enabled businesses or to employ ICT tools to enhance existing businesses, women will need capital from special financial institutions in developing countries that lend specifically to women entrepreneurs who have no collateral, and who work mostly in the informal sector. The most likely source of the necessary financial capital could be microcredit schemes that specifically target women because of high take-up and repayment experiences and social dividends reaped from lending to them (Hafkin and Taggart, 2001). In this sense, ICT-enabled businesses are no different from other traditional microenterprises in which women in developing countries are engaged. They both involve light-based manufacturing, trade, or service activities; employ about five people or less, mostly family members; have low barriers to market entry; are home-based; and require less professional experience and knowledge than those of their male partners. The only differentiating factor is the use of new technologies.

The microfinance or microcredit programmes are aimed at empowering women beyond just the setting up or expansion of microenterprises. Specifically, microcredit schemes increase women's income levels and their economic independence, enhance their autonomy over household decisions about expenditures, promote positive attitudes to women's social and political roles in communities, and provide them with information and support networks to protect their individual and collective interests at the local and macro levels.

The outreach of the world's largest microcredit schemes shows a varied performance ranging from a 100 per cent outreach in countries such as India, Malaysia, Bangladesh and Mali to less than 50 per cent in Uganda, Nigeria, Ethiopia, Nepal and France (see annex 2 for a detailed description of the 34 largest microfinance schemes). These schemes could be useful entry points for policy makers in a programme aimed at facilitating women's opportunities in ICT-related business.

In the case of ICT-enabled businesses, the Grameen Phone Project in Bangladesh described in section B stands out as a best practice model combining lending to women's microenterprises with literacy training and skills development. As described by Hafkin and Taggart (2001), among the two million borrowers of the Grameen Bank, who received wireless phones as an in-kind loan to village phone operators, 75 per cent are women. The operators resell the mobile phone service to fellow villagers, earning an average annual income of $300 as against the national average per capita income of $286. About 90 per cent of the women operators are married and have no formal education. The phone business can be managed simultaneously with another business or while doing household chores. The major advantages of this type of ICT-enabled enterprise are the minimal educational requirements (just some basic mechanical aptitude), and the small capital needed, enough to be supported by microcredit schemes. There are positive externalities also in accelerating rural development where telecommunication density is sparse.

Another successful example of ICT-enabling business with a microfinancing component is the use of smart cards by Indian women milk collectors in Rajasthan. The smart cards were used to record the quality, fat content and sales of milk to distributors and served as their bankbook, thereby empowering them to make spending decisions and increasing their profits while eliminating the middlemen (called *dhudhwala).*[21]

3. Language of the Internet

The dominance of English as the language of the Internet represents a serious problem for the majority of the world's population, which does not speak English. Women without access to formal schooling that allows them to learn foreign languages are again marginalized, but so are men in countries or regions where English is not "the" language, such as Latin America, the Middle East, French-speaking Africa and Eastern Europe. According to Hafkin and Taggart (2001), language was among the main barriers to Internet usage that women cited in their response to the Association for Progressive Communications (APC) Women's Networking Survey in 1996. Even where women do

have equal access to formal schooling, they may need to receive additional training in foreign language skills, for which time and resources will be scarce.

Hafkin and Taggart (2001) also noted that "even users with basic proficiency in English experience discomfort that discourages Internet use when using other than their native language". They cited a technical training programme conducted in Mexico, which discovered that users with a low English proficiency level were reluctant to access online help centres simply because it was in English.

While the predominance of English is a threat to the social inclusion of non-English-speaking women in the digital economy, the increasing trend towards multilingual content provides a digital opportunity in terms of language translation in software development and in web design in native languages. As with other remote services (see section B.2), this could work well for women wishing to combine household responsibilities with income-earning activities.

The other implication of the predominance of English as the Internet language is the close correlation of outsourcing and English proficiency. Earlier in this chapter, it was indicated that outsourcing trends will be on the increase (see section B). Since the top two outsourcing markets – the United States and the United Kingdom[22] – are both English-speaking, those developing countries that would want to tap those markets would have to learn English. English proficiency has been mentioned by outsourcing companies as one of the key requirements (see box 13). This gives rise to some policy implications for improving the schooling and literacy of women where a second language – English – should be learned.

Box 13

Opportunities in offshore outsourcing and English proficiency

American companies unable to find, hire, and retain skilled IT workers at home are finding a vast pool of highly educated technology savvy, English-speaking workers available overseas. "These companies are sending IT projects offshore to compensate for the limited pool of talent available in the United States", according to Cynthia Doyle, research manager for IDC's IT and Offshore Outsourcing Strategies Programme.

IDC believes India is best positioned to capture a large part of the offshore outsourcing opportunity. However, other regions have potential to develop as major sources of offshore outsourcing, including Canada, Mexico, the Caribbean, South Africa, Israel, Ireland, and Eastern Europe.

"To be a successful provider of outsourcing services, a region must demonstrate fluency in English, a vast pool of IT talent, a solid infrastructure, and experience doing business with Western companies".

Source: IDC, "Offshore outsourcers are getting involved in increasingly complex IT projects", downloadable from ww.idc.com/getdoc.jhtml?containerId=pr50223

4. Social and cultural factors

Many of the previously discussed factors affecting women's participation in the information economy are directly linked to the roles and positions of women in society and the family. In low-income families, parents tend to give priority to the education of boys rather than girls.[23] Also, women often have less control over family income (in particular if men are the main income earners), which makes it more difficult for them to pursue (fee-based) training in IT-related fields or spend family income on ICT access and use. Prevailing gender stereotypes discourage girls from pursuing science, technology or engineering careers in many developing countries, especially in Africa, where the numbers of female students in these fields are particularly low (UNESCO, 1999).

In some cultures, women's presence in public is restricted. Women may not be able to travel to undergo training or attend courses by male teachers, while at the same time few female teachers in the IT and engineering fields may be available. Also, women may not be allowed to use public Internet access centres or telecentres and hence will depend more heavily on home-based access. Lack of interaction with the public also restricts women's opportunities to practise foreign language skills. Even in societies where women's presence in public is not restricted, the cur-

rent predominance of male customers in cybercafes in many countries discourages women from using these public access places (Hafkin and Taggart, 2001).

Time is another constraint particularly felt by women, given that they assume most household and childcare responsibilities, often also caring for elderly family members. While home-based Internet access allows women to save time in their business activities, generally they have less free time to spend using the technologies (at home, at work or in public access centres) or to attend IT, language or other e-business-relevant training.

E. Conclusions and policy recommendations

This chapter has attempted to shed light on the way e-commerce and the digital economy impact on women and men in developing countries. Using examples from the countries concerned, it has described the opportunities offered to women as well as the constraints they face in taking full advantage of the potential of ICT and e-commerce. In this process, policy makers will have to play a key role in creating an environment favourable to the participation of women in the digital economy. The following draws some conclusions and outlines areas of possible policy intervention. Annex 3 lists a set of policy options identified by an UNCTAD intergovernmental expert meeting on gender.

The review of the literature has shown that with regard to women's taking advantage of e-commerce and ICT-enabled work, the implications for policy point to access to education and schooling, Internet infrastructure and technologies, financial capital, and the promotion of e-business and IT-enabled employment opportunities. Improving women's access to Internet technologies requires extensive infrastructure building of basic telecommunications (including wireless and satellite) in rural and peri-urban areas, which are currently underserved in many developing countries. This should involve common facilities such as telecentres and phone shops that offer public Internet services and are located in venues which women frequent, such as markets, churches, health clinics, schools and post offices. Microcredit programmes should target the poorest, marginalized women, improving delivery mechanisms that involve men so as to increase their perception of the intervention as supplementing family income instead of being a threat to status. Women should be allowed greater control over their incomes and be given greater powers of decision about family expenditures. A perhaps more radical implication would be the empowerment of women by allowing them titles to conjugal assets so that they could eventually be able to qualify for financing from the formal financial sector.

In the area of job creation, policy makers need to promote IT-enabled employment such as teleworking. The discussions in this chapter have shown that in developing countries institution-based teleworking generally appears to be a more attractive option than home-based teleworking, both for working mothers with young children and for management. For relatively highly skilled women, for example in software programming and the media, home-based teleworking, at certain stages of their lives, could provide a solution to problems of combining childcare responsibilities with those of ICT-related professions. But even for these women, policy makers need to ensure better provision of childcare facilities so that they do not settle for home-based and/or less challenging occupations because there is little choice. In other words, a policy framework needs to take into account the complexities of women's aspirations and life cycles with regard to enhancing their participation in all segments of e-commerce.

It is crucial to highlight the role and importance of the informal sector in the developing countries, given that the majority of the workforce work either as employees in non-contractual jobs or as miniscule or small-scale entrepreneurs. Again, women make up the largest share of workers in the informal sector in many developing countries. Women in small-scale business face additional hurdles as regards making use of ICT either for marketing or for advertising because of their limited access to market information, finance, assets and infrastructure. This is where the real challenge lies for policy makers in their efforts to bridge the (gender) digital divide and include the poorest segments of the population.

Need for women in ICT decision-making

Women should participate more in ICT policy-making in order to ensure that gender issues are being addressed. However, there is a lack of women in decision-making structures in information technology policy-making and governance in developing countries. Hafkin and Taggart (2001) found that only 5.5 per cent of senior government officials responsible for information and communication technologies in developing countries were women, although these few

were in top positions, such as ministers of communication or telecommunication (in Mali, South Africa and Colombia) and deputy ministers of communication (in Angola, Belarus, the Czech Republic, Ghana, Kyrgyzstan and the United Republic of Tanzania). These women could have an influence on the course of information and technology development in their countries and in regional and global forums. Hafkin and Taggart also looked at the number of women in ITU Study Groups in major areas of communications and technology development; such groups can influence the direction of the development of information and communication infrastructure and standards in developing countries. Out of 51 persons, there were only two women, and no women from Africa, Asia or Latin America. Similarly, at the Internet Corporation for Assigned Names and Numbers (ICANN), there are no women from the developing world among the 19 directors. Policies should thus be geared towards including more women in ICT decision- making positions at the highest levels.

Finally, the question of gender in relation to e-commerce has to be placed among the wider issues of development and growth. As we have seen, the current share of developing countries in both B2B and B2C is minute. Asia is the leading region in the developing world in e-commerce, followed by Latin America. The share of African and other developing countries is virtually nil. Even within Asia, these are concentrated in a handful of countries such as India, Malaysia, China and the Philippines. Therefore, the question of gender should not be addressed solely from the distributive point of view at this stage. Rather, it has to be addressed as a strategy for harnessing women's potential skills along with men's in endowing countries with comparative advantages for participating in e-commerce and e-business, nationally and globally.

1. Policy recommendations for enhancing skills and training

Education is by far the most important policy intervention for improving the ability of girls and women in developing countries to participate in the information society. Apart from ensuring equal access for girls and boys to primary and secondary schooling, women also need to get better access to business and technical education, especially at tertiary levels. This could be addressed by both the public and private sectors in the following manner:

- A key strategy would be to focus attention on generating demand for IT education from women themselves through awareness programmes. Exposing girls to computers and the Internet and to science and mathematics disciplines at early stages should be initiated by Governments, particularly education ministries, before gender stereotypes start to influence female attitudes.
- A second key element would entail follow-up training on ICT-related courses for women already in the workforce. It may be of benefit for companies to sponsor women in ICT training programmes, since women are potential sources of scarce skills for occupations and functions that are now being enabled by computers and the Internet. For women in the informal sector, Governments or the private sector should build IT training institutes which charge affordable tuition fees and are flexible with respect to women's time constraints.
- A third element would be ensuring that women acquire the right IT skills. Training must go beyond teaching women how to use a word processor or how to enter data, towards actual IT creation and production such as hardware and software development, web authoring and design, network management and computer troubleshooting. Women will also need business and entrepreneurial skills in order to apply these IT skills: if they are to use ICT in managing their small businesses, they need to be trained in how to develop business plans, conduct market surveys, and search for information on funding sources and the like. Women engaged in remote processing and distant work need to receive appropriate training in order to stay in employment and business as and when skill requirements alter in response to changes in technologies. And women, particularly young women, need to be provided with opportunities to learn foreign languages (especially English).

2. Other policies to enhance the participation of women in the digital economy

- Providing common access facilities, such as community centres, that reduce the commuting time of professional and business women; and public Internet services in venues that women frequent, such as markets, churches, health clinics, schools and post offices;

- Creating an appropriate environment where new modes of working – such as teleworking – could enhance women's participation in e-commerce as employees or freelances, by improving their access to Internet technologies in rural and peri-urban areas;
- Providing facilities for childcare so that women can continue working in the IT-enabled sector;
- Raising awareness in the corporate sector of the advantages of teleworking for female employees as well as for companies;
- Developing and publicizing the availability of a critical mass of multilingual and computer-literate female workforce to attract customer care services work from national as well as transnational companies.
- Supporting the establishment of telecentres as incubators and facilitators of small business in information and communication services;
- Helping to develop multilingual websites in order to make it possible for women, with less access to education and English literacy, to surf the Internet for market and business information that includes legal procedures and regulatory frameworks;
- Highlighting and, when possible, rectifying legal and cultural practices that constitute barriers to women's entry into the e-economy;
- Promoting business and entrepreneurial prospects for women in the e-economy by offering venture capital and micro finance to women entrepreneurs to set up small businesses in ICT-related and remote processing services;
- Evaluating microcredit programmes for bringing the poorest, marginalized women into the orbit of e-commerce;
- Strengthening the advocacy power of NGOs that lobby for women to have greater control over their incomes and over decisions on family budgets and expenditures.

Notes

1 Many other United Nations bodies have started to mainstream gender in their work programmes on ICT and development. In particular, the UN Division for the Advancement of Women (DAW), in collaboration with the ITU and the UN ICT Task Force, is organizing an Expert Group Meeting on the role of ICT for the advancement and empowerment of women, to be held in the Republic of Korea in November 2002. The UN Commission on the Status of Women (CSW) will consider the same subject at its 47th session in March 2003. The outcome of both meetings will contribute to the WSIS.

2 See www.worldbank.org/gender/digitaldivide/interventionsasia.htm

3 Ibid.

4 See www.tortasperu.com

5 See www.ethiogift.com

6 See www.elsouk.com

7 www.idc.com

8 In India the average annual salary of a computer programmer is less than one sixth of that of a programmer in the United States. In the Philippines it is one seventh. The average annual salary of a medical transcription secretary is $1,200 in India compared with $25,000 per annum in the United States. See Mitter and Sen (2000, pp. 2263-2268).

9 Communique India (2002); www4.gartner.com; see also chapter 9 (on e-services).

10 www.nasscom.org

11 Interview by Swasti Mitter with Sushanto Sen, Deputy Director of CII, on 8 March 2002.

12 Back-office operations are the offsite delivery of a range of non-core service functions, including routine administration tasks, customer service and technical support. They involve the use of an outsourcing base in another country (Communique India, 2002).

13 www.outsourcing.com

14 Although the concept has received most attention in developed countries, the United Nations University Institute for New Technologies (UNU-INTECH), in Maastricht, carried out two research projects in India and Malaysia, exploring the potential and spread of teleworking in developing countries. See Mitter (2000) and Ng (2001).

15 "Voice recognition aims to lower call-center costs", 22 October 2001, www.informationweek.com/story/ IWK20011018S0084; "Smarter voice recognition technology will cut call center costs", 28 May 2002, Speech Technology Magazine, www.speechtechmag.com/cgi-bin/udt/ im.display.printable?client.id= speechtechmag-news&story.id=778 - 4k - I ; "Coming soon: web sites with a voice", November 2000, www.internetwk.com/story/ INW20001109S0005.

16 "Study sees IT worker shortage in 2002", 6 May 2002, www.news.com.com/2100-1017-899730.html

17 In 1991 total telephone penetration (fixed-line plus mobile telephones) stood at 49.0 in developed nations, 3.3 in emerging nations and 0.3 in the least developed countries (LDCs). A decade later, the corresponding levels were 121.1, 18.7 and 1.1. The ratio between developed and emerging nations dropped by more than half from 15.1 to 6.1, while the gap between developed and LDCs dropped from 171.1 to 112.1. Emerging nations have done particularly well and, if anything, there is a growing gap between them and the LDCs. The gap between emerging nations and LDCs rose from 12.1 to 17.1 (ITU, 2002, p. 17).

18 The reason for women or men not using the Internet is, according to the WTDR, not so much related to cost as to lack of relevance. A survey undertaken by Ipsos-Reid and incorporated in the WTDR indicates that only 12 per cent of respondents gave "cost" as the reason for not using the Internet, as compared with 40 per cent who felt there was no need to use it (p. 26). Since the survey does not clarify the characteristics and geographical coverage of the sample, it is difficult to generalize from the findings.

19 Based on the UNDP Human Development Indicators, female GDP is roughly derived on the basis of the ratio of the female non-agricultural wage to the male non-agricultural wage, the female and male shares of the economically active population, total female and male population, and GDP per capita (PPP $). For further details see hdr.undp.org.

20 The GDI, developed by UNDP, simply adjusts the Human Development Index to take account of inequalities between men and women in life expectancy, literacy and income. Fore a definition, see UNDP Human Development Reports.

21 World Bank (2002).

22 United States-based companies alone are projected to increase outsourcing spending threefold to over $17.6 billion in 2005 from under $5.5 billion in 2000. In Europe, the United Kingdom is becoming the leading outsourcing market, capturing 22 out of the 34 mega contracts (worth over $1 billion) that went to the region.

23 Girls comprise two thirds of school-age children in the developing world without access to basic education (Hafkin and Taggart, 2001, p. 27).

References and Bibliography

Arun S and Arun T (2002). "ICTs, gender and development: Women in software production in Kerala", *Journal of International Development*, vol. 14, issue 1, pp. 39-50.

Brisco R (2002). "Turning analog women into a digital workforce: Plugging women into the new Asia economy", Digital Divide Network, www.digitaldividenetwork.org/content/stories/ index.cfm?key=135

Busse T and Brandel M (1998). "The skills struggle: It's time to restock the global IT labour pool through training and education", *Computerworld*, 7 December, www.computerworld.com/cwi/story/0,1199,NAV47_STO33161,00.html

Communique India (2002). Vol. 11, no. 2, February.

Connor H, Hillage J, Millar, J and Willison R (2001). "An Assessment of skill needs in information and communication technology", Institute for Employment Studies, draft report downloadable from www.skillsbase.dfee.gov.uk/Downloads/ ICTreport.pdf.

Dillon N and Cole-Gomolski B (1999). "Depth of IT skills shortage depends on timing, training", *Computerworld*, 5 July, www.computerworld.com/cwi/story/0,1199,NAV47_ STO36279,00.html

Dutton G (2001). "The war for IT talent is over and the talent won", *International Data Corporation ITForecaster*, 20 March, www.idc.com/getdoc.jhtml?containerId =itf20010320

Economic and Social Commission for Asia and the Pacific (ESCAP) (2001). "Report of the Expert Group Meeting to Review ICT Policy from a Gender Perspective", 18-19 December 2001.

Gaio FJ (1995). "Women in software programming; experience of Brazil". In: Mitter S (ed.), *Women Encounter Technology: Changing Patterns of Employment in the Third World*, London, Routledge, pp. 214-218.

Gothoskar S (ed.) (2000). "Nature of teleworking in key sectors", *Economic and Political Weekly*, vol. XXXV, no 26, pp. 2293-2298.

Guthand R et al. (1998). "Asian view: Despite rampant unemployment, lack of IT skills threatens Asia's growth", *Computerworld*, 7 December, www.computerworld.com/cwi/story/ 0,1199,NAV47_STO33162,00.html

Hafkin N and Taggart N (2001). "Gender, Information Technology, and Developing Countries: An Analytic Study", USAID, www.usaid.gov/wid/pubs/hafnoph.pdf

Huyer S (1997). "Supporting Women's Use of Information Technologies for Sustainable Development", IDRC, downloadable from www.wigsat.org/it/womenicts.html

IDC (2000). "A Study of the Worldwide Networking Skills Shortage", www.idc.com

IDC (2002). "Internet Usage Increasing Rapidly Across Southeast Europe", www.idc.com

ITU (1999). *Challenges to the Network: Internet for Development*, Geneva.

ITU (2002). *World Telecommunication Development Report 2002*, Geneva.

Johnson S (1998). "Gender and Microfinance: Guidelines for Good Practice", Centre for Development Studies, University of Bath, www.gdrc.org/icm/wind/gendersjonson.html

Mayoux L (1997). "The Magic Ingredient? Microfinance and Women's Empowerment", briefing paper prepared for the Micro Credit Summit in Washington, www.gdrc.org/icm/wind/magic.html

Millar J and Jagger N (2001). "Women in ITEC Courses and Careers", Department of Trade and Industry, United Kingdom, November.

Mitter S (2001). "Asian Women in the Digital Economy: Policies for Participation", UNDP (Malaysia).

Mitter S (2000). "Teleworking and teletrade in India; Diverse perspectives and visions", *Economic and Political Weekly*, vol. XXXV, no. 26, pp. 2241 – 2252.

Mitter S and Efendioglu U (1997). "Teleworking in a global context". In: *Virtually Free? – Gender, Work and Spatial Choice*, Swedish National Board for Industrial and Technical Development (NUTEK), Stockholm.

Mitter S and Efendioglu U (1999). "Is Asia the destination for 'runaway' information processing work? Implications for trade and employment". In: Mitter, S. and Bastos, M.-I. (eds.), *Europe and Developing Countries in the Globalised Information Economy*, London, Routledge.

Mitter S and Sen A (2000). "Can Calcutta become another Bangalore?", *Economic and Political Weekly*, vol.XXXV, no. 26, pp. 2263 – 2268.

Motsenigos A and Hoffman C (2001). "International B2B initiatives require web-site globalization", www.idc.com

Ng C (ed.) (2001). *Teleworking and Development in Malaysia*, UNDP and Southbound Press, Penang, Malaysia.

Ng C and Khoo KJ (2000). "Teleworking in Malaysia", *Economic and Political Weekly*, vol. XXXV, no. 26, pp. 2308 – 2313.

Taggart N and O'Gara C (2000). "Training Women for Leadership and Success in IT", Academy for Educational Development, September, www.worldbank.org/gender/ digitaldivide/techknow.pdf

UNESCO (1999). *Statistical Yearbook 1999*, Paris.

World Bank (2002). "Using information and communications technology to reduce poverty in rural India", PREMnotes, no. 20, June, www1.worldbank.org/prem/PREMNotes/ premnote70.pdf

ANNEX 1

Table 16
IDC's services industry IT activity groupings

Planning	Implementation	Operations	Maintenance and support	IT Education and training
Process improvement	Site preparation	Asset management	Telephone support	IT/technical skills training
Operations assessment	Project management	Procurement	Parts support	Desktop skills training
Benchmarking	Test and debug	Administrative and operations	Remote network monitoring	Professional certification
Needs assessment	System configuration	Media duplication and replication	Remote diagnostics	Learning augmentation
Strategy	Installation	Systems management	Electronic support	
Capacity planning	Software re-engineering	Performance tuning	Software maintenance	
Change management	Custom software development	Network management	On-site maintenance	
Maintenance planning	Packaged software customization	Back-up and archiving	On-site software support	
Design	Application interfacing and integration	Business recovery	Preventive maintenance	
Supplier analysis	Relocation services			
	Systems migration			
	Documentation			
	User experience design and analysis			

Source: IDC (2001), www.idc.com/getdoc.jhtml?containerId=26051&pageType=PRINTFRIENDLY

Table 17
IDC's services industry business activity groupings

Planning and design	Implementation/deployment	Support	Business skills training	Execution/operations
Strategy	Custom content development	Telephone support	Training delivery	Asset management
Process improvement	Rules specifications	Compliance	Professional certification	Procurement management
Process re-engineering	Project management	Electronic support	Learning augmentation services	Pick and pack
Operations assessment	Quality assurance/testing		Learning administration	Special handling
Benchmarking	Environmental assessment			Profiling
Needs assessment	Business documentation			List/database
Change management	Relocation support			Verification
Designer	Site selection and preparation			Lead qualification
Supplier analysis				Lead distribution
Organizational design				Support seminars
Cultural assessment				Marketing campaign analysis
Global brand positioning				Marketing campaign reporting
Global trade assessment				Telesales
Skills assessment				Prospecting
Legal and regulatory assessment				Order processing

Planning and design	Implementation/deployment	Support	Business skills training	Execution/operations
Capacity planning				Invoicing
				Shipping
				Inventory management
				Contract management
				Shipment management
				Employee performance management
				Credit refunds
				Time and attendance tracking
				Employee records/data management
				Cheque processing
				Tax and regulatory filing
				Payment processing
				Records storage and management
				Benefits open enrolment
				Corporate communications
				Benefit administration
				Job posting
				Candidate identification
				Skills and behavioural assessment
				Candidate interviews
				Background checks
				Candidate selection and negotiation
				Candidate hiring
				Recruiting process reporting
				Risk management and site recovery
				Equipment maintenance
				Facilities management
				Administration and operations
				Media duplication and distribution

Source: IDC (2001), www.idc.com/getdoc,jhtml?containerId=26051&pageType=PRINTFRIENDLY

ANNEX II

Table 18

Women reached by 34 largest microfinance schemes

Institution	Total number of poorest borrowers reported 1998	Total number of poorest women reported 1998	Percentage poorest women reported 1998	Total number of poorest borrowers 1997	Total number of poorest women 1997	Growth of women borrowers
Grameen Bank, Bangladesh	2 400 000	2 280 000	95	2 270 000	2 156 500	123 500
Association of Asian Confederation of Credit Unions, Thailand	1 699 292	900 625	53	1 425 262	726 883	173 742
BRAC, Bangladesh	1 040 000	1 040 000	100	900 000	900 000	140 000
Association for Social Advancement (ASA), Bangladesh	720 208	669 793	93	571 859	548 985	120 808
Proshika Manobik Unnayan Kendra, Bangladesh	640 000	358 400	56	420 000	231 000	127 400
Caribbean Confederation of Credit Unions	400 000	260 000	65	370 000	222 000	38 000
Agricultural Development Bank, Nepal	218 153	59 992	27.5	200 183	50 045	9 947
Caritas, Bangladesh	207 473	130 708	63	125 250	80 160	50 548
Debit Credit and Savings Institution, Ethiopia	168 954	64 202	38	76 257	29 740	34 462
Crédit Mutuel, France (worldwide)	162 271	19 448	12	106 884	11 757	7 691
Working Women's Forum, India	162 000	162 000	100	148 700	148 700	13 300
Swanirvar Bangladesh	137 490	103 118	75	110 800	80 884	22 234
Country Women's Association of Nigeria	126 000	113 400	90	90 000	81 000	32 400
People's Bank of Nigeria	108 000	70 200	65	92 500	64 750	5 450
Amhara Credit and Saving Institution, Ethiopia	94 004	47 002	50	46 647	23 323	23 679
Fight Against Poverty Organisation, Nigeria	75 000	74 250	99	35 500	35 145	39 105
Kafo Jiginew, Mali	67 871	67 871	100	56 899	56 899	10 972
South East Sadish Krishi Samabay Samittee Ltd., Bangladesh	62 000	55 800	90	45 000	40 500	15 300
FINCA International, United States (worldwide)	61 480	57 791	94	65 000	62 400	(4 609)
Amanah Ikhtiar Malaysia	56 087	56 087	100	55 666	55 666	421
Uganda Cooperative Savings and Credit Union, Ltd.	51 935	13 347	26	52 097	13 024	323
Thengamara Mohila Sabuj Sangha, Bangladesh	45 000	45 000	100	20 542	20 542	24 458
National Bank of Cambodia	40 570	32 450	80	26 160	20 930	11 520
Buro, Tangail, Bangladesh	39 000	37 050	95	32 413	30 792	6 258
Association for Rural Development of Poor Areas in Sichuan, P.R. China	37 800	20 790	55	11 827	9 580	11 210
Sri Lanka Business Development Center	37 500	22 500	60	22 500	13 500	9 000
IRED, Zimbabwe	35 000	28 000	80	30 000	24 000	4 000
Alliance of Philippine Partners in Enterprise Development	31 193	30 257	97	23 017	21 867	8390
Fédération des Caisses Populaires du Burkina Faso	30 806	29 266	95	12 095	12 095	17 171
Heed, Bangladesh	30 630	22 972	75	25 862	18 103	4 869
Microcredito Santa Fe de Guanajuato, Mexico	27 817	24 200	87	11 517	10 596	13 604
ACLEDA, Cambodia	25 964	25 704	99	9 099	8 917	16 787
Nigerian Agricultural and Cooperative Bank	24 780	4 460	18	27 777	3 888	572
Fundación para la Promoción y Desarrollo de la Microempresa (PRODEM), Bolivia	24 000	15 600	65	21 000	14 070	1 530
TOTAL	9 088 278	6 942 283	76	7 538 313	5 828 241	1 114 042

Source: www.gdrc.org/icm/wind/summit.html

ANNEX III

Mainstreaming gender in ICT policy

Policy options identified at the UNCTAD Expert Meeting on Mainstreaming Gender in Order to Promote Opportunities, Geneva, 14-16 November 2001

Expert Meetings are convened by UNCTAD's Commissions in order to provide specialized technical expertise on specific issues within the purview of the relevant commission. Experts are nominated by the Governments of member States, but they participate in the meeting in their personal capacities.

Policy options identified for consideration by the Commission on Enterprise, Business Facilitation and Development

1. Recognizing the public goods nature of knowledge and the Internet, Governments should ensure rapid, equitable and affordable access to the Internet and ICT for women by taking all appropriate measures such as:
   (a) Establishing an appropriate infrastructure (through telecentres, Internet cafes, etc.) in order to facilitate women's access to the Internet;
   (b) Providing computers and telecommunications at affordable prices to low-income families and specifically women entrepreneurs, as demonstrated by countries such as Pakistan;
   (c) Involving local governments (in addition to the national Government) in reaching out to rural communities;
   (d) Creating broad awareness-raising programmes using mass media and targeting rural areas;
   (e) Offering computer and language skills training specifically targeted at women; focusing on distance education at home or community centres; and offering training courses to women in telecentres at low cost;
   (f) Training women in the methods and scope of setting up e-businesses and developing e-commerce;
   (g) Promoting the capacity of women as managers and owners of telecentres;
   (h) Introducing the appropriate language courses in primary schools;
   (i) Providing Internet databases in local languages;
   (j) Creating public – private partnerships to facilitate access via the Internet to foreign markets and potential business partners for women entrepreneurs.
2. They should enhance the number of women in the IT industry by:
   (a) Increasing the enrolment of female students in ICT-related courses through specific promotion campaigns and scholarships;
   (b) Ensuring the participation of women in the design and development of new technologies;
   (c) Ensuring the representation of women in ICT policy making bodies.
3. They should support organizations and grassroots groups involved in assisting women with access to and usage of the Internet and ICT.

Possible work areas for consideration by the international community and UNCTAD

1. The international community and UNCTAD could contribute towards greater participation of women in the digital economy by:
   (a) Mainstreaming gender in their overall work on ICT and e-commerce;

(b) Promoting ways in which ICT and e-commerce can create new economic opportunities for women and thus contribute towards increasing the competitiveness of developing countries;

(c) Identifying gender-specific opportunities of the digital economy through analytical and case-study-based work, including on such issues as: (i) the level of employment provided to women in ICT-related services sectors; (ii) the extent to which these sectors are involved in export; and (iii) the type of employment foreign firms provide in these services sectors, from a gender perspective;

(d) Collaborating with Governments and the private sector to incorporate the findings from their analytical work into policy dialogue and decision-making;

(e) Developing programmes to facilitate women's access to and use of ICT and e-commerce tools, specifically through transfer of technology and competitive scholarships;

(f) Promoting ways to facilitate women's access to information and the use of ICT in local government development, and the establishment of information management systems.

2. The Commission on Science and Technology for Development should formulate guidelines on increasing the participation of women in IT during the course of its work on its new substantive theme: Technology development and capacity building for competitiveness in a digital economy.

Chapter 4

M-COMMERCE: WIRELESS COMMUNICATIONS OPPORTUNITIES FOR DEVELOPING COUNTRIES

A. Introduction

This chapter examines m-commerce, a new form of electronic commerce brought about by the rapid growth of wireless communications. The most common definition of m-commerce is the buying and selling of goods and services using wireless handheld devices such as mobile telephones or personal data assistants (PDAs). A broader definition that extends m-commerce to "mobile business" may be more appropriate. This involves business-related communication among individuals and companies where financial transactions do not necessarily occur.

In the last four years, the growth in the number of mobile telephone users worldwide has exceeded the growth in the number of fixed lines, expanding from 50 million to almost one billion in 2002. Today, over 90 per cent of countries have a mobile network, and nearly one in every six of the world's inhabitants has a mobile telephone. Almost 100 countries have more mobile than fixed-line telephone subscribers and this will become a global phenomenon in the early part of 2002.[1] The introduction of wireless communications has not only expanded telephony in many developing countries, but also introduced wireless data services which are essential for conducting m-commerce. For many people in developing countries, mobile handsets may be the first and main access route to information and commumcation technologies (ICT), the Internet and e-commerce technologies.

The challenge is to provide access to the global telecommunications system for a significant number of citizens in developing countries. Mobile communications may be the technology that overcomes the barriers constituted by the high cost of installing fixed-line infrastructure that developing countries continue to encounter.[2]

The many facets of m-commerce, encompassing a number of dynamic and evolving services, will be examined in this chapter. It begins with a description of the main features of m-commerce. Experiences in several countries are discussed where relevant. Current m-commerce applications and trends, including banking and insurance, logistics, securities, and information services, are also reviewed. In addition, regulatory issues related to data security and privacy are assessed. Finally, the main findings and recommendations for developing country m-commerce readiness are presented.

B. Main features of m-commerce

Wireless communications provide the long sought after platform that can make digital data transfer possible in many developing countries. This is due in part to the lower costs of mobile systems relative to fixed networks, the provision of short message services (SMS) and the enabling of wireless Internet connections. In developing countries most mobile services are prepaid using stored value cards. This mitigates post-paid subscription problems of creditworthiness and billing.

By mid-2002 there were 300 million mobile telephone users in the Asia-Pacific region. China has the largest number of mobile telephone users in the world: more than 170 million in mid-2002, with over 400 million forecast by 2005–2006.[3] Europe is an important mobile market with over 300 million subscribers forecast for 2002. The number of wireless communications has already exceeded the number of fixed-line subscribers, and it is expected that in many countries, particularly developing countries, telecommunications operators will continue to rapidly increase the number of mobile subscribers thanks to low infrastructure and operating costs. Surveys in the United States indicate that wireless services are expected to be a major vehicle for customer relationship management (CRM) and that the amount of business management and marketing activities carried out using remote communications is continuously growing.[4]

M-commerce represents the extension of e-commerce to a mobile environment. The main types of e-com-

merce – B2B, B2C, B2G and P2P–- remain. In developing countries mobile business applications, especially when used by small and medium-sized enterprises in remote areas, may become a key method for reaching potential customers, and are expected to be highly important features of m-commerce.

In 2002 worldwide m-commerce revenues are forecast to be just below $50 billion. The United States and Western Europe will dominate actual and forecast revenues through 2005. But by 2005 sales generated in the Asia-Pacific region and the rest of the world are expected to register a significant increase, approaching 40 per cent of the global $225 billion m-commerce revenues forecast. Given that global revenues in 2001 were about $20 billion and very small in regions outside North America and Europe, it is difficult to determine what the major m-commerce transactions have been. Most m-commerce is B2C where micro-purchases are involved. Larger transactions continue to be conducted using the usual e-commerce methods.[5]

The surge in mobile handset use throughout the world, the dramatic growth of the Internet, and the proliferation of PDA (personal data assistants) are expanding the e-commerce market in which m-commerce is expected to flourish.[6] A number of unique advantages of m-commerce have been identified:

- *Immediacy.* Consumers are constantly moving, working, commuting, travelling, socializing and shopping. M-commerce lets them buy goods and services as soon as the need arises.

- *Connectivity.* Users sharing a common location or interest can be instantly connected via text messaging and mobile chat capabilities. Advertisers can use such access to promote products and make special offers with the expectation that subscribers will answer and listen to their messages.

- *Localization.* With the deployment of positioning technologies, such as the global positioning system (GPS), companies can know users' whereabouts and will be able to offer goods and services specific to their location.

- *Data portability.* Users can store profiles of products, company addresses, information about restaurants and hotels, banking details, payment and credit card details, and security information, and access these when needed for purchases or for making contact, all from their mobile handsets.

Internet use has been dependent on personal computers (PCs) and a fixed-line network. And the growth of the Internet drives e-commerce. Consequently, until the advent of mobile telephone, e-commerce has been dependent on expensive infrastructure and equipment. Today, however, there is a growing convergence of the Internet and mobile communication. Handsets are acquiring functionalities that were limited to desktop PCs only a few years ago. Many are already running slimmed-down versions of PC operating systems and applications, and the difference between future handheld and desktop devices is likely to be related to the ergonomics of the physical user interface that will be designed to serve a particular purpose, rather than lack of processing power, memory or network accessibility.

The ITU reports that 225 countries and territories have dial-up Internet connections – that is, a link to the Internet through a local telephone line. In 2001 there were over 500 million Internet users, representing 8.2 per cent of the world's population. Global distribution of Internet access, however, remains dominated by developed countries, where over half of the adult population is online[7] (see chapter 1 for a detailed analysis of the Internet population). Wireless access is likely to be the principal means of bringing more people in developing countries to the Internet. For that purpose, mobile networks and handsets need to be upgraded to carry data and messaging, as well as traditional voice services. The introduction of "third generation" (3G) and Internet-enabled handsets in North America and Europe is imminent. For the rest of the world, second generation (2G and 2.5G) mobile capabilities have opened-up opportunities for narrow-band Internet access and SMS (see box 14 for standards definitions).

Box 14

Network technologies

Mobile protocols can provide a continuously increasing array of services to users.[1] The introduction of mobile communications continues to be subject to competing technical solutions. In contrast with the gradual development of fixed line telephony, these technologies are being introduced almost concurrently, even within the same country.[2] The most advanced third generation (3G) is being introduced in developed countries, whereas second generation (2G) less powerful technology is being applied in many developing countries. The following transmission technologies are likely to co-exist for some time in the future.

2G is the present widespread standard and consists of several implementations. GSM (Global System for Mobile Communications) operates in the 900 MHz and the 1,800 MHz (1,900 in the United States) frequency bands and is the prevailing standard in Europe and most of the Asia-Pacific region. The popularity of GSM provides the critical mass making it possible to develop a large variety of innovative applications and services economically. Other 2G GSM type technologies include DAMPS and PDC. In the United States, Japan and China, CDMA is an important standard.

2.5G mobile technology has been developed to provide voice and data services in parallel in order to bring data services and Internet access to mobile handsets. It also has several implementations. GPRS (General Packet Radio Service) is a packet switched wireless protocol that offers instant access to data networks. It permits burst transmission speeds of up to 115 Kbit/s when it is completely rolled out. A real advantage of GPRS is that it provides "always on" connection (i.e. continuous IP connectivity) between the mobile terminal and the network, while users only pay for data that are actually transmitted. GPRS networks are already operational in Europe and are being introduced in South-East Asia and other regions, for example South Africa. EDGE (Evolved Data GSM Environment), a more evolved protocol that offers data delivery rates of up to 384 Kbits, and GPRS are considered evolutionary steps on the path from 2G to 3G.

3G is the generic term for the formal standard IMT-2000 (International Mobile Telecommunications 2000) adopted by the ITU. The standard was devised in order to support the development of broadband wireless Internet access. Rather than establishing a technical specification, the ITU set forth criteria that implementations had to meet in order to achieve an IMT-2000 classification. There are several implementations based on IMT-2000. CDMA2000 was developed by the Third Generation Partnership Project 2 (3GPP2) consisting of five telecommunications standards bodies: ARIB and TTC in Japan, CWTS in China, TTA in the Republic of Korea and TIA in North America. CDMA Direct Spread is also known as WCDM(UMTS) and WCDM (DoCoMo) in Japan. TD-SCDMA was proposed by China Wireless Telecommunication Standards group (CWTS) and approved by the ITU in 1999. The Chinese Academy of Telecommunications Technology, in cooperation with private sector partners, developed the technology. Multiple 3G licenses have been issued in Germany, Japan, the Republic of Korea, the United States, and the United Kingdom.

Wireless Local Area Networks (WLAN), while more m-business than m-commerce, are gaining ground. Avoiding laying cable and using fixed lines can be a great advantage in a vast number of situations, ranging from business conferencing to managing very large production or construction sites. 802.11b is a WLAN implementation that is designed to substitute for wired networking and allows users to move around in buildings and remain connected. Its range is about 50 meters indoors and 500 meters outdoors. Bandwidth is specified up to 11 Mbps and decreases with range. The Bluetooth WLAN implementation allows mobile phones, computers, and personal digital assistants (PDAs) to interconnect easily with each other using a short-range wireless connection. It has a range of about 10 meters and a bandwidth of up to 3 Mbps.[3]

---

1 See presentation of technologies being deployed in mobile communications, using example of China, Fan Xing, Cyber Century Forum.

2 See m-commerce, van Rooyen L. (2001)

3 Definitions were sourced from Searchnetworking.techtarget.com Definitions and Technologydecisions.com, The High Road and the Low Road, February 2002.

The goal of 3G is to enable broadband mobile Internet and data services capability. After expensive 3G licences were auctioned, mostly in Europe, telecommunication companies accumulated large debts and as a result, mobile broadband infrastructure and 3G have yet to be introduced. Many telecom operators are questioning whether customers will take-up 3G as rapidly as originally expected. The launch of 3G services has not been as successful as first forecast because potential early adopters are reasonably satisfied with pre-3G service offerings, thereby reducing the attractiveness of 3G's additional features. The situation is quite different for most developing countries. The first objective of governments and telecommunications authorities is to expand the number of subscribers for mobile telephone voice and short message services. Upgrading to 2.5G or 3G is unlikely in the near future.

The burning question for companies that have grown dependent on the Internet as a business vehicle is whether mobile telephony will result more in B2C applications than in B2B applications. It is impossible on the basis of existing experience to extrapolate what will happen in the years ahead. As regards B2B, there is little evidence that companies will change their purchasing practices because of m-commerce. The short-term potential for e-commerce growth resides with the one billion mobile telephone users, who could supplement existing B2C e-commerce with m-commerce. There is rapid growth in micropayments for small items and information services. The key to increasing traditional B2C purchases such as banking transactions and to trading in securities through m-commerce is the implementation of payment systems that are low-cost and customer-friendly

C. Wireless in developing countries

The take-up of wireless has made progress even in relatively low-income areas, confirming yet again that communication is an essential human need. Prepaid cards allow access for people who would not qualify for a paid subscription. Mobile telephony is also helping to eliminate the seemingly endless waiting for a fixed-line subscription. With a mobile network, consumers can simply buy a handset togethere with a prepaid card and start using it as soon as the first base stations are in place. As mobile networks are often set up by private sector companies, the investment burden can shift away from the State.[8]

The extent of developing countries' involvement in m-commerce is dependent on the access and connectivity of the population to wireless communications. Providing millions of citizens in developing countries with access to wireless voice communications coupled with text messaging, and with an eventual upgrade to the Internet, is crucial to building m-commerce markets in those countries. Engaging in m-commerce, however, requires more than mobile empowerment. Initiating purchases and completing payments remains a bottleneck for m-commerce in many if not most developing countries.[9] Unless selection, ordering, payment and delivery can be managed at costs that are lower than in traditional commerce, both e- and m-commerce may face serious problems.

This may no longer be the case when m-commerce is fully utilized. Because PCs are not required, and fixed-line subscriber fees do not have to be paid, the cost of m-commerce can be relatively low. A handset may cost less than $100 and prepaid cards have become dominant. An important mobile application that can be used for commercial activities is SMS, particularly because it can exploit the existing wireless infrastructure in many developing countries. However, if there is to be true m-commerce, mobile phones must be Internet-enabled.

Mobile telephony has been taken up to a considerable extent in Asia. There are currently more than 200 million handsets in use, of which more than 120 million are enabled to use data services.[10] In Asia there is much more involvement in m-commerce. The most developed countries in the region – Japan and the Republic of Korea – have large mobile telephone populations with millions of Internet-enabled terminals. The leading developing country example of m-commerce deployment in the region is China.[11] This is not only because the country now has 170 million mobile telephone subscribers, but also because SMS has become very popular and has created a vast potential for m-commerce applications. A detailed discussion of m-commerce developments and strategies in China is presented in annex 1.

Latin America has seen a slower adoption of wireless. Even so, growth expectations are high and the Inter Market Group and Jupiter Research forecast that in 2005 there will be more than 50 million mobile Internet users in Latin America.[12]

Africa has more than 20 million mobile telephone users. By the end of 2001, 28 African nations had more mobile than fixed subscribers.[13] The number of

mobile subscribers in 30 sub-Saharan Africa countries, not including South Africa, rose from zero in 1996 to 1.7 million in late 2001.[14] Because most new African mobile subscribers have no fixed line available and very few own or can access a PC, their handset becomes their only communication device. Consequently, there is likely to be a great interest in using mobile handsets for as many applications as possible.

In the least developed countries (LDCs), mobile technology is increasing telephone access in a surprisingly short space of time. Uganda is an example of how mobile telephony has radically transformed access to communications in an LDC over a short period. As a result of the liberalization of the telecommunication sector and the low cost of installing wireless networks, the number of subscribers rose eight times from 1995 to 2000. Uganda's mobile density ranking among LDCs rose from 28th in 1997 to 8th in 2001 and today it has the third largest mobile network in the LDCs. Uganda's experience is being widely replicated in other LDCs. By the end of 2001, 24 LDCs in Africa had more mobile than fixed-line subscribers. In many countries, this transition took a little over a year: more mobile telephone users were added to the national network during that period than during the entire period of fixed-line operations.[15]

Another example is Afghanistan, where it is expected to take years to fully replace the infrastructures of electricity and fixed-line communications that have been destroyed. However, this is not the case with wireless communications: inhabitants of Kabul have obtained handsets and began using mobile services with prepaid cards in April 2002. By the end of May there were more than 2,000 handsets in use, a significant addition to the existing and inadequate 12,000 fixed lines.[16]

D. M-commerce applications and trends

Mobile telephone customers in many developed countries are starting to use handsets to make purchases from retail stores, conduct personal banking and make travel reservations, as well as to view sports and news programmes, and search the Web (see box 15). In Germany, for example, mobile users are said to "have a moderate attitude toward many new services", yet about 25 per cent are particularly interested in m-commerce possibilities. In the United States mobile phones are often kept in family cars and used as auxiliary communication devices, rather than being carried and used continually by family members. In Europe, the greatest interest in m-commerce seems to be in Italy whose large population of mobile telephone customers have indicated an interest in paying bills (56 per cent) and conducting banking transactions (60 per cent) via wireless devices. Mobile service providers allow both prepaid and post-paid account subscribers to register and link their cash/debit cards with mobile phone subscription accounts. This allows subscribers to conduct mobile transactions for services and goods offered through their particular mobile service provider, for example topping up of prepaid accounts and purchase of theatre tickets. Certain commercial activities using SMS, such as hotel and restaurant reservations, could eventually lead to a growth in m-commerce applications. The following discussion takes a more detailed look at several promising applications.

1. SMS

Since 1992 SMS has allowed people to send and receive text messages using their mobile phones. Each message can contain up to 160 alphanumeric characters. SMS is the backbone of m-commerce, with the number of messages totalling billions in 2001.[17] One of the greatest concentrations of SMS users is in Singapore, where 52 per cent of phone users utilize SMS more than once a day. SMS use in Australia, China and the Philippines is reported to be almost as high. The global average, however, is 23 per cent.[18]

In December 2000, Filipinos were sending almost 50 million short messages a day, or around 9 per subscriber. The Philippines is the leader in per capita SMS usage, accounting for some 10 per cent of all short messages sent around the world. The Philippines had 8.5 million mobile telephone subscribers in June 2001. The number of mobile telephones in use exceeded the number of fixed lines in 2000; it continues to grow rapidly and is expected to reach 15 to 20 million. SMS is said to offer a practical alternative for those who do not have a computer; mobile telephone subscribers outnumber PCs in the Philipinnes by 4 to 1. A mobile short message is actually much cheaper than a telephone call. SMS was initially free. A nominal 2 cents charge was introduced in 1999. SMS accounts for a growing portion of mobile telephone revenues, since for every call made on a mobile phone, an average of 10 short messages are sent. Wireless Application Protocol (WAP) remains expensive for B2C m-commerce applications. Finally, the vast majority of Filipinos still do not have credit cards to use for online transactions or may have insufficient bank account balances to tie a debit card to direct debit.

Box 15

Survey of national B2C m-commerce market trends

Germany

- Germany has a relatively less receptive customer base. However, its sheer size within the European market makes it an important area.
- Mobile customers have moderate attitudes toward many new services. Much of current usage is personal calling by relatively light users.
- One quarter of German mobile phone owners would like to make purchases with their wireless devices, while over 30 per cent are interested in accessing video cameras at home and securing travel reservations.

Italy

- The Italian market is a high-potential area for m-commerce. The high penetration of mobile phones makes the customer base relatively large. Text messaging could capture more business.
- There is considerable interest in many mobile services: paying bills (56 per cent); paying for retail store purchases (52 per cent); banking (60 per cent) and video-mail (66 per cent).

Japan

- Japan has the most receptive customer base for m-commerce.
- The recent success of new Internet-based entertainment services has heightened receptivity.
- Close to 30 per cent of mobile users want the same capabilities on their handset as on personal computers.
- There is substantial interest in advance mobile services: having a virtual tour guide (40 per cent); purchasing inexpensive items (34 per cent); viewing news and sports (33 per cent) and face-to-face video conversations (34 per cent).

Republic of Korea

- The Republic of Korea is a developing market that appears to be poised for rapid growth in the future.
- It has one of the largest penetrations of web-enabled phones (50 per cent of all handsets), which gives this market high growth potential for broadband applications.
- 41 per cent of mobile owners use their devices some or all of the time at home, 66 per cent of the time while at work or school, and 68 per cent of the time while on vacation.
- There is solid interest in advanced mobile services: viewing real-time traffic conditions (43 per cent); accessing maps or directions (55 per cent).

United Kingdom

- The UK is a mid-level market, where future growth will require that mobile services do a superior job of delivering on promised performance and value.
- Users in the UK tend to feel slightly overwhelmed by information, and that society has become too dependent on technology.
- At the same time, there is a strong interest in m-commerce with practical applications: having face-to-face video conversations (48 per cent) and locating ATMs (60 per cent).

United States

- The US market is bimodal, having a dichotomy between heavy and light mobile users.
- The United States is an essential target for any global mobile commerce business strategy.
- Mobile users split their time 75 per cent/25 per cent between personal and business use, while over half use devices in cars.
- Interest in advance services varies: receiving short bites of entertainment (15 per cent); accessing maps and directions (50 per cent); and viewing news and sports (23 per cent)

Source: Personal Communications Industry Association/Yankelovich Global m-User Market Research.

In Hong Kong, China, wireless data traffic was underdeveloped because local mobile telecommunications operators were not eager to expand this business while revenue from voice traffic alone was growing rapidly. In December 2001, six local mobile operators announced an agreement to make their SMS interoperable and forecast significant new revenue from SMS in the years ahead.

2. Micro-payments

M-commerce offers vast opportunities to make micro-purchases easier.[19] These can be as simple as buying from a vending machine, paying a parking meter or purchasing gasoline. Among the most widespread m-commerce applications using SMS, is making payments through post-paid accounts linked to debit cards. In the case of subscriptions to information services, the mobile service provider charges the customer through monthly bills. However, in many developing countries a shortage of consumer credit systems and the lack of automated payment systems that can be conveniently used for wireless electronic payments are hampering advancement of m-commerce. Micro-payments and settlements via wireless are growing rapidly in a number of developed countries. Estimates for 2002 are typically around $1.5 billion.[20] Forecasts for wireless micro-payments speak of $ 200 billion worldwide by 2005, with more than $ 40 billion in the United States.[21]

3. Financial Services

A wide variety of mobile payment and settlement methods are currently used in various countries. In the Republic of Korea, mobile Internet customers prefer to integrate charges for purchases into their monthly telephone bills. Japanese often prefer to pay mobile Internet charges and usage fees in cash at convenience stores.

Prepaid value cards are widely used in Japan. However, a growing number of services, such as specialized information services, can be charged to monthly telephone bills. A new system will be introduced before the end of 2002 that uses mobile handsets with an infra-red interface that would automatically debit prepaid cards. The cost of equipping handsets with an infra-red interface will be absorbed by savings resulting from operators and vendors not installing new vending equipment. In Japan there is great interest in this new mobile technique. Figure 4 illustrates the priorities of Japanese and Republic of Korea consumers.

Saving time, simplicity and speed of payments are the main advantages of mobile settlements. The following characteristics are listed in order of importance:

- Payments;
- Rapid payment;
- Record of payment provided;
- Less cash to carry around;
- Point-of-sale convenience;
- Signature not required.

A number of concerns still exist and demonstrate the novelty of mobile settlements and people's lack of awareness about how to take advantage of them. The main concerns are:

- Difficulty in making a payment or a financial transaction;
- Risk to the confidentiality of personal data;
- Difficulties in processing payments, including loss of payments;
- Problems stemming from the loss of a mobile device, which someone might find and use to make illegal purchases.[22]

Mobile banking is still hampered by the requirement for standardized payment cards and online systems. There has been more success with securities trading, however, where investors can buy and sell shares using their mobile handsets. Other areas are opening up – for example, insurance, where potential customers can receive offers and submit personal details for premium quotes by insurers, all with their mobile phones.

Mobile communications provides insurers with yet another way to interact with, and obtain information from, potential customers. The most immediate benefits are reducing administrative costs and bringing innovative and less expensive services to a wider market. An important facet of mobile technology will be to enable insurance agents and field representatives to provide better customer service.

Agents tend to focus on clients who they believe will take out larger policies, while the low end of sales and marketing through m-commerce has the potential to extend insurers' reach into previously underserved

segments where agent penetration is low. Buying habits are changing in that many customers want online access to product information and quotations and want to pay premiums, compare prices, access and update their policy information and claims status and receive customer service – all online.

Regarding direct insurance sales, a vast market of potential buyers could be reached through the use of mobile-based insurance marketing methods. The present level of mobile media richness and the interface quality of commercial handsets may not satisfy regulatory requirements for selling insurance products, including policy delivery and payment, in most countries. Owing to government supervision and policy complexity, mobile insurance may have to wait for 3G before making real m-commerce headway.

Mobile services include all those products provided by securities brokerage firms. Wireless technology enables customers to bypass ordering in person or by telephone, thus opening the securities market to a large number of potential buyers. In addition, brokerages supply financial information and market data to investors through their mobile handsets. This provides individual clients who have online accounts with instant access to the buying and selling of securities. However, because of poor user interface of mobile telephones and PDAs, significant mobile trading is not expected before 2005 and the full roll-out of 3G and associated handsets.

4. Logistics

The potential of mobile communications for generating greater efficiency in transport and logistics is widely acknowledged. The movement of goods within developing countries, as well as with regard to imports/exports, has traditionally been slow and inefficient owing to a lack of modern logistics systems. ICTs have become the key to achieving efficient logistics. Logistics costs in developed countries add about 12 per cent to the retail cost of a product, whereas in developing countries this may be as high as 20 per cent.[23]

Transport and logistics will clearly benefit from the introduction of wireless services and, in doing so, expand m-commerce. Wireless data access will make it possible to follow goods movements throughout the supply and value chain. With the growing use of information technologies in cargo booking, tracking, clearance and delivery by major shipping lines, as well as in customs clearance, ports, warehouses and stock points, external and internal trade will become more efficient.[24]

The challenge lies in the introduction of hardware, software and networking which are costly and require technical expertise to operate. Trackability and traceability need to be ensured through interfacing technologies such as ID chips and bar codes. Mobile communications devices will then help link-up the supply chain.

Transport is typically multimodal, ranging from rail-water-air-shipping to express delivery services. The introduction of intelligent transport services further increases the value of mobile communications in the logistics supply chain, in particular for support services such as pick-up and delivery of goods.

5. Information services

News, weather reports, and traffic and map information have increasingly become the services most sought after by mobile telephone subscribers. Since the launch of mobile services in Japan in 2000, as many as 30 per cent of all mobile customers indicate that they are users of those information services. This is three times the PC-based usage of paid information services. There is a charge by mobile service providers of about $2.50 (300 yen) per month for unlimited access to a menu of information services.[25] Over 90 per cent of mobile users in Japan access bank account data through their handsets. Figure 5 outlines the popularity of various mobile services in Japan.

Value added text messaging is the use of SMS to provide a content service or product to the consumer at a premium price. The value added to the text message by the application or the content contained therein is assumed to be above and beyond that of a standard text message and the consumer knowingly consents to be billed for that added value. In Ireland, this is known as premium text messaging. It will involve the allocation of a 5-digit short code so that consumers will understand they are accessing premium services and will be prepared to pay for them.[26] An early entrant will be mPerium, which will launch an m-payments solution using text messaging that will enable websites to charge their audience for time-metered access on their mobile telephones.[27] Other services that could be available are: event-driven content – sports alerts for a favourite team, personal investment information and alerts, industry sector news alerts, travel information such as localized real-time traffic news, and other local information.

6. Wireless CRM Services

Customer relationship management (CRM) services usually consist of a set of methodologies, software and Internet capabilities that are coordinated and co-integrated and whose purpose is to help an enterprise manage its relationships with customers. Company activities can be very varied and may not always be managed in a coordinated way from a customer-centric point of view. The advantages for consumers of having better coordination between, say, research and development, manufacturing and after-sales services may translate for the company into marketable value-added or increased competitiveness. Much of any commercial organization's activities, including business operations and customer servicing, falls within the scope of CRM. Therefore, its large size, as shown in figure 6, is not unexpected. CRM can transform knowledge and data stored in companies by applying them, in real time, to existing and potential sales and service opportunities, in particular through access to an enterprise's data, message systems, remote sales force automation and order tracking. It has been forecast that in the United States between 35 per cent and 40 per cent of company sales and support personnel will be using mobile devices within the next two to three years.[28]

Mobile technology is starting to emerge as the newest value-added feature for CRM.[29] Extending CRM to wireless devices will enable enterprises to be more proactive in their marketing and sales by providing continuously updated information to field representatives, as well as by offering customers a broader array of contact and self-service options. Three levels of benefits are expected:

1. Wireless CRM enables greater mobilization of the sales force, replacing periodic data synchronization with real-time information concerning products, client status, purchase history, inventory levels, product vendor information, order tracking and related data. The sales force will also have wireless financial transaction capabilities, shortening the sales cycle and increasing enterprise responsiveness.

2. Wireless CRM facilitates a higher level of customer support by providing additional contact channels for clients seeking information or technical assistance. By extending customer data to mobile devices, the enterprise enables its support staff to better anticipate and respond to customer issues and enables customers to take advantage of self-service support and transactions via their mobile phones or PDAs.

3. Location-based marketing will be an extension of current marketing automation and customer analysis systems. These emerging applications are expected to stimulate m-commerce by extrapolating location-specific buying behaviour to provide information to mobile device users.

7. Other Mobile Services

M-commerce opens up a myriad of options for new electronic services. These include making appointments, voting, applications for membership or membership renewal and entitlement cards, and alarm systems. Norway provides an excellent example of this diversity of m-commerce; box 16 outlines the range of currently available services, and those soon to be available, in that country.

A survey of frequently purchased items in the Republic of Korea found buying habits similar to those in Japan. About 12 per cent of mobile subscribers indicated that their main preferences are buying movie tickets, cosmetics, banking, audio-visual and electronics products.

E. Privacy and data protection

The need to protect personally identifiable data has received the attention of national policy-makers and international organizations for more than 30 years. With the advances in wireless communications, concerns have again arisen about loss of control over personal information. Some 40 countries have adopted national data protection laws, ranging from Canada and Argentina to Sweden and Greece, and Thailand and the Republic of Korea. Internationally, the Organisation for Economic Co-operation and Development and the Council of Europe, have adopted legal instruments for their member countries governing the collection and use of personal data.

1. Regulatory issues

Because mobile communications services are new and operators are being licensed to compete with incumbent carriers, a number of policy and regulatory issues must be resolved. Interconnection between fixed-line operators and competing mobile operators has been the major difficulty constraining mobile development.

Box 16

M-commerce services in Norway

Telenor Mobile, the major telecommunications operator in Norway, launched its MobilHandel service in September 2001. According to recent reports, the service has become highly popular with mobile users who want to order content and services as well as pay by debiting a bank account, credit cared or mobile purse. Norway is one of the most developed mobile markets, with 450,000 citizens actively using e-commerce on the Internet. Telenor Mobile considers these users to be potential early adopters of m-commerce. The Norwegian bank DnB is the main partner on the payments side and, together with Telenor, it has developed SmartPay, the payment solution. SmartPay has introduced the first PKI secured payment solution on a SIM card and gives access to all payment methods: bank accounts, credit cards, and Smart Cash (purse).

Services currently available: Bus tickets (SAS Oslo airport shuttle); tickets to movies, football games, concerts; soda machines; purchases of goods and services from the Internet; parking fees; flowers; gambling; donations to charity organizations; ski passes; music recognition and purchase of CDs; and refilling pre-paid mobile cards.

Services soon to be available: Fast-food restaurants; carwashes; golf tees; vending machines; slot machines; petrol; travel tickets; and purchases of other goods and services.

Source: Telenor Mobile, Norway

The predominant conflicts over mobile interconnection have occurred in developed countries where several operators are seeking to gain market share. Developing countries have experienced fewer problems when national regulators have insisted on rapid deployment and fairly priced interconnection rates. Many developing countries, however, have limited geographical coverage for mobile telephone use, some operators charge both caller and receiver, and transmission standards still need to be harmonized.

A new European Community Directive that "adapts and updates existing provisions to new and foreseeable developments in electronic communications and technologies" is now replacing the existing telecommunication Directive. It is expected to be adopted before the end of 2002. The revised Directive stipulates that the location data, giving the geographical position of mobile users' terminal equipment, as in road transport services that provide traffic information and guidance for drivers, may not be used for surveillance purposes. Traffic data in general may be collected and used only with the consent of the subscriber.

It has been recognized that commercial users of wireless communications should be subject to codes of fair personal information practice, established by public law or self-regulation. The Wireless Advertising Association (WAA), an international trade group, has adopted a privacy policy that should be readily available to consumers. Under this policy WAA members should give users notice and choice regarding the use of personal information obtained. It may be used only for the purpose for which it was collected unless users explicitly consent to its being used for other purposes. Furthermore, WAA members are required to make every effort to ensure the security of personal information and, where reasonable, allow wireless subscribers to correct or delete such information.[30]

The specific provisions of the WAA privacy policy require that a member company must make known to potential recipients: (a) what information is being collected; (b) its policy on data storage; (c) the choices available to an individual regarding policy on collection of personal information; (d) the use of personal information; (e) any third-party collection of personal information, together with a statement of the organization's commitment to data security; and (f) what steps the organization takes to ensure data security and access by the consumer to his/her records.

2. Mobile security

Concerns about e-commerce security are only heightened in the m-commerce domain. Fixed-line Internet and PC-based browser technology provides a media richness and interactivity that can be used to implement technological security and assure commercial partners that transactions are under way safely and surely. In contrast, the present-day mobile interface, be it SMS or WAP, is fairly poor and does not inspire

confidence. Furthermore, worries about data interception in the wireless medium are heightened, unlike in the case of fixed-line access, through an imperfect understanding of the technology. Finally, mobile handsets are more prone to theft and consequential misuse, particularly since they may contain passwords, keys and personal identification numbers (PINs) used to provide the authentication and data integrity required for verifying financial transactions. Security is vital if m-commerce is to become an electronic wallet for micro-payments for customers worldwide.

In addition to digital signature laws and regulations, certification authorities are being created by governments, financial institutions and other bodies, or are licensed to private entities, so that parties to e-commerce transactions can know the identity of all entities or individuals involved.[31]

To ensure m-commerce payment interoperability among devices and networks, the financial-services-backed Mobile Payment Forum was established in November 2001.[32] Initial members were Master Card International, Visa International, American Express and the Japan Card Bureau. The Forum now has 89 members. It is cooperating with the PayCircle consortium and the Mobile Electronic Transactions initiative, supported by wireless and Internet infrastructure vendors and handset manufacturers. The Forum's work should lead to secure m-commerce by migrating existing security mechanisms to the mobile environment, or by installing similar security levels for authentication, data integrity, privacy and non-repudiation. Its work covers both existing and emerging technologies, including symmetric keys and biometrics.[33]

Another organization, Radicchio, is a global initiative of over 50 companies in m-commerce and security industries that promotes m-commerce solutions based on public key infrastructure technology for personal handheld devices and wireless network. This initiative is a cross-industry non-profit organization, representing the interests of mobile operators, system integrators, hardware manufacturers, certification service providers and financial service providers, as well as software houses.

F. Main findings and recommendations

The growth of wireless communications in less than five years has created new voice and data communications services that are essential for launching widespread business and consumer m-commerce applications.

It is becoming clear that m-commerce will not parallel earlier expansion of e-commerce. B2C transactions will be far more extensive than B2B transactions. This may be in part the result of already well-established fixed-line channels of e-commerce activities among companies. Individuals are finding it increasingly attractive to initiate B2C contacts with companies to order purchase products and services. The conduct of m-commerce is limited by difficulties in making electronic payments and concerns about security and privacy of transactions. Technology also plays an important role because mobile terminals must be Internet-enabled in order to provide full m-commerce possibilities.

There is a new dimension of m-commerce that involves introducing products and services that may not directly result in immediate transactions. In the United States, companies use mobile telephony to contact employees, conduct sales and marketing programmes and provide customer care. Enterprises in developing countries may find mobile communications very attractive for marketing in remote locations. Methods to maximize benefits from mobile business clearly require further examination.

Fundamental to a rapid expansion of m-commerce is improved access to mobile services by consumers in developing countries, for which a number of government actions are required. These involve liberalizing the telecommunications market, licensing new mobile operators, creating an independent regulatory body that will establish a fair and competitive market supporting compatible standards and facilitating the interconnection among operators. National Governments should exercise leadership in the adoption of authentication, security and data privacy policies and regulations. Improving connections to the Internet backbone remains vital.

Notes

1 Chapter 2 of the ITU's *World Telecommunications Development Report 2002* gives detailed information about developed and developing countries experiences with mobile communications. It documents the rapid growth of mobile telephony across the world in the last five years.

2 See *World Telecommunications Development Report 2002*.

3 Pyramid Research and government forecasts as reported by the Economist Intelligence Unit, November 2001.

4 The definition of m-commerce appropriately includes mobile business – companies that are introducing mobile communications for marketing, customer relations and rapid contact with sales and other staff.

5 See Accenture, "Through the Wireless Window: Where Do We Grow from Here?", 2000.

6 *Ibid.*

7 See *World Telecommunications Development Report, 2002*.

8 *Ibid.*

9 *Ibid.*

10 Cyberatlas.internet.com, "Wanted: One wireless app users simply cannot live without", 14 May 2001.

11 See Cyber Century Forum, "Scaling the Great Wall of E-Commerce: Strategic Issues and Recommended Actions", 1999.

12 Cyberatlas.internet.com, "Wireless devices continue to proliferate", 7 January 2002; Julia Scheeres, "Latin America: The mobile world", Wired.com, January 2001.

13 See *World Telecommunications Development Report, 2002*.

14 The ITU's *World Telecommunications Development Report 2002* describes, and provides statistics on the growth and importance of recently introduced mobile communications in Africa.

15 See *World Telecommunications Development Report, 2002*.

16 i.t.matters.com, May 2002, http://itmatters.com.ph/; Australian IT, July 2002, http://australianit.news.com.au/; Radio Free Europe, April 2002, http://www.rferl.org/.

17 See *World Telecommunications Development Report, 2002*.

18 See survey by management consultancy A.T. Kearney and Cambridge University's Business, "Mobinet 4", January 2002, www.atkearney.com/pdf/eng/Mobinet_4_S.pdf.

19 See Electronic Commerce Promotion Council of Japan, 'Mobile EC in Japan and User Awareness', Press release, 1 March 2002, www.ecom.or.jp/ecom_e/press/press20020301.htm

20 Mformobile.com, "How will we be paying for mobile commerce?", July 2002, www.mformobile.com/; ePpaynews.com, "Mobile Content Driving mCommerce Market", July 2002, www.epaynews.com/.

21 McGarvey R "Wireless micro-payments: Big hurdles for small change", Mbusinessdaily.com, www.mbizcentral.com/.

22 Profiles of m-commerce in Japan and the Republic of Korea are presented in the 2002 report by the Electronic Commerce Promotion Council of Japan entitled "Mobile Internet Survey Project in Japan and South Korea".

23 Estimates given in a presentation made at the Center for Information Infrastructure and Economic Development Seminar on Transport and Logistics, Beijing, China (April 19, 2002) by Ding Junfa, Executive Deputy Secretary General, Association of China Transport & Logistics.

24 UNCTAD, *Electronic Commerce and International Transport Services*, TD/B/COM.3/EM.12/2, 31 July 2001.

25 See *Mobile EC in Japan and User Awareness.*

26 See Ireland Office of the Director of Telecom Regulation, "A framework for value-added text messaging (SMS) services", ODTR 02/14, 28 January 2002, http://www.odtr.ie/docs/odtr0214.doc.

27 Cellular-news.com, "Premium SMS used to pay for internet content", February 2002.

28 See Cherry Tree & Co., "Wireless applications and professional services", November 2000, www.triple-tree.com/res_rep.htm.

29 *Ibid*.

30 The WAA is one of the first business organizations to prepare and endorse a code of conduct for m-commerce.

31 A detailed discussion of e-commerce security may be found in chapters 6 and 7 of UNCTAD's *E-Commerce and Development Report 2001* (UNCTAD/SDTE/ECB/1).

32 See "Visa, MasterCard to work together on m-commerce standards", e-commerce Times, 7 November 2001, www.ecommercetimes.com.

33 "Symmetric encryption uses the same public key for both encryption and decryption. The main problem with this approach is that the key needs to be shared by both the sender and the recipient of the electronic data. Thus, the data need to be sent separately from the key. If someone intercepts the key, they can decrypt the data. Symmetrical encryption provides confidentiality but not authentication or non-repudiation. Asymmetric encryption uses two keys, one for encryption and one for decryption, or one private key and one public key. Asymmetric encryption is ideally used in those cases where data need to be shared but the decryption key need not be sent. The public key encrypts the message, and the private key decrypts it. The public key cannot decrypt the message it encrypted, and ideally, the private key cannot be derived from the public key. Asymmetric keys provide confidentiality, authentication and non-repudiation." This explanation was given by Mark Edmead, a security management expert, at ForsearchSystemsManagement.com., at an online forum, in February 2000.

ANNEX I

China: M-commerce applications and strategies – A case study

Forecasts for mobile subscribers in China range from a conservative estimate, predicting that mobile subscribers will amount to 230 million by 2005, to optimistic predictions of over 400 million by the end of 2005, giving a penetration rate of 31 per cent.[i] Financial services may become the first to embrace significant B2C m-commerce and are described in some detail below.

Banking

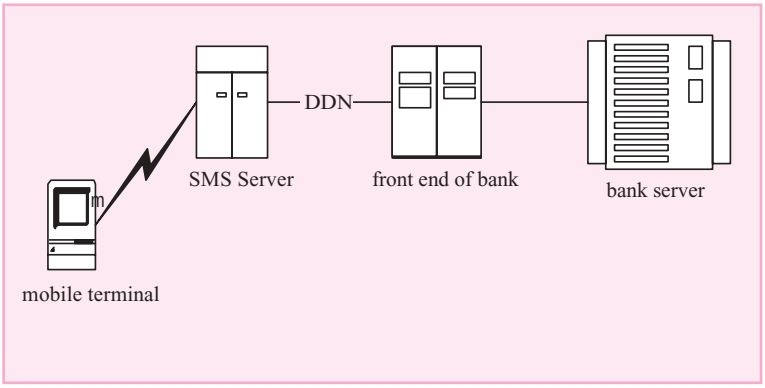
Currently in China, mobile banking utilizes 2-2.5G systems, based on GSM cellular technology providing voice and narrow band data services. The Subscriber Identity Module (SIM) network architecture is composed of mobile payment made by mobile phones and mobile Point of Sale (POS) terminals.[ii] Messages are transmitted through an SMS centre where data are transferred to a banking front-end system through dedicated networks. The front-end system decodes the SMS messages and stores the data in the internal database system. After verification, a return confirmation message is sent back to the end-user (customer). In addition to not being an Internet transaction, a striking drawback of this application is that a message cannot exceed 160 characters – when the message exceeds this limit, it must be split into two message packets. When POS is used, because magnetic card transactions are generally carried out through multi-terminal co-processing, the SMS method may lead to transaction "timeouts" thereby reducing the success rate of a transaction.

The introduction of GPRS, which is now being installed by China Mobile, will provide end-to-end IP connections. GPRS' features include: theoretical transmission speeds of up to 115Kbps, always-on-network status, and data volume-based billing. This advancement will greatly facilitate expansion of both mobile terminal and POS payments. The full-range of mobile banking customer services in China and other countries that introduce similar technologies will be the following:

- Inquiry services – including account balances, transaction history analysis, banking service, information inquiries, etc;
- Transfer services – customers can perform transfers from one account to another;
- Auto-payments – customers can submit bill payments for phone services, utilities, insurance, etc;
- Personal banking – customers can make stock inquiries, securities transfers, stock trading, etc;
- Other services – such as loss of reporting and change of password, etc.

Mobile banking is mainly based on carriers offering bank-related value-added services with the SIM Tool Kit (STK)-supported SIM cards they supply to their handset customers, who can then communicate with the bank servers using the SMS platform, as described in chart 9. This technology can offer good security at low usage costs and is now the main channel for mobile banking in China. However, it also has drawbacks in that SIM cards have limited storage capacity and can only store the banking service programmes of a single bank. When time SIM storage capacity is improved and GPRS become fully introduced, customers are expected to migrate to the high-capacity STK-GPRS.

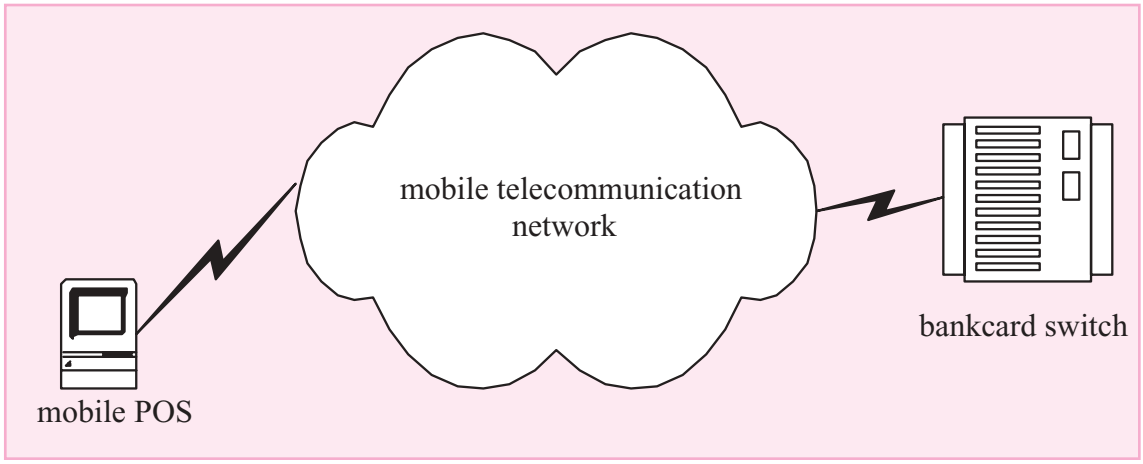
Chart 9
Transmission of message from mobile phone to bank



Source: China Agricultural Bank.

A customer uses a mobile telephone menu to enter messages.[iii] The SIM card then encrypts the message and transmits to the SMS Center, which identifies the destination of the IP address on the message header and uses DDN to transmit the massage to the bank's front end system. The front-end system then decrypts the message for verification and transforms the message into a data format recognizable to the internal computer system. The data are then processed by the bank's main system and a response message is sent to the customer's terminal via the original path.

Chart 10
Mobile POS terminal transactions using bank cards



Source: China Agricultural Bank.

After a cardholder swipes his card through the POS terminal, a transaction message is transmitted to the banking card exchange network. After the card-issuing company has completed verification, a return message is transmitted back to the POS terminal and the transaction is complete.

Both enterprises and consumers in China have demonstrated a strong interest in banking cards – mostly debit or other forms of pre-paid cards. There are now more than 360 million banking cards issued, but most are rarely used. This is in part because China's banking regulations have prohibited establishing countrywide bankcard systems. However, this is being changed, and countrywide transactions will become possible in the near future. Interbank

networks or standardized formats presently do not exist for using bankcards in POS terminals across China. The People's Bank of China is actively engaged in improving this situation, and a commission composed of representatives of all Chinese banks as well as major foreign card-issuing companies, including American Express, VISA and MasterCard, will be addressing these issues.

The wider deployment of POS terminals is also necessary in China so that more extensive consumer and commercial applications can be realized. In the future, applications may be expanded to include industrial, taxation and insurance sectors. The POS system also will have great prospects in the tourism, car rental, retailing and take-away service markets. The China Banking Card Center for Mobile POS Systems described in chart 10 is presently being designed and will provide:

- Reliability – guaranteeing during system operation that services are correctly processed without unpredictable errors, with a comprehensive monitoring system that ensures prompt handling of system problems;

- Security – encryption throughout the entire transmission, with series of verifications of both the terminals and the operator, in order to ensure that passwords are not easily disclosed and messages altered during transmission;

- Technological sophistication – using advanced mobile communication technologies, mobile terminals and bank-end systems will ensure a satisfactory transaction success rate;

- Open platform – ensuring the compatibility with the system of all vendors and service providers.

Insurance

In China, the Pingan Insurance Company is anticipating that, of the 20 per cent of Internet users who say they plan to purchase insurance online, a significant percentage will obtain information on policies via mobile handsets.[iv] Using SMS and later 2.5G mobile technologies, Pingan is anticipating the greatest demand in China by individuals will be motor vehicle, health, vehicle and family property insurance.

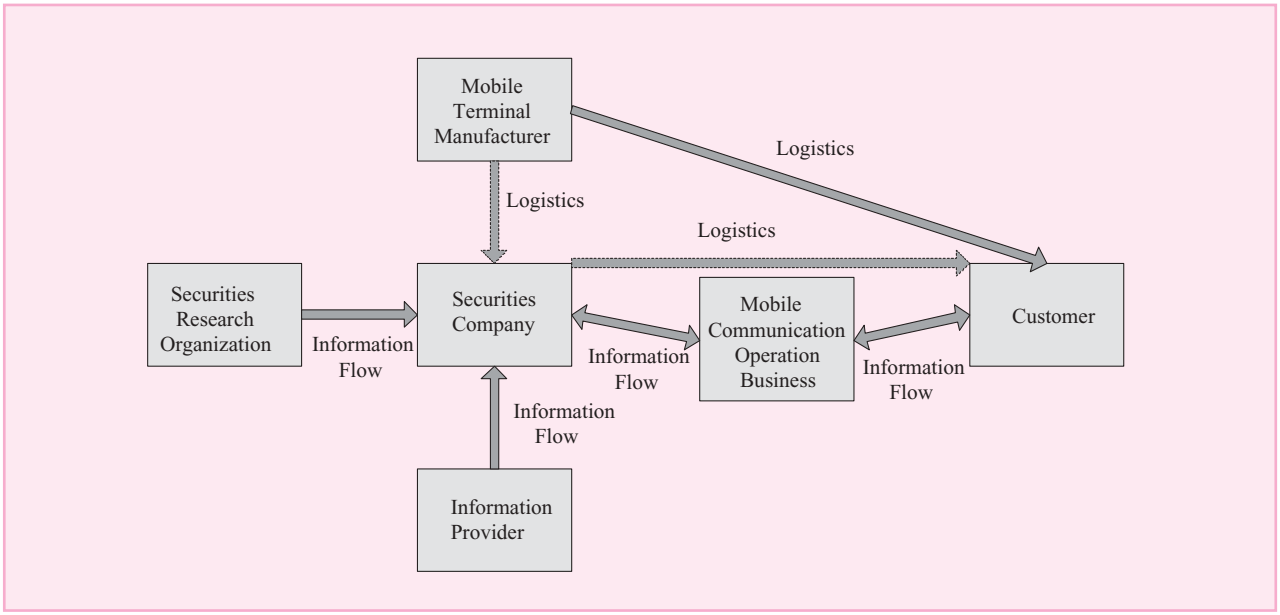
For automobile insurance, smaller local companies in China are beginning to apply mobile technology. HuaAn Insurance and Shenzhen DiDou Technology Company have partnered to develop an automobile insurance integrated services system that uses GPS technology to allow customers to prevent auto theft and perform digital management.

Securities trading

In China, the securities services market can be divided into securities trading and securities information services. The former focus on transaction fulfillment and the latter provide various information services relevant to the trading of financial instruments.

At the end of 2000 there were 58 million off-line investment accounts (95 per cent being individuals) in Shanghai and Shenzhen alone. Today many brokerage houses have begun to offer mobile securities services to their securities investment customers. However, mobile trading has not progressed as rapidly as mobile information services. A report by the China Securities Regulatory Commission indicates that most, nearly 90 per cent of Chinese investors cannot often visit brokerage outlets to monitor markets and trade, and most people cannot access the Internet at work to get market information and perform transactions. Among the three million online investors in China, nearly 90 per cent have expressed interest in utilizing mobile securities trading.[vi]

Chart 11
Mobile securities service value chain



Source: China Securities Regulatory Commission.

At time of writing, 724 Solutions and Bank of America (Asia) were offering Wireless Securities Trading Services in Hong Kong. These services will allow customers of Bank of America (Asia) to access real-time wireless stock trading, quotes and other brokerage services with various Internet-enabled mobile devices such as WAP mobile phones and PDAs. With no restrictions on network carrier, customers can perform trading functions anywhere and at any time using the Internet-enabled mobile device of their choice. Signing up for the services is done by setting up a customer ID and PIN via the Internet, while access is through a secure, end-to-end connection with the bank's WAP site.[vii] Another example is the intermediation of Hong-Kong-based mobile operator 1010, which is providing mobile access to banking services, including securities trading, for clients of six local banks.[viii]

i Economist Intelligence Unit, November 2001.

ii See description of China's developments in mobile banking, Su, S., Agricultural Bank of China.

iii See Su, S. (2001) for detailed description of China's advancement in bank payments.

iv See Zhan, L. (2001) for a description of mobile technology in the insurance industry of China.

v See Hou, H. (2001), paper on Wireless Financial Trading Applications for China.

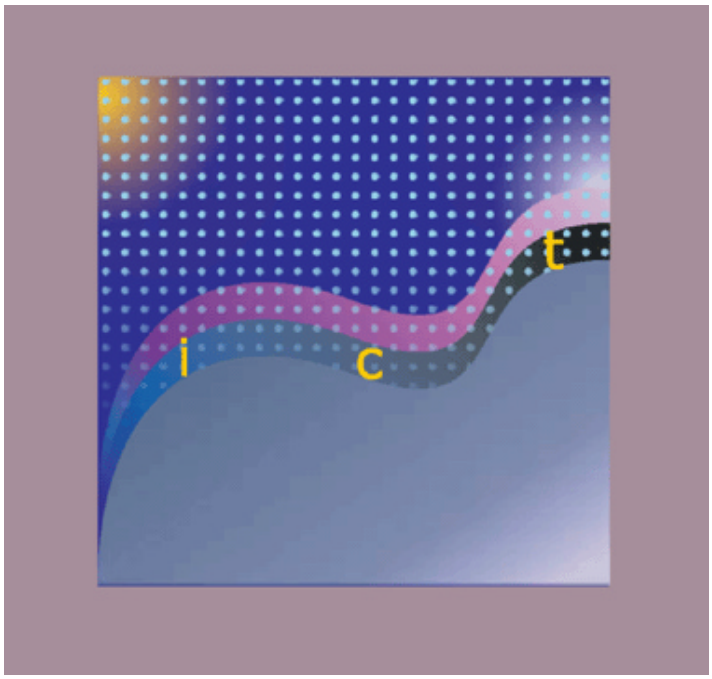
vi See Hou, H. (2001), paper on Wireless Financial Trading Applications for China.

vii 724.com, May 2002.

viii http://www.csl1010.com/personal_en/vas/va_mbs.jsp.

Part Two

IMPACT OF E-COMMERCE ON SELECTED SECTORS



Chapter 5

THE IT INDUSTRY, E- BUSINESS AND DEVELOPMENT

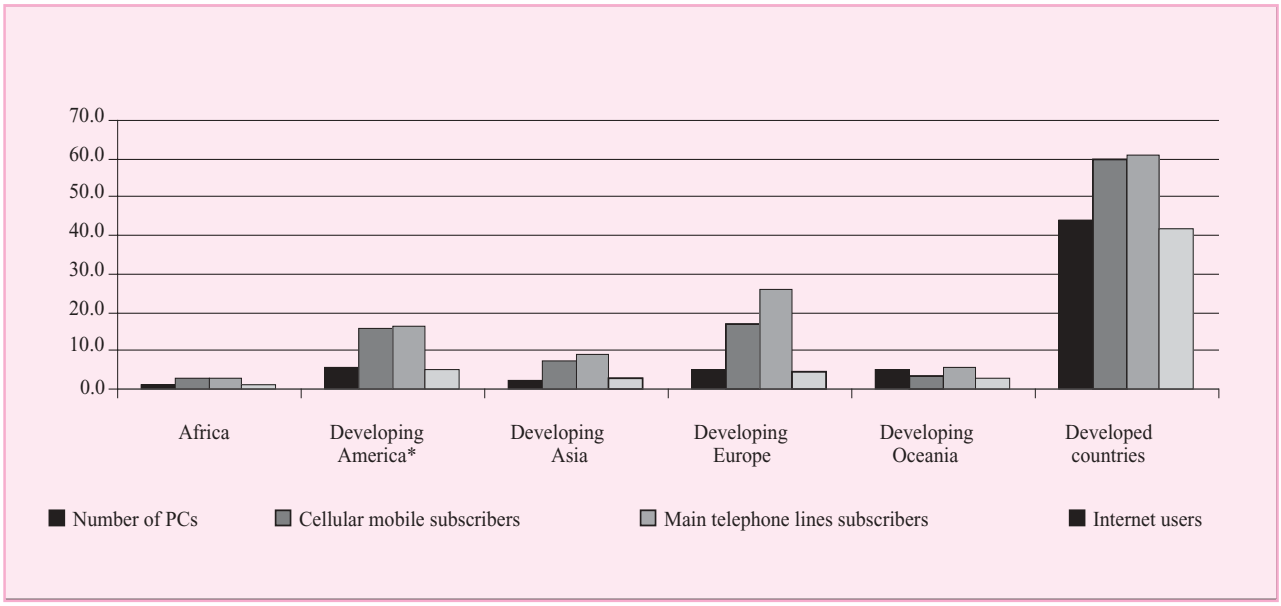
A. Introduction and definition of the information technology industry

This chapter looks at the information technology producing sector (IT) with special reference to IT multinationals' investments in developing countries.

The IT industry provides essential instruments that make e-business possible, including not only computer hardware and software but also fixed telephones, mobile telephones, telecommunication equipment and wireless transmission equipment.[1] As chart 12 below shows, the availability of IT equipment goes hand in hand with Internet connectivity and is therefore clearly a prerequisite for e-business.

Even though e-business impinges on IT goods, this does not necessarily imply that having a local IT producing industry would be an advantage for the local business sector when it moves into e-business. However, when the business sector starts adopting new information and communications technologies in its operations, it relies heavily on local or locally available IT expertise in order to fully realize all the efficiency gains that the Internet makes possible at the level of a single firm as well as at the level of the industry and of the country's economy as a whole.

Chart 12
Access to telephones, PCs and the Internet per 100 inhabitants (2001)



Source: UNCTAD calculations on ITU data.

In this connection, the existence of a local IT sector or of investment from IT multinationals might contribute to the take-off of e-business in developing countries if it promotes IT awareness and culture in the local business sector, if it advances the IT competencies of the workforce and if it brings the technology closer to the local business community.

In the light of the above, this chapter sets itself two objectives. On the one hand, it tries to present some long-term trends in the industry that produces the tools necessary for conducting 'e-business', in its widest possible meaning. On the other hand, it attempts to present evidence about whether the conditions outlined above are realized, or in other words, whether the IT industry can contribute to development and growth by enhancing a country's capacity to engage in e-business.

This chapter presents data on international trade in IT products and the trade policy environment in which the industry operates, and summarizes the debate on the impact of IT on growth and development. In addition, it presents the results of an UNCTAD survey of the most influential IT multinationals designed to obtain information about their investment in developing countries and countries with economies in transition and their use of e-commerce in general and in the latter countries in particular.

Clearly, the analysis does not aim to be exhaustive. It needs to be complemented by the analysis – contained in other chapters of this report – of the experience of companies from developing countries that are successfully engaging in the production of IT goods, as well as of the IT-using business sector that is turning the new technologies into new products and new ways of conducting business.

B. Trade in IT products and trade policy environment

Although reliable data on the IT industry are hard to find, it is safe to say that IT is one of the world's largest industries. According to one estimate, "worldwide IT spending has reached almost $988 billion and is expected to increase at a compound annual growth rate (CAGR) of 9.4 per cent from 2001 to 2006 to reach $1.5 trillion".[2]

Most analysts agree that the IT industry, having suffered a setback in 2001 due to the economic recession and the effects of the tragic events of 11 September, might experience a modest recovery in 2002. Growth should then pick up again in 2003.[3]

The IT sector was the subject of intense negotiations during the Uruguay Round and remains so today. In

Box 17

The Information Technology Agreement

The products covered by the Agreement include computers and other electronic data processing equipment, semiconductors, telecommunications equipment, and computer software[1].

For these products, participating Governments agreed to completely phase out tariffs and all other duties and charges by 1 January 2000. However, developing countries participating in the agreement however, have requested and received an extended phase-out period for at least some products. In no case does the implementation period extend beyond the year 2005.

As of 4 February 2002, 57 Members States or separate customs territories in the process of acceding to the WTO had signed the ITA. Collectively, they represented approximately 93 per cent of world trade in IT products.

In addition to the elimination of tariffs on the products that were initially covered, the ITA called on participating Governments to expand product coverage. To date, however, in spite of the intense negotiations in the Committee of Participants on the Expansion of Trade in Information Technology Products, which supervises the implementation of the Agreement, no products have been added to the initial lists. The Committee is also negotiating the question of non-tariff barriers with a view to including these within the scope of the Agreement.

[1] The complete listing of the products covered by the Agreement can be downloaded from WTO (1996).

December 1996, at the first WTO Ministerial Conference held in Singapore 54 WTO Member States signed the Information Technology Agreement (ITA – see box 17 for details). Its two most important characteristics are that:

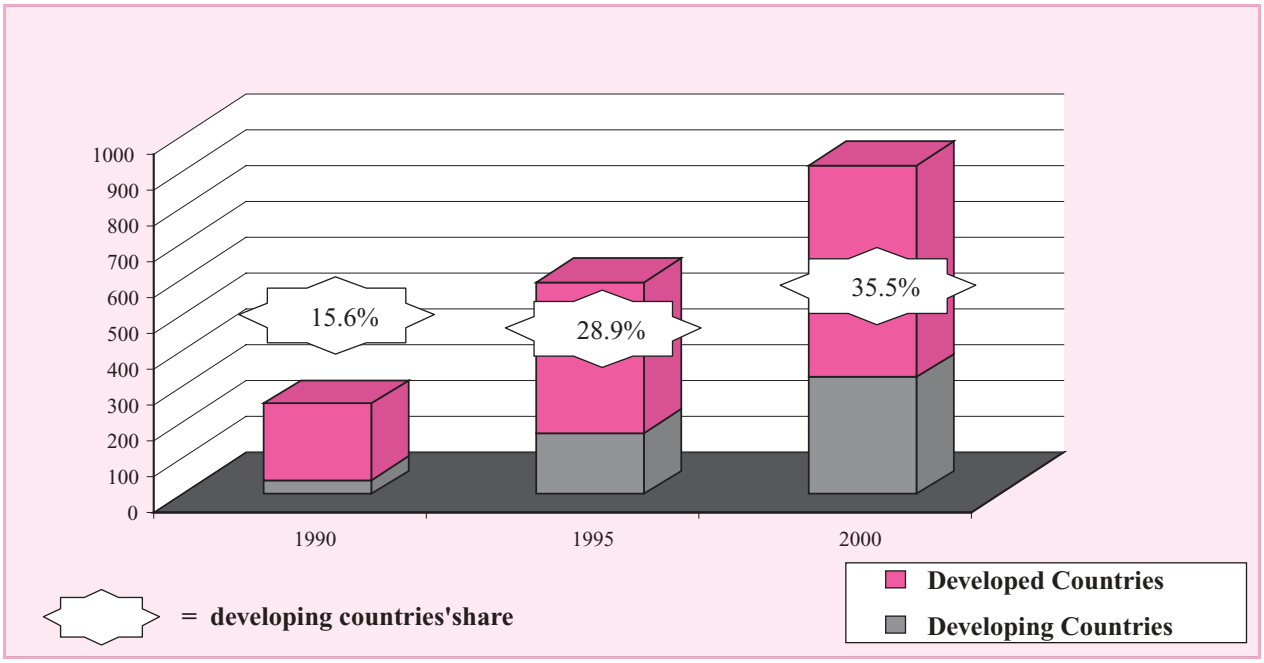
- It was signed as a separate document, and is therefore not a part of the "Single Undertaking': for this reason, participation in the Agreement is not compulsory for WTO member countries and for countries that are in the process of accession to the WTO;

- It is a tariff-cutting mechanism that obliges its members to cut tariffs of all products covered to zero.

As shown in chart 13, trade in IT products grew tremendously over the last decade and was worth over $ 900 billion in 2000.[4] In particular, exports of IT products from developing countries grew at a compound annual growth rate (CAGR) of 23.5 per cent over the last decade, while exports from developed countries grew at a CAGR of 10.8 per cent.[5] By comparison, total world exports grew by 6 per cent over the same period.[6] As a consequence, the share of developing countries and economies in transition in IT exports grew from 15.6 per cent of exports in 1990 to 35.5 per cent in 2000.

It is also worth noting that IT exports represent a higher share in the exports of developing countries than in those of developed countries. In fact, IT exports grew from 12 per cent of total developing countries' exports in 1990 to 22 per cent of their total exports in 2000, while for developed countries the share was respectively 10 per cent in 1990 and 14 per cent in 2000.[7] This phenomenon was a result of transnational corporations strategies for locating hardware production in emerging markets, as well as of developing countries' efforts to develop local IT production capacities which resulted in important outsourcing of IT production to those countries.

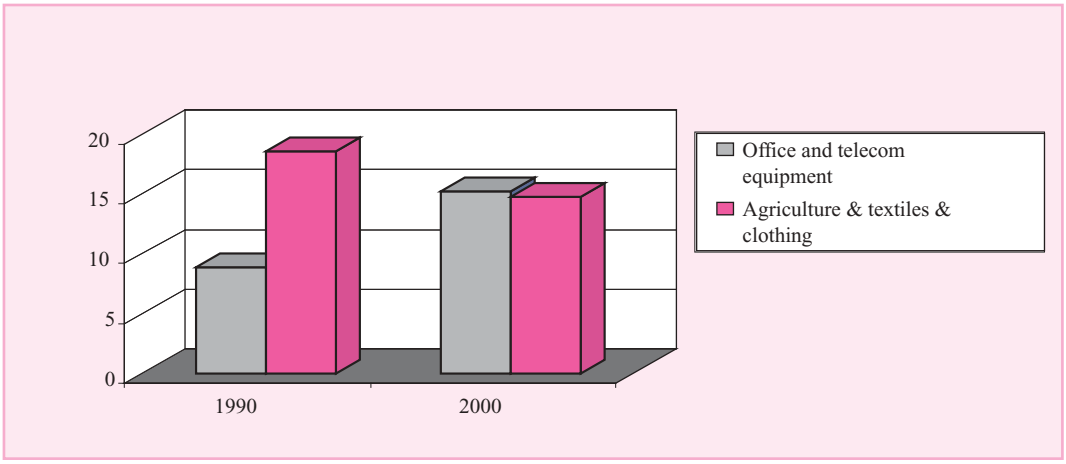
Chart 13
Total exports of IT products ($billions)



Source: UNCTAD COMTRADE database.

As a result of the rapid growth in the last decade, and as shown in chart 14, the share of IT products now exceeds the share of agriculture, textiles and clothing products combined.

Chart 14
Share of IT in World Trade (percentage)



Source: WTO (2002).

The main sub-sectors within the IT industry were semiconductors, electronic data processing (EDP), office equipment (OE), telecommunications equipment, components and miscellaneous goods.[8] The two largest of these – accounting for almost 60 per cent of IT exports – were EDP and semiconductors.[9]

EDP was the largest sub-sector, with 29 per cent of total IT exports in 2000.[10] This segment includes personal computers, mainframe computers and peripherals such as keyboards, printers, monitors, cables and modems. Storage units, for example hard drives but also CDs and diskettes, are also included in this category. It is interesting to note that trade in EDP includes trade in packaged software, although this is not specifically mentioned. This happens for two sets of reasons: on the one hand, a large proportion of internationally traded software is installed in new computer devices, and users pay for it as part of the price of their new machine; this makes the distinction between hardware and software difficult to capture in import and export figures. This problem is compounded by the fact that, in the current trade nomenclature, there is no distinction between virgin disks and disks containing data, information or programs, so that even software that is sold separately from new computers is not adequately recorded in international trade figures.

The share of developing countries in EDP hardware was quite high, accounting for 40 per cent of exports in 2000.[11] Developed countries – and in particular the United States and Japan – are the main producers of high-end computer products, but Asian countries, particularly Singapore, the Republic of Korea, Malaysia, Thailand and China, are also powerful competitors, especially in the PC sub-segment.[12] Thus, the presence of developing countries is higher in the commoditized IT products, which are characterized by low value-added.

As regards software, the United States is the world's leading exporter, and it has been estimated that 'American off-the-shelf software accounts for 70 per cent of the world market".[13] Among developed countries, Japan, Ireland, Singapore, the United Kingdom, France and the Netherlands are emerging as software industry hubs. Among the developing countries, a number of Asian countries are promoting production of software and software services, in particular India, Pakistan, Malaysia, the Philippines and Thailand, among others.[14]

The second largest sub-sector, with 25 per cent of exports, was semiconductors, and it was the one with the largest participation by developing countries, accounting for 43 per cent of exports.[15] Again, the largest producers were the United States and Japan, together with a number of ASEAN countries, whose market share has been increasing steadily. Leading exporters from the ASEAN region are in particular the Republic of Korea, Thailand and Taiwan Province of China.[16]

Table 19

Total exports of IT products and developing countries' share of exports

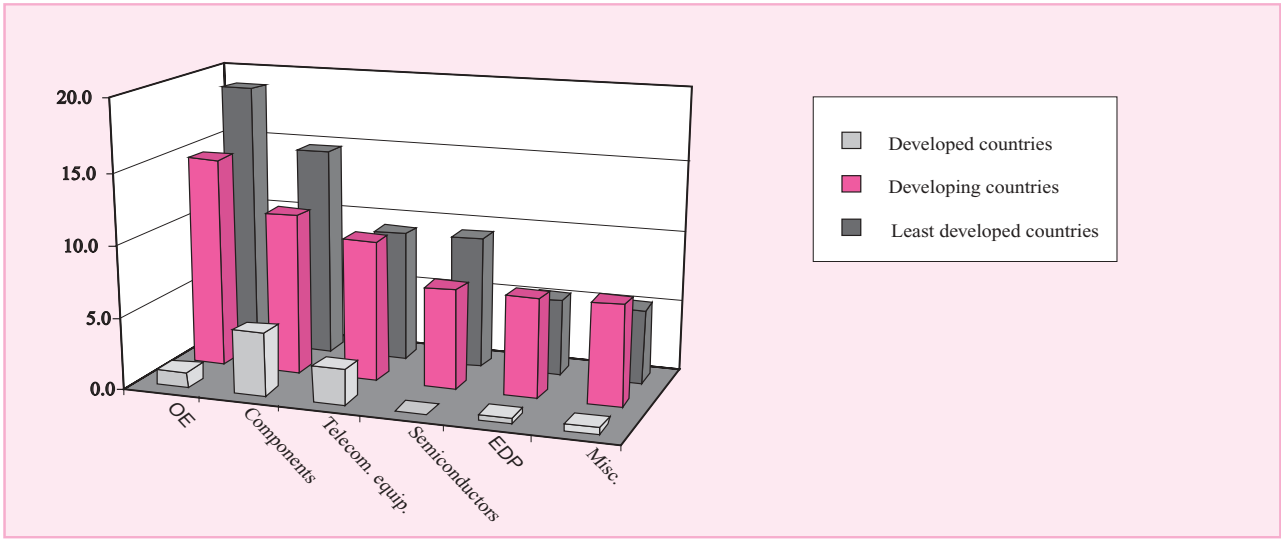
Years	1990		1995		2000	
Product Group	Total exports (billion $)	Developing Countries' Share (%)	Total exports (billion $)	Developing Countries' Share (%)	Total exports (billion $)	Developing Countries' Share (%)
Electronic Data Processing	94	15	196	28	303	40
Semiconductors	41	29	138	38	227	43
Other components	51	14	125	27	179	34
Telecommunications equipment	16	11	42	16	109	24
Miscellaneous	26	4	56	20	60	13
Office equipment	25	16	37	36	41	34
Total	253	16	594	29	919	36

Source: UNCTAD COMTRADE database.

As shown in chart 15, the level of tariff protection applied to IT goods is currently low in developed countries and it is quite likely that since developed countries are the main markets for these products, this was one of the factors that enabled the rapid growth of developing countries' exports of IT goods. However, tariffs remain relatively high in the developing world and especially so in least developed countries. As the chart shows, the level of protection is highest in the office equipment and components sub-sectors. The reason for this, with regard to the components sub-sector, is in part that some products included in that sub-sector are difficult to separate from components of an electrical and even mechanical nature.[17] Thus, these products were not subject to the sweeping tariff-cutting exercise that focused on the IT sector. Even when this is taken into account, the rate applied by some of the least developed countries appears to represent one more obstacle for companies located in those countries in accessing technology at reasonable cost. In order to enable developing countries' manufacturers and service providers to engage in e-business and to take full advantage of the opportunities offered by the new technologies, the tariffs levied on these products need to be reassessed.

Chart 15

Simple average of tariffs applied to IT products



Source: UNCTAD TRAINS database.

C. Role of IT in e-business and the developmental impact of the IT industry

In the last three decades a number of countries have used the IT industry as a tool for their development, for a number of reasons. First, the sheer size of the industry now makes it an important investment opportunity. Second, since many segments of the industry do not require a large amount of upfront capital, entry in this sector is relatively easy for countries that have adequate human capital. Third, as mentioned in the previous section, the protection level for the IT industry is relatively low in the major importing markets, and this no doubt was among the factors that favoured the growth of the IT industry in some of the developing countries.

A number of developing countries have therefore undertaken strategies to attract investment in the field of IT and/or develop the IT industry. The IT industry has grown in waves, as regards both technological developments and market demand, so according to one interpretation, the countries that have succeeded in developing an IT local sector were those that recognized and consequently targeted an emerging trend, investing in the production of goods for which the technology was already established, but for which the market was not yet saturated.[18] Some of the South-East Asian countries were, for example, successful in penetrating the PC industry in the early 1980's when PCs relied on a robust technological base and the industry was growing fast.

One clearly emerging new wave in the next few years concerns the development of open-source software. As explained in box 18, open-source not only offers promising opportunities to the software industry in developing countries but also is particularly well adapted to fitting in with developing countries' current pattern of hardware production.

Box 18

Open-source software

In contrast to the proprietary software produced by most commercial manufacturers, open-source software is written and perfected by volunteers, who freely share the programming code that would otherwise be kept secret. Under the terms of the most popular open-source licences, anyone can redistribute the software without paying fees to its author, and anyone can modify it if they distribute the new version under the original terms: open-source and non-proprietary.

The most important of open-source products is the operating system Linux, which has become a powerful competitor of proprietary software and is running on 30 per cent of all active website servers on the Internet, including perhaps the most famous B2C website, Amazon.com. Furthermore, it was recently reported that 'Merrill Lynch and Credit Suisse First Boston have both started to use Linux throughout their operations, for such high-powered tasks as financial trading and order processing'.[2]

The development of open-source software provides promising opportunities for the software industry in developing countries. In this respect, it should be made clear that open-source is free in the sense that anyone is free to view and modify its source code, but not in the sense that nobody is selling it. For-profit companies have found ways to sell open-source software basically by selling customer service and support.

It is also interesting that the development of open-source provides an ideal match for the capacities of developing countries also as regards their current patterns of hardware production. In fact, thanks to open-source programs, complex applications can run on ordinary PCs linked together into "farms" rather than requiring more expensive super-computers and mainframe workstations. Because ordinary PCs are mainly produced in developing countries, while more expensive equipment is mostly produced in the developed countries, the developing countries can capitalize on their strength by developing open-source software.

In addition, by writing applications based on the Linux operating system, programmers from developing countries will be increasingly be able to acquire a more direct understanding of the operating system and enhance their skills. Also, developing countries' programmers can now draw on the online collaboration by software engineers throughout the world in the development of the software and benefit from shared experience rather than from the mere transfer of a technology that is developed outside their borders.

Box 18 (*continued*)

An interesting example of the utilization of Linux in the developing countries comes from a Pakistani university and research institution,[3] where low-cost, old computers – such as 386 or 486 machines with no hard disk and little memory – are used in connection with larger machines to operate a laboratory which is used to give courses in engineering and computer programming.

[1] See www.netcraft.com/survey.

[2] DylanTweney (2002).

[3] The University of Engineering and Technology, Lahore, Pakistan. For details see Bokhari, and Rehman (1999).

Another emerging trend in developing countries is the customization of IT and especially software products for the use of their local or regional markets. In fact, a number of SMEs from developing countries are closely cooperating with transnational corporations in order to make their products or services suitable for the particular needs of a niche clientele or a foreign market. Box 19 explores this area and gives examples.

Box 19

Localization of software and websites: a growing industry

The increasing size and reach of the IT industry and the Internet have created the need for the "localization" of software packages as well as of companies' websites. Localization can simply mean translation of the content into the local language, but quite often goes further because the software programs will require some re-engineering in order to run smoothly in the foreign language environment.

For example, there is a major need to "Arabize" software for the Middle East region, a potentially large market with some 175 million Arabic speakers, Arabic being the sixth most widely spoken language in the world. A number of Egyptian companies are competing in this potentially lucrative market, in the hope they can replicate the success that they enjoy in the Arab world in producing media content – books, films and broadcasting. Examples include Shazly, specializing in the Arabization of English software, (http://www.shazly.8m.com) and S.A.L.T. (http://www.salty2k.com Systems Arabic Localization Technology), which has conducted successful localization of Microsoft and Lotus software packages as well as providing services related to websites translation and web hosting. From another region, Transco Technology Co., Ltd. of China (http://www.transco.com.cn) provides an already solid client base of TNCs with localization in respect of the growing Chinese market.

Interestingly, localization is clearly also extremely important in the open-source environment. As an example, Arabeyes (www.arabeyes.com) is "a Meta project that is aimed at fully supporting the Arabic language in the Unix/Linux environment. It is designed to be a central location to standardize the Arabization process. Arabeyes relies on voluntary contributions by computer professionals" from all over the world. As was discussed above, open-source provides a number of opportunities for developing countries: these opportunities can only be enhanced by localization and translation into local languages, which can then serve as a springboard for developing new ventures and business opportunities.

A number of other examples could be given of potential opportunities for companies from developing countries in the IT sector. However, it is more important to underline the key input that IT makes to development in its widest possible sense. In fact, IT is among the factors that underpin the globalization taking place in virtually all business sectors.

New ICT such as the Internet give companies the opportunity to develop new products, to access world markets at lower costs and to source the goods and services needed in the production process in wider and more competitive markets. This translates into increased efficiency not only at the level of the firm, but also at the level of the business sector and the economy as a whole.[19]

While it is clear that many companies in developing and transition economies are using e-business in a variety of forms,[20] to fully benefit from the new tech-

nologies and integrate them into everyday business requires a technological infrastructure and a level of workforce expertise that are beyond the reach of the majority of small and medium sized enterprises in developing countries. It is for this reason that business associations, local and national governments, and international organizations are developing a number of initiatives in order to create a nurturing environment into which the business community can successfully integrate e-business practices.[21]

The present analysis is complementary to these efforts, in that its aim is to offer hindsight on the role of the IT industry in facilitating the adoption of e-business by the local business sector in developing countries. In this connection, the next paragraph presents the survey designed and conducted by the UNCTAD secretariat in order to highlight some of the basic facts of foreign investment in IT in developing countries and especially the relationship between IT transnational corporations and the local workforce and the local business sector.

D. Methodology of the survey of the most important IT multinationals

The UNCTAD secretariat undertook a survey of the determinants of IT companies' investment and use of e-commerce in developing and transition economies. It used several databases[22] in order to identify all the IT companies of a size large enough to justify overseas investment. Information about the sample population, the rate of response and a copy of the questionnaire can be found in annex 2.

The questions included in the questionnaire were carefully selected and worded in such a way as to minimize the work required of the respondents and to facilitate the analysis of the results. This meant that – with only one exception – multiple-choice questions were preferred to open questions. As an example, many of the questions requested the respondents to choose among alternative strategic options or rank various factors that guide their investment decisions or desired government strategies. Of course, this implied a certain loss of spontaneity and of generality in the answers, which are typical and have to be accepted in these surveys.

While a question on the magnitude of worldwide revenue from IT products was included, questions aimed at extracting quantitative information such as the magnitude of planned or existing investment, the revenues from sales at a specific location or the number of personnel working in any given site were deliberately excluded for a number of reasons. First, quantitative information would be difficult for the companies to disclose, and would prevent many from participating in the survey and providing a valuable insight into policies and strategic business options. Second, these questions would not necessarily have given indications about the magnitude of developing country operations. For example, depending on the different ownership arrangements and on the business strategy adopted by the mother company or by the local management, a very small upfront investment could result in a larger or a smaller business venture. Including a question on the number of employees could have been equally misleading, depending on what part of the work was subcontracted and on the labour or capital intensity of the goods that were produced (production of semiconductors is capital-intensive whereas IT services are markedly labour-intensive).

The answers, which are presented below, are intended to be of assistance in the design of policies and strategies that will not only attract the kind of IT investment that best matches a country's strengths but also allow developing countries and countries in transition to increase the IT competence of the workforce and to deepen the linkages between national firms and IT multinationals. Unless otherwise indicated, the source of all the data presented in the next paragraphs is the UNCTAD survey.

E. Results of the survey

1. Composition of the sample

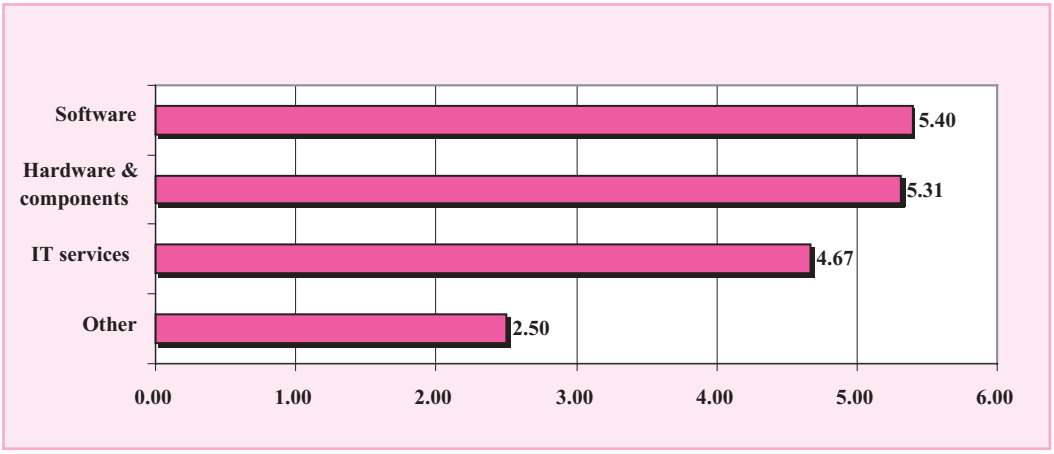
As regards the composition of the sample of respondents, the 35 companies that replied to the questionnaire had a cumulative turnover from IT products of $ 413 billion, which represents around a half of IT worldwide production. The average turnover was $ 12 billion: it should be noted however that this is not the total turnover of the companies – which is even larger – but exclusively the revenue from IT sales.

The sample included companies of different sizes and revealed that even relatively small-scale companies in the field of IT invest in overseas markets. Twelve companies had a turnover of less than $ 1 billion, nine companies between $ 1 and 10 billion, five companies between $ 10 and 20 billion, five between $ 20 and 40 billion, and 3 with more than $ 40 billion.

The survey was not addressed to local IT-producing companies in developing countries for two sets of reasons. First, multinational companies make up an important share of production in the IT sector. For instance, the sum of the revenue of the top ten hardware and of the top ten software producers, according to *Fortune magazine*, is $ 311 billion, or roughly a third of worldwide IT spending.[23] Secondly, it would have required two different questionnaires to inquire about the local operations of small IT companies and the overseas operations of IT multinationals, so that it was decided that this second line of analysis should be treated separately.

As regards the geographical composition of the sample, 14 respondents were from North America, 11 from Western European countries, 5 from Japan and 4 from Asia. The companies in the sample represent a variety of business models and invest in different sub-sectors. The respondents were asked to indicate in which sectors they primarily invested: multiple answers were possible because several companies are producers of both software and hardware. Chart 16 reproduces the finding on a scale of 1 to 10: the sectors in which most companies invested were software and hardware and components, followed by IT services. Only a minority invested in other sub-sectors.

Chart 16
Sectors in which the companies invest



Scale: 1 to 10.

It is interesting to note that the companies which indicated that they invested primarily in hardware and components had an average turnover of $ 18.82 billion, while those that invested primarily in software had an average turnover of $ 4.28 billion. In other words, many of the "smaller" companies in our sample were mainly investing in software. This replicates the underlying structure of the industry: by way of comparison, the 12 largest companies in the field of computer hardware and office equipment, as reported by *Fortune magazine*, had an average turnover of $ 21.3 billion, while the 13 largest software producers had an average turnover of $ 4.3 billion.[24]

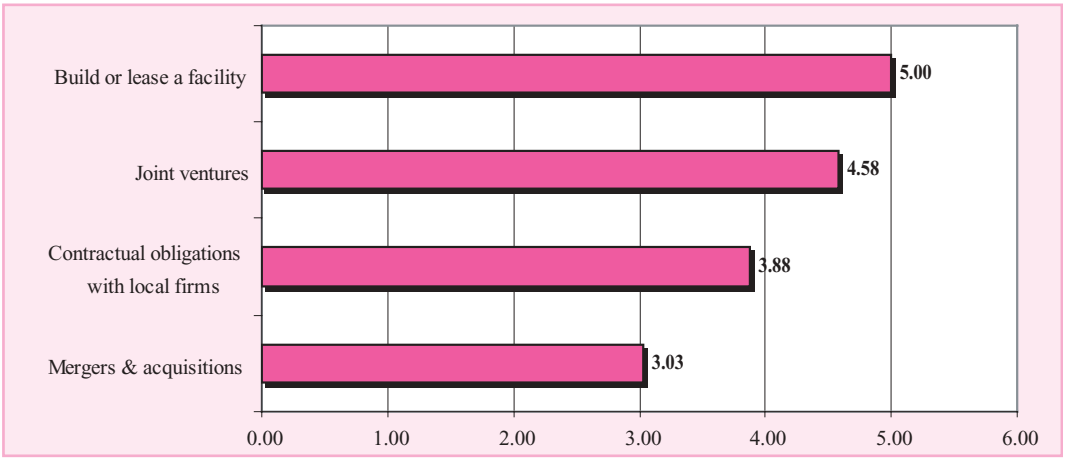
2. Type of ownership arrangements

Respondents were asked to rank the means that their company used in order to establish a presence in developing countries. Companies were given four choices, as set out in Chart 17.

The majority of respondents answered that investment was of the greenfield type (building or leasing a facility), while mergers and acquisitions were the least utilized among the available options. Interestingly, this is the reverse of the finding by the *World Investment Report*: "Over the past decade, most of the growth in international production has been via cross-border M&A rather than greenfield investment".[25] The difference in conclusions may be explained by the fact that the corporate IT sector in developing countries has not yet presented advantageous acquisition targets or merger partners owing to the relative infancy of the entire IT sector.

Our finding could be related to the particular characteristics of the IT industry as opposed to other eco-

Chart 17
Means that your company uses in order to establish a presence in developing countries



Scale: 1 to 10.

nomic sectors. One should be careful, however, about potential definitional discrepancies. In particular, in our survey, greenfield investment was defined quite loosely to include building or leasing a facility. In other words, this answer could point to strikingly different patterns, such as building a new plant for the production of IT hardware or leasing an office for the distribution of a company's products.

Nevertheless, reading through the answers, and combining this answer with the one on the purpose of investment (see below), led to the conclusion that quite a number of the respondents were indeed undertaking greenfield investment with the intention of starting local production. The prevalence of greenfield investment is a positive sign, because it results in a net increase in the developing countries' production facilities, and can contribute to the overall improvement in macroeconomic and export trade performance.

Another important expansion tool, utilized extensively by the respondent companies, was the formation of joint ventures with local companies, whereby the multinational corporation is typically contributing its command of state-of-the-art technology and the local partner the knowledge of the market. In many cases, joint ventures are preferred to the alternative of directly acquiring local companies, because this strategy requires a lower upfront investment, and because continuity in the operations of local companies is preserved.

The relatively low number of companies that chose mergers and acquisitions as their preferred expansion tool could be due to a number of factors, including the fear that local companies may be burdened by debt or tied down by the composition of their workforce.[26]

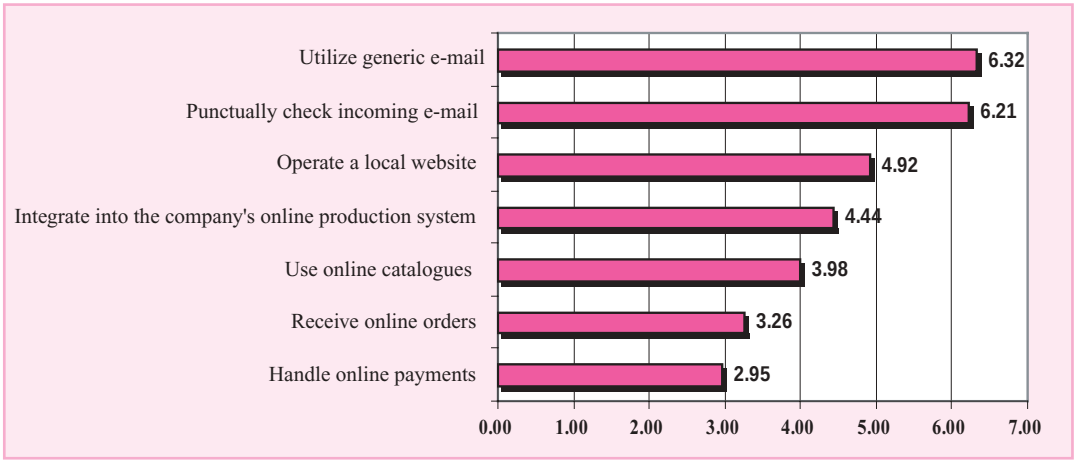
3. Utilization of e-commerce by IT multinationals

The respondents declared that – on average – 35 per cent of their purchases and 16 per cent of their sales were done over the net. Reliable statistics on enterprises' use of e-commerce are notoriously difficult to find,[27] and so it was not possible to compare this finding against other figures collected at the worldwide level, as would have been desirable. As a tentative comparison, in the United States, a recent survey by the United States Department of Commerce found that: "E-shipments account for 18.4 per cent of the value of all shipments from US manufacturing plants in 2000".[28] In account of the fact that our sample includes companies from countries that are less advanced in e-commerce than the United States, we can conclude that companies from the IT sector are – as would have to be expected – comparatively heavy users of electronic commerce.

In this light, it is interesting to see whether developing countries' operations are able to seamlessly integrate into the multinationals' system of production, which relies on high technology for the execution of contracts with established suppliers (see chart 18)

Chart 18

What proportion of your facilities in developing countries use the following technologies?



Scale: 1 to 10.

The respondents were asked what proportion of their developing countries' operations used common information and telecommunication technologies. On a scale of 1 to 10, 10 would represent an answer such as "all developing countries' facilities utilize the technology" and a value of 1 "none of the developing countries' facilities utilize it". As can be seen from chart 18, a large proportion of developing countries' facilities utilize e-mail and operate a website, but few of them are yet engaging in e-commerce operations such as managing online catalogues, receiving online orders and handling online payments, and more generally becoming integrated into the company's online production system.

It is perhaps for this reason that a rather high percentage of the respondents declared that the various aspects of e-commerce did not facilitate "at all" the setting up and operating of developing countries' facilities (9 per cent). An equal percentage of respondents held an opposite view – namely that e-commerce had greatly facilitated such operations – and the great majority of respondents thought that e-commerce had made things significantly (32 per cent) or somewhat (47 per cent) easier.[29] More research would have to be done to qualify this perception, but it appears that in the operation of overseas facilities the "handshake" and personal contacts still retain their importance in spite of technological advances and that developing countries' facilities continue to be managed utilizing ordinary telecommunications tools rather than the new technologies, in view in particular of the still limited availability of ICT in developing countries.

4. Location of investment

The respondents were asked to provide details of the regions where they invested or where they intended to invest in the near future, indicating for what purpose they were investing or were intending to invest there (Chart 19). In order to keep the design of the questions simple, the companies were offered six choices: Africa, Eastern Europe, Latin America, Middle East, South-East Asia (ASEAN countries) and other developing countries in Asia (including India and China). The majority of the respondents (70 per cent) indicated that they invested in "other developing countries in Asia", while a slightly lower percentage (67 per cent) in South-East Asia. These regions were followed at a distance by Eastern Europe and the Middle East, and then by Africa and Latin America.

Next, in view of this strong concentration of IT investment, which appears to be even more important than that encountered in many other industries, it becomes interesting to see what are the factors that draw investment to specific countries and what are the consequences of alternative policy actions that countries can take in this regard.

In the first place, as Chart 20 shows, the location of the investment was influenced by the location of the mother company's headquarters. On the Asian and Latin American markets, the bulk of the investment was from United States' firms, while in Eastern Europe it was from European companies. In the Afri-

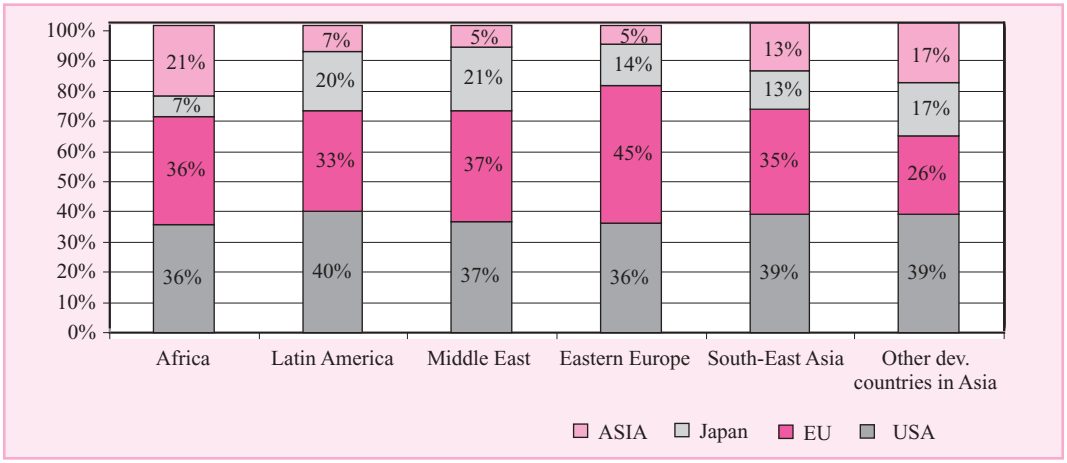
can and Middle East markets the percentages of European and American companies were identical. A surprisingly high percentage of investment in Latin America and the Middle East came from Japanese companies, and equally interesting was the involvement of Asian companies in the African market.

Chart 19

In which of the following regions does your company currently invest or intend to invest (percentages)?

Chart 20

Percentage of companies that invest in the different regions according to the location of their headquarters

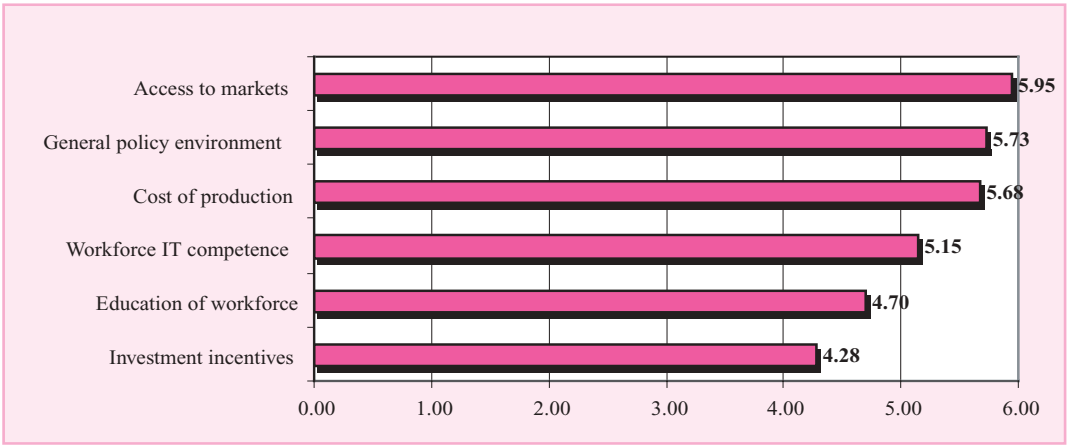


As for the other factors that directed IT investment to specific markets, the most important was access to markets (market size and potential, proximity to larger markets, participation in regional/bilateral free trade areas), followed by general policy environment (political stability, trade policy, tax policy), cost of production, workforce IT competence, workforce education and investment incentives (see chart 21).

This ranking basically reflects the findings of other surveys – see, for instance, the *Foreign Direct Investment Survey*[30] – but shows that IT companies attach particular importance to the competences of the workforce. The most important message from chart 20 is that IT multinationals will select the location of their subsidiaries according to fundamental macroeconomic variables, which the country can alter only in the medium

Chart 21

Factors that your company considers in choosing a developing country as a potential location for investment



Scale: 1 to 10

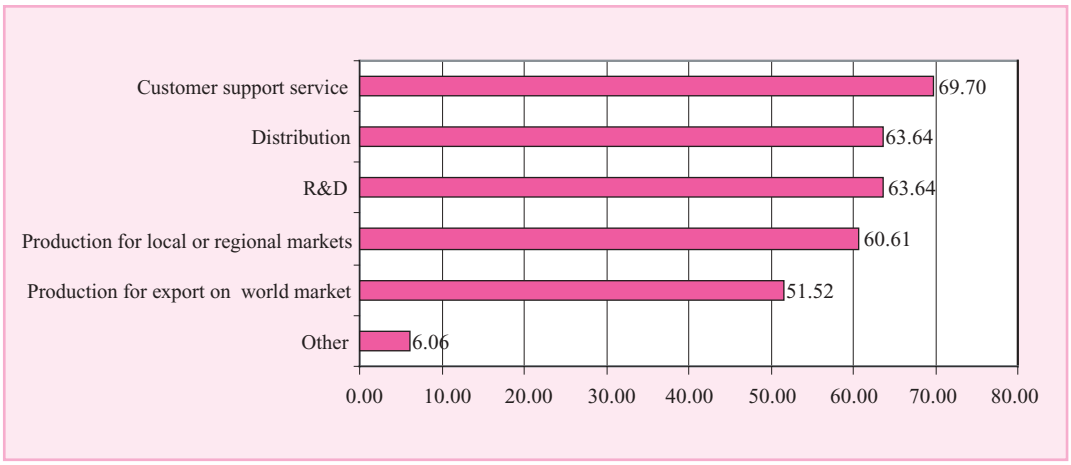
to long term. For instance, the most important factor in TNCs decisions appears to be "access to markets": while access is a geographical factor over which the policy maker has little control, partially, it can be enhanced by signing free trade area agreements at the regional level and marketing the country as the potential production hub to service the regional market. The case is similar for factors such as "general policy environment" and "cost of production": Governments can influence them by making the country an enabling environment for investment – both local and foreign – but clearly this can only be a long-term policy goal. Factors such as investment incentives, which can be altered in the short term, are instead likely to have less effect on companies' decisions on the location of investment.

Next, it is interesting to analyze the purpose for which the respondent companies invest in developing regions (see chart 22). The questionnaire gave the companies five choices: Customer Support Service (CSS), Distribution, Production for export on the world markets, Production for local or regional markets, Research and development (R&D) and Other. The most important reason for investment in developing countries was customer support service and distribution, followed by R&D, and production.

Since customer support service and distribution are critical factors that draw IT investment to the different markets, it is safe to assume that IT multinationals will invest more heavily in the very regions in which they are more intensively exporting. Thus, as e-commerce

Chart 22

For what purpose does your company invest or inted to invest?(percentages)

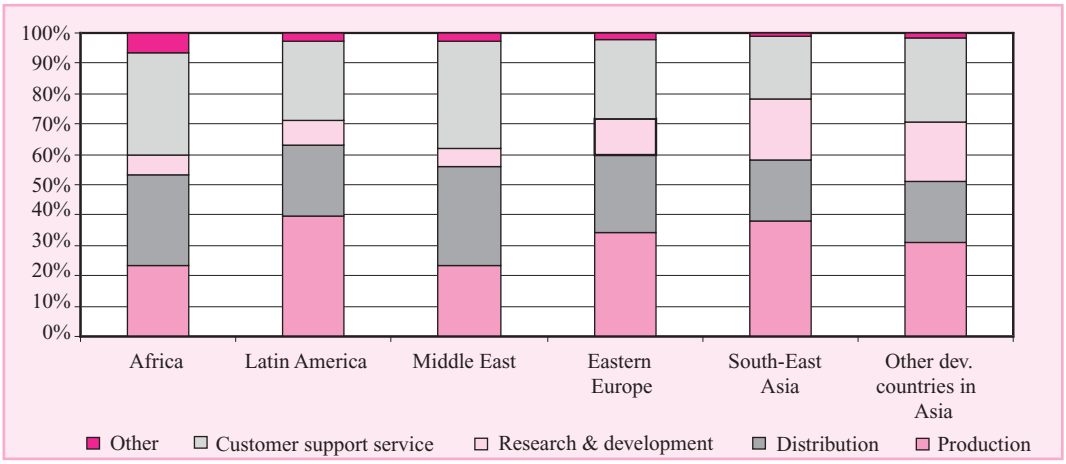


and e-business lead the business sector in developing countries to make more intensive use of the new technologies, more IT investment will flow to those regions. The relative importance of customer support service also points to the growing market which tends to the needs of corporate clients for the customization of hardware and software and which – as was discussed in boxes 17 and 18 – also offers business opportunities for developing countries.

Chart 23 makes a cross-analysis of the reasons why multinationals invest in the different regions, according to the purpose of investment. It appears quite clearly that investment in production facilities and in research and development – which is the one that most facilitates the transfer of technology from multinationals to local companies – is still heavily concentrated in South and South-East Asia. In fact, while R&D represents 20 per cent of all investment in those two regions, the percentage is only 6 per cent in the Middle East and 7 per cent in Africa. Similarly, investment in production facilities represents 37 per cent of total investment in South-East Asia and only 23 per cent of total investment in Africa.

Chart 23

Percentage of companies that invest in the different regions according to the purpose of investment



To summarize, the findings from the questionnaire point to an intensive concentration of IT investment in South and South-East Asia and in particular to the concentration of investment for productive and research purposes in those regions. Furthermore, it appears that government policies can only alter investment decisions on location in the medium to long term.

We turn now to the last set of questions, which focused on what actions Governments could take in order to maximize the positive fallback of IT investment, in terms of use of local labour by TNCs and enhancement of workforce skills and in terms of deepening the linkages between TNCs and the local industry.

5. Labour

A key benefit of FDI – and especially so in the field of IT – is the potential for human resources development. TNCs may in fact act as a powerful pull factor, because they often offer better wages than domestic firms, but at the same time require a higher level of competence. As a result, they stimulate the development of a technically skilled workforce and encourage Governments and households to invest in education. In addition, the characteristics of jobs in TNCs are such that they often require on-the-job training so there TNC investment may have a direct impact on the qualifications of the workforce.

This brings us directly to the next question - how much of the employment generated by the multinationals is local. The respondent companies reported that – on average – local labour represented 79.7 per cent of the total workforce in their facilities in developing countries. The variation among companies was quite high for this answer, and over half of the companies in the sample reported percentages of 90 per cent and higher. It is also interesting to observe that the multinationals mostly employ skilled[31] labour in their developing countries' facilities: in fact, it represented close to 69 per cent of the total workforce.

The respondents were then asked to specify which policy actions would be desirable in order to increase the number of high-skilled local personnel and improve their competencies (see chart 24).

The companies were of the view that the most important policy action in this regard was developing and expanding local universities, followed by increasing the quality and reach of primary education.

6. Subcontractors

One last important dimension that deserves to be explored is that of the linkages between multinationals and local industry.

The concept of "linkages" was the central theme in UNCTAD's *World Investment Report 2001*, which summarizes its benefits as follows:

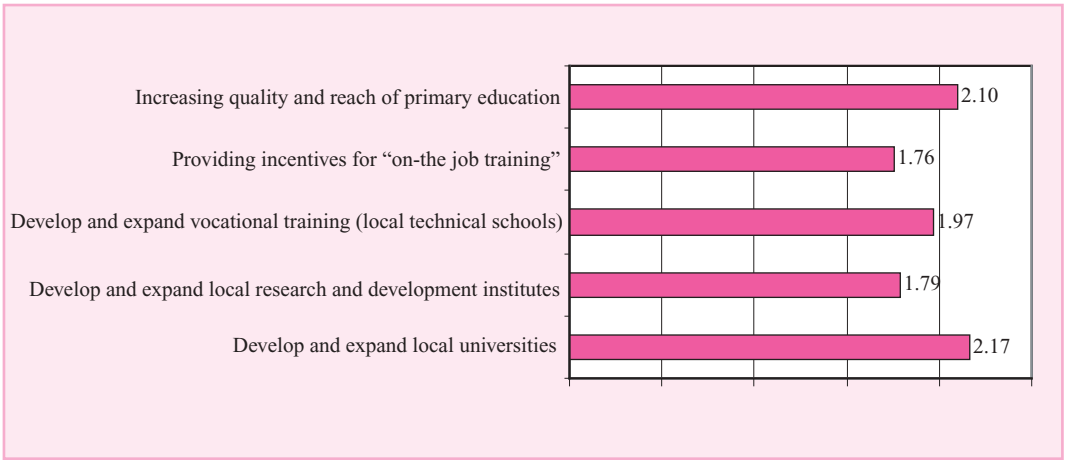
> "A key factor determining the benefits host countries can derive from FDI are the linkages that foreign affiliates strike with domestically owned firms. Backward linkages from foreign affiliates to domestic firms are important channels through which intangible and tangible assets can be passed on … They can contribute to the upgrading of domestic enterprises, provide opportunities for production and employment by domestic suppliers and embed foreign firms more firmly in the host economies".[32]

For these reasons, our survey included a question on the linkages that TNCs made with local firms. The companies that responded to our survey maintain intense linkages with local companies in the host countries. In particular, 65 per cent of companies indicated that they were buying generic office supplies from local firms and 56 per cent that they sourced from them direct inputs into the production process. Only 9 per cent of the firms declared that they did not rely on local partners.

Additionally, the respondents were asked to specify which policy actions would encourage them to make further use of local firms. As chart 25 shows, the most important ones are the strengthening of enforcement of contracts either by reinforcing local courts or through international investment agreements, developing the competencies of local firms in the field of IT, improving telecommunication infrastructure and improving information on the stability and financial security of local firms.

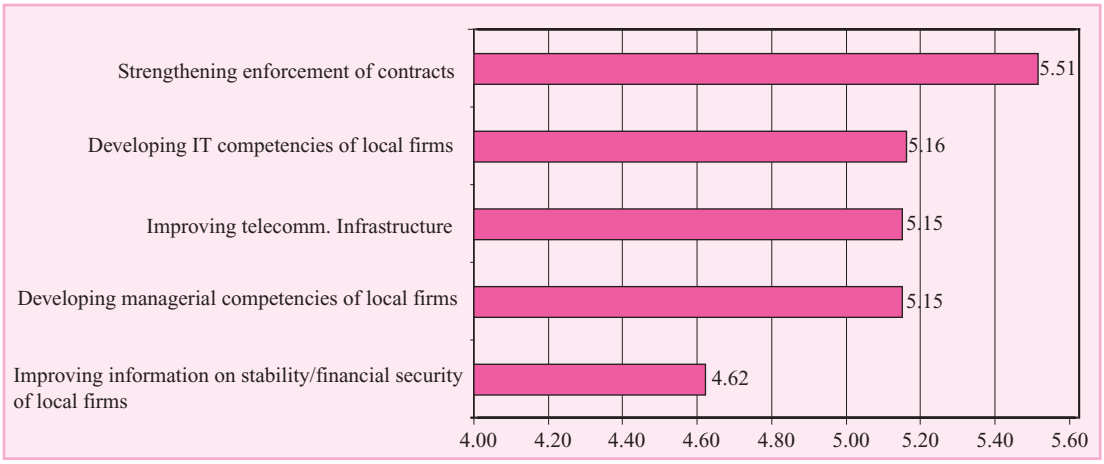
Chart 24

Actions that would help improving the competences of your company's local employees in developing countries



Scale: 1 to 10

Chart 25
Actions that would encourage you to increase your reliance on local subcontractors



Scale: 1 to 10

F. Conclusions

With regard to the question asked in the introduction to this chapter – that is, whether the IT industry, and more particularly investment by IT multinationals in developing countries, can contribute to enhancing a country's capacity to engage in e-business – the answer appears to be a qualified "yes".

First, it appears from several of the answers in our survey that the TNCs that are investing in the IT sector in developing countries are doing so with a long-term objective. First, the very reasons why the TNCs choose the locations in which they invest have to do with complex, economic and geopolitical factors rather than short-term advantages. Moreover, an important part of the respondent companies reportedly chose 'greenfield' investment as a preferred expansion method, which is clearly a strategy that reflects an intention to create production capacity and establish a presence in the local markets of developing countries in the long term. Finally, the fact that the majority of the workforce employed in the production facilities of the TNCs is local labour, and especially skilled local labour, also shows a long-term commitment, in the light of the difficulty of hiring, training and retaining IT-savvy labour, especially in developing countries.

Second, IT investment in developing countries has a positive spillover effect on the local productive sector, which is significantly involved in the production process of the multinationals. The companies also appear to focus on increasing the competences of their local workforce.

Third, the survey also reinforces the intuition that IT companies engage quite intensively in e-commerce, and that they equip many of their subsidiaries in developing countries with e-commerce functionalities. If that is so, IT investment might then make an important contribution to increasing e-commerce in those countries, at the same time boosting data traffic on the Internet, fuelling competition and hence potentially bringing about cost reductions in telecommunication services.

On the other hand, most of the IT companies indicated that the new technologies made only a partial contribution to the setting up and operation of developing countries' facilities. This suggests that developing countries' facilities continue to be managed utilizing ordinary telecommunications tools rather than the new technologies, in view in particular of the still limited availability of ICT in developing countries.

Furthermore, IT investment is still very concentrated in Asia and South-East Asia, even more so than other kinds of investment, which are more dependent on the availability of natural resources. It is also important to emphasize that investment for production and research purposes – which offers the best opportunities for transfer of technology – is even more heavily concentrated in these regions. It would therefore

appear that investment by IT multinationals could be used as a pull factor for the development of e-business only by some of the developing countries.

This finding is reinforced by the analysis of the factors that directed IT investment to specific markets, which reveals that policy incentives can alter multinationals' investment location decisions only in the medium to long term.

However, this picture could change in the coming years, as the new technologies become more widespread, fuelling demand for IT sales and investment in the developing countries. A potential role for the policy makers – in cooperation with the private sector and all the relevant stakeholders – will then be to foster an enabling environment for e-business through the adoption of national e-strategies. The specificities of the e-strategies will differ across countries and regions, but the analysis contained in this chapter highlights the importance of involving the local IT industry and the local branches of the IT multinationals in their definition and implementation.

Government policies might also play an important role in enhancing the positive impact of IT investment on workforce skills – by improving the reach and the quality of university programmes – and in deepening the linkages between the multinationals and the local business sector by strengthening the enforcement of contracts, developing IT competencies of local firms, and improving telecommunications infrastructure.

The industry includes a number of strikingly different economic sectors, some of which are particularly dynamic and were resilient to the recent economic downturn. The high growth of some segments of the industry, combined with the recent liberalization of the sector in the context of the WTO ITA Agreement, appears to provide IT companies from developing countries with important opportunities for exports. The localization of existing software programs and the customization of IT systems for the benefit of the local business sector as well as for the multinationals that are present in the country, could also constitute an initial entry strategy for software companies of developing countries, which could then build up export capacity targeted at the regional markets. The fact that a large share of the multinationals' investment in the developing countries is directed to distribution and customer support services – which are a proxy for the customization of hardware and software products to the needs of corporate clients – is also indicative of the importance of this market and of its potential. It is important to underline that this strategy is on the borderline between IT production and IT use and as such it at the same time provides opportunities for local IT companies and enhances the local business sector's capacity to engage in e-commerce.

Our analysis also highlights the significant opportunities that may emerge from the development of open-source software and from the adaptation of existing technology to this new environment. In this regard, Governments can play an active role by ensuring that local businesses and the local IT industry can make their choices as regards systems infrastructures which best suits their needs with a full understanding of the issues at stake. Training programmes and the adaptation of university curricula might be needed to ensure that the local IT industry as well as the local business sector can take full advantage of these opportunities. In the dialogue that is taking place at the national and international levels among all the stakeholders involved in the definition of "e-strategies" for developing countries, these opportunities should be adequately addressed.

Notes

1 For a description of the products included in this study, see annex 1.

2 IDC (2001).

3 See IDC (2002): 'Worldwide IT spending growth, which was flat in 2001, is projected to rise to 4.7 per cent in 2002 and to 9.6 per cent in 2003'.

4 UNCTAD COMTRADE database.

5 Ibidem.

6 WTO (2002).

7 UNCTAD COMTRADE database.

8 See annex 1 for details of the product categories utilized in this study.

9 UNCTAD COMTRADE database.

10 UNCTAD COMTRADE database.

11 UNCTAD COMTRADE database

12 ITC (1999, p. 14).

13 ITC (1999, p. 52).

14 Ibid.

15 UNCTAD COMTRADE database.

16 ITC (1999, p. 34).

17 This problem is, for instance, particularly important for relays, switches, inductors and connectors, which may include some electrical products in addition to electronic ones.

18 For a detailed discussion of this trend see Kraemer and Dedrick (1999).

19 For an analysis of the impact of ICT on development see Bridges.org (2001), Digital Opportunity Initiative (2001), Department for International Development (DFID) (2002), Goldstein and O'Connor (2000), Kapur (2001), Open Economies Project (2002), UNCTAD (2000b), UNCTAD (2001b), UNCTAD (2002) and UNDP (2001).

20 For examples see UNCTAD (2001a), chapter 9, 'E-Commerce in the Least Developed Countries'.

21 See UNCTAD (2002). UNCTAD held an Expert Meeting on Electronic Commerce Strategies for Development, from 10 to 12 July 2002. The papers and the presentations from that meeting are available at http://www.unctad.org/ecommerce.

22 Including Fortune, Datamonitor and Piranhaweb.

23 Our estimate of worldwide IT spending includes telecommunication and scientific equipment, for which Fortune 500 does not provide a separate listing, so that the one-third ratio is an underestimate.

24 *Fortune magazine*, 15 April 2002, available at www.fortune.com

25 UNCTAD (2000a, p.10).

26 For an illustration of why M&As might be difficult in emerging markets, see *The Economist* (2002). The article, which notes that the Republic of Korea has many large companies that interest foreign investors, asks why they are so difficult to buy and gives illustrations of difficult negotiations in the field of IT and in other sectors. Apparently, the reasons for these difficulties have to do with local culture, lack of reliable financial information and debt. These problems are not specific to the Republic of Korea, but are illustrative of problems that are quite common in developing countries. Indeed, as reported by the *Wall Street Journal* of 8 May 2002, "Korean FDI in April surged 56.6 per cent from a year earlier".

27 For more information on the collection of statistics on e-commerce see UNCTAD (2001b).

28 United States Department of Commerce (2002).

29 Percentages do not add up owing to the fact that some companies did not respond.

30 Multilateral Investment Guarantee Agency (MIGA) (2002).

31 The companies were not given a definition of "skilled labour" but were left free to utilize their own definition. It is therefore quite possible that definitions varied across companies, but we preferred to keep the questions as simple as possible to minimize the work required of the respondents.

32 UNCTAD (2001a, p. 132).

References

Bokhari, S. H. and Rehman, R. (1999). "Linux and the developing world", *IEE Software*, January/February.

Bridges.org (2001). "Spanning the digital divide", available at http://www.bridges.org/projects/reports.html.

Department for International Development (DFID) (2002). "The significance of information and telecommunication technologies for reducing poverty", available at http://www.dfid.gov.uk/Pubs/files/ict_poverty.pdf.

Digital Opportunity Initiative (2001). "Creating a Development Dynamic", Final Report of the Digital Opportunity Initiative, UNDP, New York, available at http://www.opt-init.org/framework.html.

Goldstein, A. and O'Connor, D. (2000). "E-Commerce for Development, Prospects and Policy Issues", Technical Paper No. 164, OECD Development Centre, Paris, September, available at http://www.oecd.org/pdf/M00006000/M00006196.pdf.

International Data Corporation (IDC) (2001). "The market after September 11", Special IDC Telebriefing, 11 October, available at http://www.idc.com/getdoc.jhtml?containerId=25758.

International Data Corporation (IDC) (2002). "Economic recovery to drive IT market rebound in 2002", IDC Press Release, available at http://www.idc.com/getdoc.jhtml?containerId=pr2002_04_29_171739.

ITC (1999). *Trade in Information Technology Products and the WTO Agreements: Current Situation and Views of Exporters in Developing Countries*, Geneva.

ITU (1999). *Challenges to the Network: Internet for Development*, Geneva.

ITU (2002). *World Telecommunication Development Report 2002*, Geneva.

Kapur, S. (2001). "Developing countries in the network economy: a blueprint for success", presentation made on the occasion of the *International Symposium on Network Economy and Economic Governance*, available at http://www.econ.bbk.ac.uk/faculty/kapur/personal/pres.html.

Kraemer, K. L. and Dedrick J. (1999). "National Policies for the Information Age: IT and Economic Development", available at http://www.crito.uci.edu/itr/publications.

Mallampally, P. and Sauvant, K. (1999). "Foreign direct investment in developing countries", *Finance and Development*, March, available at http://www.imf.org/external/pubs/ft/fandd/1999/03/mallampa.htm.

Multilateral Investment Guarantee Agency (MIGA) (2002). *Foreign Direct Investment Survey*, World Bank, Washington, DC, available at http://www.ipanet.net/fdisurvey.

Open Economies Project (2002). "Digital Entrepreneurship and Innovation: A Framework for Policy, Legal and Regulatory Action", document prepared for the joint meeting of the United Nations ICT Task Force, G-8 Group of Nations DOT Force, and World Economic Forum Global Digital Divide Initiative, New York, 4 February, available at http://cyber.law.harvard.edu/openeconomies/actionframework.htm.

The Economist (2002). "Dead deals walking: South Korean takeovers", February.

Tweney, D. (2002). "Buying Industrial-Strength Tech on the Cheap", 25 April, available at http://www.business2.com/

UNCTAD (1999). *World Investment Report 1999: Foreign Direct Investment and the Challenge of Investment*, United Nations, Geneva and New York.

UNCTAD (2000a). *World Investment Report 2000, Cross-border Mergers and Acquisitions and Development*, United Nations, Geneva and New York.

UNCTAD (2000b). *Building Confidence: Electronic Commerce and Development*, UNCTAD/SDTE/MISC.11, United Nations, New York and Geneva, available at www.unctad.org/ecommerce.

UNCTAD (2001a) *World Investment Report 2001: Promoting Linkages*, United Nations, Geneva and New York.

UNCTAD (2001b). *E-Commerce and Development Report 2001*, UNCTAD/SDTE/ECB/1, United Nations publication, sales no. E.01.II.D.30, United Nations, New York and Geneva, available at www.unctad.org/ecommerce.

UNCTAD (2002). "Electronic Commerce Strategies for Development: The Basic Elements of an Enabling Environment for E-Commerce", TD/B/COM.3/EM.15/2, prepared for the UNCTAD Expert Meeting on Electronic Commerce Strategies for Development, Geneva, 10-12 July 2002, available at www.unctad.org/ecommerce.

UNDP (2001). *Human Development Report 2001: Making New Technologies Work for Human Development*, New York, available at http://www.undp.org/hdr2001.

United States Department of Commerce (2002). "2000 E-Commerce Multi-Sector Report", 18 March, available at http://www.census.gov/eos/www/ebusiness614.htm.

WTO (1996). Ministerial Declaration on Trade in Information Technology Products, http://www.wto.org/english/tratop_e/inftec_e/itadec_e.htm.

WTO (2002). *International Trade Statistics*, available online at http://www.wto.org/wto/english/res_e/statis_e/statis_e.htm.

ANNEX I

STATISTICAL DATA ON THE IT SECTOR

The dataset utilized in the analysis of trade flows and tariffs was constructed using the United Nations COM-TRADE database and the UNCTAD TRAINS database, on the basis of a classification provided by ITC in the publication *Trade in Information Technology Products and the WTO Agreements* (ITC, 1999). This definition is close to – although not identical to – the product coverage of the WTO ITA Agreement. The reason for the discrepancy lies in the fact that the ITC definition utilizes Standard International Trade Classification (SITC) codes at the 4-digit-level, whereas in the Annex to the WTO Agreement the product coverage is defined in the Harmonized System (HS) at the 6-digit level.

It also should be noted that in the dataset on trade flows all countries that report data to the United Nations were included in the analysis. Because not all countries reported data for the three years that were included in the analysis, a different subset of reporting countries had to be utilized to cover the entire period.

Annex table 20 below provides a detailed listing of the product codes that were used in the analysis of trade flows and tariffs.

Table 20
Dataset utilized for analysis of trade in the IT sector

Products	SITC codes	Description
Semiconductors	7764, 7763	Discrete semiconductor devices and integrated semiconductor devices. Commonly, transistors, thyristors, diodes, hybrid circuits, microprocessors, memories, A to D and D to A converters, A to D amplifiers and a host of microchip components which form the building block of any electronic system.
EDP	7521, 7522, 7523, 7526, 7527, 7529, 7599	Large, medium and small-scale systems including input/output devices, storage devices and data communication equipment. In common parlance, personal computers, work stations, multi-user servers, keyboards, monitors, printers, modems, LAN cards, hubs, routers, serial and parallel ports, multi-media accessories, cables and other peripherals. Computer software: packaged software in diskettes, magnetic tapes and CD-ROM.
Office equipment	7511,7512,7633, 7513, 7591, 7638	Electronic typewriters, electronic calculators, electronic cash registers, electronic accounting machines, dictation equipment and photocopiers.
Telecom equipment	7643,7641,76491,76481	Line telephony/telegraph transmission apparatus, radio telephony/ telegraphy receiver, parts and accessories, switching equipment, fax machines, transmission equipment, telephone sets, other telecommunications equipment, accessories and parts.
Other components	7762,7768,7711,7712, 7786,7723,7722,7724, 7725,7731,8984	Color television tubes, monochrome television tubes, other display tubes, capacitors, resistors, connectors, plugs and sockets, electrical circuits, switches, transformers, chokes, coils and PCBs.
Other miscellaneous products	7788, 7648, 8743, 8744, 8747, 5985	Measuring and checking devices, chromatographs, spectrometers, optical radiation devices, and electrophoresis equipment and other miscellaneous equipment.

Source: ITC (1999, pp. 164-165).

ANNEX II

QUESTIONNAIRE ON ELECTRONIC COMMERCE AND INVESTMENT IN DEVELOPING COUNTRIES

The survey began with a selection of around 250-300 candidates drawn from databases from Fortune, Datamonitor and Piranhaweb. The questionnaire was sent by e-mail or fax to all these companies, and was then posted on the web to make it easier for the companies to respond. After an intense follow-up that lasted over two months during which the importance of the questionnaire was highlighted, 35 companies responded. The response rate – over 10 per cent – should be considered very satisfactory, since in this kind of questionnaire response rates typically range around 2-5 per cent. Following the survey, the results were uploaded in a database and responses from the companies aggregated to allow not only a simple analysis of answers given to specific questions but also cross-question aggregations.

The questionnaire

1. What is the percentage of your company's sales that take place electronically (i.e. customer's order is placed electronically)?

   _____

2. What is the percentage of your company's purchases that take place electronically (i.e. your order is placed electronically)?

   _____

3. Does your company currently invest or intend to invest in any of the following regions? For what purpose? Please mark with an x the corresponding cell in the table

   _____

	Production for export on world market	Production for local or regional markets	Distribution	R&D	Customer support service	Other (specify)
Africa						
Latin America						
Middle East						
Eastern Europe						
South-East Asia						
Other developing countries in Asia						

4. Within these regions, which country will be the top location of your investment in the coming two years?

   _____

5. Please rank from 1 to 4 the factors that your company considers in choosing a developing country as a potential location for investment (1= most important; 4= least important)

	Rank
Develop and expand local universities	
Develop and expand local R&D institutes	
Develop and expand vocational training (local technical schools)	
Providing incentives for "on-the job training"	
Increasing quality and reach of primary education	

6. Please rank from 1 to 4 the sectors in which your company primarily invests (1 = most important; 4 = least important)

Hardware and components	Software	IT Services	Other
❑	❑	❑	❑

7. Please rank from 1 to 4 the means your company uses in order to establish a presence in developing countries (1 = most common; 4 = least common):

obligations	Build/lease a facility	Mergers & acquisitions	Joint ventures	Contractual with local firms
	❑	❑	❑	❑

8. In your company's facilities in developing countries, on average, what is the percentage of local labour in the total workforce?

_____

9. In your company's facilities in developing countries, on average, what is the percentage of skilled labour in the total workforce?

_____

10. Please rank from 1 to 4 the actions that would help improve the competences of your company's local employees in developing countries (1 = most important; 4 = least important)

	Rank
Develop and expand local universities	
Develop and expand local R&D institutes	
Develop and expand vocational training (local technical schools)	
Providing incentives for "on-the job training"	
Increasing quality and reach of primary education	

11. When investing in developing countries does your company rely on local partners:

For production don't rely of inputs	For generic office supplies	For other purposes	No, we on local partners
❑	❑	❑	❑

12. Please rank from 1 to 4 the actions that would encourage you to increase your reliance on local subcontractors (1 = mostDo different aspects of "electronic commerce" facilitate the setting-up and the operation of your facilities in developing countries:

	Rank
Improving telecommunications infrastructure	
Developing IT competencies of local firms	
Developing managerial competencies of local firms	
Improving information on stability/financial security of local firms	
Strengthening enforcement of contracts by local courts/international agreements	

13. Do different aspects of "electronic comerce" facilitate the setting-up and the operation of your facilities in developing countries:

To a great extent	Significantly	Somewhat	Not at all
❑	❑	❑	❑

14. What proportion of your facilities in developing countries use the following technologies: (1= all of them; 4 = none of them):

	Rank
Utilize generic e-mail	
Punctually check incoming e-mail	
Operate a local website	
Use online catalogues	
Receive online orders	
Handle online payments	
Integrate into the company's online production system	

Company name ……

Total turnover from IT products (Thousand US $) ……

Contact person ……..

E-mail address……..

Chapter 6

E-FINANCE FOR DEVELOPMENT: GLOBAL TRENDS, NATIONAL EXPERIENCE AND SMEs

A. Introduction

Large enterprises have greater access to finance on competitive terms than do small and medium-sized enterprises (SMEs) and microenterprises. The SMEs of developing and transition economies, which represent the most of these countries' productive capacity, face an even more severe lack of access to finance.

The advent of online electronic finance has brought with it the promise of cheaper, faster and more widely available finance for SMEs. Various types of online financial services that may be available to SMEs have already emerged or are coming on stream.

The Internet is a global phenomenon and so is e-finance. Its deployment is not limited to developed countries, and indeed some developing countries – such as Brazil, India and the Republic of Korea – are experiencing particularly strong growth in e-banking. At the same time, there are significant differences not only among regions but also among countries within the same region. It is interesting to note that, to a large extent, although the initial impetus has often been provided by foreign institutions (Deutsche Bank launched the very first Internet banking project in Latin America in 1996 and Citibank has developed a special "e-toolkit" across all its branches worldwide) local financial institutions have now successfully taken the relay. In many developing and transition economies the local enterprise sector has also developed active Internet and e-commerce strategies, thus matching the e-finance drive of the local financial service providers.

The Dynamics of e-finance in emerging economies, while not dissimilar, are clearly not identical to those of e-finance in the developed countries. It appears that by and large, e-finance in developing countries is driven by Internet banking, e-payments, and e-trade finance. Activity in financial markets is still limited, although in countries such as Mexico and the Republic of Korea online brokerage services appear to be quite well developed. On the other hand, some e-financial services seem to be specifically tailored to the developing and transition economies. This is the case of microfinance, which will be discussed in the section on SMEs' specific services.

This chapter begins with a review of current trends in e-finance, including Internet banking, e-trade finance and e-credit information, and then looks at the global e-finance platforms. It also provides a review of SME-related e-finance experiences and initiatives in developing countries and, finally, outlines the challenges facing SMEs and related players.

Documentation on e-finance for SMEs is still heterogeneous and fragmented, especially regarding developing and transition economies. In particular, there is a lack of information on the attitudes of users of e-finance services. E-finance suppliers provide a large share of the available documentation. However, in some cases the information is provided to support business initiatives and therefore the data should be used with caution. This chapter is based on published data and information made available by experts participating in two recent UNCTAD e-finance related events, namely the UNCTAD Expert Meeting on Improving Competitiveness of SMEs in Developing Countries: Role of Finance, Including E-Finance to Enhance Enterprise Development, held from October 22 to 24, 2001 in Geneva, and the UNCTAD Side Event "E-Finance for Development", held on 19 March, 2002 in the framework of the International Conference on Financing for Development convened by the United Nations in Monterrey, Mexico.[1]

Throughout the chapter, a narrow definition of e-finance – to mean financial services delivered online through Internet fixed and wireless networks to enterprises and households – will be used.[2] However, where appropriate, the discussion covers related areas such as the offline use of electronic devices for payment transactions in remote areas.

B. Internet banking

Internet banking refers to the deployment over the Internet of retail and wholesale banking services. It involves individual and corporate clients, and includes bank transfers, payments and settlements, documentary collections and credits, corporate and household lending, card business and some others.

Since its inception Internet banking has experienced strong and sustained growth. According to Jupiter Media, Internet traffic for all United States banks grew by 77.6 per cent between July 2000 and July 2001, compared with overall World Wide Web traffic growth of 19.8 per cent over the same period.[3] Another source estimated that the share of United States households using Internet banking will increase from 20 per cent in 2001 to 33 per cent in 2005, and that by 2010 there might be 55 million users.[4] In France, the number of online banking accounts is recording an annual growth rate of 75 per cent and is forecast to reach 10 million by 2003. Datamonitor forecasts that between 2000 and 2003 the number of online bank accounts in Europe may grow annually by 34 per cent, increasing from 14.3 million in 2000 to 34.2 million in 2003.[5]

Internet banking operations currently represent between 5 per cent and 10 per cent of the total volume of retail banking transactions both in the United States and in Europe. This is less than the share of Internet securities trading, estimated at between 20 and 25 per cent of the total, but much more than overall business-to-consumer (B2C) e-commerce, which represents less than 2 per cent of the total retail trade.

Internet banking is becoming a driving force shaping the future of the banking industry. All banks, including those that were cautious in the past, intend to offer access to their products and services via the Internet, which is seen as a major distribution and communication channel. The current status of Internet banking shows that – contrary to what some analysts initially expected – pure Internet banks have gained only a limited share of the market. In fact, the traditional banks have not been destroyed and, while a few of the pure Net bank models may succeed, no newcomer has been able to penetrate the banking sector on a large scale. The "click and mortar" model – a strategy combining physical and Internet presence – has thus become the dominant model. The traditional banks and other financial service providers have adopted aggressive Internet strategies. At present the entry barriers to Internet banking appear to be much higher for new entrants than was the case during the early days of this type of banking. The barriers stem from customer attitudes and the very nature of banking services and products. The traditional banks with a strong customer base have a competitive advantage over newcomers. However, to maintain this advantage is not easy. The key to success is to keep abreast of technological change and sophistication; this allows a bank to understand the potential of Internet technologies and to integrate them into a coherent business strategy. For many banks the scale of the requisite operations and investments creates problems of outsourcing or aggregation of services.

For "click and mortar" banks, transforming bank branches into multipurpose advisory centres would also encourage clients to move to Internet banking, since the majority of Internet users also make use of bank branches and automated teller machines (ATMs). The idea is to transform bank branches into "one-stop shops", i.e. well-networked financial advisory centres for clients.[6] Thus the prevailing model of Internet banking today is the one that is thoroughly integrated within the existing banking infrastructure, which combines click and mortar systems.

To further develop e-finance, banks need to show customers that they provide the same security standards on the Internet as in traditional banking. Moreover, like credit card associations and companies, banks should assume, at least in the initial stages, full responsibility for covering the costs incurred by clients as a result of a security breach and unauthorized transactions. To encourage migration to Internet banking, the banks should also offer better interest rates and cheaper accounts. The ability to gain customers' trust thanks to security, willingness to take responsibility and the offer of financial incentives has been an important feature of the most successful pure Net banks.

Online banking for SMEs

Many global financial service providers have developed specialized SME-related Internet banking. For example, Citibusiness, a service of Citigroup, provides online various e-finance services to SMEs, including current, savings and money market accounts and certificates of deposit. Furthermore, SMEs can apply online for lines of credit, loans and mortgages. The service also includes the management of clients' funds in separate accounts. Other global players, such as HSBC, Deutsche Bank, Standard Chartered Bank are also developing similar services.

C. Internet payments

From closed to open architecture

Payment systems, particularly the wholesale systems used for transactions among financial institutions, have been moving to an electronic infrastructure since the beginning of the 1970s. Electronic payment systems and networks were based on proprietary protocols and dedicated telecommunication infrastructure.

The Internet has radically changed this situation. It is an *open network infrastructure*, involving direct non-hierarchical links between the buyer, the vendor and any intermediaries, as well as between them and the technology providers. The Internet model dissociates the network from the physical infrastructure. It allows interconnection between heterogeneous networks and provides ubiquitous common standards, whose development is no longer controlled by a single entity or even a group of entities. Furthermore, with encryption technology, digital certificates and smart cards, it is now possible to provide security in a modular and flexible fashion. Thus a highly secure environment can be created on the public networks.

Chart 26
Internet payments: a radical value shift

Traditional payment service providers	Internet
Closed network	Open network
Private infrastructure	Public infrastructure
Mono-industry	Cross-industry

As Chart 26 shows, the Internet entails a radical value shift, although this view is not necessarily universally shared. Even leading players such as SWIFT and Visa have not yet transferred their core operations to open systems, and this creates a degree of uncertainty as far as their future operations are concerned. For many payment systems, use of Internet Protocol standards and protocols does not entail a radical change in their business practices and their governance. It remains to be seen whether the full advantages of Internet architecture can be gained without fully accepting the open network model.

Despite numerous attempts aimed at offering innovative alternatives, credit and debit cards and their existing payment network and procedures are still the main payment instruments for B2C transactions. They are used in more than 90 per cent of online purchases. Small businesses are using them for some of their payments. However, there is a broad recognition that the current credit-card-based payments cannot fully satisfy e-commerce transactions. Most e-tailers consider the current payments structures to be quite expensive. Even the supposed beneficiaries of this situation, namely banks and payment networks, do not particularly like those structures. The card networks point out that Internet transactions represent a disproportionate percentage of charge-backs and fraud. To make payments more secure and to reduce merchant's liabilities for fraud and certain charge-backs, Visa introduced the so-called Verified by Visa (VbyV). It is hoped that the introduction of such applications will increase consumer confidence in Internet-based card payments. At the same time, card-based payments are not yet well suited for either small-value (micro-payments) or large-value payments. Whether the recently introduced smart cards combining the virtues of all cards and other e-banking characteristics (in a chip embedded in a card) will make cards suitable for micro- and large-value payments remains to be seen.

In order to find an alternative to card-based system, a number of alternative Internet payment initiatives have been launched. The first-generation systems (including initiatives such as Digicash, CyberCash and Cyber-com) were wound down after encountering severe problems. Micro-payments, which were also considered in the mid-1990s to be a viable mechanism for transactions of intangible goods (information, online entertainment and others), have not taken off as expected, at least not yet.

The main problem with these first-generation Internet payment initiatives is that they were not focused enough on their customers' behaviour and attitudes. Most of them appeared to be hasty steps in the search for more efficient and lasting solutions. They combined considerable technological sophistication with a degree of marketing and business naivety. They also became trapped in a vicious circle: merchants would not offer e-payment schemes if few customers used them, while customers would not use e-payments if few merchants accepted them.

Despite the poor record of the first wave of e-payment schemes, the development of Internet-based payment has not slowed down but instead has broadened in scope. Online payments continue to attract new entrants, including cyber-entrepreneurs backed by venture capital and well-known IT providers such as Microsoft and Yahoo. The range of proposed solu-

tions is becoming wider and currently includes, virtual points providers (e-centives.com, mypoints.com), P2P (peer-to-peer) payments (PayPal, BillPoint, PayDirect, eCount.com), virtual escrow systems (escrow.com, tradesafe.com), digital wallets (Yahoo Inc., Microsoft Passport), virtual and smart cards (Visa, American Express, Mastercard), and electronic bill payment and presentment or EBPP (e-route, billserv.com, Check-Free Transpoint).

The multiplicity of online payment methods reflects the continuing search for standards in the industry. Moreover, online payments devices are now becoming more diversified by moving from PC workstations to mobile devices and Internet enabled television sets.

One of the successful payments solutions with the potential to organise online payments for small SMEs and microenterprises is Paypal. While still relying on traditional banking accounts and card infrastructure for actual fund transfers, it has managed to capture from the card associations the online P2P payments market. The payment architecture of Paypal combines innovation – the use of e-mail for payment notification and confirmation, account management and its integration into existing payment systems. Using existing networks Paypal plays the role of a merchant by keeping the books of e-mail transactions as its own and settling a large proportion of them. Paypal's income is derived primarily from the float on accounts, which it manages, complemented by fees charged to purchasing customers and service providers. This business model allows Paypal to undercut the traditional merchants, particularly for small businesses. This arises, for instance, in the context of online auctions, where buyers and sellers need a sure, secure and cost-effective payment mechanism to settle their transactions. Paypal has also benefited from having a close association with the leading cyber-auction operator, E-Bay (25 per cent of E-Bay payments go through Paypal). A system such as Paypal can capitalize on viral marketing, as each user of Paypal encourages his or her friends and business acquaintances to open an account.

Further expansion of global e-payments systems: Visa, Identrus and SWIFTNet

While payments card associations such as Visa, Mastercard and American Express were already at the forefront of Internet based payments (and are now moving towards their further diversification), the banking industry was also changing its attitude – from being reactive to proactive. The creation of Identrus and the migration of SWIFT, the most important global interbank payments network, to the Internet under the SWIFTNet programme were among the most visible examples in that respect.

The largest payment card association, Visa has continued to experience a spectacular growth in its payments traffic. Between 1985 and 1997 Visa transactions increased from $100 billion to $1 trillion; they then doubled, reaching $2 trillion in 2001 (Visa International 2002). However the share of e-commerce related payments is still low and concentrated mainly in the B2C sector. While continuing to upgrade its e-payments modules based on PC workstations, Visa is exploring new payment devices such as mobile phones, palms and computers (m-payments), Internet powered TV sets (t-payments), offline payments between electronic devices in proximity (p-payments) using infrared or Bluetooth technologies, and payments initiated by voice sensitive technologies (v-payments). As far as SME servicing is concerned, Visa has developed several solutions, including Visa Business (permitting SME buyers to have a short-term trade credit limit embedded in the limit of a given card), Visa Distribution (permitting large wholesale suppliers to automate the account receivables from SME buyers), Visa Purchasing (permitting larger enterprises to streamline procurement process) and Visa Commerce (a non-card-based B2B payments model). Such models are *inter alia* helping to integrate SMEs into online payments and in particular familiarizing them with larger company standards. Visa and other card companies were among the leaders in developing a critical technology of the smart card. This technology has been used in South Africa, for instance, to create financial infrastructure for people without banking accounts. In the medium term, the smart card might provide secure and cost-effective support for specialized payment and settlement services, *inter alia* for SMEs, including those operating in the informal sector.

The SWIFT network is a core element of the global payment infrastructure. Like Visa, it is experiencing an impressive growth in the volume of its operations. From 1991 to 2001 SWIFT message traffic increased from less than 0.4 billion to 1.5 billion messages a year. Daily traffic in 2002 peaked at close to 8 million messages a day. Most SWIFT payments are directed towards Europe, while Fedwire continues to dominate payments in the United States. SWIFT has cooperated with European central banks to support their real-time gross settlement systems, serving as a common messaging service for the majority of high value payment

systems in the euro zone. Its role in providing market infrastructures is also expanding, as it is becoming a messaging hub for clearing and settlement in securities, using Global Straight Through Processing (STP), and in foreign exchange trading, using Continuous Linked Settlement (CLS) systems, which are in its turn linked to Real –Time Gross Settlement (RTGS) one.

From the standpoint of the global payment infrastructure, the December 2000 decision of SWIFT to migrate to a new IP-based network, SWIFTNet, represents a major milestone.

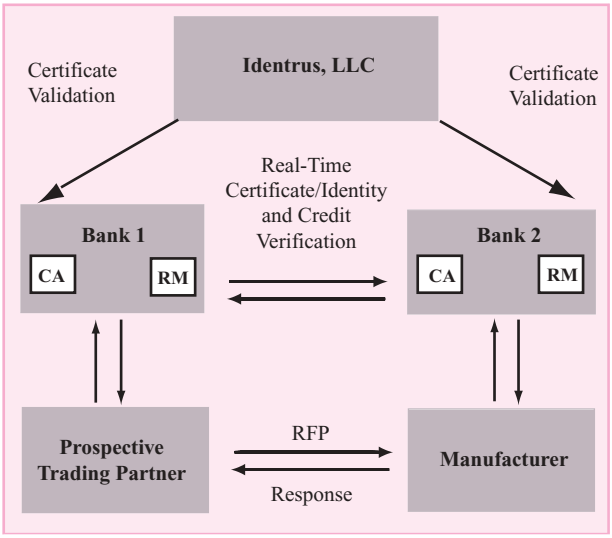
It is expected that SWIFTNet will combine IP standards with highly secure, high-performance networks, owned and operated by SWIFT. The principal SWIFT application, FIN, starts to migrate to SWIFTNet from August 2002 and will form SWIFTNetFIN, a fully IP based application. As a result, all SWIFT customers will have to migrate to the Internet. It is expected that SWIFTNet will offer a wide range of other services, including information, security and payments. SWIFTNetFIN's ambition is to become the infrastructure of choice for the new generation of Internet technologies based payment systems and related services.

To run the above-mentioned systems requires nearly 100 per cent security standards. Many security arrangements have been proposed in order to achieve such a result. The most notable arrangement is Identrus, a United States based organization created in early 1999 and owned by 42 global financial institutions, which act as Identrus Certificate Authorities for corporate customers in more than 133 countries. Identrus seeks to create a global trust infrastructure, based on Public Key Infrastructure (PKI) enabling business-to-business (B2B) commerce among all companies using this infrastructure. The Identrus network will link in a structured and hierarchical way various security and certification systems created by its member banks. The Identrus itself will operate a root certificate authority (root CA), an entity at the pinnacle of the electronic identity hierarchy. Identrus' legal and technical infrastructure is based on a set of uniform system rules, contracts and business practices for comprehensive trust and risk management (UNCTAD, 2001).

In December 2000, four major banks – ABN AMRO Bank, Bank of America, Deutsche Bank and HypoVereinsbank – joined with Identrus and deployed trust-enabled B2B applications.

In 2000, Identrus announced a strategic alliance with SWIFT. The introduction of IP standards will allow

Chart 27
The Identrus scheme



Source: http://www.identrus.com/story_03.xml

SWIFT members and users to have single interfaces with various infrastructures and services.[7]

Transactions in denominated notes are still the main payments method for SMEs. Although handling cash is extremely expensive and cash balances do not earn interest, cash is still used even in developed countries. For example, at the end of 2001, the total amount of United States dollars in circulation was around $620 billion (i.e. $2,200 per capita). Even if one assumes that 75 per cent of that amount was used abroad there is still $550 per capita for United States residents. The scale of cash transactions is higher in Europe and even more so in Japan, not to mention the developing and transition economies.[8] In developed countries the ratio of payments to gross national product (GNP) is very high, but in developing countries it is much lower; this indicates that in those countries money circulates less rapidly and that there are lower levels of formal financial intermediation.

The need to participate in e-commerce and the requirements for entering the chain of online payments are constantly pushing SMEs to adopt the culture of online payments. Similarly, the increasing shares of online retail and wholesale payments in overall payments are generating increased SME participation in online payments.[9]

Some of the above-mentioned payments systems, mainly B2C, could also be adapted to SME and micro-enterprises requirements. At the same time B2B payments methods are also making inroads. Medium-sized and large enterprises are seriously considering

using electronic invoice presentment and payment (EIPP, a B2B cousin of EBPP) in inter-enterprise payments. According to experts, online EIPP cuts costs related to online handling of accounts receivable (AR) and accounts payable (AP) in comparison with their paper versions, by more than half. In the European Union and in many other countries, since digital invoices are now legally acceptable, it is possible to process EIPP and EBPP. In many cases these systems are run by banks, to which enterprises outsource their receivables and payables activities. The reason for outsourcing is the reluctance of enterprises to make large investments while establishing those systems in-house. Also, outsourcing enables them to cut even further the costs related to handling the e-invoices traffic.[10]

Most SMEs, especially in developing countries, still operate mainly in their national markets. However, this should not prevent them from using the Internet for payments. In fact, the Internet's main use – as far as e-payments are concerned – is for domestic payments. For example, in 1999 domestic payments represented 99 per cent of the volume and 86 per cent of the value of all payments transactions. According to a projection by Boston Consulting Group, while between 1999 and 2009, international payments might experience high growth rates and could increase from $238 trillion to 510 trillions, their share in overall payments will probably increase by 3 per cent, from 14 to 17 per cent. The same consulting group projects much higher growth rates for domestic payments in developing and transition economies during the same decade (The Boston Consulting Group, 2002).

Developing countries' initiatives

According to a World Bank survey, the average online banking penetration for developing countries by the end of 1999 was close to 5 per cent (World Bank, 2001). For some countries, the penetration was considerably higher and growing rapidly. At the same time, according a survey by Citibank, United Arab Emirates, user preferences related to banking channels are as follows: bank branch – 12 per cent; ATM – 0 per cent; Telephone banking – 0 per cent; online web based banking – 76 per cent; mobile phones – 12 per cent.[11] In other words, the developing countries are also voting for Internet banking.

In Brazil, the number of e-banking users reached 8 million in 2001 and is growing rapidly. Most Brazilian banks have followed the click and mortar strategy and also entered into strategic alliances with leading Internet service providers (ISPs). Thus Banco Itau entered with AOL into an agreement to bring its customers to AOL services offering free access and customized features facilitating access to e-banking. Today, the majority of the leading Brazilian banks, including Banco do Brazil, BNDES, CEF, Bradesco and Banco Itau are offering advanced e-banking services and nearly a quarter of their client base has already migrated to the Internet. Moreover, SMEs are active users of online banking. Thirty per cent of Banco Itau SME customers are operating online. Unlike in Argentina, Brazilian banks have managed to preserve the real value of their customers' deposits in spite of a period of high inflation rates. As a result, with a high level of banking intermediation (65 per cent of the population) Brazilian banks have espoused Internet banking, which has been well received by both consumers and enterprises, while dollarization and disintermediation in Argentina created a demand side problem for banks and thus discouraged them from investing in Internet banking (Oliveira, 2001). At the same time, increased insecurity in the streets due to social unrest or crime is prompting many users to opt for Internet banking, so as to avoid physically visiting a bank. Thus the crisis in Argentina led to a short-term increase in the use of Internet banking.

Mexico is another leader of Internet banking in Latin America. It adopted legislation providing for the development of both e-commerce and e-finance. One of the local leading banks – Banamex – has over 1.25 million users of Internet banking, including 50,000 companies, mostly SMEs (Martinez-Guerra, 2002). The Mexican subsidiary of the Spanish bank BSCH has launched P-market, an online market place linking SMEs with various suppliers. The bank offers online functionalities to allow SMEs to manage their finance online, and has developed an online procurement system, called Procura Electronica. The bank experienced a rapid increase in the number of its online clients in the first year of operation.

India, one of the leaders in software development, has an advanced online banking system. Over 50 banks offer online services. The example of the largest private bank, ICICI Bank, is really impressive. It has multiplied by four the number of its online banking users, who represent over 15 per cent of the total. Its SME department is a leader in the design of wholesale e-finance credit lines for Indian SMEs. E-banking permits business process re-engineering to achieve zero latency leading to improvements in customer service levels and better risk management because of real-time settlement. While the argument for drastically reducing transaction costs is more debatable in India owing

to low e-banking adoption rates, low labour costs and "free" existing branches, there is a better price discovery process as more and more markets gain integrated real-time and improved access to these trading and data-dissemination platforms. At the same time, however, many changes are still required in technology, access infrastructure and banking regulation. (Mor, 2002; Kumar 2001).

In Bangladesh there is a large gap between the computerization of foreign banks and that of local commercial banks (the gap is particularly great in respect of local public commercial banks) and as regards the state of their intra- and inter-branch online networks. However, 75 per cent of local banks are planning to introduce e-banking, which implies very dynamic improvements in their ICT use indicators. Virtually all banks use banking software at their head offices and during the past few years around one third of local banks has become SWIFT members. Credit card and point of sale services (POS) are already provided by a quarter of local banks, while ATM and internet banking are expanding rapidly especially in major cities (Raihan, 2001) .

In regions lacking adequate telecommunication infrastructure, technologies that make it possible to store and transact value in proximity and offline are taking root. Thus smart cards based on Visa Horizon proximity technologies are being introduced in Ghana and some other African countries. The Visa Horizon and Visa Electronic systems could be of particular interest to microenterprises in remote rural areas. In countries with low banking penetration or where there is mistrust towards local banks, the establishment of basic ATM cards for employees, issued by well-known payment card companies, makes it possible to cash salary cheques, and this represents a step towards establishing banking relationships *inter alia* through e-banking.

Finally one of the most impressive records has been achieved by the Republic of Korea, which has higher than the OECD average e-commerce and e-finance indicators. Internet banking in that country has increased at a rapid pace, the number of online users having risen from 2 million in 2000 5.3 million in December 2001. The country is a leader in the region with 54 per cent of users having multiple online banking relationships (Korea Times Infotech, 2002). The Republic of Korea is also leading in online brokerage and in mobile banking. In South-East Asia Internet banking is also developing rapidly in Thailand, Malaysia, Singapore and to a lesser extent, in the Philippines. Apart from North and South Africa the Sub Saharan Africa is the region that is seriously lagging behind in Internet banking, although it is giving to the rest of the world the good example of microfinance developments.

D. International electronic trade and finance systems

Designed to facilitate the movement of goods and services, trade finance systems rely on complex flows of complicated and traditionally paper-based documents, and this makes the whole process slow, costly and error-prone. Hundreds of billions of dollars are being spent annually on processing the paperwork associated with international trade.

For several years, various participants in international trade have sought to simplify the process and migrate from paper-based to electronic documents. This task has been laborious and often frustrating because of the difficulties in defining common standards.

The advent of Internet technologies has the potential to significantly accelerate the progress towards fully electronic trade finance. However given the fact that trade finance related payments are only a small part of the overall payments traffic, the banks have had to make hard choices either to retain trade payment and finance functions for themselves, or to outsource them and save on transaction costs while keeping the client base.

The need to outsource trade services was the main reason for industry-wide, private initiatives to create global online platforms centralizing the servicing of the trade cycle and in particular the trade finance part. Those platforms have the potential to service the trade and trade finance needs of SMEs. The following is an outline of Bolero, Tradecard and CCEweb.

Platforms for digital trade documents: Bolero, Tradecard and CCE web

Bolero International Ltd. is a United Kingdom based joint venture of SWIFT and the TT Club (an association of freight insurers) created in April 1998. The aim was to create a platform for the secure electronic transfer of commercial trade documentation and data worldwide via the Internet. The platform went live in September 1999, with SWIFT operating the system under contract to Bolero (UNCTAD, 2001).

Bolero maintains that it acts as a neutral and trusted third party that provides the so-called Core Messaging Platform for highly secure delivery and receipt of all trade related electronic documents and payments. In addition to a common technology platform, bolero.net provides a unified legal structure that binds together all parties involved in international trade (importers, exporters, shipping agents, freight forwarders, customs and international banks). The messages between users are validated and acknowledged while the Title Registry application facilitates, online, the transfer of ownership of goods. After extensive consultation with the industries, Bolero issued a RuleBook, which allows disputes to be resolved in the same way as with paper documentation. In addition Bolero allows for the application of the provisions of eUCP, the electronic version of Uniform Customs and Practice for Documentary Credits (UCP) of the International Chamber of Commerce (ICC). Bolero has also developed a value- added service called SURF, which matches trade documentation online between buyers, sellers and banks in order to accelerate all trade transactions and reduce error rates.

At present, SWIFT operates the Core Messaging Platform on behalf of bolero.net. It is planned to be one of the first services to migrate to SWIFTNet. In order to demonstrate its commitment to Internet technologies and their tangible benefits, Bolero and its users have developed BoleroXML, a set of specifications which describe the standard structure and contents of the electronic version of a common trade document such as Commercial Invoice, Bill of Lading and Packing List. UN/CEFACT has recently endorsed BoleroXML as a migration path to the ebXML standard. Bolero is committed to providing an open solution that runs over the Internet.

TradeCard is a United States company developing an online substitute for the traditional bank-based letter of credit (L/C). It intends to make it a trust building platform for the process of online negotiations in trade transactions and related payments. It was launched in 1997, and went live on the web in 2000 (for more details see UNCTAD, 2001).

TradeCard focuses on what is often considered a critical bottleneck in international trade transactions: lack of an inexpensive and efficient system for cross-border trade payment settlement. In March 2001, TradeCard introduced an automated, collaborative, global trade settlement platform which is intended to streamline and automate the processing of virtually any payment transaction, whether it is domestic or cross-border, guaranteed or open account, large or small.

Initially, the banks were reluctant to accept the new competitor. But currently TradeCard works with a dozen international banks and has entered into strategic partnerships with Coface as payment insurer, Marsh, the largest broker of cargo insurance, MasterCard and Thomas Cook, as well as with Cap Gemini Ernst & Young.

CCEweb is a Canadian company, which has based its @GlobalTrade - an electronic payment and trade management system - on the eUCP and existing trade services banking infrastructure. The company launched its initiative in September 2000 and has built strategic partnerships with Adobe, CGE&Y, China Systems, Identrus, SITPRO and Visa International. While retaining the existing rules and banking practices to which the trading community is accustomed, it tried to create simplified electronic versions of a letter of credit as well as streamlining the flow of electronic trade related documents. CCEweb states that it has developed arrangements to streamline operations for both exporters and importers. It hopes that the banks will find its centralised platform a useful tool to outsource costly L/C related operations. While it did not challenge the existing practices on L/C unlike TradeCard, and did not create a parallel rules book unlike Bolero, it did try not only to adapt those instruments to the Internet, but also to develop easy and fast-track versions of e-L/Cs. The @GlobalTrade system allows the printing of the original electronic bill of lading and other trade-related documents in countries without enough technological capacity to cope with PKI solutions or legal and insurance structures to support them. CCEWeb also intends to start the use of passwords and pin numbers with clients especially from developing countries that do not yet have possibility to integrate into PKI systems. They will thus have electronic signatures (Katsman, 2002). Passwords and pin numbers are especially important for developing countries' financial service providers and SMEs.

The systems claim to bring about major savings in costs and time through electronic processing of trade and especially trade finance documents. CCEweb might be the most user friendly one, while Bolero is the most secure one. At the same time alternative arrangements implemented by TradeCard introduce more competition into the system and push costs further down.[12]

Bolero was an initiative of major financial industry players, while Tradecard and CCEweb are private ventures. Although all are now operational, none of them has yet become profitable. To remain operational, they still need financing, including venture capital financing and the issuance of new shares or debt financing.

Other companies active in facilitating cross-border trade payments via the Internet include LC Connect, Proponix, Actrade, FinancialOxygen, Qiva, ClearCross and Xign Corp.[13]

E-forfeiting marketplaces: ITFex and LTPTrade

Based in New York and in London respectively, ITFex and LTPTrade are B2B exchanges, created in 2000, that seek to develop an Internet-based secondary market for international trade finance instruments such as forfeiting bills, bankers' acceptances and shipping guarantees.[14]

At present, this is an extremely fragmented and illiquid market, with an annual trading volume estimated at $75 billion in 2000. Celent Communications estimates that Internet technologies will stimulate the emergence of an electronic trade finance instruments market, whose value by 2005 should total over $700 billion. At the same time, Celent recognizes that the growth of the electronic trade finance market will be slower than that of e-markets for other instruments such as bonds or equities. This is due not only to the disparate nature of trade finance instruments but also to the weaknesses of established automated trading mechanisms, such as matching, and of pricing benchmarks.

It is too early to judge the prospects of IFTex and LTPTrade, their development plans having been adversely affected by the general slowdown in B2B commerce. Both exchanges are now operational. In September 2001, LTPTrade launched a new release of its trade finance transaction and information platform. Key features of the new platform include improved offering and dealing functionality, as well as expanded research and information resources.

Developing countries' experiences

Emerging markets are expected to continue to be the main growth engine for the trade finance sector. Last year, trade finance flows between the United States and Western Europe diminished, wheras in Eastern Europe, Latin America and Asia, trade finance experienced high growth rates.

The total volume of L/Cs received by all Latin American exporters in 1999 reached $87billion, in addition to the $29 billion in documentary collections. Of this total, only $30 billion came from Latin America's trade with the rest of the world including the United States. Intra-regional trade is often made up of medium sized to large companies that lack open-account trade tools and rely on old-fashioned and expensive L/Cs.

This creates an opportunity for financial institutions seeking to offer electronic trade finance services. Banks such as Bradesco and Banco Itau in Brazil and Banamex in Mexico, seek to develop online wire transfers, online initiation of L/Cs, and other related online services. Sixty-five per cent of Mexican companies surveyed use at least one of the above mentioned products, and more than half of the companies in Mercosur countries turn to high-tech trade finance tools. Argentina used to lead in the proportion of companies using technology products (58 per cent), but Brazilian companies use them more extensively than other Mercosur countries - 2.8 products on average per company in Brazil versus 1.7 products on average per company in the other countries.

However, local banks, large though they may be in their own country, suffer from a lack of global coverage. This explains their interest in global initiatives such as TradeCard and Bolero. Global banks such as Citibank, JP Morgan, Chase and ABN Amro are, of course, very active in this area and offer not only competitive pricing on trade financing products but also access to their networks and platforms. And when they cannot beat their local competitors, they co-opt them. In July 2001, Citibank bought Banamex for $12.5 billion.

In other parts of the world, e-finance trade initiatives are still in their early stages. In India for instance, Exim Bank, the German-based West LB and IFC (a World Bank affiliate) created in March 2001 a joint venture Global Trade Finance (GTF) Pvt Ltd to offer factoring and forfeiting services to Indian exporters. West LB has a 40 per cent stake in the venture, while Exim Bank has 35 per cent and IFC 25 per cent. In addition, the company has foreign currency lines of credit from both West LB and IFC, as well as a rupee line of credit from Exim Bank. GTF was set to begin operations in autumn 2001. One of its objective was to allow exporters to initiate their transactions online.

A more ambitious project, Global Trade Finance Network (GTFNet), seeks to facilitate the finance of trade debt receivables generated primarily from emerging

markets, their acquisition and distribution worldwide. It is defined as a cross-territory extranet-based "business to business" network, with headquarters in Singapore and hubs in the United Kingdom, the Middle East and the Americas. Founded by Tara Kimbrell Cole and sponsored by a prestigious board, which is chaired by the former Chief Executive Officer of Standard Chartered Bank, GTFNet is not as yet operational.

E. Online credit information and credit insurance systems

The Internet provides a great deal of information about many companies through the use of search engines. However, relying on this source may not provide reliable information about risk. A proprietary credit information database on companies' performance, both as payers and suppliers, based on data from partners, experts, and actual transaction and debt collection experiences, is the type of source required to manage the credit and performance risks. Such Internet-based databases are run not only by banks but also by specialized agencies. Some of them are mainly credit information providers such as Dun &Bradstreet and Equifax, while others are credit insurers such as Coface and Gerling NCM. In addition to providing credit information on companies, they cover traders' risks. Credit insurance is a less expensive alternative to bank-based letters of credit, which permits traders to rely on open account payment operations, thereby moving the counterparty risk to the credit insurer.

Counterparty risk is particularly important in the case of SMEs, as their trade is often hampered by a perceived lack of creditworthiness or of a supply performance record, owing to the absence of reliable data and information about SMEs.

The Internet makes the collection of credit risk information easier but credit risk management tasks more complex. By reducing the cost of information and standardizing data formats, it makes it easier to gather and disseminate credit information. It also facilitates integration of information and transactions. At the same time, the Internet considerably expands the number of potential counterparties and the range of transactions. Businesses active online have to deal with thousands of new buyers and sellers that they know nothing about. There is therefore a need for a quick and up-to-date creditworthiness assessments. The skills required for this activity are highly specialized and cannot be acquired overnight. Prior experience and accumulated historical data are essential. Barriers to entry are high. Not surprisingly, this segment continues to be dominated by a small group of suppliers, each of which has adopted an aggressive Internet strategy. These strategies have common elements, for example all suppliers make their existing data available via the Internet, but there are also significant differences. Alternative approaches to credit information assessment, using innovative technologies, are also emerging. However, those approaches are being adopted and deployed by the existing suppliers rather than by new entrants.

Online credit information: Dun and Bradstreet, and Equifax

Dun & Bradstreet (D&B) is probably the oldest existing provider of business information (since 1841). It created the so called D-U-N-S Number (Data Universal Numbering System), which has become a standard for keeping track of millions of businesses in the United States. The system is also expanding worldwide. It provides identifiers of single business entities, while linking corporate family structures together. The D-U-N-S Numbers include parents, subsidiaries, headquarters and branches of more than 62 million corporate family members in 120 countries.

D&B is implementing a comprehensive Internet strategy to provide Internet-based services. Among those online services is D&B Global Access Toolkit, an online global data delivery service, and QuickBooks®, a business decision making tool for SMEs. D&B also seeks to become an important player in B2B e-commerce. To achieve this goal, the company entered into strategic partnerships with Oracle, Siebel Systems, SAP and other B2B players to integrate D&B products into their offerings. In August 2001, VeriSign, Inc., the leading provider of Internet trust services and domain name registration services, and Dun & Bradstreet announced an agreement under which e-businesses applying for VeriSign's Shared Hosting Security service will be automatically authenticated by Dun & Bradstreet using the company's global database (for more details see UNCTAD 2001).

The core business of Equifax is credit reporting, and enabling and securing global commerce. It has developed a range of diversified services, including transaction processing, direct marketing, customer relationship management and e-commerce security solutions. In July 2001, Equifax spun off its payment services into a separate company, Certegy.

Equifax's principal asset is the world's largest repository of consumer credit information. In January 2001, Equifax launched a new service – the Small Business Financial Exchange. Managed by Equifax, the Exchange brought together initially 15 of the largest United States small-business lenders – such as Bank of America, Bank One and Wells Fargo – in order to provide reports and maintain comprehensive trade data on small businesses. This has become a source of aggregated risk and exposure information on an estimated 25 million small businesses in the United States. The Exchange will enhance lenders' ability to make small business credit decisions and facilitate financing needs for this important segment of the economy.

Equifax Internet based products include Equifax Secure, Checkfree and SunTrust, which permit the identification and authentication of participants in online transactions. Another product, ePORT, tries to lower costs, speed up delivery and increase product penetration for the existing credit information services. Strategic alliances have been formed with VeriSign, Paymentech and PricewaterhouseCoopers.

Online credit insurance: Coface and Gerling NCM

The Coface Group, headquartered in Paris, is one of world leaders in export credit insurance and operates in 93 countries on five continents. Coface offers an integrated range of guarantees, including credit insurance, guarantee insurance, exchange risk cover and fidelity insurance, to its client companies worldwide. It also provides receivables management and credit information services. In order to allow its clients to analyse and monitor the financial position of their trading partners throughout the world, Coface has developed a Common Risk System, an online database containing information on 41 million companies, out of which 1.2 million are from developing and transition economies. Coface has a credit exposure of $150 billion to 2.2 million companies, of which $15 billion i.e. 10 per cent, is the cover for companies from emerging economies. According to Coface, the overall performance of companies from emerging economies is not worse than that of OECD countries, which indicates the potential for enterprises from the emerging countries to access external finance and e-finance.

In December 1999, Coface launched a web-based rating system, @rating, that allows companies to insure trade debts and obtain credit limits online. The @rating system uses the data from the Common Risk System to develop a simple and easily accessible credit rating system, which allows a company to:

- Check a trading partner's reliability online;
- Protect transactions online. Apply for an @rating Quality Label and obtain a credit limit online;
- Check payment experience online.

@rating provides a method of assessing trade debts of less than six months' duration for amounts between 1,000 and 100,000 Euros, which represent the overwhelming majority of most traditional trade and e-commerce transactions. It offers a simple means for trading partners to protect themselves from the risk of default and to set customer credit limits, based on constantly updated information. For the first time, ratings are generated by an agency, which can in addition insure the risks it is rating. The Coface Group and its partners in Credit Alliance are backing the rating with a guarantee of payment, using credit insurance policies.

To facilitate its risk monitoring capability, Coface expanded @ratings to cover country risks (data on 140 countries are provided and regularly updated). All Coface group products now incorporate the @rating solution. Since its launch, some 350 partners (banks, factors, electronic marketplaces, Chambers of Commerce, etc.) have integrated the @rating in their service offering (UNCTAD, 2001; Cazes, 2001; Boccara, 2002).

Gerling-NCM (G-NCM) emerged at the end of 2001 as one of the largest global credit insurer after the merger of Gerling Namur with Dutch NCM. Gerling Namur was the result of the previous purchase of Belgian Namur by German Gerling. It has an active Internet strategy and its two main services are called E-Service and E-Trade. The E-Service permits the actual or potential insureds, brokers and other interested parties to access the G-NCM credit information database using the Internet based SERV@NET system. The database has information on company performance, policies and so forth. It is complemented by the group's Intranet called SERV@WORK, which gathers information on risks and is used as a tool for underwriting risks in all countries where G-NCM is present.

The E-Trade products represent various types of insurance cover. Those products include Trusted Shops, covering buyers from failed online shops (non-

delivery, non-refund, fraud etc.) and Trusted Trade, providing e-marketplace participants with credit insurance cover against the loss of receivables. Other insurance and financing products to render one-stop- shop financial services to those participants are also in the pipeline. They also include eCredible, in-sourcing online credit management services from companies and insuring their credit risks, for example verification of buyers, collection of receivables in time, credit monitoring and payment guarantee and Trade Cover, which offers online immediate coverage against risk of non-payment of a buyer or group of buyers (it is not a comprehensive credit insurance against all buyers) and gives the insured a choice of protection level. The eCredible and Trade Cover are in some ways competing with the Coface @rating system (Rennotte, 2001).

It is important to note that credit information and credit insurance providers are not resolving the problems of market instability. While diminishing the risks of other companies' failures, they themselves could be exposed to the excessive demands arising from their obligation to insureds if their counterparties massively fail to respect contractual obligations in the event of a generalized economic crisis. In that case, credit information providers will find their prestige damaged because of the excessive number of errors in their judgement of credit risks, while the credit insurers might encounter difficulties in meeting their cover obligations even if their capital reserves meet the requirements of insurance regulators.[15]

Many developing countries are following the examples of the United States and continental Europe by developing the necessary regulatory framework for setting up of credit information reporting systems. The essential elements of that framework include registration laws, bankruptcy laws, court registers; strict requirements for disclosure by private sector operators; public data dissemination and publishing requirements; the possibility of collecting, processing and disseminating public records, suits and judgements, and permission to access companies track records with banks for authorized institutions, etc. However, the presence of credit bureaux in many countries does not guarantee the presence of exhaustive and updated data on SME payments behaviour and other key risk assessment data. The revolutionary impact of Internet data mining techniques in terms of coverage and reach, rather than transaction costs, could also boost the creation of a credit information industry in those countries, thus achieving a breakthrough in the risk assessments of a host of companies, including SMEs.

One of the most impressive examples of comprehensive credit information services in developing countries is Serasa of Brazil. Established in 1968 by Brazilian banks that realized there was a need to have a common risk data collection and assessment centre, Serasa today has the largest credit information databank on institutional and household borrowers in Latin America. Receiving information from companies and households directly and also gathering information on them from independent sources (including court distributors, protest notaries, boards of trade, Central Bank, public registrars and official publications), Serasa contributes to the majority of decisions by banks, payment card companies and other financial service providers on extending credits to companies and households. All products and reports of Serasa are available online. They include business behaviour reports, credit and analysis reports, and special SME reports. While Serasa has a very aggressive e-credit information programme to expand on the Internet it is also actively using other communications tools as fax, telephone and others (Bedrikow, 2001, 2002).

F. Private equity mobilization

It is a widely shared misconception that, in the early stages of their existence, SMEs could raise capital from venture capital funds. On the contrary, those funds provide equity only to well-stablished SMEs with a good track record including good financials. Initial capital for a new business comes normally from the businessmen's own pockets or the pockets of their relatives, friends and so-called business angels – wealthy individuals ready to invest in the business plans, which are of interest to them. Normally business angels are organized into associations. They support companies of their choice and pave the way for venture capital funds to invest. The latter take over SMEs having good chances to become large companies and in few years time further finance their expansion in order to prepare them for the initial public offering (IPO), i.e. selling their shares – and making, they hope, a large profit – on the well-established stock exchanges, where the firms become publicly quoted companies.

The Internet has introduced a new dynamism into the functioning of above institutions, permitting them in some cases to go for global initiatives and geographically diversify their portfolios.

All large business angel associations and venture capital funds have functional websites where the SMEs

can look for interested investors by filling in the posted questionnaires and thus establishing initial contact with potential investors.

Linking private equity investors to SMEs in emerging countries is far more challenging than in OECD countries. With few exceptions such as Singapore, there is no local venture capital industry. And business angel networks are often family or ethnically based. Nevertheless, some efforts, spearheaded by international players, have been launched to create Internet-based private equity networks.

EmPower Link

In January 2001, the United Kingdom's International Development Consortium (IDC) established a joint venture called Empower Link Holdings (Pty), with the South African investment fund Omega. The idea was to take the EquityLink, its very successful business angel network created in 1995, into South Africa, linking it with United Kingdom and European opportunities. EmPower Link was supposed to provide support services to South African SMEs, including management development, financial management, business development, sales and marketing, IT, and innovation in technology and design. It was expected to contribute significantly to the development of a comprehensive SME support infrastructure in South Africa.

Softbank Emerging Markets

In February 2000, Softbank, one of world's best-known Internet companies, announced the creation of a joint venture with the International Finance Corporation (IFC) of the World Bank Group to establish start-up Internet companies in as many as 100 developing countries. The joint venture is an investment fund called Softbank Emerging Markets (SBEM), to be based in California's Silicon Valley on a capital base of $200 million. Seventy-five per cent of this will come from Softbank and the remaining 25 per cent from the IFC.

To begin with, SBEM will act as an incubator, investing in and providing advice to promising local Internet ventures in 10 to 20 countries. SBEM plans to establish a number of holding companies to make investments and oversee operations of local joint ventures in those countries. The first local office was opened in Malaysia.

G. Microfinance initiatives

Microfinance is an arrangement whereby microfinance institutions lend small amounts of money typically to a group of individuals or very small SMEs (with fewer than 10 employees). This process mainly happens within the framework of the informal economy, i.e. outside the formal financial system in developing countries and transition economies. It is estimated that more than half of economic activities in sub-Saharan Africa derive from the informal economy. While the microfinance market requirements are estimated to be $300 billion, the assets of more than 8000 microfinance institutions worldwide do not exceed $7 billion. Keeping microenterprises out of the reach of the development community is unacceptable, considering the UN targets for the reduction of world poverty. The approach here should be to consider the poor as an untapped resource rather than a social burden. Developing modern and inclusive microfinance actively using Internet technologies could help partly to implement this paradigm shift.

Pride Africa

Pride Africa is a non-profit United States company with regional offices in Nairobi and operating activities in East and Southern Africa. It is one of the best examples in Africa of a successful and imaginative implementation of microfinance formulas with the active use of modern ICT technologies. With a network of 54 branches servicing more than 100,000 clients from Kenya, Malawi, United Republic of Tanzania, Uganda, and Zambia, Pride Africa has created a replicable franchise, including a proprietary software system, uniform operational processes and training for staff. The financial and information service network provided by Pride Africa offers microfinance opportunities for local people and small enterprises that previously had no access to flexible financing, owing to rigid banking regulations and the information monopolies of government and large businesses (Campaigne 2001, 2002).

Grameen Bank

The famous pioneer of microfinance, the Bangladeshi Grameen Bank, is also at the forefront of the efforts to bring e-finance to remote villages, using its microfinance services. By introducing POS terminals and diffusing smart cards in different villages it enables users to read and record entries, and to deposit and withdraw cash.

Virtual Microfinance Market

The Virtual Microfinance Market (VMM) is an information exchange system designed to facilitate interactions between microfinance institutions (MFIs), private investors, Governments and other participants in the microfinance market. It was developed by the United Nations Conference on Trade and Development (UNCTAD), with the guidance of an advisory board, and in the framework of a technical assistance project financed by the Government of Luxembourg.

VMM also provides contact and financial information on MFIs willing to mobilize commercial funding ("demand"), information on the legal and regulatory conditions of investment and links permitting direct contact with regulatory authorities in each country ("environment"). In addition, it also provides data on investors and financial intermediaries, information on conditions attached to past or current offers ("supply"), and access to sources of knowledge, technical advice and training in state-of-the-art techniques and tools for improving MFIs' financial management and access to capital markets ("knowledge").

This project is aimed at creating sustainable market links between the commercial investment world and the microenterprise sector in developing countries. It is expected to permit the investment on commercial terms, of millions of dollars at the grass-roots level and the creation of thousands of jobs. VMM is accessible free of charge to all its members, i.e. to all duly registered information providers (Otero, 2001).

H Lessons from global e-finance experiences

E-finance: it is only the beginning

The above overview of enterprise related e-finance, while far from comprehensive, clearly demonstrates the breadth and the depth of e-finance development. The dotcom crash and the difficulties of B2B marketplace development over the last two years may have changed the public perception of the Internet and slowed somewhat the speed of its deployment but they have not changed the fundamental momentum of e-finance. In the not too distant future the distinction between finance and e-finance might become somewhat blurred as the core financial technology, from user interface through middleware to applications and networks, will probably become Internet-enabled and Internet-based.

However, the process of evolution towards e-finance is still in its early stages. For one thing, Internet technology will continue to evolve towards larger bandwidth, fixed-wireless convergence and terminal access independence.

Four common misconceptions

Beyond the technology, it is essential to understand the business dynamics of e-finance. On this score, it appears that there are four common misconceptions about e-finance, which help to explain some serious strategic errors, frequently committed by overenthusiastic promoters of e-finance.

Cost reduction potential

There is no doubt that the Internet has the potential to reduce financial transaction costs. However, the cost reduction potential has often been exaggerated or misinterpreted. The cost dynamics of e-finance are quite complex. For one thing, in order to achieve the full potential of cost reduction, it is important to create a fully automated system, capable of straight-through processing. Such a system may require large investments in computing power, network building and programming capability. Furthermore, the costs of migration from closed to open i.e. Internet-based architecture are often very high. For that reason, many e-finance enthusiasts favoured a "pure play" model, creating an Internet bank from scratch. The underlying assumption was that the newcomers had a crucial cost advantage. However, this assumption proved false. Whatever cost advantage newcomers may have achieved via technology, it was decisively undermined by the need for heavy client acquisition spending. Furthermore, while technology cost savings were often hypothetical, marketing costs were actual expenditures, amounting to between $150 and $300 per customer. While such costs could be justified in online broking, this was not the case for Internet banking. The Internet did not invalidate the basic marketing rule that the cost of selling a new product to an existing customer is 10 per cent of the cost of selling to a new customer. A large part of Internet costs remain invisible at first glance, but they are still there (GEF, 2001b).

Ease of implementation

A related fallacy was ease of implementation. While a basic website can be created cheaply and quickly, to design and implement a fully functional, industrial-

strength application capable of accommodating in a secure manner a large number of complex transactions and a huge variation in volume is a complex and protracted undertaking. In addition, there is limited previous experience to draw on and the necessary skills and know-how are still scarce. Thus, the potential for specification creep and cost overrun is as large with the Internet as it is in the traditional IT environment. This was vividly demonstrated by Vontobel Bank in Switzerland, which in spring 2001 announced a loss exceeding 120 million euros, due entirely to an overly ambitious Internet banking project.

Disintermediation

Contrary to some high-profile pronouncements, the Internet economy is not frictionless. Actually, with a dramatic increase in the number of transactions and expansion of the universe of potential relationships, the overall level of friction is likely to increase. The abundance of information, opportunities and relationships increases the need for new intermediation structures and mechanisms. The challenge to the financial institutions and financial services providers is not disintermediation but the changing nature of intermediation. Thus, e-finance has stimulated the emergence of new categories of intermediaries such as financial portals, transaction aggregators and financial applications services providers.

The e-finance impact

Until 2000 it was commonly thought that e-business would revolutionize the financial industry and destroy the existing "dinosaurs." However, the evolution of e-finance clearly demonstrates the advantages of suppliers of established financial services, be they banking, transaction processing, credit information or insurance, as long they have the capacity to evolve and to embrace the new approaches and technologies. The dominant business model today is "click and mortar" and an innovation is most likely to succeed if it is adopted by the leading players. This does not mean that financial services will not change, as they have been doing for the last few decades. Rather, the change will be more gradual and will probably take place mainly inside the established systems and structures. While the dynamics of e-finance do not entail a sudden upheaval, it probably will lead to a profound and lasting transformation of financial services. Not only the access be broadened in terms of the number of potential users, but also these services will be available anywhere in the world, 24 hours a day, seven days a week. E-finance will enhance the information and technology content of financial services and thus further blur the boundaries between finance and technology, information and transaction, and financial institutions and technology providers. This evolution raises, among others, a number of substantive regulatory issues. In particular, banking, securities and insurance regulators should further strengthen cooperation within and between their groups at both national and international levels.

I. E-finance challenges for SMEs

SMEs and e-commerce

Before engaging in e-finance, SMEs have to be already involved in e-commerce. Hence the e-commerce preparedness of SMEs is a measure of their readiness for e-finance. Although the Internet revolution was driven initially more by SME dotcoms than by large corporations, the majority of SMEs in traditional sectors are still lagging behind the large companies in the use of the Internet as a core element of business organization and a channel for developing e-commerce. Various surveys of SME e-preparedness in OECD countries suggest that only less than a quarter of SMEs with web presence actually use it as a business instrument, i.e. for the purpose of active web trading and related e-payments operations. In developing countries this indicator is much lower. The majority of SMEs still limit their activities to maintaining a web page, with various levels of links and advertising. On the Internet they also gather information about markets and competitors, as well as searching for partners, with further negotiations taking place either through e-mails or offline, while successful deals are generally completed in a traditional manner, – that is, with traditional paperwork or through the use of cash. According to some surveys, SMEs cite security concerns, lack of legal guarantees for online transactions, expenses related to hardware, software and maintenance, and the length and cost of training as the major impediments to starting e-commerce.

At the same time there is much less awareness in developing countries of the potential and importance of e-commerce. In that sense it is interesting to note the results of a Citibank survey of a sample of SMEs in Arab Gulf States (Saudi Arabia, United ArabEmirates, Kuwait, Qatar, Bahrain and Oman) and Middle Eastern or Mashreq countries (Egypt, Lebanon and Jordan) that inquired about their e-commerce preparedness. While the majority of SMEs surveyed - 79 per

cent and 73 per cent respectively - had access to the Internet, only 23 per cent and 38 per cent provided the Internet to all their departments, only 13 per cent and 18 per cent provided it to their procurement departments, and only 2.6 and 2.3 per cent had actually ever conducted online trading. Moreover, 45 per cent of Gulf and 25 per cent of Mashreq SMEs did not have a positive approach to e-commerce, considering it less secure and of lower quality, and preferring traditional trade as a better business tool (Krishnan, 2001). In contrast, many SMEs in Latin America and Asia, and North and South Africa, do have access to the Internet. However, what matters is whether they consider it the tool for promising business models. Various surveys suggest that this is increasingly so for the majority of them.

The Internet provides SMEs with a unique opportunity to overcome economies-of-scale limitations by aggregating buyers and suppliers, i.e. linking individual SMEs to each other, to major companies, to e-procurement chains and to other e-marketplaces. For example, a Tunisian start-up, Intelligent DSP, works with the New Delhi office of Analog Devices to develop remote monitoring services for electrical power meters. More broadly, successful e-commerce initiatives facilitate the emergence of new forms of business organizations such as virtual hubs and networks. By streamlining their operations and business relationships e-commerce helps to create a supply chain management for SMEs and overcome the high trade barriers they normally face. Increasing the role of buyer feedback helps to make production more customer-centred and flexible. Creating many portals for SMEs with useful and functional contents greatly contributes to their efforts to access business information at much lower cost and hence to overcome the information asymmetry problem.

Among private sector efforts to facilitate SME access to e-business opportunities, mention may be made of the business portals specially designed to offer rapid and convenient answers to a variety of small business needs. The challenge is to maintain a range of services that are both easy to find and effective. Banks have also launched SME-oriented business portals in order to ensure customer loyalty and create a basis for Internet-based banking services for SMEs.

Despite its recent slowdown, most analysts expect the B2B e-commerce market to grow substantially in the coming years. The Gartner Group forecasts that the worldwide B2B e-commerce market will reach $7.3 trillion by 2004. Initially, many B2B initiatives focused on so-called big-ticket deals among large enterprises, thus overlooking the great potential for SME involvement. However, further changes are rapidly correcting this initial miscalculation. Efforts to involve SMEs more actively in B2B markets take two forms: adapting large exchanges to the specific needs of SMEs and developing specific exchanges for SMEs. Although many SMEs see B2B markets as a way for large buyers to put additional pressure on suppliers to lower their prices, they understand the importance of emerging e-markets as supply channels for their products. As a result, many SME's are doing their best to adapt to the requirements of the global procurement platforms of large manufacturers.

The large e-marketplaces could cover a comprehensive range of B2B services for SMEs. That range includes supply chain management, e-procurement, SME's specific web service providers and exchanges. In particular, those bundled services might include web page creation, hardware and software integration and ISP connection, and low-end security products at affordable prices. One of the key problems of SMEs in the emerging economies is their unfavourable sectoral mix. Most SMEs, which are active in traditional sectors, lack export capability. The lack of high-technology SMEs is certainly a major handicap for many emerging economies and an obstacle to the development of locally based e-commerce. On the other hand, the growth of the Internet provides an opportunity to create new businesses specializing in new technologies. However, in order to realize this opportunity it is necessary to have access to technology and to create an environment capable of nurturing the new businesses. In the OECD countries, successful high-technology businesses are often concentrated (clustered) in small geographical areas, where they can obtain access to a wide range of resources, including technical skills, academic research, financial expertise and development know-how. More importantly, such clustering favours informal as well as formal contacts. Silicon Valley in the United States, Silicon Glen and Cambridge in the United Kingdom, Sophia Antipolis in France are often quoted as examples of high-tech clusters.

Such clusters also exist in developing countries such as India (Bangalore) and Malaysia (Penang). The transition economies are also trying to draw on their relatively developed workforce and education and R&D centres to accelerate the use of the Internet in their economic activities. At the same time other emerging markets are also trying to catch up. Thus, recent projects in Africa and Middle East specifically oriented

towards Internet-based technologies include El Ghazala in Tunisia, Gauteng Innovation Hub in South Africa and Internet City in Dubai (UNDP, 2001a). Given Dubai's role as major trade hub in the region and its liberal trade and investment regime Internet City may become a well-connected multifunctional technology hub. Many well-known foreign hi-tech companies have already opened offices there.

Support to SMEs is being provided at both international and national levels. In this connection, mention may be made of the G8 initiative (Global Marketplace for SMEs) and the EU initiative (Go Digital). There are many other initiatives by national Governments and other public entities. Some of them are of a very general nature, while others are more specific, trying for example to create investors' networks, including business angels and venture capitalists for SMEs, or to provide access to the services of local export financiers (the United States Department of Commerce's Export Finance Matchmaker). Although many of them tend to overlap, they still cannot meet the huge demand from SMEs. Linking those networks together might help to do so. However, neither the Global Information Network for SMEs, nor the European Observatory of SMEs seems to have managed to create a network of networks devoted to e-commerce information for SMEs.

Although the developing countries also have their own programmes for modernizing SMEs, their capacities are much more limited. This makes it important for global and regional organizations, including the UN family, regional development banks, NGOs and others, to further expand their awareness-raising and technical and financial assistance activities in that field to support the SME sector in developing and transition economies. In this connection development of e-commerce with emphasis on SME needs is definitely part of the mandate of the ICT Task Force created by the UN Secretary General. While it is hard to overestimate the advantages of the Internet for SMEs, it will require a great deal of awareness-raising and technical assistance from the international community to facilitate SME's participation in e-commerce.

SMEs and e-finance

E-finance includes Internet banking and payments, e-brokerage, e-insurance and other related services. Internet technologies have now penetrated all aspects of the financial services industry, including retail and wholesale, back office and front office, information and transaction. SMEs also use the bank lending and trade finance channels and are highly dependent on the quality of credit information related to their performance and financial health. E-finance of immediate interest to SMEs in developing countries includes Internet banking and payments, e-trade finance, online credit information and related e-credit insurance and e-factoring operations. Microfinance shares a number of features with SME finance; it is also similar to household finance and can be considered to be a combination of both those forms of finance.

The e-commerce practices of SMEs in developing countries raise the question of their ability to gain access to Internet banking, online payments, online trade finance and Internet based credit information databases.

In developing and transition economies there are many innovative initiatives to launch or facilitate e-finance for SMEs implemented by local banks, financial companies or other public and private sector based organizations and associations. The following are examples of some successful models and new initiatives.

SMEloan

SMEloan serves mainly the needs of SMEs in Hong Kong, China. The company offers Express Loans of up to HK$ 1 million, approved within one minute of submitting an online application. This allows business owners to obtain financing instantly. In practice, most SMEs borrow modest amounts. However, SMEloan offers possibilities of borrowing more than HK$ 1 million, using more time-consuming procedures. The innovative approach of SMEloan was to finance SMEs with lower transaction costs and better results by leveraging Internet resources, thus making it possible to set up scalable lending operations based on knowledge of future cash flows, i.e. receivables of SME borrowers. By providing a home page to each borrower SMEloan requires borrowers to provide business data; these are automatically analysed by its risk diagnostic software, which gives early warning of any unusual operating trends manifested by the borrower. Only selected problematic borrowers are then addressed. The others receive quasi-automatic credit approval similar to that given by a credit card company. In that sense, SMEloan is different from a bank that treats SMEs like other companies and hence incurrs higher unit costs from SME lending since it demands from SMEs complex sets of documents and assigns individual managers to each SME borrower. The successful SMEloan model attracted the attention of IFC of the

World Bank Group, which has invested $20 million in this promising venture.[16]

Streamlining SMEs cash flow or pre-financing online

Banks in many developing and transition economies are exploring possibilities of using online finance instruments to streamline the cash flow of SMEs on the basis, for example, of better management of their receivables, especially when the counterparts are the payables of large companies considered by banks to be much better risks. Here banks play the role of a factor discounting the receivables of SMEs. The situation is more complex in the case of trade between SMEs. In this connection, credible and searchable live Internet based databases on SME risks initiated or created by SMEs associations themselves could be a solution. Moreover, the creation of mutual insurance funds by association members could serve to support bank's e-trade finance operations and thus reduce the level of their perceived risks (De la Pardo, 2001; Guglani, 2001).

Smetrix e-trade finance clearinghouse proposal

An interesting initiative is the Smetrix B2B trade and e-trade finance clearing house proposal. Smetrix is a company in the Philippines that is trying to address the problem of more rapid and less costly access by SMEs to trade finance through the creation of a global e-supply chain in which a central clearing house handles the problems of authentication and risk assessment of SMEs. The clearing house, using its own database or partners credit information on SMEs, is expected to be able to create propitious conditions for SMEs either to have their online receivables discounted or receive structured finance (handling the risk of a given transaction) from a participating bank, or to securitize those receivables, capitalizing on the higher corporate rating grades of their trading partners (Pascual, 2001).

Major players are apparently starting to support the idea of financial clearing house based on the Smetrix concept. According to Smetrix it is expected that General Electric will provide the necessary technology support, while IBM will provide the technology support for the clearinghouse and interfaces with banks. The HSBC Capital Markets service might take the lead in terms of developing a real-time trade financing system using large corporations with good credit risk ratings as anchors for enhancing the receivables of their SME suppliers. At the same time Citibank might backstop the electronic collections and settlements for those receivables, while Dun & Bradstreet through its Philippines subsidiary could deliver the online credit and evaluate the SME receivables.

The Small Business Guarantee Finance Corporation, which is the Philippine Government's financial institution ensuring financing and guaranteeing for SMEs, is committed to taking the lead in delivering guarantees on the receivables. It is interesting to note that the Philippine Central Bank considers supporting this type of SME access to e-finance to be a part of its microfinancing agenda.

While in some respects the system is reminiscent of Bolero, it has some distinctive features. Like Bolero, the Smetrix clearinghouse is intended to be a hub bringing together all trade related workflows and checking the authenticity of electronic documents. Also, it is expected to reconcile the contents of those documents, and this will permit online negotiations and confirmations between parties, thus facilitating the conclusion of deals and minimizing further disputes. At the same time it is supposed also to be a constantly updated electronic library on credit information related to the trading participants. That library is intended to be constructed through the supply of information from partner banks and credit information and evaluating companies, as well as through the clearinghouse's record of trading partners' successes and failures.

However, the claim that a clearinghouse such as Smetrix one eliminates risks is clearly an overstatement. While it can successfully handle the risks related to the authentication of partners or legal issues related to trade, it cannot fully control the risks related to the supply performance of the seller and the payment commitments of the buyer (in spite of mechanisms for upgrading credit risk). SMEs remain more vulnerable as trade partners because of their higher exposure to the vagaries of the economic cycle.

Policy implications

Promising first signs

The positive signs related to e-finance for SMEs in developing countries include:

- The high level acceptance of technology by customers and financial institutions;
- The many innovative approaches;

- The initial tangible results in terms of market access and revenue generation.

However, most projects have not yet been launched on a large scale. It is therefore too early to determine which ones are likely to be the most successful and provide the "best practice" benchmarks to be replicated in other countries. Many aspects of the key question as to when and how e-finance will fundamentally change the conditions of SME's access to e-finance still remain to be resolved. Nevertheless, from the experience so far, a number of key challenges can be identified. Some of these challenges are discussed below.

Adapting global technology to local requirements

While Internet technologies are global and standardized, their applications can and need to be adapted to local circumstances. The Internet offers an amazing capability to reconcile global uniformity with local flexibility. It facilitates cross-border links, but at the same time creates new configurations of networks and clusters. Distinctions between proximity and remoteness remain highly pertinent, even if the distance becomes virtual rather than geographical.

The most successful e-finance stories in developing countries, including those of banks such as ICICI Bank of India, Banco Itau of Brazil and Banamex of Mexico, emphasize the ability to respond to local requirements in terms of product mix and delivery channels. The need to localize financial solutions is even greater with regard to e-finance for SMEs, which for the most part operate within a limited geographical area. Furthermore, their characteristics, size, financial structure and sectoral mix can vary considerably even within the same country or region.

Strengthening public support

Most e-finance developments have taken place through the interplay of competitive market forces, with limited public sector intervention. Some of them, particularly in Internet banking, have been launched by foreign institutions. The situation is quite different in the case of e-finance for SMEs, where public sector intervention is quite frequent. It is not only that the public authorities have to create the broad framework for e-commerce development (appropriate legislation and technological infrastructure, to mention the two most important) but also that they need to ensure that SMEs take advantage of the new environment and the opportunities it creates. The great majority of developing countries SME success stories with regard to involvement in e-commerce were largely the result of initial public sector support.

However, while public sector involvement in e-commerce promotion appears to be of critical importance in many cases, it differs in many respects from traditional government interventions. It is more flexible and proactive and relies less on administrative edicts and more on cooperation with the private sector. Rather than maintaining stability, it promotes innovation. The new modus operandi often entails setting up specialized agencies or decentralizing support measures to local governments, for example in countries such as China and India.

Creating an adequate regulatory and institutional framework

To facilitate the implementation of programmes, developing countries need to play a proactive role in encouraging the rapid adoption of market friendly laws and regulations, including laws on e-commerce, electronic contracts and digital signatures. It is equally important to ensure effective coordination of government agencies, industry associations and other facilitators. At the same time, while e-finance and e-commerce do not eliminate borders, they make them more porous.The Internet may also allow companies and households to circumvent regulations and restrictions. For example, in spite of exchange controls in many developing countries, households and companies still manage to open accounts with foreign banks or brokerage houses via the Internet. The Internet makes the use of offshore companies and banks even easier. The downside is that the Internet offers new opportunities for fraud.

Without a robust regulatory framework, the development of e-finance and e-commerce might be jeopardized. However, if such a framework is too rigid and formal, it may discourage innovation and entrepreneurship and, more importantly, deter the informal sector from engaging in e-commerce. In the end, e-finance and e-commerce will succeed only if they create a stable physical and virtual infrastructure of trust, shared by all parties concerned, including public authorities, local and foreign entrepreneurs, financial services providers and customers, and not the least SMEs.

Creating and maintaining an environment based on trust is essential in order to attract private foreign cap-

ital and know-how, as well as financial and technical assistance from international development agencies and NGOs.

Mainstreaming SMEs towards e-finance

Improved tax regimes and simplified regulations, as well as other support measures, will permit SMEs to move towards the formal economy. This will include comprehensive reporting on their assets and liabilities, thus allowing them to be listed in Internet based credit information databases. That might create a fundamental positive change in the financial community's perception of SMEs as credit risks. In turn, the SMEs will be encouraged to participate in the e-finance revolution and use online banking and payments as part of their common business practices, while as trusted clients they might start to receive online trade finance and eventually investment. This conclusion is valid not only for the overwhelming majority of SMEs in developing countries but also for SMEs in developed countries.

Finally, it is important to mention that the majority of recommendations of the UNCTAD expert meeting on e-finance for SMEs held in 2001 stressed the role of active policies and public-private cooperation in such vital areas as the creation of an adequate regulatory and institutional environment for e-finance, the development of secure and legally binding methods of electronic transmission and the introduction of modern e-finance instruments.[17]

J. Conclusions

The critical mass of e-finance and e-commerce resources, know-how and actual operational experience is concentrated in a limited number of large private sector companies, headquartered in OECD countries. Those companies provide key elements of infrastructure, networks, systems and applications. They operate globally, in terms of both sourcing and selling their products and services, and the emerging economies are the natural extension of their outreach. Many developing and transition economies are trying hard to find their niches in this new globally networked economy.

Various global e-finance projects have been created by banks such as Citibank, HSBC and Deutsche Bank, payment card associations such as Visa and Mastercard, and some others. Examples include CitiBusiness and the Visa Business Card. It is worth mentioning that the financing of households and microenterprises i.e. so-called microfinance initiatives, are also currently under scrutiny by banks and the international development community. For example, Deutsche Bank has created a Microcredit Development Fund, which has contributed to the creation of many microfinance institutions.

One area in which cooperation is essential is the development of global online banking and payments platforms such as SWIFTNet and Identrus, which are the key elements of the emerging new global e-finance architecture. As their design and implementation evolve, they should take into consideration the e-finance requirements of developing countries. So far, those platforms have tended to focus mainly on the needs of global corporations, although payment and settlement services for SMEs operated by trusted banks in developing countries also need to be a part of the global systems. Among other things, careful consideration should be given to the issue of interoperability between global and local e-finance platforms.

Global trade and information platforms such as @ratings and Bolero present a somewhat different challenge. These platforms explicitly cover developing countries and SMEs. However, for the platforms to offer full benefits, both the quantity and the quality of information about the SMEs have to be enhanced. To be listed in platforms such as @ratings, SMEs need to provide reliable figures with timely updates. The Internet offers the means of lowering costs and reducing the length of this task. However, it is still a complex process, particularly for the SMEs. Hence there is a need for closer cooperation with and between existing credit information companies in developing countries, as well as for the creation of companies providing those services in countries where they do not yet exist.

Many experts raise the issue of leapfrogging, which gives countries with underdeveloped financial systems the possibility of moving ahead rapidly. The arguments developed above suggest that while opportunities for leapfrogging exist, it is not certain that they are widespread. Countries with weak financial systems also often suffer from the absence of technological infrastructure and associated skills, which makes the creation of a vibrant e-finance system quite arduous. To build a cyberfinance offer from scratch requires the mobilization of high-level skills in the financial, telecom and IT sectors, which many developing countries do not have and cannot develop without external support. The examples of countries such as Estonia and the Republic of Korea, which have achieved e-finance

sophistication comparable to that of most advanced OECD countries, are not easily replicable. Furthermore, even the more advanced emerging economies have to make large number of improvements in critical systems and applications such as trade finance hubs or financial markets in order to achieve the required level of competitiveness. Nevertheless, it is true that e-finance offers more opportunities for quicker deployment and better coverage than the traditional approaches to financial systems development. Skipping magnetic strip technology in Poland by directly installing smart chip technology and advanced acceptance terminals to backstop online payment systems is an example of leapfrogging. At the same time while the evolution of Internet technologies holds considerable promise for e-finance and e-commerce, it also increases the complexity of the underlying systems and applications. For the developing and transition countries, the challenge ahead will be to build capacities, particularly local expertise to manage these complex systems.

Notes

1 The expert papers and the UNCTAD documents are listed in the References. To access them go to those two e-finance events on the UNCTAD e-commerce website www.unctad.org/ecommerce

2 See also UNCTAD 2001, Chapter 7, "Managing Payment and Credit Risks Online: New Challenges for Financial Service Providers", pp 143-169

3 See www.jmm.com

4 See www.onlinebankingreport.com/resources/sr7.html

5 See www.datamonitor.com.

6 See, for example, "Reinventing branch banking", Forrester TechStrategy Report, March 2002.

7 See www.visa.com: www.identrus.com; www.swift.com.

8 Rogoff (2002, pp. 56-57).

9 For a detailed discussion of the mechanics of online payments see UNCTAD (2001, Chapter 7).

10 "E-invoicing: ready to take off?" in CFO Europe, Economist Intelligence Unit Country Briefing, 22 April 2002.

11 Citibank UAE Newsletter, issue 02, 2002

12 See www.bolero.net; www.tradecard.com; www.cceweb.com

13 See for example www.lcconnect.com; www.proponix.com

14 See www.itfex.com; www.ltptrade.com

15 See www.dnb.com ; www.equifax.com www.coface.com; www.cofacerating.com; www.gerling.com/credit/

16 "IFC Invests US$20 million in SMEloan (Asia)", IFC Press Release No. 1/158, 12 December 2001

17 See document TD/B/COM.3/EM.13/L.1, 29 October 2001.

References and bibliography

Papers presented at the UNCTAD Expert Meeting on Improving Competitiveness of SMEs in Developing Countries: Role of Finance, Including E-Finance to Enhance Enterprise Development, Geneva, October 22-24 2001 (to download the papers go to "Events" at : www.unctad.org/ecommerce).

Bedrikow R, Legal Manager, Serasa, Brazil. *Serasa of Brazil: a leading credit information provider in Latin America.*

Campaigne J, Executive Director, Pride Africa, Kenya. *Banking on Africa: Commercial Bank Linkages with Microfinance Institutions.*

Cazes J, Managing Director, Coface Group, France. *@Rating: An Innovative Way to Enhance Small Business Competitiveness in Emerging Markets.*

Claessens S, Professor of Finance, University of Amsterdam; Glaessner, Thomas, Lead Financial Economist, World Bank; and Daniela Klingebiel, World Bank. *Electronic Finance: A New Approach to Financial Sector Development?*

De la Orta Pardo M, Administrative Director of E-Business, Westbridge University, Mexico. *"Coalition": A Proposal for Financing SME's.*

Guglani S, Managing Director, Sakhsham Financial Services Ltd, India. *Future of E-Finance for SMEs.*

Krishnan S; Regional Head of E-Business for Middle East, South Asia and Africa, Citibank, Dubai. *E-Value Propositions to Small and Medium Enterprises (SMEs).*

Kumar S, Head of SME Department, ICICI Bank, India. *E-Finance in a Developing Country Like India.*

Oliveira A C B, Executive Director, Banco Itaú, Brazil. *E-Finance for SMEs in Brazil*

O'Mahony D, Professor, Trinity College, Ireland. *Progress in Electronic Payments: Implications for Developing Countries*

Otero P, Member of Advisory Board, Virtual Microfinance Market, Bolivia. *Presentation of the VMM.*

Pascual G, Managing Director, Smetrix, Philippines. *Establishing a Regional Business-to-Business Clearinghouse.*

Raihan A, Research Fellow, Centre for Policy Dialogue, Bangladesh. *The State of E-Finance in Developing Countries: Bangladesh Perspective.*

Rennotte P, Gerling Namur, Member of Executive Board, Belgium. *E-finance for SMEs in Developing Countries.*

Sato S, Senior Advisor, BIS, Switzerland. *Creating an "E-Finance Friendly" Regulatory and Institutional Framework.*

UNCTAD Background Paper, UNCTAD/SITE/Misc.48, October 17, 2001, *E-Finance and Small and Medium-Size Enterprises in Developing and Transition Economies,* prepared in collaboration with Charles Goldfinger and Jean-Christophe Perrin, respectively Managing Director and Associate Consultant, Global Electronic Finance SA, Belgium.

UNCTAD Issues Paper, TD/B/COM3/EM.13/2, *Finance and E-Finance for SMEs as a Means to Enhance their Operations and Competitiveness.*

*****

Papers and presentations at the UNCTAD Side Event "E-Finance for Development" held in the framework of the International Conference on Finance for Development, Monterrey, Mexico, 19 March 2002 (see: www.unctad.org/ecommerce).

Boccara D, CEO, Coface Group-North America, USA. *Improving the Credit of Companies in Emerging Markets : the Coface Group Approach.*

Campaigne J, Executive Director, Pride Africa, Kenya. *Taking E-finance to the Microlevel: Building Commercial Bank Linkages with Microfinance Institutions in Africa.*

De la Orta Pardo M, Administrative Director of E-Business, Westbridge University, Mexico. *Mobile E-finance: The New Road for Accessing Financial Services.*

Goldfinger C, Managing Director, GEF SA, Belgium. *Cyberfinance: Lessons and Prospects,*

Hawkins J, Senior Economist, Monetary & Economic Department, BIS, Switzerland. *E-Finance and Development: Policy Issues.*

Martinez Guerra I, Head of Internet Banking, Banamex, Mexico. *E-Finance in México.*

Mor N, Executive Director, ICICI Bank, India. *E-Finance for Development: An Indian Perspective.*

Visa International, USA. *U-Commerce: Electronic Payments, Economic Growth, and Financial Efficiency,* presented by Reid William, Global Product Director, Global Commercial Solutions.

*****

Other sources.

Bedrikow R (2002). *E-Finance in Brazil,* paper presented at the UNCTAD E-Commerce Workshop in Curacao, 25-27 June 2002.

Business Week (2001). "Online Money trading takes off ", 3 September.

Celent Communications (2001a). *Guide to Electronic Bond Trading Systems,* January.

Celent Communications (2001b). *Trade Finance: Revolutionizing a Medieval Market,* June.

Claessens S, Glaessner T and Klingebiel D (2000). *Electronic finance, reshaping the financial landscape around the world.* Financial Sector Discussion Paper no.4, World Bank, Washington, DC. The World Bank

Claessens S, Glaessner T and Klingebiel D (2001). *E-Finance in Emerging Markets: Is Leapfrogging Possible?* Financial Sector Discussion Paper no.7, World Bank Washington DC.

The Boston Consulting Group (2002). *Global Payments 2002*

The Economist (2000). "The hollow promise of Internet banking", 11 November.

Emarketer (2002) *The eBrazil report*

Global Electronic Finance (2001a). *Internet and Securities Markets,* Financial Issues Working Group, February.

Global Electronic Finance (2001b). *Internet and Payment Systems.* Financial Issues Working Group, March.

Goldfinger C (2001). *European Financial Services: The Twin Challenge of Eurofinance and E-Finance*. Brussels, 21 March.

Goldstein A and O'Connor D (2000). *E-commerce for Development: Prospects and Policy Issues.* Technical Paper No. 164, OECD Development Centre.

Hilton AndrewA (2000). *Internet Banking: a Fragile Flower.* CSFI, London, April.

International Finance Corporation. (2001). *E-Finance Global Initiative Briefing Note.* Global Financial Markets Group, 12February.

Katsman J (2002). "Trade Services 2001 Review". *L/C Monitor,vol. 4, issue 4, Januar.y*

The Korea Times Infortech (2002). "Korea's Internet Banking Users hit 5.3 million", 28 May. See: http://www.hankooki.com/kt_tech/200205/t20020528171451451l0.htm

Martin H and Soupizet J F (1998). "The EU and the information society in developing countries". *The Courrier ACP-EU, no. 170, July-August.*

Murdoch A (2001). "Value for money: Magnifying microcredit". *World Link, September.*

OECD (2001). *Understanding the digital divide.* Paris.

Pyramid Research (2001). *Africa / Middle East perspective.*

Rao M (2000). "Development: 1,000 ways to close the digital divide". *globalinfo.org, 18August.*

Rao M (2001). "Internet ushers in fourth wave of banking and finance innovation". *E-finance summit, Singapore, March.*

Rogoff S K (2002). "The surprising popularity of paper currency". *Finance and Development, March.*

UNCTAD (2001). *E-Commerce and Development Report 2001*. United Nations publication, sales no. E01.11.D.30, Geneva and New York.

UNCTAD (2000). *Building Confidence: E-Commerce and Development Report.* United Nations publication, sales no. E.00.II.D.16, Geneva.

UNDP (2001a). *Human Development Report*. New York.

UNDP (2001b). *Digital Opportunity Initiative Report.* Markle Foundation, Accenture.

*****

Internet sites

www.Africa4biz.com; www.Alibaba.com; www.ati.tn; www.banamex.me; www.bnamericas.com; www.bolero.net; www.bondnet.com; www.citicorp.com; www.coface.com; www.datamonitor.com; www.DevelopmentEx.com; www.dnb.com; www.eban.com; www.Eplus.com; www.EquityLink.com; www.FT.com; www.gerling.com/credit/; www.GEXS.com; www.globalfinanceonline.com; www.icici.com; www.Idc.com; www.identrus.com; www.InfoAmericas.com; www.itau.com.br; www.jmm.com; www.mondus.com; www.onlinebankingreport.com; www.planetfinance.com www.prideafrica.com; www.pyramid.com; www.purchasepro.com; www.serasa.com.br; www.SMEloan.com; www.swift.com; www.TradeCard.com; www.venturesite.co.uk; www.VeriSign.com; www.visa.com; www.watersinfo.com; www.247Customer.com.

Chapter 7

E-COMMERCE AND THE PUBLISHING INDUSTRY

A. Introduction

Publishing is a large industry present in all countries of the world.[1] There are no consistent and reliable global data on the total monetary value (e.g. in terms of actual sales revenue) of the world publishing industry. Even if such data were available, they would necessarily be incomplete, as they would exclude numerous publications that are distributed free of charge. To give a rough indication of the size of the industry, however, table 21 shows world trade in cultural goods, which include publications (printed matter and literature), for 1980 and 1998. Exports of printed matter and literature rose from $ 7,623 million in 1980 to $ 25,618 million in 1998. Within this category, exports of books grew from $ 3,453 million to $ 10,627 million over the same period.[2] Table 22 gives data on the number of daily newspapers published and the circulation per 1,000 inhabitants in developed and developing countries. Further data appear in annex I, which shows the total number of records in the ISSN Register for the period 1991 to 2001. The register is a record of periodical publications (serials), including electronic serials. It shows that in 2001 there were over 1 million records and that new records added annually during 1991-2001 numbered approximately between 40,000 and 60,000.[3]

The value of the publishing industry to society, cannot, however, be fully assessed from trade figures, the number of publications or similar indicators alone. Vast unquantifiable spillover benefits accrue to users of published materials in the form of education, transfer of technology, advances in science and industry, the creation of new types of employment, and improvements in social services and indeed in the overall economic growth of countries. Major improvements in publishing resulting from the application of Information Technology and e-commerce technologies can be expected to augment these benefits.

Electronic publishing (e-publishing) is the publishing of information in electronic format. It is implemented by creating, maintaining, archiving and distributing documents using computers and networks. Electronically published materials may be created initially only for electronic transfer, or they may have been converted from material originally published on paper.[4]

Table 21

World trade in cultural goods by category

	1980				1998			
	Imports		Exports		Imports		Exports	
	$ m	%	$ m	%	$ m	%	$ m	%
Printed matter and literature	7 399	15.5	7 623	16.0	25 478	11.9	25 618	14.7
Music	8 557	17.9	9 040	19.0	50 870	23.8	47 618	27.3
Visual arts	4 979	10.4	3 559	7.5	14 992	7.0	9 8558	5.7
Cinema and photography	9 679	20.2	10 213	21.5	29 339	13.7	27 855	16.0
Radio and television	9 615	20.1	10 640	22.4	40 880	19.1	34 740	19.9
Games and sporting goods	7 610	15.9	6 425	13.5	52 096	24.4	28 586	16.4
All countries available	47 839	100	47 501	100	213 655	100	174 272	100

Source: UNESCO (2000), I*nternational flows of selected cultural goods, 1980-98.*

Table 22

Daily newspapers: number published and circulation per 1,000 inhabitants

Year	Number of dailies			Circulation per 1,000 inhabitants		
	Developed countries	Developing countries	World	Developed countries	Developing countries	World
1970	5 266	2 681	7 947	292	29	107
1975	4 525	2 775	7 300	292	32	110
1980	4 488	3 359	7 847	363	37	111
1985	4 396	4 049	8 445	342	40	110
1990	4 229	3 991	8 220	340	42	107
1995	3 967	4 324	8 291	230	58	95
1996	3 972	4 419	8 391	226	60	96

Source: UNESCO (1999), *Annual Statistical Yearbook, 1999.*

E-publishing represents an improvement over print publishing technology and is considered a major development that may revolutionize information-related activities in society. Its rate of growth needs to be interpreted with caution, bearing in mind that many major technological inventions in the past took decades to have a full impact.

The consequences of e-publishing can be compared to those resulting from Gutenberg's invention of the printing press. This invention is considered the origin of mass communication. For the first time, it became possible to disseminate information and knowledge to large numbers of people who could share it simultaneously. Before then, there were only handwritten books made by monks, scholars and scribes and read only by churchmen, government officials and academics. With the introduction of print, intellectual life was no longer restricted to the elite as publications became more widely available to the general population.

E-publishing can bring about major reductions in the cost of producing and distributing publications, thus making it easier for many individuals and enterprises to participate as authors and publishers and for more titles to be published. Because of increased access to publications by readers and the availability of technology that permits more enterprises to enter the industry, e-publishing can foster a higher degree of competition and increased price transparency.

The benefits of e-publishing may be significant for developing countries. These countries lag behind developed countries in access to published material, including educational publications. Furthermore, their imports of published materials are substantially larger than their exports of those materials. By enhancing the capacity of individuals and enterprises to produce and distribute publications, e-publishing provides great potential for promoting the growth of the publishing industry in developing countries and a reduction in this trade imbalance.

A discussion of e-publishing may touch on issues such as technology, the costs of production and distribution, pricing models, industry structure, the quality of published materials and intellectual property. This chapter provides a brief examination of these issues. With the advent of new technologies, the relationships between publishers, the media and consumers which were traditionally based on contractual licensing agreements with copyright protection, have completely changed in ways that make the situation difficult to control.

B. Publishing Features And Main Issues

This section examines the main features of and developments in e-publishing, using examples involving newspapers, scholarly journals and books (monographs and textbooks). While these categories provide a useful sample for study, it should be borne in mind that there are many other types of publications, including magazines, nonscholarly periodicals, newsletters, pamphlets, booklets, research reports, bulletin boards, catalogues, dictionaries, and encyclopedias. Also, each category may include many subcategories; for example, magazines include general-purpose and specialized ones. Furthermore, even the main categories overlap a great deal in content and format. For example, some books contain chapters contributed by different authors and thus in many ways resemble jour-

nals. In some cases, old journal articles by one or more authors are assembled into a book. There is therefore some degree of competition and interchangeability between different types of publications. Despite this diversity, however, the issues raised in connection with the three selected types of publications are relevant to the other forms as well. The choice is partly based on the fact that newspapers and books have mass markets of a much larger scale than other individual publications. Scholarly journals differ in many ways from the other two types, and also their recent history highlights to a greater degree the economic aspects of publishing, such as cost, pricing models and industry structure.

In each of the selected cases, a general description of the publication is provided in order to give the context in which issues are examined. Also, while the main focus is on economic aspects of e-publishing, brief accounts of technical and other related issues are given in so far as they have economic implications. For example, while the formats in which publications are presented electronically and their functionality are technical matters, at the same time they determine the software and other requirements imposed on users, as well as the searchability and quality of the published materials, and these are important economic dimensions.

1. Newspapers

Newspaper are serials usually issued daily or weekly. Their primary function is to report public news of general interest, although they may also include features, commentary and advertisements. Newspaper publishing enterprises range in size from small, locally based publishers to national and international ones owned by international conglomerates or industrial groups. All countries around the world publish newspapers, but the number of newspapers and the circulation of individual newspapers vary widely.

There is presently a great deal of interest in online newspapers, and numerous newspapers are now posted on the Internet. Some directories of online newspapers list over 10,000 newspapers covering practically every country around the world, including least developed countries (LDCs).[5] While there is no evidence that all the listed online newspapers are fully functional, the sheer numbers involved demonstrate the overwhelming perception by newspaper publishers of the importance of an online presence and also the existence of demand for electronic newspapers.

The volume and quality of content and the level of sophistication of the browsing functionality vary considerably between newspapers. Most online newspaper publishers maintain print versions alongside the digital versions. The majority of the latter can be accessed through the World Wide Web (WWW) and use the hypertext mark-up language (HTML) format, making them readable with a standard Internet browser. This means that the reader has to be connected to the Internet in order to read the newspaper. An alternative means of distribution for e-newspapers is e-mail. For e-mail distribution, besides HTML, formats such as PDF (portable document format) and plain ASCII text are also used. E-mail distribution avoids the necessity of establishing an Internet connection at the time of reading the newspaper. Further, the PDF format may allow the publisher greater control of layout and content so that material cannot be quickly and easily copied, modified, and then distributed by third parties.

Some newspapers have automated search and archiving capabilities that enable readers to access back issues containing previous related articles and other background information for a given news item. In some cases, news items appearing in a current issue of the print version are reported in greater detail or with additional data in the online version. For example, the latter may contain more pictures, longer narratives, full interviews, and so on. In addition to text, online newspapers may offer other features, such as audio, video, graphics and charts, that enhance the news presentation. Links may give access to online libraries through which readers are connected to various reference sources. Another service is the provision of personalized newspapers, whereby a reader can receive an individualized selection of articles published in a given newspaper. To achieve this, the reader identifies preferred subjects such as current events, sports or cultural and political issues and the newspaper automatically designs a personalized edition containing articles that match the reader's interests. Yet another useful feature of online newspapers is continuous updating of news, something that would be too costly to accomplish for print newspapers. However, in spite of the possible technical and economic viability of a continuous up-dating, apparently at the moment only a few newspapers are providing continuous updates perhaps because most newspapers are still closely linked to their print counterparts in their production systems.[6]

The majority of online newspapers are free and provide unrestricted access to their websites. Some, while free of charge, impose access restrictions by requiring

the reader to enter an ID and password, both of which are issued after the reader has provided a selection of personal information. Other papers employ differentiated pricing whereby parts of the paper are free while other parts that contain special information require a subscription. Some papers even offer two separate online versions, one free and the other subscription-based. Where the entire online version is free, the funding comes from advertisements appearing in the print versions and, in some cases, in the online version as well. Some observers think that online versions are being offered for free merely on an experimental basis to allow publishers to gain information about readers and their Internet habits. In due course, more and more newspapers are expected to charge for access to their websites. While this change is already happening, it has not yet become widespread.

In some cases the online version comprises only selected parts of the print newspaper, which obliges readers to obtain the print version if they wish to access all the articles. Unlike print journalism, where interaction with readers is largely limited to letters to the editor, online newspapers permit wide-ranging contacts between and among readers, editors and journalists that allow the newspapers to receive feedback from readers.

E-publishing has had an impact on newspaper journalists trained for or experienced in print publishing by obliging them to learn new methods of information collection and reporting. For example, it requires them to use skills needed for online presentation, including the use of video, animation and audio. Journalists are emerging who can combine information technology skills with elements of traditional news reporting.

Very little information is available on the cost of producing newspapers online as compared to that of print production. The example of the French newspaper "Le Monde" that launched in 1998 its web edition, offers an indication of its online strategy and related costs (see box 20). A great deal of discussion has occurred regarding the cost of publishing online scholarly journals, which are examined in the next section. The discussion there applies generally to online newspapers as well.

Box 20

The online strategy of Le Monde

Interview with Bruno Patino, Director General, Le Monde Interactif

Objectives

Created in 1998 to develop the web platform of *Le Monde* (www.lemonde.fr), Le Monde Interactif now offers a wide range of services designed to consolidate readership and attract more readers.

Initially, its implementation was driven by the need to compete with other newspapers that were going online. An online strategy is being progressively put in place to benefit fully from the Internet. The objective is to attract a wider, more varied readership and personalize the newspaper in order to offer individualized services that will match readers' personal preferences. According to Mr. Patino, this is a long process that has just started. The Internet has indeed made it possible to reach readers who would not have been reached otherwise, in particular in foreign countries (48 per cent of the persons who consult Le Monde interactif indeed live outside France, Source: Xiti – May 2002), and young readers. Indeed, figures indicate that the number of visits increased 389 per cent in two years (between April 2000 and April 2002). 60 per cent of the readers of the online version are under age 35, while the printed version attracts only 29 per cent of that age group. There is clearly a need for a newspaper to renew its readership, and every effort is made to offer attractive services to this readership.

The online version of *Le Monde* is designed to complement the printed version in offering dynamic and interactive services. These services include:

– Around-the-clock updates (7j/7, 24h/24) and three daily editions

– Articles from *Le Monde* and its supplements, complemented by site-specific articles, and many multimedia documents

– An edition accessible by subscription for 5 euros per month offering exclusive contents such as a daily morning newspaper (checklist), country information sheets, information kits on specific topics, etc.

– A personalized edition (thematic newsletters, weather forecasts, forums and chats and more than 720,000 archived articles

BOX 20 (*continued*)

What are the costs of *Le Monde*'s Internet strategy?

If "conception, making and distribution" constitutes the traditional problematic of the publishing industry, the online version has dropped the "making" element since readers can decide which articles to print. This reduces the cost, not only of producing but also of distributing the newspaper, in particular abroad, and efficient delivery of the newspaper in good condition, which is not always possible by regular mail. For one euro, readers can get a PDF version of the daily edition that can be downloaded or e-mailed, whereas the printed version costs 1.20 euros. PDF delivery represents the least costly means of distribution, since it involves automated electronic procedures and little human intervention (technical maintenance). But so far sales related to the distribution of PDF files are rather low: about 50 to 500 copies are sold per day.

The online version has generated 8,008,550 site visits and 43,368,550 pages viewed in April 2002 (Source: Cybermétrie), which does not necessarily mean new clients. The cost of maintaining the site is quite high. Apart from the initial technological investment, the main costs are related to the employment of 57 staff members that are currently working for the online edition. According to Bruno Patino, large newspaper groups are using between 40 and 70 staffers to run their online versions. The costs are partly covered by advertising revenue, but the current size of the market and the rates for Internet advertising cannot cover more than 30 per cent to 50 per cent of the human resources costs involved in the online edition. Two additional types of resources come from online sales to professionals (enterprises); these sales cover from 30 to 50 per cent of the costs. To cover the remaining costs, every effort is made to attract more subscribers by offering new services. This requires constant efforts, and results will only be visible in the long run. For instance, the new edition for online subscribers (5 euros) that was launched in May 2002 has gathered thousands of new clients. The strategy is to attract more readers for both editions (online and/or printed), since the two readerships have different reading habits: On average, a reader spends 30 minutes reading a printed newspaper, on public transport or at home or work, whereas on the Internet the average site visit is less than 10 minutes.

According to Mr. Patino, it is impossible to predict the future of the online edition in the medium or long run, as it is technology-driven and technology is evolving rapidly. Wireless technology seems to be the next challenge, but it is worth remembering that recent technologies such as WAP services and GPRS, have not been as successful as was predicted.

2. Scholarly journals

Scholarly journals play a role as channels and sources of information important to society, in fields including scientific discovery, medicine, public policy, business, technology, industrial development, and so on.[7] Articles in scholarly journals are based on original research and written by experts or scholars in specific academic or professional fields, as opposed to newspaper journalists. A published article is usually identified with the author who derives recognition from it. Journals typically have a review board consisting of peers or other scholars in the field that decide which submitted articles will be accepted for publishing. Unlike newspapers, scholarly journals have limited interest for the general public. However, they have dedicated markets comprising authors and readers who depend on them as publishing outlets for career advancement and as sources of scholarly or professional knowledge. Therefore, individual journals tend to have a higher degree of continuity and less demand elasticity than, for example, newspapers. Furthermore, the major stakeholders for scholarly journals – journal publishers, scholars, public and private institutions and libraries – are different from those for newspapers, and thus some of the underlying issues in relation to e-publishing are different. On the consumer side, libraries play a pivotal role in the purchasing of scholarly journals, accounting for the bulk of subscription revenue.[8]

Many scholarly journals have traditionally been published by nonprofit academic associations, although there is increased participation by commercial publishers.[9] In recent years, scholarly journals have faced severe financial problems resulting mainly from escalating subscription prices and from budgetary constraints faced by libraries, which are the major subscribers. Table 23 shows price changes in United States journal prices for the period 1984 to 2000. The budgetary constraints are mainly administrative in that institutions allocate budgets for journals based largely on their overall administrative priorities for given resources rather than on the demand for particular publications.

On the other hand, increases in the prices of journals appear to be the result of a combination of factors including rising production costs and the ability of publishers to charge as much as the market can bear. The latter ability is enhanced by the monopoly enjoyed by certain publishers and by the presence of inelastic demand. It has been suggested that the largest journal publishers may be playing the role of price leaders and influencing the prices of the other publishers. Another possible explanation is that too many journals have entered the market in recent years, which has led to reduced circulation for individual journals and in turn to an increase in the average fixed costs.[10] Interestingly, as tables 24 and 25 show, journals published by commercial publishers differ substantially from the prices of those published by nonprofit professional associations.

As will be discussed later in this section, observers have suggested that e-publishing could play a role in

Table 23

Price changes in serial (journal) prices in the United States

Year	Number of titles	Average price	Price change %	Index
1984	1 537	295.13	-	100
1985-87	N/A	N/A	N/A	N/A
1988	1 310	341.32	N/A	115.7
1989	1 308	363.20	6.4	123.1
1990	1 308	377.24	3.9	127.8
1991	1 307	412.38	9.3	139.7
1992	1 294	445.37	8.0	150.9
1993	1 294	466.57	4.8	158.1
1994	1 294	489.76	5.0	165.9
1995	1 280	522.01	6.6	176.9
1996	1 280	556.58	6.6	188.6
1997	1 281	578.22	3.9	195.9
1998	1 282	604.31	4.5	204.8
1999	1 286	638.18	5.6	216.2
2000	1 294	671.94	5.3	227.7

Source: American Libraries, May 2002.

Table 24

Non-profit journals, issue prices and prices per page (US$), 1985 and 2001

Journal	Year 1985		Year 2001	
	Price	Price per page	Price	Price per page*
American Econ. Assoc. Journals	160	0.03	140	0.03
Econometrica	139	0.09	241	0.14
Journal of Political Economy	80	0.06	175	0.13
Quarterly Journal of Economics	77	0.06	198	0.13
Journal of Finance	64	0.04	207	0.07
Journal of Consumer Research	90	0,18	99	0.19
Economic Journal	160	0.14	321	0.16
Review of Economic Studies	104	0.14	180	0.24
Review of Economics & Statistics	141	0.20	200	0.27
American J. of Agricultural Econ.	21	0.05	134	0.10
Average	104	0.10	187	0.15

Source: Bergstrom, T. (2001),"Free laborfor costly journals?" Journal of Economic Perspectives, Summer, pp. 183-198..

* Price per page is the price of the journal divided by the number of published pages.

providing solutions to these problems. They point out that it is not merely the conversion from print publishing to e-publishing that will make a difference but also the ability of e-publishing to enable new publishing business models and technical capabilities that are not possible with print publishing.

Like newspapers and other publications, journals are now embracing electronic publishing. Scholarly or academic electronic journals have shown a very high rate of growth. Table 26 shows the number of scholarly electronic journals and communications listed in the *Directory of Electronic Journals, Newsletter and Academic Discussion lists.*[11]

Table 25

Journals published by commercial publishers, issue prices and prices per page (US$), 1985 and 2001

Journal	Year 1985		Year 2001	
	Price	Price per page	Price	Price per page
Journal of Financial Economics	175	0.29	1 429	0.72
Journal of Economic Theory	410	0.34	1 800	0.90
Journal of Econometrics	463	0.39	2 020	0.87
Journal of Monetary Economics	146	0.36	1 078	0.79
Journal of Public Economics	389	0.33	1 546	0.85
World Development	413	0,31	1 548	0.70
European Economic Review	333	0.28	1 189	0.60
J of Env Ec & Manag	78	0.20	650	0.93
Journal of Health Economics	106	0.27	865	0.76
Economic Letters	341	0.28	1 592	1.07
Average	286	0.30	1 372	0.82

Source: Bergstrom (2001).

Table 26

Growth in number of scholarly electronic journals and other comunication forums

	Journals and newsletters	Listserves and discussion lists	Total
July 1991	110	517	627
March 1992	133	769	902
April 1993	240	1 152	1 392
May 1994	443	1 784	2 227
May 1995	675	2 480	3 155
May 1996	1687	3 118	4 807
December 1997	3414	3 807	7 221

Source: Directory of Electronic Journals, Newsletters and Academic Discussion Lists, various issues, Washington, DC: Association of Research Libraries, Office of Scientific and Academic Publishing. See www.people.virginia.edu/^^pm9k/libsci/ejs.html.

Another database, Ulrich's, shows that as of 2000 nearly 20,480 active serials or periodicals were available online.[12] These included academic/scholarly journals, bibliographies, bulletins, consumer journals, directories, government publications, newsletters and newspapers. According to the database, online was the leading single format alternative to print, followed by microform/fiche/film for 13,580 periodicals. Equally significant, Ulrich's reports that as of October 2000 a total of 2,401 online-only serials had been launched, most of which were still active.

E-publishing of scholarly journals is likely to expand readership, especially in developing countries where learning institutions are usually undersupplied with journals for budgetary reasons, and where scholars have limited access to outlets for scholarly publication. It also makes possible the introduction or expansion of advertising, which traditionally has not been a major source of income for scholarly journals.

In many ways, the business models used for electronic journals resemble those for online newspapers. Many journal publishers offer both print and electronic versions of each issue, what is referred to as parallel or dual publishing. At present this model is useful in that it gives users a choice, particularly at a time when e-publishing is still at a formative stage. It seems that many publishers of scholarly journals are unwilling to make a complete shift to electronic only publishing because this new business model is still being tested. It is too risky to abandon print publishing, which continues to be the mainstay of the publishers' cash flow. Similarly, some subscribers (e.g. libraries) prefer to have access to electronic journals without abandoning the print versions, for which they have well-established cataloguing and archiving systems. In some cases, the electronic versions are full-text versions of the print issues, while in others they present tables of contents only, or selected parts or articles of the print version. Presenting the table of contents alone does not constitute true e-publishing, and probably the real objective is to use the electronic version to advertise the print version. On the other hand, presenting selected articles is an attempt to provide free access without jeopardizing the volume of subscriptions. In other cases the electronic journal contains additional information, including raw data used for research, thus allowing other researchers to test the same data in different ways.

Some e-journals provide hypertext links, which are particularly useful in scholarly publishing, given the large number of sources that researchers usually consult in a given research project. Interactivity and searching capability are also being extended to the creation of databases, which bring together texts, indexes and abstracts of articles published in different journals. E-journals employ more or less the same formats for delivering content as those used by newspapers, that is, HTML and PDF. When journals make extensive use of symbols and graphics, these may be inserted into HTML or PDF in their original graphic file formats, of which the GIF and JPEG formats are the most common.

Like newspapers, scholarly journals adopt a variety of pricing and licensing methods. Some publishers bundle the electronic version with the print subscription by providing free access to the electronic version to those who subscribe to the print version, while others charge an additional fee for access to the electronic one. Still others supply the electronic version as the base price, and the price of the print version is added to the electronic one. Yet other publishers use separate pricing for print and electronic versions, as well as charging per article accessed by the reader. In most cases, institutions such as libraries pay a site license fee for electronic access and must then ensure that only entitled persons in the institution get access. The licenses are negotiated separately even in cases where an institution also subscribes to the print version.[13]

The question of the cost of e-publishing is contentious. First-copy costs are high, although the marginal costs of printing additional copies and physical distribution costs are low. On the other hand, the processing of articles, marketing and administrative costs are costly. Some studies have suggested that costs are considerably lower for e-journals than for print journals. For example, a study commissioned by Industry Canada concluded that the production and distribution of a new e-journal could be 28 to 48 percent less expensive than the cost of the print counterpart.[14] However, some publishers contend that set-up costs for e-journals are high and that the largest share of publishing costs is fixed, including editing and marketing costs, which apply to both print and electronic publishing. Also, the additional capabilities that come with e-journals (e.g. search ability and hypertext links) lead to cost increases. Some publishers enter e-publishing with no experience in the business and are obliged either to invest in developing in-house the skills and competencies required for e-publishing or to contract out the technical work of website development and maintenance and to support outside vendors in acquiring the necessary state-of-the-art technology.

Also, users of e-journals see an increase in other fixed costs, for example, involving site licenses, new cataloguing systems, the hiring of extra library staff members to manage journal access, the training of staff members and costumers in the use of the new system, and hardware costs including computers and printers. Some costs (e.g. printing) are actually passed on to end users (Many readers are more likely to print the contents of an electronic journal than read it entirely on screen). Thus, overall, the comparison of costs between e-journals and print journals is inconclusive.[15] This uncertainty clearly presents a dilemma for publishers as well as their main customers. For the publishers, it is not clear which model will prevail in the long run. In the short run, the parallel printing system is proving to be very costly. As e-publishing expands, some readers move to e-journals, thus reducing the subscription base for print journals without the former fully compensating the latter in the form of increased revenue from e-journals. This tends to oblige publishers to increase subscription rates for print journals, which in turn encourages libraries and other institutions to cut back further on subscriptions.

The financial difficulties faced by scholarly journals that were referred to earlier have led to a number of initiatives with implications for e-publishing. Even though there is no general agreement regarding the relative costs of electronic and print versions of journals, some observers have encouraged self-publishing by scholars and the formation by scholars and libraries of network-based electronic publishing projects as a way of bringing down journal prices.[16] Self-publishing by scholars is becoming viable as new technology makes it feasible for authors to format their own papers. It is also significant to note that peer review and editing are usually offered for free by other scholars, and thus self-publishing would not involve prohibitive costs for authors.[17] Partly to implement such a strategy, scholarly and professional associations have been urged to use electronic submission of manuscripts and to distribute journals to subscribers electronically. These initiatives may help account for a large increase in the number of e-journals launched by scholars in recent years.

However, the academic community has not fully accepted e-journals as a form of scholarly publishing. E-journals are considered by some to have lower quality and prestige than print ones, and usually authors of articles in e-journals are denied academic credit for these publications. It has been pointed out, for example, that some e-journals cut costs by eliminating professional copy editing and peer review. However, it appears that the lack of recognition of e-journals for academic credit is partly due to inertia and uncertainty vis-à-vis a new system. Proponents of e-journals have pointed out that even scholarly print journals evolved over time, at a pace dictated largely by developments in scholarly culture rather than by technological developments. They note that scholars tend to be conservative in their intellectual pursuits. What matters most are the norms and standards being enforced rather than the technology used for publishing and delivery. Technically, manuscript submission and peer reviews can be managed through e-mail. Similarly, editing and correction can be performed electronically. Furthermore, quality can be ensured if publishers and libraries establish codes of best practices for authors regarding such matters as peer review. There is nothing inherent in e-publishing that prevents scholars and publishers from maintaining high publishing standards.[18] Some observers have suggested that electronically managed peer review could be rendered faster, more efficient and more transparent than the traditional process. For example, the use of the Internet could permit contact with a large population of possible peer reviewers and a much faster circulation of manuscripts. It could also allow open peer comments, thus providing a supplementary level of review. Also, available information shows that e-journals do care about quality; for example, a study on e-publishing acceptance rates (for books) revealed that rates for accepted and rejected manuscripts were not lower for e-publications than for print publications.[19]

It is significant to note that authors of journal articles are able to circulate the initial drafts of their articles before they are eventually submitted for publishing. Electronic publishing facilitates this process as authors can carry out the distribution more cheaply and to a wider readership online. Authors can use preprint servers to send manuscripts to central databases or post them on directories that are accessible to the general public. Preprints create opportunities for authors and help alleviate the problem of high journal prices, but at the same time they create difficulties for publishers: readers who can access preprints for free have little or no incentive to subscribe to the journal, and budget-constrained libraries, too, may tend to rely largely on free preprints.

3. Books

Books are the single most numerous type of publication outside the category of periodical publications. For statistical purposes UNESCO has defined a

"book" as a "non-periodical printed publication of at least 49 pages, excluding covers".[20]

This chapter focuses on electronic books (e-books), which have aroused great interest in the publishing industry, with some expecting that e-books would completely revolutionize book publishing. Particularly note worthy was the publication by a best-selling commercial author, Stephen King, of "Riding the Bullet" as an online-only book in 2000. The considerable demand for the book convinced the industry, including traditional bricks and-mortar publishers, that there was really a potential for e-books.[21] At the time it was predicted, for example, that sales of digital books (e-books), digital downloads and print-on-demand books would grow from $9 million in 2000 to $414 million in 2004.[22]

E-books are created as computer files that can be read by various mechanisms – computers, personal digital assistants (PDAs) or special hand-held book reading devices using proprietary software.[23] They can be delivered to the reader either as downloads from the Internet or as e-mail file attachments. E-books can also be made available on diskette and CD-ROM. They use a variety of file formats (e.g. PDF, HTML, RTF) and can be read using various operating systems (e.g. Windows CE and Palm) or in files that are equipped with reading software. As was pointed out in the discussion of e-journals, these various formats provide different functionalities, for example, an e-book created as an HTML file gives the capability to include multimedia features with audio, video and animation.[24]

Market performance – the supply of and demand for e-books

There is an apparent lack of consensus regarding how well the market for e-books has performed. Some analysts point out that there have been very few commercial success stories between 2000 and 2002. It is pointed out that most established book authors continue to publish with traditional print publishers, and those in the industry who had forecast the rapid growth of e-books no longer support those expectations.[25] On the other hand, some industry actors continue to support and invest in e-book-related activities contending that e-books have enjoyed high growth rates and will continue to do so. Furthermore, a number of print publishers are preparing to distribute their existing titles electronically. Other interests such as the Open eBook Forum are promoting e-books by raising reader awareness of the benefits of e-books.[26] Indeed, supporters of e-books suggest that the real issue is not that there is a poor market for e-books but that the initial growth forecasts were exaggerated. A quick look at promotional materials indicates that a large number of e-books are being advertised and points to the existence of an impressive array of e-book distributors, publishers as well as on-demand publishers.[27] The problem in making an independent assessment is to determine the actual volume of e-book sales.

Another relatively new distribution format, print on demand (POD), is a sort of combination of e-publishing and print publishing. This technology allows a book to be stored as an electronic copy and be printed and bound only according to the number of copies actually demanded or paid for. For book publishers, printing on demand solves the perennial problem of having to print copies without being certain of the actual number required by the market, and then having to absorb the resulting unrecouped production and storage costs.

Benefits of e-books for authors

It is widely recognized that where the print publishing model prevails, many books that are written are never published. Because of the high cost of editing, formatting and printing, the publishers tend to select only the "best" books, largely on the basis of expected sales. As a result, publishers have tended to dominate the process of deciding which books get published and which do not. E-books allow authors to publish online themselves at an affordable cost. This increase in outlets and opportunities has empowered authors to decide what materials actually get published. Further, as e-publishing increases competition between publishers, e-publishers are more willing to publish books that would have been rejected in print publishing.

Authors may also find that some e-publishers are willing to work more directly and closely with them than traditional publishers would be. Also, some e-book publishers assist authors with the editing and distribution of e-books. The books may be advertised on the publisher's website, and other services may also be offered – for example, copyright and ISBN registration and registration in the *Books In Print* database as well as with major online book distributors. This generosity may be explained by the fact that many e-publishers are new to the industry and are in the process of establishing business networks.

E-publishing can also provide improved customer service and can allow authors to receive quick feedback from readers about their publications. For example, authors can establish direct contact with readers by providing e-mail addresses and websites through which readers can express their views and suggestions concerning a book. Such information may help authors in preparing updates or new editions of their works. Also, e-publishing has been credited with increasing the royalties paid to authors. It is reported, for example, that on average e-publishers pay authors royalties in the range of 20 to 30 per cent of the net price received from sales of a book, compared to the royalties of 8 to 10 per cent typically paid by print publishers.[28] Some e-publishers provide even higher royalties, such as a 50-50 split of royalties with authors.[29]

As the cost of Internet access declines, e-publishing stands to benefit from an increase in the number of readers to whom publications are distributed without consequential cost increases. The cost of distributing an e-book remains the same regardless of the number of people reading the book, subject to the size of the bandwidth available. Authors who self-publish are able to eliminate intermediaries (publishing houses) and deal directly with readers, thus reducing transaction time and other transaction costs, although they must pay for marketing costs. Thus, overall, e-publishing lowers barriers for new entrants and offers the potential for a much greater number of individuals to publish their books which in turn creates the potential for a large increase in published titles.

Benefits of e-books to publishers and opportunities for e-businesses

Largely due to economies of scale, traditional print publishing requires books to be printed in large numbers in order to maximize opportunities for profitability, although the existing market may not ensure that the whole print run is sold. Printing numerous copies of a book has the disadvantage of tying up capital and also involves considerable costs for shipment, warehousing, inventory and distribution to retailers. The alternative, namely printing fewer copies, poses the risk of running out of stock, which can result lost sales opportunities. Also, small print runs are less profitable than large ones, as unit printing costs tend to decrease with increasing numbers of printed copies.

The tendency towards large print runs is due largely to the difficulty of ascertaining demand. Available information shows that, while book publishers often distribute large numbers of copies of printed books to retailers, eventually many copies are returned unsold to the publishers.

The above problems can largely be eliminated with e-books. As e-publishing minimizes the amount of printing, the need to determine demand is also minimized. Physical transportation of books is significantly more costly than the distribution of e-books. Similarly, e-publishing reduces or eliminates warehousing and inventory costs.

E-publishing has still other benefits. New editions can be produced more frequently than in print publishing. Publishers can publish shorter titles (those that are longer than magazine or journal articles but shorter than typical print books), reprints and books that are out of print, with few or no overhead costs. E-publishing also makes it possible to sell parts of a book or other publication and thus provide new sales opportunities for a given publication. Length limitations are far less important than in print publication, and authors can include additional content such as annexes, additional data, and so on, which is not always feasible in print versions.

Unlike printed books, which eventually run out of print and tend to remain available in bookstores for relatively short periods of time, e-books can theoretically remain available for any length of time. Generally, e-publications have lower sale prices than their print counterparts. For example, the prices of e-books in a particular category might range from $1 to $6 whereas comparable paperbacks might sell for $6 to $10.[30]

Like e-newspapers and e-journals, e-books enable the use of features such as sound, video, automatic cross-referencing and interactivity. They also allow readers, through hyperlinks, to be linked to other texts, audio, video or other digital content outside a book that is accessible on the Internet. Further, they permit publishers to reach global markets more readily.

Disadvantages of e-books

In general, e-books have the disadvantage of being less portable than printed books. An e-book has to be read on a computer screen or using an e-book reader. Generally, text is harder to read on a computer screen than in print form; characters are not as clear, and looking at a screen for extended periods of time can be tiring. As regards e-book readers, consumers have been concerned by their cost and by the fact that all devices are not compatible with all e-book formats. This obliges customers to keep track of which e-books can be read

on their systems, and creates difficulties for publishers in deciding on which formats to use.

Cost comparison between e-books and printed books

The relative costs of online and print publishing are of major concern to publishers because they are a major factor in deciding whether to get involved in e-publishing. At first glance, e-publishing appears to be less expensive than print publishing, since in the former the marginal costs of printing and physical distribution, are low or nonexistent. However, a more meaningful comparison must consider both fixed and variable costs. Fixed costs include the cost of editors and other staff and the technology infrastructure needed for production. Some of these costs may be higher in e-publishing than print publishing. For example, staff costs may rise because of heavy dependence on skilled technology workers. However, today most book "manuscripts" are prepared as computer files and are delivered to the printer in electronic format. Converting these files to the widely used HTML or PDF format should not require substantial additional resources. Also, increased competition may create greater demand not only for high-level customer services but also for high-quality publications with sophisticated functionality. As in the case of journals, therefore, there appears to be no clear consensus, at least in the current run transition atmosphere, as to whether, overall, e-books are less costly than printed books.

Pricing/Revenue models for e-books

Since e-books are a relatively new form of publishing, publishers are still searching for the most appropriate pricing models. Because of this and other factors, including efforts by institutions such as libraries to overcome budgetary constraints, the pricing of e-publications has generally become fairly complex and in many ways contentious. (See the earlier discussion of e-journals.)

C. E-Publishing in Developing Countries

The preceding section outlined the state of the art in e-publishing and the potential benefits this model offers. As regards the actual growth of e-publishing, it was mentioned that some sectors, such as e-journals, have seen much progress in spite of uncertainty caused in part by the ongoing crisis of high journal prices in the face of limited library budgets. On the other hand, there are clearly opposing perceptions concerning e-books, with some observers feeling that e-books do not yet have a significant presence and are not likely to do so soon, while others think their market role is substantial and growing.

This report takes the view that e-publishing is already having a significant impact, given, for example, the number of online newspapers and e-journals currently in existence. There is therefore justification for taking a positive view of this new technology and supporting e-publishing activities for the benefit of all stakeholders in the publishing chain. This report also shares the view that the slow growth of e-publishing should not be interpreted to mean that this form of publishing has no future. Historically, a number of other technologies, including press printing, have taken decades to have a major impact on society.

The benefits of e-publishing that were described in the preceding section of this chapter may accrue to publisher and users of published materials in all countries, including developing ones. E-publishing uses technology and business models that make it easier for individuals and small enterprises to publish cost-effectively. It also allows their publications to reach a global readership at a minimal cost. The net effect is to enable enterprises in developing countries to compete with established publishers, although initially they may need to rely on niche markets at the national or regional level.

It is evident, however, that publishers and users in developing countries have lagged behind their developed-country counterparts. This lag can be attributed to a variety of factors, including the low level of Internet connectivity, without which e-publishing is not possible.[31] However, more fundamental problems exist that are directly linked to the publishing industry itself.

Some of the problems concerning publications in developing countries and their implications for the growth of e-publishing are summarized below. The publishing industry as a whole is generally less developed in developing countries than in developed ones.[32] Table 22 showed, for example, that developing countries, with a much larger share of the world population, had more or less the same number of newspapers as developed countries. Even more significant, in developed countries the volume of circulation per 1000 inhabitants was more than twice than in developing countries. Annex II, which shows the distribution

of book publishers by country, indicates that publishers are concentrated in only a few countries and that most developing countries have very few book publishers. In this connection, other sources show that in developing countries with a sizable publishing industry the main publishers are branches of major publishing houses in developed countries. Other indicators, such as the number of book trade organizations, show the same uneven distribution across countries.[33]

The following summary by the UNESCO Institute for Statistics provides a succinct picture of the uneven distribution of the production of published materials and access to such materials:[34]

- Over 50 per cent of countries worldwide have an estimated daily newspaper circulation of 50 copies per 1,000 inhabitants.
- In more than half of the world's countries, there are fewer that 10 newspaper titles. Only 8 per cent of countries have over 100 newspapers.
- Around 50 per cent of countries worldwide produce, on average, less than one book per inhabitant per year; 30 per cent produce between one and three books per inhabitant; and 20 per cent produce four or more books per inhabitant annually.
- Around 60 per cent of countries have fewer than 50 copies of school textbooks per 1,000 inhabitants, while just 20 per cent of countries have more than one textbook for every inhabitant.
- Around 70 per cent of countries worldwide provide fewer than 200 public libraries per million inhabitants; 16 per cent provide between 200 and 500 libraries; and 15 per cent provide more than 500.
- In nearly 50 per cent of countries worldwide, all the libraries combined contain less than one book per inhabitant; 20 per cent contain between one and three books per inhabitant and 30 per cent contain four or more books per inhabitant.

The following observations further illustrate the poor state of publishing in developing countries:

- There is limited information on what publications are published in developing countries. For example, only a few articles published in developing countries are listed in the world's major journal indexes and book directories. This lack of information undermines readers' ability to access these publications and authors' ability to research opportunities for publishing in these countries.
- Partly because of the above and for reasons of quality and prestige, many scholars in developing countries tend to publish with publishers in developed countries, thus failing to contribute to the growth of the local publishing industry or those of other developing countries.
- While many scholars from developing countries strive to publish their work in developed countries, a number of factors such as competition for authorship and biased peer review, make it relatively difficult for developing-country authors to be published. In other words, authors in developing countries fail to realize their full publishing potential due to limited access to publishing outlets or lack of knowledge about the outlets.
- High journal costs have been exacerbated by a proliferation of scholarly journals on different subjects. This means that many journals available on the market are not being purchased and therefore, are not used by readers. Journals published in developing countries thus face particularly stiff competition from those of developed countries. The latter have a larger readership base, which generates a more substantial cash flow, ensuring regular publication and consistent quality.
- Some journals and textbooks produced in developing countries have relied on government and corporate sponsorship, but these sources have decreased with the countries' overall poor economic performance in recent years. Also, limited readership has meant limited advertising revenue.

Some observers have suggested that the problems facing publishing in developing countries can be overcome or reduced by e-publishing. As was mentioned earlier, the technology and business models applied in e-publishing may provide business opportunities for enterprises, including small ones, in developing countries. In recognition of the potential social and economic impact of publications, a number of national and international initiatives have been launched to promote e-publishing and access to e-published materials in developing countries. A listing of some of the initiatives can be found in Annex III.

Such initiatives are new and there is little information regarding their current status and successes or failures. It is notable, however, that the provision of access to e-publications to institutions in developing countries for free or at reduced prices appears to be similar to pricing models that are used by a large number of publishers worldwide, as was mentioned in part B. It was pointed out that free access was at times used as a marketing strategy which could change in due course. On the other hand the initiatives involving the access to publications produced by developing country publishers, if successful, could result in genuine growth of e-publishing in the developing countries.

D. Copyright Issues in the World of E-Publishing

Intellectual property is an intangible form of property and includes four types of human works that are protected by copyright laws: inventions (patents); symbols, names and images (trademarks); designs used in commerce (industrial designs); and literary and artistic works (copyright).[35] Copyright law grants the author of a work the exclusive right to reproduce the work, prepare derivative works and perform and display the work publicly. Copyright protects published and unpublished literary, scientific and artistic works in any form of expression. Protection automatically occurs when works are actually created and fixed in a tangible form. Registering copyright may be convenient for commercial or litigation purposes but is generally not necessary to obtain a valid, enforceable copyright.

Since the advent of new technologies in the 1990s, the development of adequate national and international copyright legislation has been of particular concern. Indeed, by making works accessible via the Internet or other digital channels, authors and publishers are losing control over the distribution of their works. The concern of copyright owners has thus taken on new and challenging dimensions.

New technologies enable anyone to make exact copies of a work and share them almost anonymously with others. The Internet allows people to steal contents freely and share them with others using tools such as peer-to-peer technology (P2P). P2P on the Internet is a network that allows computer users with the same type of networking software to access files from one another's hard drives. This was the technology that was employed by millions of Napster[36] users.

While basic computer equipment is needed for carrying out piracy, copying and distribution process have been dramatically facilitated by advanced digital technology. Cases have been recently reported in which books were being illegally translated or copied, sometimes even before their official release. This happened, for example, with J.K. Rowling's famous "Harry Potter"series. Before the advent of the Internet and related technologies, many countries were already facing copyright infringement on a large scale. The illegal copying of books presents a real danger to the survival of the legal publishing industry. For example, the *UNESCO Courier* in its March 2001 edition[37] published figures showing that : while the legal publishing industry annual turnover in Latin America and Spain is $5 billion, the illegal business makes $8 billion.

The copyright issues related to the publishing industry are similar to those faced by the software and music industries, both of whose products are copyright protected. However, piracy of published works, including books, newspapers and journals, has not yet reached the same level in terms of volume, monetary value and popularity as that of music, for example. Nevertheless, it is likely to become a serious problem as e-publishing takes off. It has been reported that digital piracy (involving software, music, films and books) is responsible for multi-billion-dollar loss annually.[38] So far, thousands of books are said to have been illegally exchanged on the Web in 2001; figures or estimates are not available for journals and newspapers.[39]

This part of the chapter outlines some general issues related to copyrights and their economic importance, taking into consideration the different dimensions they have in developed and developing countries. Unsurprisingly, developed countries, as major exporters of intellectual property, have made great efforts to ensure its protection. Since the 1990s, a worldwide trend toward the harmonization of national laws has been influenced by international negotiations that led, in particular, to the adoption of international agreements such as the WTO Agreement on Trade-Related Aspects of Intellectual Property (TRIPS),[40] the 1996 WIPO Copyright Treaty[41] and the WIPO Phonogram Treaty,[42] known as "the WIPO Internet Treaties".

1. The economic impact of copyrights

The increasing economic importance of intellectual property rights makes them a more and more prominent issue in trade relations between countries. The main argument advanced in international debate in support of the protection and enforcement of intellectual property rights is that they lead to greater international trade for the benefit of all. Given that developed countries are the major exporters of intellectual prop-

erty, the intention is clearly to protect their exports by keeping pirated products out of the destination markets.

The main justification of copyright for developed countries has always been economic. The largest exporter of intellectual property rights is the United States. In 1990, the United States formed the International Intellectual Property Alliance (IIPA),[43] which divided copyright-based industries into four groups,[44] and provided statistics on their contribution to gross domestic product (GDP), employment and trade in the United States. The IIPA 2002 Report[45] confirms the important role of copyright-based industries which represent one of the fastest-growing sectors of the economy, making significant contributions to domestic employment and revenue growth as well as to international trade. The *Report* states that in both developed and developing countries, studies have generally reported contributions to GDP in the range of 3 to 6 per cent. According to the *Report*, it is estimated that in 2001 the core copyright industries[46] in the United States accounted for 5.24 percent of the country's GDP, or $535.1 billion – an increase of over $75 billion from 1999. Over the last 24 years (1977 – 2001), the copyright industries' share of GDP grew more than twice as fast as the remainder of the U.S. economy (7 per cent vs. 3 per cent).

The IIPA's estimate of the revenues generated by foreign sales/exports of selected U.S. core copyright industries (see Table 27) in 2001 was $88.97 billion, an increase of over $52.78 billion from 1991.

To put these figures into perspective, it is necessary to look at the extent the importance of trade losses in the United States due to copyright piracy. IIPA's estimate of total trade losses for 2001 was $9.4 billion, an increase of $898 million from 2000. Business software applications represented 29.3 per cent of the total trade losses in 2001, closely followed by record and music, losses related to this sector increased from $2.9 billion in 2000 to $3.2 billion in 2001. Estimates related to book losses, which in 2001, represented 10.3 per cent of the total trade losses at $650.8 million, while their value was $671.8 million in 2000. IIPA's estimates that worldwide loses due to piracy of United States copyrighted materials are in the annual $20-22 billion range, and does not include estimates due to Internet piracy. The United States' trade losses from piracy are increasing and are expected to grow even more with the development and expansion of new technologies.

Table 27

Estimated Revenues Generated by Foreign Sales/Exports of selected U.S. Core Copyright Industries, 1991-2001

(Billions of dollars)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Industry	E	E	E	E	E	E	E	E	R	E	E
Pre-recorded records, tapes, etc	$6.15	$6.58	$7.44	$8.74	$9.76	$9.83	$10.01	$9.90	$10.27	$9.76	$9.51
Motion Pictures, TV, Video	$7.02	$7.05	$8.36	$9.34	$10.24	$11.58	$12.34	$12.93	$13.70	$14.50	$14.69
Computer software	$19.65	$21.94	$24.32	$26.44	$29.14	$34.81	$40.28	$41.87	$50.65	$56.88	$60.74
Newspapers, Books, Periodicals	$3.36	$3.62	$3.67	$3.79	$3.97	$3.96	$4.22	$4.51	$4.79	$4.33	$4.03
Total for Selected Industries	$36.19	$39.19	$43.78	$48.33	$53.11	$60.18	$66.85	$69.21	$79.41	$85.46	$88.97

E = estimate; R = revised.
Source: IIPA, Copyright industries in the US Economy: the 2002 Report.

Table 28

USTR 2002 "Special 301" Decisions and IIPA estimated U.S. trade losses due to copyright piracy

(In millions of U.S. dollars)
and estimated levels of copyright piracy for 2000-2001

	Motion Pictures				Records & Music				Business Software Applications[1]				Entertainment Software				Books			
	Loss		Video Piracy Level		Loss		Piracy Level		Loss		Piracy Level		Loss		Piracy Level		Loss		TOTAL LOSSES	
	2001	2000	**2001**	2000	**2001**	2000	**2001**	2000	**2001**	2000	**2001**	2000	**2001**	2000	**2001**	2000	**2001**	2000	**2001**	2000
PRIORITY FOREIGN COUNTRY																				
Ukraine (GSP)	**40.0**	40.0	**80%**	99%	**170.0**	200.0	**85%**	95%	**46.7**	23.7	**87%**	89%	**NA**	NA	**NA**	NA	**NA**	NA	**256.7**	263.7
306 MONITORING																				
Paraguay[2]	**2.0**	2.0	**80%**	80%	**253.6**	200.0	**99%**	90%	**3.5**	8.5	**72%**	76%	**NA**	9.7	**NA**	99%	**3.0**	3.0	**262.1**	223.2
People's Republic of China	**160.0**	120.0	**88%**	90%	**47.3**	70.0	**90%**	93%	**1140.2**	765.1	**92%**	94%	**455.0**	NA	**92%**	99%	**130.0**	130.0	**1932.5**	1085.1
UNRANKED BUT WITH OCR																				
Mexico (OCR)	**50.0**	50.0	**40%**	40%	**366.8**	300.0	**61%**	63%	**146.9**	145.7	**55%**	56%	**202.5**	NA	**83%**	90%	**40.0**	30.0	**806.2**	525.7
PRIORITY WATCH LIST																				
Argentina	**30.0**	32.0	**45%**	45%	**78.2**	76.0	**47%**	46%	**72.5**	92.9	**62%**	58%	**NA**	141.4	**95%**	94%	**8.5**	8.5	**189.2**	350.8
Brazil3 (GSP)	**120.0**	120.0	**33%**	33%	**302.0**	300.0	**55%**	53%	**272.3**	264.1	**56%**	58%	**NA**	248.2	**99%**	94%	**14.0**	18.0	**708.3**	950.3
Colombia	**40.0**	40.0	**90%**	90%	**73.0**	60.0	**65%**	60%	**19.5**	33.2	**52%**	53%	**NA**	39.0	**NA**	85%	**5.3**	5.0	**137.8**	177.2
Dominican Republic (GSP)	**2.0**	2.0	**60%**	60%	**7.7**	2.0	**65%**	80%	**4.0**	6.7	**64%**	68%	**NA**	6.0	**NA**	NA	**1.0**	1.0	**14.7**	17.7
Egypt	**15.0**	15.0	**35%**	35%	**9.2**	12.0	**41%**	48%	**14.5**	10.0	**58%**	56%	**NA**	14.9	**90%**	94%	**32.0**	30.0	**70.7**	81.9
European Union	**NA**	NA	**NA**	NA	**NA**	NA	**NA**	NA	**NA**	NA	**NA**	NA	**NA**	NA	**NA**	NA	**NA**	NA	**NA**	NA
Hungary	**18.0**	18.0	**40%**	40%	**4.5**	3.0	**30%**	20%	**21.3**	33.3	**48%**	51%	**43.3**	9.6	**90%**	86%	**4.0**	4.0	**91.1**	67.9
India	**70.0**	47.0	**60%**	60%	**NA**	6.0	**40%**	40%	**256.0**	181.6	**70%**	63%	**NA**	NA	**90%**	80%	**37.0**	36.0	**363.0**	270.6
Indonesia (OCR)	**27.5**	25.0	**90%**	90%	**67.9**	21.6	**87%**	56%	**63.1**	55.7	**88%**	89%	**NA**	NA	**NA**	99%	**30.0**	32.0	**188.5**	134.3
Israel (OCR)	**15.0**	15.0	**50%**	50%	**40.0**	45.0	**25%**	30%	**36.9**	51.3	**40%**	41%	**66.5**	52.0	**89%**	NA	**1.0**	1.0	**159.4**	164.3
Lebanon (GSP petition)	**8.0**	8.0	**80%**	60%	**2.0**	2.0	**40%**	45%	**1.1**	1.3	**79%**	83%	**NA**	1.5	**NA**	96%	**2.0**	2.0	**13.1**	14.8
Philippines (OCR)	**28.0**	25.0	**80%**	70%	**23.9**	1.4	**36%**	33%	**19.9**	21.8	**63%**	61%	**NA**	41.0	**99%**	98%	**44.0**	44.0	**115.8**	133.2
Russian Federation (GSP)	**250.0**	250.0	**80%**	90%	**285.0**	250.0	**64%**	70%	**90.6**	89.0	**87%**	88%	**173.6**	NA	**90%**	94%	**48.0**	48.0	**847.2**	637.0
Taiwan	**35.0**	30.0	**30%**	30%	**51.7**	60.5	**48%**	44%	**106.8**	123.9	**53%**	53%	**119.4**	319.3	**70%**	90%	**20.0**	20.0	**332.9**	553.7
Uruguay (GSP petition)	**2.0**	2.0	**40%**	65%	**4.0**	4.0	**50%**	35%	**6.4**	7.9	**63%**	66%	**NA**	16.3	**NA**	82%	**2.0**	2.0	**14.4**	32.2
WATCH LIST																				
Armenia (GSP)	NA	NA	NA	NA	4.5	5.0	85%	90%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.5	5.0
Azerbaijan	NA	NA	NA	NA	13.0	12.0	85%	90%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	13.0	12.0

Bahamas (OCR)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Belarus	NA	NA	NA	NA	20.0	28.0	75%	90%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	20.0	28.0
Bolivia	2.0	2.0	100%	100%	15.0	15.0	85%	85%	4.9	2.8	77%	81%	NA	1.5	NA	NA	5.5	5.5	27.4	26.8
Canada	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chile	2.0	2.0	40%	40%	12.2	5.0	35%	30%	46.3	33.1	51%	49%	NA	41.0	NA	80%	1.1	1.0	61.6	82.1
Costa Rica (OCR)	2.0	2.0	40%	40%	4.8	3.0	40%	40%	6.9	14.9	64%	68%	NA	0.2	NA	50%	NA	NA	13.7	20.1
Greece	10.0	10.0	15%	20%	NA	10.0	NA	15%	38.9	46.9	64%	66%	NA	38.1	NA	78%	NA	7.0	48.9	112.0
Guatemala	2.0	2.0	60%	60%	NA	4.0	NA	60%	14.1	12.3	73%	77%	NA	0.1	NA	60%	2.5	2.3	18.6	20.7
Italy	140.0	140.0	20%	20%	40.0	50.0	23%	25%	338.8	327.0	45%	46%	NA	NA	74%	65%	23.5	23.5	542.3	540.5
Jamaica	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Kazakhstan (GSP)	NA	NA	NA	NA	25.0	25.0	78%	90%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	25.0	25.0
Kuwait	9.0	8.0	85%	85%	NA	3.0	50%	50%	4.5	6.6	76%	80%	NA	NA	85%	NA	2.5	2.5	16.0	20.1
Latvia	1.5	1.5	NA	75%	NA	4.0	NA	65%	4.6	NA	59%	77%	NA	NA	NA	NA	NA	NA	6.1	5.5
Lithuania	1.5	1.5	NA	80%	7.0	7.0	85%	85%	3.9	NA	56%	76%	NA	3.5	NA	98%	NA	NA	12.4	12.0
Malaysia	40.0	41.0	80%	80%	148.9	15.6	70%	65%	75.0	75.4	70%	66%	56.4	NA	93%	98%	8.2	8.0	328.5	140.0
New Zealand	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pakistan (GSP petition)	11.0	10.0	NA	60%	60.0	65.0	90%	90%	9.2	24.5	83%	83%	NA	NA	NA	NA	44.0	45.0	124.2	144.5
Peru	4.0	4.0	50%	75%	57.8	55.0	97%	96%	11.2	12.6	60%	61%	NA	3.8	NA	70%	9.0	9.5	82.0	84.9
Poland (OCR)	25.0	25.0	27%	25%	37.0	31.0	30%	30%	77.1	82.7	53%	54%	115.8	103.1	90%	85%	6.5	7.0	261.4	248.8
Qatar	0.5	0.5	30%	25%	NA	0.2	NA	25%	2.2	3.0	78%	79%	NA	NA	NA	NA	0.2	NA	2.9	3.7
Romania	6.0	6.0	65%	60%	14.0	11.0	70%	55%	15.7	17.1	75%	77%	NA	6.9	95%	91%	2.0	2.0	37.7	43.0
Saudi Arabia	30.0	40.0	45%	65%	12.0	8.0	42%	40%	16.4	17.7	52%	59%	115.7	28.0	83%	NA	14.0	14.0	188.1	107.7
Slovak Republic	NA	2.0	NA	20%	NA	0.5	NA	10%	8.1	5.3	46%	45%	NA	7.0	NA	85%	NA	NA	8.1	14.8
South Korea	25.0	20.0	25%	20%	4.0	7.0	14%	19%	100.4	177.2	48%	56%	487.7	157.0	63%	90%	35.0	39.0	652.1	400.2
Tajikistan	NA	NA	NA	NA	3.0	3.0	83%	90%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.0	3.0
Thailand (OCR) (GSP petition)	24.0	24.0	65%	60%	16.6	15.6	45%	45%	32.6	42.7	77%	79%	29.1	130.5	93%	98%	28.0	33.0	130.3	245.8
Turkey (GSP)	50.0	50.0	40%	50%	3.5	4.0	35%	40%	22.4	78.6	58%	63%	23.7	116.2	90%	96%	27.0	28.0	126.6	276.8
Turkmenistan	NA	NA	NA	NA	NA	5.0	NA	90%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0	5.0
Uzbekistan (GSP)	NA	NA	NA	NA	NA	30.0	NA	90%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0	30.0
Venezuela	25.0	25.0	65%	65%	54.0	30.0	62%	62%	25.7	16.9	55%	58%	NA	47.0	NA	78%	20.0	22.0	124.7	140.9
Vietnam	NA	7.0	NA	100%	NA	NA	NA	100%	26.3	13.5	94%	98%	NA	NA	NA	NA	NA	8.0	26.3	28.5
	1323.0	1264.5			2339.1	2065.4			3207.4	2926.5			1888.7	1582.8			650.8	671.8	9409.0	8511.0

[1] BSA's trade loss estimates represent losses to U.S. publishers only, and differ from the BSA trade loss numbers generally released by that as: (a) publishers in that country and (b) losses to distributors/retailers in the country in question. This chart includes BSA' finalized statistcs for 2001.

[2] Paraguay: RIAA reprot that it estimated losses to the sound recording/music industry include both domestic piracy in Paraguay and estimated losses caused by transshipment.

[3] Brazil: RIAA reports the 55% piracy level in Brazil for 2001 reflects an amalgamated rate; the level of audiocassette piracy is 99% and the level of CD piracy is 47%. "GSP" means a GSP IPR Review is being conducted by the GSP Subcommittee; "GSP Petition" means that a petition is pending before that Subcommittee for its acceptance to initiate a Review.

Source: IIPA, USTR 2002 "Special 301" Decisions, including trade loss estimates and piracy levels for 2000-2001.[47]

In most developing countries, copyright issues have not acquired the same urgency because copyright-based industries remain smaller. As was pointed out by the World Bank[48] in 1999, from the viewpoint of developing countries, the relevance of copyright is usually limited to artistic and literary works and the motion picture and television industries. With the expansion of Internet use, it is expected that copyright-based industries will grow in locations offering adequate IT skills and lower production costs, as has happened in some Asian countries in recent years. Efforts made by developing countries to address issues concerning national and international copyright legislation will occur when the capacity of local industries to generate intellectual property increases.

2. The impact of technology on copyright legislation

Copyright laws have been technology-driven and have tended to follow the development of technologies pioneered by the developed world. In the publishing industry, the invention of the printing press, computers and new technologies has led to reform of copyright legislation. The Statute of Ann, enacted by the British Parliament in 1710, known as the corner stone of copyright, responded in particular to booksellers' fear of their books being counterfeited and illegally distributed. Further to the Statute of Ann, national legislation was enacted in several countries: in 1790 the United States promulgated its first federal copyright statute, and thereafter several Western European countries (France, Germany, Austria and Spain) enacted laws recognizing authors as the owners of rights in their works.

In some developing countries, the laws regarding the protection of intellectual property were modelled on existing laws of developed countries. As the number of copyright-based industries in developing countries is generally quite low, the development of national laws was not high in the development agenda. Even developing countries that have implemented and ratified national and international agreements still do not fully meet their obligations in enforcing these laws. However, with the growth of copyright-based industries facing competition from foreign products, many developing countries have now realized the impact of copyrights and more generally intellectual property rights on their economies following

Copyright protection is provided in the Berne Union of the Protection of Literary and Artistic Property, known as the Berne Convention (1886). The Convention establishes standards for protection of copyrights in literacy and artistic works. It envisages the principle of automatic treatment by providing protection to artistic works and national treatment that allows the courts of a country to apply national laws to offences occurring within that country. To date, 140 member countries have ratified the Berne Convention.[49]

More recently, the concern over digital rights has forced national, regional and international authorities to adapt their legislation to face the new threats posed by virtual and global distribution of contents. The WTO Agreement on TRIPS, which came into effect on 1 January 1995, is the most comprehensive multilateral agreement on intellectual property. The areas of intellectual property covered by TRIPS include copyright and related rights (i.e. the rights of performers, producers of sound recordings and broadcasting organizations), trademarks (including service marks), geographical indications (including appellations of origin), industrial designs, patents (including the protection of new varieties of plants), the layout designs of integrated circuits and undisclosed information (including trade secrets and test data). The international debate on copyright issues in a digital era also led to the adoption in 1996 of the "WIPO Internet Treaties", which entered into force in 2002. The common objectives of these treaties are to protect copyright owners in the digital age, favour the development of human creativity and promote electronic commerce.

The adoption of the TRIPS and WIPO Internet treaties has influenced the adoption by developed and developing countries of national legislation in line with the principles set forth by the two treaties. For example, in adopting the Digital Millennium Copyright Act (DMCA),[50] the United States updated its copyright law for the digital era and prepared itself for the ratification of the WIPO Internet treaties. The DMCA included provisions concerning the circumvention of copyright protection systems, fair use in a digital environment, and online service provider (OSP) liability. Moreover, the IIPA is responsible for tracking developments in the area of copyright legislation and enforcement in over 80 countries. In doing so, it determines whether the acts, policies or practices of any foreign country infringe on intellectual property rights or fair and equitable market access for individuals in the United States entitled to intellectual property protection. IIPA Country reports are available for 77 countries.[51]

The European Union has prepared a European Copyright Directive[52] which was adopted in April 2002 and allows the European Union and its member States to ratify the WIPO Internet Treaties. This is expected to happen by the end of 2002. By 2004, all European countries will need to have adapted their national legislations in order to extend copyright protection to the Internet and other new media in accordance with this Directive. After many years of legal discussion, to balance the rights of creators and the privacy of users, the Directive offers the possibility for European Union member States to adopt all or part of copyright exceptions that it envisages would allow for copying for technical reasons, personal use and archival purposes.

Modernizing the traditional legal instruments of multilateral copyright conventions and treaties[53] is essential, but the costs and benefits of harmonization are not always equally shared. Indeed, as was mentioned earlier in this chapter, developing countries lag behind in terms of producing intellectual property as a whole, including published materials. However, this should not draw attention from the benefits that developing countries stand to gain from ratifying and enforcing copyright legislation.

3. Enforcement of copyright legislation

The adoption of the WIPO treaties in 1996 generated an international pressure on developed and developing countries to comply with international agreements and thus, enforce anti-piracy mechanisms with regard to imported products. Indeed, the recent flurry of implementation of copyright legislation at the national level responds to pressure exerted on Governments by international bodies and local industries to provide effective enforcement of these laws. As part of WIPO's and WTO's joint efforts to help developing countries meet their commitments regarding intellectual property and conform with the WTO agreement on TRIPS, since 1998 technical assistance in preparing legislation, training, institution building, and modernizing intellectual property systems and enforcement has been extended to developing countries.

National legislation has been enacted by the majority of countries worldwide to ensure copyright protection in the digital age, but it is too early to assess the effectiveness of these actions. While software and music piracy remain the most important economic issues for all countries, other works, such as books, are also under threat as advances in digital technologies facilitate the expansion of piracy. In one of its country reports,[54] the IIPA indicates that piracy "is rapidly changing: it is becoming more predominantly digital, moving online, and migrating to dispersed production formats such as CD-Recordable (CDR). Piracy of analog formats – audiocassettes, videocassettes, and books and other printed materials – remains a serious, and in some instances a worsening, problem. But technological and market trends are clearly pushing piracy in a new direction. Simply put, technological advances are increasing the opportunities for piracy, and pirates are taking full advantage of them."

All countries, including developing ones, are urged to comply with international agreements to protect works from piracy for the benefit of exporters of intellectual property products. However, enforcement of intellectual property rights depends on the effective functioning of a country's judicial system.

Beyond legal solutions and actions carried out by the local police, prevention campaigns have recently been launched by developing countries to demonstrate their commitment to fighting copyright infringement. In preparing the present report, the UNCTAD secretariat surveyed a number of copyright and intellectual property offices[55] in both developed and developing countries. They were asked whether they were affected by e-book piracy and what solutions were being implemented to combat digital piracy. All respondents indicated that they were encountering a certain degree of digital piracy but that the main problem areas were software and music.

In its efforts to promote intellectual property, the Copyright Office of Hong Kong (China) visits schools to create awareness of intellectual property issues. Since 1997, a total of 389 schools including 136,704 students have been visited. The Copyright Office has also launched an anti-piracy advertising campaign aimed at consumers using pirated goods. It is too early to assess the impact of these campaigns.

In the survey responses, three cases of e-publishing piracy were reported. Typical of the answers gathered were those of the Copyright Office of Peru (Box 21) and the United Kingdom Patent Office (Box 22). The Customs of Hong Kong,[56] the enforcement agency for the protection of intellectual property rights, recently reported a case involving the selling of a pirated version of an English dictionary in CD-R format in retail outlets.

Indeed, creating awareness of intellectual property rights, including copyright issues, has for the past few years been the preoccupation of intellectual property

Box 21

E-publishing and copyright in Peru

In Peru, Mr. Martin Moscoso, computer and communications law attorney at the Copyright Office, National Institute for Promotion of Competition and Protection of Intellectual Property (INDECOPI) says that e-commerce in Peru has developed rapidly thanks to the availability of public Internet access facilities for the fact that few households have personal computers. The legal framework has been implemented to foster e- commerce: electronic contracts are allowed by statute, digital signatures are covered by specific legislation. In particular, the legal framework covering copyright (Legislative Decree 822 from 1992) is updated and includes new technologies. Moreover, Peru has signed the WIPO Internet Treaties. However, e-publishing is still in its early stages. Therefore, just a few cases have reached to Copyright Office and are mainly related to unauthorized reproduction and distribution of photographs through a webpage (*Editora Automás vs. Publimilla SRL*). In short, the legal framework is ready, and the potential problems will increase with the development of e-commerce in Peru. (May 2002)

Box 22

E-publishing and copyright in the United Kingdom

According to Mr. Brian Simpson, assistant director, Copyright Directorate, United Kingdom Patent Office, the United Kingdom Patent Office is not aware of anecdotal information specific to the United Kingdom as regards e-book piracy. There was a certain amount of activity last year following releases of e-books in 2000. He believes Stephen King was first to test the market but the original encryption used was easily hacked. Estimates from late 2001 suggested that around 7000 books protected by copyright were then illegally available on the Internet. The United Kingdom Patent Office has been working to implement many of the recommendations of the Intellectual Property (IP) Group of the United Kingdom's Creative Industries Task Force. They have developed an IP portal, *www.intellectual-property.gov.uk*, to complement their own Patent Office website (*www.patent.gov.uk)* by providing more basic information on intellectual property for the general public.

The United Kingdom Patent Office is also working with industry and others (Crimestoppers Trust) to raise awareness of IP crime and its damaging effects for all. Moreover, Mr. Simpson specifies that they are developing a CD-ROM for schools on intellectual property jointly with the UK Institute for Citizenship and the UK National Consumer Council. The CD-ROM is directly related to the introduction of the subject of citizenship into the national schools curriculum in September 2002. (May 2002)

and copyright offices both in developed and developing countries. The advent of new technologies has spurred a large number of countries to reform their national copyright law in order to ensure copyright protection for materials available over the Internet. However, bringing copyright laws into line with the WTO Agreement's and WIPO treaties, and providing effective enforcement of these laws with regard to piracy, counterfeiting and other forms of intellectual property rights infringement has proved to be difficult. Due to the complexity of intellectual property laws and their enforcement, developing countries still lag behind and have still not managed to comply with the TRIPS requirements and enforcement mechanisms. Priority must be given to the development of a policy framework that allows great flexibility while ensuring implementation of international agreements.

E. Conclusion and Recommendations

1. Conclusion

Publishing is a major industry that has an impact on many aspects of society. Electronic publishing represents a major transformation in publishing methods and business models, and it introduces new products and capabilities into the publishing industry.

An examination of e-publishing approaches to disseminating newspapers, scholarly journals and books has shown that while there are a wide variety of e-publishing models, they share many features such as delivery formats, capabilities and pricing models. Publishers generally offer parallel print and electronic versions of the same publications, although some publish electronic-only versions as well. While parallel or dual publishing has some advantages, it tends to be very expensive and presents publishers with a dilemma, since electronic-only publishing has not yet proved its viability as a business model.

There are a variety of pricing models for e-publications, especially journals and newspapers, including free access to electronic versions for all readers, electronic free versions for print subscribers, access to electronic versions for print subscribers for an extra charge, single article sales and so on. Journal publishers also use site licenses.

While e-publications are considerably cheaper than print publications with respect to printing and to some extend distribution costs, when other fixed costs are taken into account, e-publishing may be as costly as or even more costly than print publishing, at least in the short run.

The quality of e-publications relative to print publications is a contentious issue, especially for scholarly publications. While it is true that print publishing may be more meticulous in controlling quality of content, many e-publishers also apply a high degree of quality control. From a technical point of view, there are no inherent reasons why e-publishing cannot institute the same level of quality control as print publishing.

There is a perception in some publishing circles that e-publications, especially e-books, have so far had dismal success. Other observers, however, take the view that e-publishing has had impressive growth, although initial forecasts may have been overly optimistic. Reinforcing the latter view, some major traditional publishing houses and e-publishing software vendors continue to invest in e-publishing, including e-books.

Developing countries have lagged behind developed ones in publishing and using e-publications because of limited computer Internet access and low levels of participation even in print publishing. Recognition in developing countries of the value of e-publishing has led to a wide variety of national and international initiatives aimed at promoting e-publishing and improving access to e-publications in developing countries. Some of the initiatives are similar to marketing strategies used by publishers in developed countries. Publishers and users of publications in developing countries may find some of the initiatives to be useful sources of support and opportunities for cooperation when formulating their own e-publishing strategies.

2. Recommended strategies for publishers and users in developing countries

The following are some key questions relating to business models and strategies to be considered. They are outlined here to provide a guide and an indication of the scope of the work involved and the types of investments to be made.

Strategies for prospective publishers and authors

(a) As e-publishing demands new skills, publishers would need to take measures to train staff members to use new technologies, especially in areas that do not exist in traditional print publishing, such as interactivity and multimedia capability etc. One option is to contract out the technical tasks to technology firms or established e-publishers. If the publishing is to be undertaken in-house, an analysis of the capital and operating costs associated with the required information technology and infrastructure needs to be undertaken.

(b) Where a publisher is a start-up firm with no existing investment in print publishing, there appears to be a widely held view that such a venture should commence on an electronic-only basis, although this is feasible only where the majority of readers have Internet access. The question is more complex for publishers that have invested in print publishing. The “parallel” model of print publishing combined with electronic publishing appears to be the most prevalent. The decision essentially involves weighing costs against marketing opportunities. The publisher needs to assess the expenditure costs of converting from print publishing to electronic-only publishing and compare them with the expected gains. On the marketing side, if most users can only access print publications (as would be the case in most developing countries), a move to electronic-only publishing may entail a total loss of market.

(c) Other questions that would need to be addressed include the following:

(i) Whether to establish on one's own website or be hosted by other sites;

(ii) What kinds of materials are suitable for e-publishing;

(iii) Whether to place online the full text, only the table of contents, or only selected chapters;

(iv) Which distribution channels to use, including institutional buyers (libraries), wholesale and retail stores, specialist document delivery services, etc. A decision also has to be made whether a publication should be delivered online or through a portable device such as a CD-ROM. A CD_ROM may be the better option in developing countries where Internet connectivity is still poor, although the trend is now towards online publishing, and a CD-ROM cannot be updated or easily link readers to Internet sites. E-publishing on CD-ROM should therefore be considered a transitional stage. Online delivery can occur via optical disk systems through public network connections (ISDN) or directly over the Internet. The publisher has various options regarding the format or language to be used, as was discussed in part B of this chapter, including ASCII, HTML and PDF. There are also options with regard to the graphic and audiovisual tools to be used. These choices require a fair amount of knowledge about IT and should also take into account trends in languages used on the Internet in order to ensure compatibility.

(v) Whether to build own databases as a backup information source;

(vi) Whether to "bundle" books or journals - that is sell them as a package;

vii) Which pricing models to use;

(viii) How many of the value-added features enabled by e-publishing (e.g. searching capability, multimedia) are to be provided, taking into account the costs involved and the market being targeted;

(ix) How the publication should be marketed;

(x) Undertaking copyright, ISBN and other registrations;

(xi) How to obtain editorial services;

(xii) Whether the publisher should cooperate with other publishers to gain economies of scale, a factor that has driven some major publishers into mergers and acquisitions; and

(xiii) Whether an author should engage in self-publishing and what external support is available for this purpose.

A number of guidelines for e-publishing dealing with these types of questions and more technical ones are available and may be consulted.[57]

Strategies for users of e-publications

Users include individual buyers of publications and institutional buyers, essentially libraries of different types. This section focuses on libraries since their purchases are large and hence their buying decisions are more important in terms of expenditures than purchases by individuals. Usually publishers negotiate deals when issuing licenses for publications such as journals to libraries. These arrangements specify prices for various print and electronic versions. A library has to weigh cost against the importance it attaches to print relative to electronic versions for reasons other than cost.

Given fixed budgets, when adopting e-publications users may have to choose not merely between print and electronic versions but also between different types of publications – for example, between e-books and e-journals to the extent that there is scope for substitution between them. In their purchasing and other operational activities, libraries may create or join library consortia in order to gain bargaining power vis-à-vis publishers. Such consortia are now being used widely at the national, regional and international levels.[58] Their functions include selecting electronic publishing resources and entering into licensing arrangements with publishers in order to rationalize price negotiations. Members monitor the market for publications, obtain offers and evaluate them for negotiating purposes. Collaboration between consortia members also extends to providing joint access to acquired e-publications, which is the equivalent of interlibrary loans for print publications. If a group of libraries wishes to establish a consortium, there are published guidelines that provide information on how to create such an institution.[59] Libraries may also join existing consortia such as the International Coalition of Library Consortia (ICOLC), which has worldwide membership.

There are a number of other possible strategies for institutional users. For example, while not many titles may currently be available as e-books, such books provide a cost-effective solution to libraries' budgetary constraints in that a library owning an e-book may transfer the content into several readers' e-book devices and thus avoid purchasing several copies of the same book. E-books may also help libraries reduce the delays typically involved in interlibrary loans of printed books – a library can obtain the contents of an e-book from another library in a matter of minutes. However, a decision to purchase e-books format has to take into consideration the present and projected availability of needed titles in e-books and the suitability of the available technology for reading books, as well as its cost.

The role of governments

Most developing countries have traditionally printed many types of official documents. Because of high printing and distribution costs, such documents are usually distributed only within government circles and to a few external outlets. Most governments and government-related institutions in developing countries now have websites or at least make use of other websites and portals to publish various types of information. This means that there is scope for governments to provide their publications online. An expansion of electronic publications by governments would not only widen the distribution of vital government information, it would also provide leadership by example to authors and publishers in the private sector.

To promote e-publishing, some governments in both developed and developing countries have encouraged all government institutions to progressively adopt e-publishing. Some governments have established minimum standards for government e-publications. These standards are intended to ensure the quality and accessibility of the published information.[60] Developing countries should find these examples a useful guide in establishing their own protocols.

Outside their own publishing activities, governments in developing countries can stimulate the development of electronic publishing in the private sector, in the following ways:

(a) Providing training in publishing, particularly e-publishing;

(b) Providing financial support to SMEs or individuals launching projects related to e-publishing;

(c) Removing excessive regulations that restrict the freedom of publishing;

(d) Formulating national policies and guidelines concerning e-publishing, including legal deposit of electronic publications in national repositories or archives;

(e) Providing fiscal incentives such as tax exemptions or reductions for e-publications (many countries already grant such incentives for print publications);

(f) Providing financing to public and academic libraries to enable them to launch programs for accessing and archiving electronic publications (in many cases, governments are already the main source of funding for libraries);

(g) Facilitating the linkage of the national and international initiatives (see Annex III) with academic institutions, libraries and publishers in the individual countries concerned;

(h) Providing clear guidelines regarding copyright laws (as was discussed in part D) and promoting the use of best practices in e-publishing;

(i) Supporting surveys to gather information about publications produced in the country and disseminating such information online in order to expand awareness of and access to the country's published materials by end users and researchers inside and outside the country;

(j) Stimulating the promotion of regional cooperation among publishers as well as among libraries, in order to enable them to achieve economies of scale and reduce operating costs;

(k) Establishing national research councils or similar institutions to provide suitable frameworks for funding projects for research and disseminating the results of such research through publications including e-publications; and

(l) Raising public awareness about the advantages of electronic publications.

Notes

1 In this report, publishing refers to the production and distribution of printed or written literary works or documents such as books, newspapers, journals and other types of publications. It excludes information delivered by radio, television and cinema.

2 UNESCO (2000), International flows of selected cultural goods 1980 and 1998.

3 See annex I.

4 Electronic publishing is not to be confused with desktop publishing, which is usually used to create products that are distributed in a noninteractive medium, usually paper or other hard copy.

5 See, for example, Onlinenewspapers.com.

6 Some real-time information services do provide continuous updates of online news, but these services are not considered here as newspapers.

7 For detailed definitions of scholarly journals, see, for example, "Online study guide: Periodicals" at www.ithaca.edu/library/course/periodical.html; "Scholarly journals and magazines" at www.nmus.edu/library/scholar.html and "What is a scholarly journal? A popular magazine? A trade journal?" at http://camellia.sch.edu/literacy/table version/lessons 5/periodicals.htm.

8 There are individual subscriptions to scholarly journals as well. However, due to the dominant role of libraries as the main subscribers, in examining e-journals the focus is on issues related to libraries.

9 See "Brief history of scholarly journals" at http://panizzi.shef.ac.uk/elecdiss/ed0001/ch0200.html, "Scholarly societies and their relationship with commercial publishers" at www.scholarly-societies.org/comm_publishers.html; "Scholarly journals: There is no single villain in scholarly publishing's crisis" at http://pitt.edu/utime/issues/33/001026/13.html; Bergstrom T (2001), Free labour for costly journals, Journal of Economic Perspectives", Summer 2001: pp. 183-198.

10 For an extended discussion, see Akerson A "University libraries and scholarly communication" in Peak R and Newby G (1996), Scholarly publishing: The electronic frontier, MIT Press. Cambridge, Mass.

11 Lists of journals are published by many other sources as well, such as Ulrich's International Periodicals Directory and the Gale Database of Publications and Broadcast Media. There is, however, a lack of data on the exact number of journals published around the world. In large part, this results from a lack of uniformity in definitions of the term "journals".

12 Bowker's Ulrichsweb, Serial Trends, http://www.ulrichsweb.com/ulrichsweb/ulrichsweb_news/UlrichsSerialsTrends.asp.

13 See Spinella M (2000), Electronic publishing models and the pricing challenge, http://www.si.unmich.edu/PEAK-2000/spinella-paper.pdf; MacKie-Mason J and Riveros J (2000), Economics and electronic access to scholarly information in Kahim B and Varian H (eds.), Internet Publishing and Beyond, Cambridge, Mass., MIT Press.

14 Industry Canada (1995) Cost and revenue structure of academic journals: Paper-based versus e-journals. For other discussions of the subject, see for example Odlyzko A Competition and cooperation: Libraries and publishers in the transition to electronic scholarly journals, American Academy of Arts and Sciences, www.amacad.org/publications/trans13.htm; Odlyzko A the Economics of electronic journals, www.firstmonday.dk/issues2_8/odlyzko; Bot M, Burgemeester J and Rees H (1998), The cost of publishing an electronic journal: A general model and case study, D-Lib Magazine, November, http://www.dlib.org/november98/11roes.html.

15 For further discussion on the cost of e-journals, see Bergstrom B (2201) Free labour for costly journals? Journal of Economic Perspectives, Summer, pp. 183-198.

16 In addition to looking to e-publishing as a possible solution, some libraries have responded to the crisis by forming buying consortia which enable them to negotiate favorable subscription rates with publishers. Such consortia arrangements are also beneficial to publishers because they enable them to retain customers and also rationalize the selling process.

17 For an extended discussion, see "The future of publishers, journals and libraries", www.mathdoc.ujf-grenoble.fr/texte/Odlyzko/amo94/node9.html.

18 See, for example, "The interactive potential of the Net", www-mathdoc.ujf-grnoble.fr/texte/Odlyzko/amo94/node8.html.

19 Wiesner, Karen, “E-publisher acceptance rates”, www.writing-world.com/epublish/wiesner.html.

20 UNESCO, Statistical Yearbook, various issues.

21 It turned out, however, that most of the downloads of the book were distributed freely by sellers for promotional purposes. It is uncertain whether there would have been great interest in the book if readers had to pay for it.

22 IDC, “Electronic publishing forecast and analysis, 2000-2004: Digital Books and Print on Demand". 2000.

23 E-book reader is a propriety software with a specific electronic text. The text is read using an e-book device that has a screen and is capable of reading e-books.

24 For further discussion on e-books, see for example Lynch, Clifford, “The battle to define the future of the book in the digital world,” www.firstmonday.dk/issues/issues6_6/lynch/.

25 For example, see “E-book Story Fails to Unfold”, www.cbsnews.com/stories/2002/05/14/tech/printable508968.shtml.

26 See www.openabebook.org.

27 See, for example, eBooks.com and digitalindex.com.

28 See www.epubbed.com/article1013.html.

29 See the formula suggested by the American National Writers Union for setting the level of royalties, http://ccat.sasa.unpenn.edu/jod/nwul.html.

30 See www.epubbed.com/article1013.html.

31 For a discussion of problems of infrastructure and connectivity see “Building Confidence and Report on E-Commerce and Development 2001.”Also see ITU and WIR 2002?

32 For further discussion, see for example, Wresch, W., “E-commerce innovations in the book publishing industry: Opportunities for the developing world”, www.uwosh.edu/faculty_staff/wresch/ICIS/htm.

33 See www.literarymarketplace.com/1mp/int/resourcesGeoList.asp?ID=11.

34 UNESCO Institute for Statistics, Facts and Figures 2000.

35 According to the definition given by the World Intellectual Property Organisation (WIPO), a copyright is “a legal term describing rights given to creators for their literary and artistic works [...]. The kinds of works covered by copyright include: literary works such as novels, poems, plays, reference works, newspapers and computer programs; databases; films, musical compositions, and choreography; artistic works such as paintings, drawings, photographs and sculpture; architecture; and advertisements, maps and technical drawings."

36 Napster is an application that allows people to share music over the Internet without having to purchase their own copy on CD. After downloading Napster, a user can get access to music recorded in the MP3 format from other users who are online at the same time. By simply typing in the name of an artist or song, the users receive a list of what’s available, and then download the music from another user’s hard drive. In July 2000, the United States District Court prohibited Napster from “engaging in or facilitating others in copying, downloading, uploading, transmitting or distributing plaintiffs’ copyrighted works” . For more details on Napster litigation, please see the U.S. District Court decision at http://news.findlaw.com/hdocs/docs/napster/napster022102ord.pdf.

37 “Pirates and the paper chase”, by Lucia Iglesias Kuntz, The Courier of Unesco (March 2001)

38 www.envisional.com/assettracker.

39 www.envisional.com/assettracker.

40 www.wto.org/english/tratop_e/trips_e/trips_e.htm.

41 WIPO Copyright Treaty: www.wipo.org/eng/diplconf/distrib/94dc.htm.

42 WIPO Phonogram Treaty: www.wipo.org/eng/diplconf/distrib/95dc.htm.

43 The International Intellectual Property Alliance (IIPA) is a private sector coalition created in 1984 to represent the U.S. copyright-based industries in bilateral and multilateral efforts to improve international protection of copyrighted materials.

44 The four groups are: the core industries, partial copyright industries, distribution, the copyright-related industries. Copyright industries in the US Economy: The 1990 Report, www.iipa.com/.

45 Siwek S, Copyright industries in the US Economy: The 2002 Report, prepared for the IIPA, available at www.iipa.com/copyright_us_economy.html

46 The core industries include newspapers and periodicals, book publishing and related industries, music publishing, radio and television broadcasting, cable television, records and tapes, motion pictures, theatrical productions, advertising and computer software and data processing.

47 www.iipa.com/pdf/2002_Jul11_USTRLOSSES.pdf

48 'Intellectual property rights and economic development', World Bank, background paper for the World Development Report 1999, Technet Working Paper. www1.worldbank.org/wbiep/trade/papers_2000/bpipr.pdf.

49 www.wipo.org/treaties/ip/berne/index.html.

50 DMCA, www.loc.gov/copyright/legislation/dmca.pdf.

51 www.iipa.com/countryreports.html.

52 www.eurorights.org/eudmca/CopyrightDirective.html.

53 The Berne Convention for the Protection of Literary and Artistic Work (1886), the Universal Copyright Convention (1952), the Rome Convention for the Protection of Performers, Producers of Phonograms and Broadcasting Organizations (1961), the WTO Agreement on Trade-Related Aspects of Intellectual Property Rights known as TRIPS (1996), the Geneva Phonograms Convention (1971)

54 www.iipa.com/rbc/2002/2002SPEC301KOREA.pdf.

55 Canada, Colombia, Hong Kong, Mexico, Peru, the United Kingdom, Russia, Singapore, Thailand

56 The Customs of Hong Kong also replied to the enquiry sent to Intellectual Property Offices in preparing this chapter.

57 See for example, "A Manual for Publishers in Developing Countries"; http://citd.scar.utorornt.ca/Epub_manual/.

58 See www.library.yale.edu/consortia/2001currentpractice.htm.

59 See http://alexia.lis.uinc.edu/~b-sloan/consort.htm.

60 For example see guidelines set by the Canadian Government, www.dcita.gov.au/infoaccess/electronic_formats.html.

References and bibliography

Braga C, Fink C and Sepulveda CP (1999) *Intellectual PropertyRights and Economic Development*, World Bank, background paper for the *World Development Report 1999*, Technet Working Paper. Available at http://www1.worldbank.org/wbiep/trade/papers_2000/bpipr.pdf.

Ciolek T (1997) "*ANU E-commerce / E-Publishing Issues*". Available at http://www.ciolek.com/papers/ecomm/e-issues976.htm

Digital Millennium Copyright Act (DMCA). Available at http://www.loc.gov/copyright/

legislation/dmca.pdf.

Forrester Research (2000). *Content Out of Control*. Available at http://www.forrester.com/ER/Research/Report/Summary/0,1338,10020,FF.html.

Forrester Research (2001). *The Digital Copyright Standoff*. Available at http://www.forrester.com/ER/Research/Report/Summary/0,1338,11946,FF.html.

Houghton J (2000). *Economics of Scholarly Communication*, Center for Strategic Economic Studies, Victoria University.

Houghton, J. (2001). *Crisis and Transition: The Economics of Scholarly Communication*. Learned Publishing 14 (July) pp. 167-176.

IIPA 2002 *Special 301 Reports* (country reports); Available at

http://www.iipa.com/copyright_us_economy.html

IIPA, United States Trade Representatives (USTR) 2002 "Special 301" *Decisions, including trade loss estimates and piracy levels for 2000-2001*. Available at http://www.iipa.com/statistics.html.

Journal of Electronic Publishing (1997). Solving the dilemma of copyright protection online. Available at http://www.press.umich.edu/jep/03-02/doi.html.

Journal of Electronic Publishing (1994). Copyright in a time of change. Available at http.//www.press.umich.edu/jep/04-03/strong.html

Kahin B and Hal Varian (eds.) (2000). *Internet Publishing and Beyond*, The MIT Press, Cambridge, Massachusetts.

Kuntz LI (2001) *Pirates and the paper chase*, Lucía Iglesias, *UNESCO Courier* journalist

Lall S (2001). *Indicators of the Relative Importance of IPRs in Developing Countries* UNCTAD/ICTSD Capacity Building Project on Intellectual Property Rights and Sustainable Development.

Lynch C (2001). *The battle to define the future of the book in the digital world*, Firstmonday. Available at http://www.firstmonday.dk/issues/issues6_6/lynch/.

Peek R and Newby G (eds.) (1996). *Scholarly publishing: The electronic frontier*, The MIT Press Cambridge, Massachusetts.

Rawlings G (1991). *The new pulblishing: Technologies impact on the publishing industry over the next decade*, November. Available at http://www.roxie.org/papers/publishing.

Siwek S (2002) *Copyright Industries in the U.S. Economy: The 2002 Report*, prepared for the International Intellectual Property Alliance (IIPA). Available at http://www.iipa.com/copyright_us_economy.html.

UNCTAD (1996) *The TRIPS Agreement and Developing Countries*, United Nations Publication, UNCTAD/ITE/1, Sales No.: E.96.II.D.10

UNESCO (1996). *Proceedings of the joint ICSU Press* / UNESCO Conference on electronic publishing in Science, ICSU Press, UNESCO, Paris. Available at http://users.ox.ac.uk/micsuinfo/confproc.htm

ANNEX I

STATITICS OF THE ISSN REGISTER – TOTAL NUMBER OF RECORDS IN THE REGISTER AND NEW ANNUAL ENTRIES

Year	Total number of records in ISSN Register	New record entered in the year
1991	578,315	59,353
1992	619,979	41,664
1993	659,927	39,948
1994	710,734	50,807
1995	755,058	44,324
1996	801,522	46,464
1997	846,858	45,336
1998	894,913	48,055
1999	945,973	51,060
2000	988,969	42,989
2001	1,037,156	48,187

Source: ISSN Statistics: http://www.issn.org:8080/English/pub/tools/statitics/

ANNEX II

NUMBER OF BOOK PUBLISHERS IN SELECTED COUNTRIES/TERRITORIES IN 1999

Afghanistan (6)
Albania (5)
Algeria (3)
Angola (1)
Antigua and Bermuda (1)
Argentina (116)
Armenia (2)
Australia (530)
Austria (404)
Azerbaijan (2)
Bahrain (2)
Bangladesh (12)
Barbados (2)
Belarus (9)
Belgium (181)
Benin (2)
Bermuda (1)
Bolivia (6)
Bosnia and Herzegovina (3)
Botswana (6)
Brazil (220)
Brunei (Darussalam (1)
Bulgaria (80)
Burundi (3)
Cameroon (5)
Cape Verde (1)
Chad (1)
Chile (39)
China (121)
Colombia (56)
Costa Rica (35)
Cote d'Ivoire (7)
Croatia (34)
Cuba (16)
Cyprus (17)
Czech Republic (112)
Democratic Peolples'Republic of Korea (10)
Denmark (105)
Dominican Republic (5)
Ecuador (14)
Egypt (21)
El Salvador (3)
Estonia (20)
Ethiopia (3)
Fiji (4)
Finland (58)
France (653)
French Guana (1)
French Polynesia (3)
Gambia (1)
Georgia
Germany (1504)
Ghana (33)
Greece (130
Guadeloupe (1)
Guatemala (5)
Guinea-Bissau (1)
Guyana (6)
Haiti (4)
Holy See (Vatican) (5)
Honduras (3)
Hong Kong (China)(73)
Hungary (69)
Iceland (30)
India (262)
Indonesia (70)
Iraq (1)
Ireland (89)
Islamic Republic of Iran (3)
Israel (138)
Italy (607)
Jamaica 26)
Japan (243)
Jordan (4)
Kazakstan (6)
Kenya (45)
Kuwait (3)
Laos (2)
Latvia (17)
Lebanon (17)
Lesotho (3)
Libyan Arab Jamahiriya (1)
Liechtenstein (16)
Lithuania (31)
Luxembourg (26)
Macau (4)
Madagascar (15)
Malawi (6)
Malaysia (65)
Maldive (2)
Mali (1)
Malta (8)
Martinique (3)
Mauritania (1)
Mauritius (11)
Mexico 151)
Monaco (9)
Mongolia (17)
Mozambique (4)
Maynmar (9)
Namibia (9)
Nepal (3)
Netherlands (222)
Netherlands Antilles (3)
New Caledonia (2)
New Zealand (121)
Nicaragua (2)
Niger (1)
Nigeria (62)
Norway (53)
Oman (1)
Trinidad and Tobago (12)
Pakistan (44)
Panama (3)
Papua New Guinea (13)
Paraguay (2)
Peru (21)
Philippines (47)
Poland (82)
Portugal (136)
Puerto Rico (12)
Republic of Korea (117)
Republic of Moldova (3)
Reunion (2)
Romania (72)
Russian Federation (93)
Rwanda (3)
Samoa (1)
Saudi Arabia (8)
Senegal (11)
Sierra Leone (4)
Singapore (44)
Slovakia (33)
Slovenia (11)
South Africa (81)
Spain (523)
Sri Lanka (37)
Sudan (3)
Suriname (18)
Swaziland (1)
Sweden (126)
Switzerland (360)
Syrian Arab Republic (2)
Taiwan, Province of China (67)
Tajikistan (1)
Thailand (31)
The Democratic Rep. Of Congo (8)
Macedonia (15)
Togo (5)
Tunisia (19)
Turkey (52)
Turkmenistan (1)
Uganda (5)
Ukraine (10)
United Arab Emirates (2)
United Kingdom (1113)
United Rep. Of Tanzania (27)
Uruguay (27)
Uzbekistan (2)
Venezuela (27)
Viet Nam (9)
Yugoslavia (40)
Zambia (19)
Zimbabwe (38)

Source: http://literarymarketplace.com

ANNEX III

A BRIEF DESCRIPTION OF ELECTRONIC PUBLISHING INITIATIVES[62]

1. **Electronic Publishing Trust for Development**: Established in 1996, the trust facilitates open access to the world's scholarly literature and supports the electronic publication of reviewed bioscience journals from countries experiencing difficulties with traditional publication. Its activities include fostering awareness of the benefits of electronic publishing, as well as support in the areas of training and management and distribution. It enables scientific communities in developing countries to take advantage of new communication technologies to disseminate the results of their work internationally, in particular to make scientific journals published in developing countries available on the Internet.

2. **Bioline International**: This not-for-profit electronic publishing service is committed to providing access to research journals published in developing countries and thus reducing the North-South knowledge gap in the area of health. With peer-reviewed journals from Brazil, Cuba, India, Indonesia, Kenya, South Africa, Uganda and Zimbabwe, it makes bioscience information generated in these countries available to the international research community.

3. **Information Program of the Open Society Institute (OSI):** Among other activities, this program has launched an Open Access Initiative supported by projects furthering international research and scholarship – for example, funding for the publication in peer-reviewed online journals of articles by authors residing and working in 67 developing countries and countries with economies in transition.

4. **World Health Organization (WHO):** The WHO and the world's largest medical journal publishers have agreed on an initiative to allow nearly 100 developing countries to access important scientific information that would otherwise be unaffordable to them. Under the agreement, the journal publishers would give medical schools and research institutions in these developing countries access to these publications via the Internet for free or at greatly reduced prices.

5. **Jamaica Overdrive**: This project has been implemented by the e-commerce, software conversion and e-publishing applications company Overdrive, which has established an e-book technology center in Montego Bay, Jamaica, involving 200 e-book editors. The center provides e-publishing services ranging from manuscript editing to conversion of manuscripts for print-on-demand, Adobe and MS Reader e-book format. This project supports the development of e-publishing skills and business opportunities in a developing country.

6. **3BillionBooks**: This is a consortium formed by 3BillionBooks, a private company, and the publishing divisions of UNDP, the World Bank, UNICEF, ECOSOC and similar agencies, with the objectives of (a) creating and managing a digital catalogue of new and backlist Consortium titles and other publications, (b) installing and servicing machines in regional locations chosen by the Consortium, and (c) creating software, distributing and printing content globally in book form and from digital files, and providing worldwide service to these facilities. The project, which is still at the planning stage, will focus on print-on-demand technology, which, it is hoped, will revolutionize the distribution of books worldwide, especially in developing countries.

7. **Africa e-Journals Project**: Under this pilot project to provide global access to selected African scholarly journals, the journals will be published in full-text versions on the Internet under the license of participating collaborators with the African Studies Association, the Association of African Universities and CODESRIA. The project will negotiate copyright regimes and cost a recovery system to be shared between the original African publishers and the project's web publishers. One of the key objectives is to promote the availability of African journals in the United States.

8. **African Journals OnLine (AJOL)** : This pilot project, managed by INASP, aims to promote the use of African-published journals in the sciences by providing access to tables of contents and abstracts on the Internet, along with a document delivery service and a link to the full text of the article or journal.

9. **African Journals OnLine Publishing Project (AJOPP):** This pilot project was created to explore options available in electronic publishing by offering selected journals support in electronic delivery, and to evaluate whether e-publishing increases journal use and sustainability.

10 **Scientific Electronic Library Online Project (SciELO):** Initially launched in Brazil and then in other Latin American and Caribbean countries, this project aims to increase the visibility and accessibility of scientific literature published in the region. It facilitates the transition from print to electronic publishing on the Internet by providing tools for the preparation, storage, publication and evaluation of scientific journals. The project envisages the establishment of national and regional websites including the leading journal titles in various areas of science study.

11. **Latindex project**: Created in 1995, this is a bibliographical system for the scientific and technical journals published in Latin America and the Caribbean and also in Portugal and Spain. It collects information from national information centers and put them into an Internet-based database that offers bibliographical information about nearly 7,000 titles from 25 countries.

Chapter 8

E-INSURANCE

A. Introduction

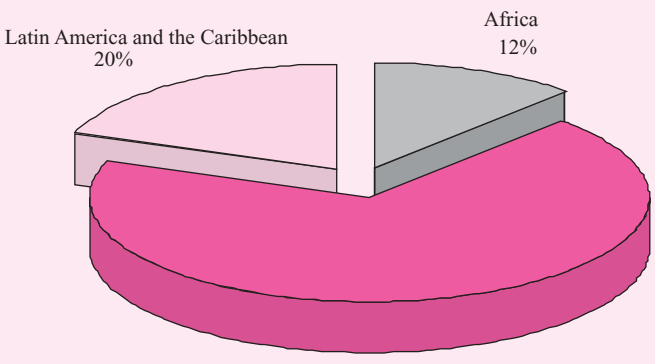
In 2000, insurance companies worldwide wrote $2,444 billion in direct premiums. In other words, the equivalent of 7.8 per cent of global gross domestic product (GDP) was used to purchase insurance products.[1] During the same year, insurance companies in developing countries generated premiums worth $209 billion representing 8.5 per cent of global insurance premiums. A regional breakdown of insurance premiums in developing countries is presented in chart 28.

1. Development perspective

A developed and functioning insurance sector is a fundamental condition for economic success.[2] The objective of insurance is to provide financial stability to individuals, organizations and businesses. As a risk pooling and transfer mechanism, insurance allows the insured to mitigate pure risks (i.e. risks that involve only the possibilities of loss or no loss). Examples of such risks are fires, flooding, ill health and unintentional damage to a third party.[3] Insurance helps business to stay open and individuals to continue their work or education by providing financial compensation if an insured risk occurs and causes damage. Even when no loss occurs, insurance provides peace of mind, a service of considerable, if unquantifiable, value. As a financial sector, insurance is a major investor. Life insurance can stimulate and mobilize personal savings that may, in its absence, become sterile assets. It can also relieve pressure on social welfare systems. Insurance is also needed for trade and commerce where it enhances the creditworthiness of trading partners and can reduce the risk of failure of start-ups and small and medium-sized enterprises (SMEs) as non-diversified risk-takers. The important role of the insurance sector for trade and economic development has been affirmed many times and has been comprehensively analyzed by UNCTAD whose research and policy advice are available at its dedicated Internet website.[4]

Chart 28

Insurance Premium Volumes in Developing Countries (2000, in millions of dollars)



Region	Life	Non-life	Total per region
Africa	18 678	6 526	25 204
Asia	98 047	44 639	142 686
Latin America and the Caribbean	13 645	27 111	40 756
Total per class	130 370	78 276	208 646

Source: Sigma (2000)

2. E-insurance

E-insurance can be broadly defined as the application of Internet and related information technologies (IT) to the production and distribution of insurance services. In a narrower sense, it can be defined as the provision of an insurance cover whereby an insurance policy is solicited, offered, negotiated and contracted online. While payment, policy delivery and claims processing may all be done online as well, technical and regulatory constraints may not allow these elements to be subject to full e-commerce application in certain countries.[5] However, insurance legislation worldwide is being continuously modified to accommodate online payment and policy delivery, and, outside the discussion of e-insurance metrics, these elements should be included in the narrow definition.

The anticipated efficiency effect of e-insurance is twofold. First, e-insurance should reduce internal administration and management costs by automating business processes, permitting real-time networking of company departments, and improving management information. Secondly, it should reduce the commissions paid to intermediaries since it can be sold directly to clients. For insurance sold to individuals, agents typically receive a commission of 10 to 15 per cent for non-life policy sales and renewals and from 35 to 100 per cent for life insurance policies in the first policy year, but much less on renewal.[6] However, some of the income gained in commissions that are not paid to intermediaries must be spent on online customer acquisition and marketing. Assuming cost savings do materialize, in a competitive market they would be passed on to consumers thereby allowing them to buy more insurance, or other products or services. Since insurance penetration[7] in developing countries is only of that in developed countries, the efficiency gains created by e-insurance may contribute substantially to growth in insurance spending and thus intensify its indisputable role in promoting trade and development.

Of the $2.5 trillion worth of global insurance premiums, about 1 per cent could qualify as e-insurance, according to the broad definition. Little, if any of the premiums earned in developing countries could be described as e-insurance according to the narrow definition.[8] In stark contrast, the majority of the $100 billion global reinsurance business is traded using some form of electronic medium. This general assessment seems almost unchanged in comparison with previous UNCTAD reporting on e-insurance.[9] Considered along with initial reports[10] indicating that online premium rates are more competitive, this could point to an acceleration in online distribution of insurance covers measured by the overall value of insured assets.

Chart 29

Insurance on the Web
Total Internet Sales

Source: Forrester Research, CSFB.

During the height of the dot.com euphoria, expectations for e-insurance growth were very strong, and many insurance and reinsurance companies and intermediaries have continued to invest in their e-commerce capabilities. Swiss Re's research arm SIGMA estimates that by 2005 e-insurance will have 5 to 10 per cent market share in standardized personal lines insurance. The corresponding figure for Europe is 3 to 5 per cent. While it is difficult to give exact figures,[11]online sales of insurance products have been increasing steadily. Already, of the 166 million Internet users in the United States,[12] 25 per cent use the web to find insurance information and 73 per cent of those request rate quotes.[13] Chart 29 indicates forecasts that 4 per cent of global premiums will qualify as e-insurance by 2003. However, online premium volumes are still modest today, and this begs a number of questions. Are insurance products suitable for e-commerce? Is the insurance industry ready and willing to embrace Internet technology? Is the adoption of e-commerce practice important for insurers operating in developing countries and for their clients? How do clients benefit from purchasing insurance online and what are the pitfalls that require improved regulation?

This chapter will discuss the fundamental suitability of insurance products for e-commerce. It will review existing e-commerce practice in insurance and reinsurance and discuss the use of IT in these industries. Throughout, it will discuss the position of financial intermediaries and the changes IT may bring about in the value chain. It will propose a number of best practice guidelines for companies and will assess the regulatory implications for the sector. Throughout the chapter, where pertinent, reference will be made to issues and initiatives in developing countries. The chapter will also discuss Internet use by insurance companies in Africa and will review the objectives and progress of a joint UNCTAD and African Insurance Organization (AIO) venture aimed at developing operational insurance software.

B. Suitability

If we can establish that the insurance product has the potential to benefit from the application of IT and e-commerce, then we can review e-insurance business and supervisory practice in a cross-comparative manner. We may find it difficult to conclude why certain e-insurance applications work and others do not. However, can we definitely exclude the fallback of unsuitability of insurance products as an explanation for modest e-commerce growth in the insurance industry?

1. Information and risk

The business of insurance is pure risk. In insurance theory, risk is often defined as the variation between actual losses and expected losses.[14] Insurers' premium rates are based on an assessment of average expected losses and damage.[15] However, premiums collected based on such an average rate may not be sufficient to pay for all the damages in a year, if that year generates greater-than-average losses. Thus, insurers need to have additional funds in reserve.[16] Such reserves are established when an insurer incorporates its business and are often addressed by government insurance regulation and supervision. More importantly, reserves may be replenished during years when losses are less severe than the expected average.

There are several fundamental steps an insurer must take. First, it must calculate a premium rate for the risk it intends to insure against particular causes of damage (e.g. when insuring vehicles or homes against theft or fire). It must also establish adequate reserves to cover deviations from average, expected losses. Finally, the insurer must determine whether any particular clients are likely to attract greater than average misfortune and must decide how to adjust the rates it proposes to them individually.

As this simplified outline shows, the fundamental machinery of insurance involves mathematical treatment and statistical analysis of numerous events and the processing of large amounts of data about existing or potential clients. Not surprisingly the application of proprietary IT is widespread and has been a natural development among insurers in developed countries with competitive financial services markets. Today, IT is widely used to handle communication with intermediaries, policy processing, premium notices, market analysis, sales forecasts, and accounting. Clearly, insurance is an information-intensive enterprise and is thus suitable for e-commerce.

2. The information contract

The establishment of an insurance contract does not require much more than an exchange of information. As long as no damage occurs, most insurance contracts, and their performance as un-invoked promises, remain in the sphere of pure information and are therefore highly amenable to the application of IT. Like any other contract, an insurance contract or pol-

icy needs to satisfy the four basic conditions of legality, capacity, offer and acceptance, and consideration.

To ensure legality the client needs to have an insurable interest: the asset to be insured has to be the property of the client and some information confirming this is usually submitted. The requirement of capacity is satisfied by an exchange of information showing that the insurer, agent or broker is licensed and that the client is not a minor, insane, intoxicated or acting outside the scope of assigned authority.

The condition of offer and acceptance is satisfied by having the insurer offer coverage terms and conditions for an insurable interest, against a loss caused by general or named perils under particular conditions of hazard. The client reciprocates the offer by expressing an acceptance of the proposed contract. (Sometimes the offer is preceded by a *solicitation of an offer* by the client. The *subsequent offer* of the insurer should not be understood as an acceptance: it is the client that must express acceptance.) It is apparent that an enormous amount of information may be exchanged to satisfy this contract condition.

The consideration of the insurer consists of the promise of financial compensation for the loss events defined by the policy. The consideration of the client is to pay a premium. The promise is a non-physical information service. Similarly, the transfer of funds is often electronic, and even cash itself has a nominal value unrelated to its physicality. When a loss occurs, the damage is assessed and a claim is submitted. Large amounts of data are again transmitted between policyholders, intermediaries and insurers.

E-insurance requires modern e-commerce legislation that permits insurers and the insured to safely and unambiguously exchange information, make electronic payments and validate their responsibilities through digital signatures. Insurance-specific legal and regulatory issues are discussed on page 207, while fundamental legal issues pertaining to e-commerce have been dealt with in various UNCTAD publications.[17]

3. Is insurance bought or sold?

A frequently cited aspect of insurance that may detract from its suitability for e-commerce is that its products are often said to be "sold rather than bought". The assumption is that without the sales push of a physical agent, consumers would buy fewer and less valuable insurance policies. Business-to-consumer (B2C) e-insurance is not considered pushy enough, and potential clients are only a mouse click away from other unrelated Internet content.

Certain issues relating to the legal and regulatory environment of a national insurance market can be overcome by having a system of physical agencies. Insurance is difficult to sell online if some or all of the following conditions exist:

- Electronic signatures are not legal;
- Credit card payment is not accepted for insurance purchases;
- Physical documents (policies) have to be delivered to clients and paper copies archived by the agent and insurer;
- Document formats are over-regulated;
- Agents and insurers have to display their license physically;
- Remuneration of insurance portals or markets is prohibited if they do not possess an agent or broker license;
- Physical proof of coverage is requested by third parties (e.g. law enforcement or estate agents).[18]

The agency system is deeply ingrained in the insurance industry, and the insurance agent community supports the notion that insurance is sold, not bought. Insurers do not want to alienate their agents, who remain their most important sales channels. Often, insurers define the agent, not the policyholder, as their customer. It is difficult to predict whether direct Internet purchasing by consumers can replace agents.

The establishment of an insurance contract requires the exchange of large amounts of data, often of a personal nature. While the electronic medium is perfect for data transfer, consumers often worry about the extent to which information submitted by them will be kept private, both at the time of contracting and in the future. When submitting data to an agent, clients assume that they can hold the agent responsible and can seek legal remedy if their privacy is transgressed. The anonymous nature of a website can provoke the opposite assumption in that behind the monitor there is nobody to hold responsible. Clients may also suffer data fatigue when filling out lengthy online forms and may, as a result, give up on soliciting a quote without the coaching of an agent.

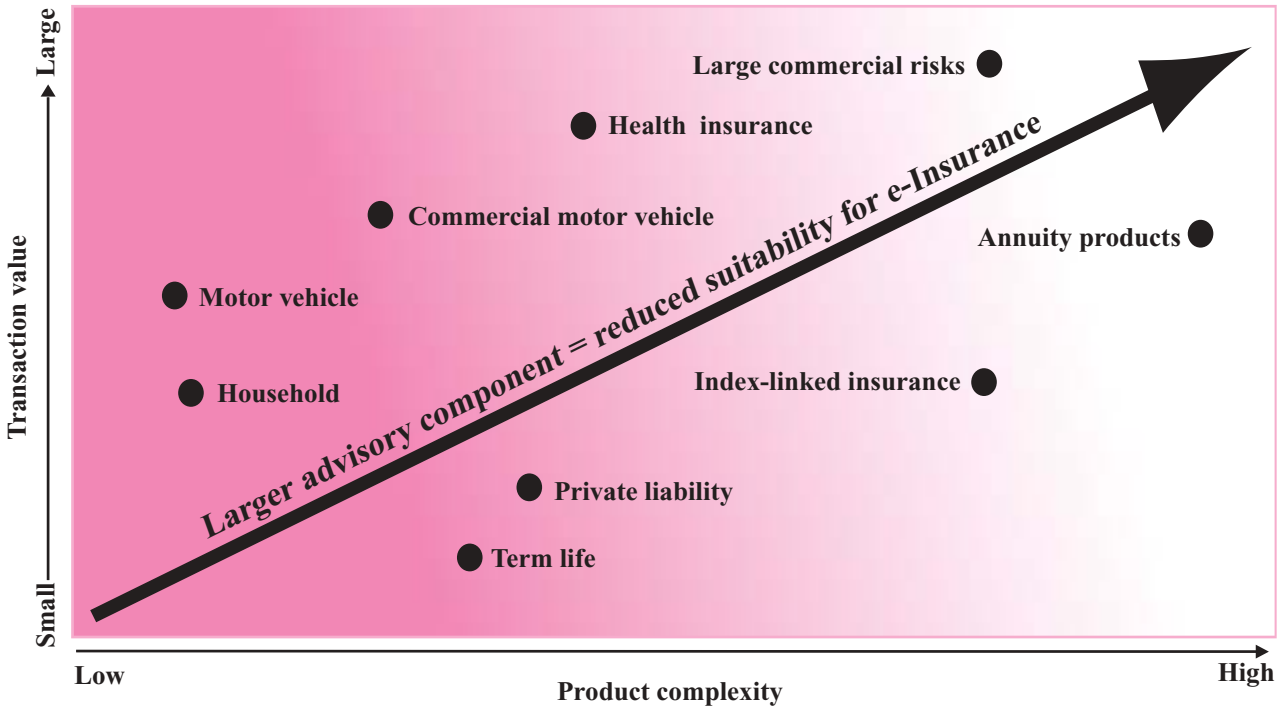
Thus, many insurers have opted to provide only policy information and insurance education on their websites

and leave the actual selling to intermediaries. When clients decide to ask for a quote, they are asked for their postal or zip code and are directed to a nearby agent. The problem with this strategy is that insurance agents may not be highly regarded by consumers for their professional honesty and ethics. In the United States, Gallup polls conducted yearly from 1993 to 2000 ranked insurance agents at the very bottom of the credibility scale. Only 9 to 12 per cent of respondents gave insurance agents very high or high marks for honesty and ethics, in comparison with 25 to 37 per cent for bankers and 13 to 19 per cent for stockbrokers, in consecutive polls during the same period.[19] Consumers may be dealing with insurance agents purely for a lack of a better option. This may be their destiny in developing countries for the foreseeable future due to relatively low levels of Internet and credit card penetration.

The modest progress in e-insurance, in developed countries, compared to the online banking sector, can also be explained by the notion that insurance companies consider the use of e-commerce, and its disintermediating effect, a fairly risky business strategy. A recent Swiss Re SIGMA report on e-insurance concluded that "re-engineering traditional business processes is expensive and often meets with considerable opposition from within the (insurance) company itself." A similar report by CSFB pointed out that "legacy systems are inflexible and expensive to change… the (insurance) culture is understandably risk averse… (while) the Internet threatens existing distribution systems, creating a thorny channel conflict."[20] A recent survey by KMPG revealed that, while the industry is planning and preparing for e-insurance, for 40 per cent of companies e-business actually a threat because of a lack of strategic vision. Further, a quarter of the 175 insurance executives interviewed affirmed that their companies lacked e-business competencies.[21] In a recent joint study by the Economist Intelligence Unit and PricewaterhouseCoopers, two-thirds of the insurance managers interviewed said that their own companies do not have sufficient e-business leadership capabilities for success in e-insurance.

The same study noted that few insurers believed they had the requisite in-house technological skills for e-business. It is worth noting that, that while insurers employ on average 48 per cent more IT staff than banks do, the majority are used to service and manage unique proprietary IT systems where it is difficult to achieve economies of scale.[22]

Chart 30
Product Suitability for e-Insurance



Source: Based on Donaldson, Lufkin and Jenrette (2000), Swiss Re Economic Research & Consulting, Swiss Re Sigma (2000).

It may be true that insurance consumers may find certain products difficult to understand and may be hesitant to buy online. However, the research cited indicates that insurers have not yet found a way to put the "e" into insurance. Results in banking, stock broking and tourism show that the online consumer in developed countries has the technology and willingness to engage in e-commerce.[23]

There are ongoing debates about the suitability of individual insurance product for e-commerce. The conventional wisdom is that obligatory, very simple or low-price products do not require a seller's push and thus can be distributed through e-commerce. The greatest demand is for motor vehicle insurance, followed by health, homeowner's and term life insurance. 24 In line with the general relationship established in chart 30, insurers selling online directly to clients are offering a very restricted portfolio of products. Progressive. com, a leader in the United States online insurance market, is currently offering only motor vehicle insurance and related products. Another prominent online insurer, Allstate.com, is more ambitious and offers motor, homeowner's, life and small business insurance policies. Amica.com provides only motor and homeowner's policies, and several types of life insurance. European insurers also vary in the scope of offered insurance policies. For example, Ineas.com provides motor vehicle, homeowner's and accident insurance while esure.com offers only motor vehicle insurance.

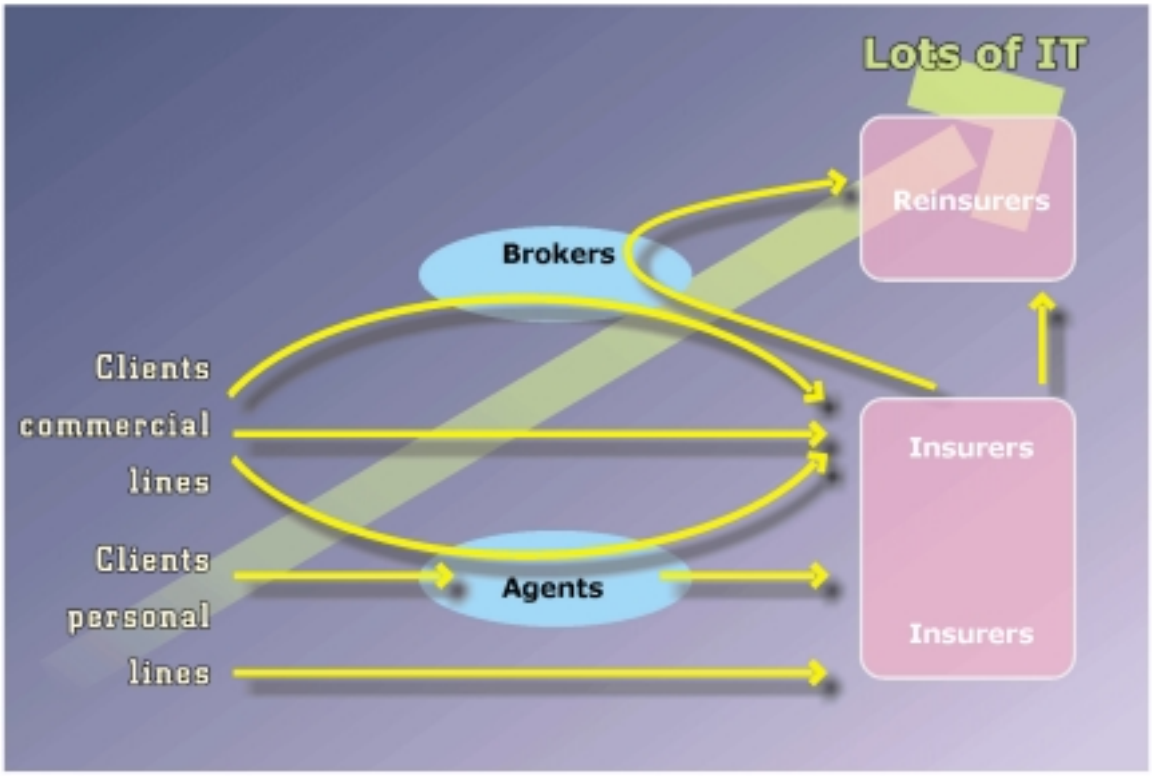
While many insurers continue to rely on their agency networks and cling to the "sold not bought" paradigm, there is little real evidence supporting it, apart from pronouncements about its genuineness that are often articulated by insurance agents and managers. What is needed to bring insurance online is the implementation of best-practice management and technology suited to e-commerce.

C. Best Practice

1. How things have changed

Internet and e-commerce technologies are already changing the structure of the insurance industry. The magnitude of the change can be best appreciated by comparing charts 31 and 32. As chart 31 shows, the

Chart 31
Pre-Internet Insurance



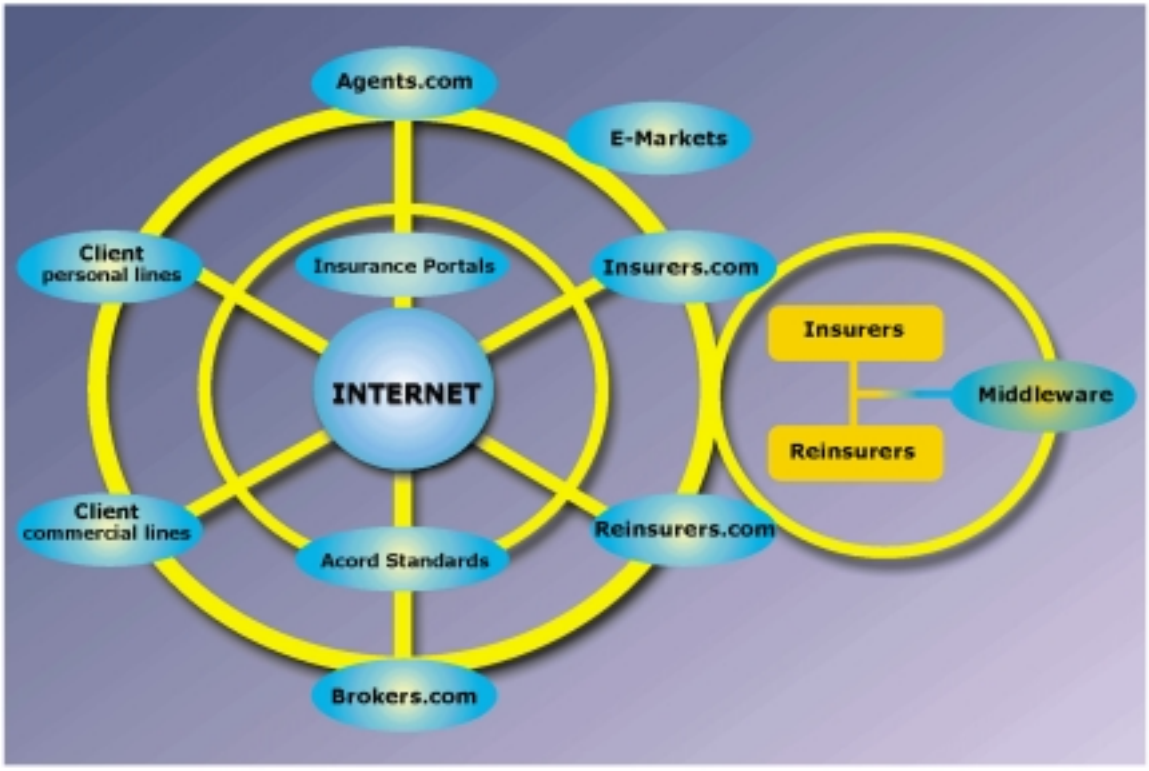
pre-Internet insurance world is largely linear, with individuals (personal lines) or businesses (commercial lines) moving risk to insurers, sometimes directly, but more often through the intermediation of brokers and agents. Intermediaries are responsible for processing more than 90 per cent of all premiums collected. The application of IT increases diagonally down the chart and is most prevalent in the reinsurance sector.

Chart 32 describes an Internet-enabled insurance industry and market. Its main characteristics are that technology can be evenly distributed and information intermediation is no longer a necessity but a preference. Gone is the linear travel of payments and risk information from client to (re)insurer. Buyers of personal and commercial insurance and reinsurance can choose to pursue multiple paths to acquire price and policy information. Insurers and reinsurers have extended their reach through their online incarnations. Brokers and agents may do so as well. Using data standards can positively facilitate the resulting increase in communication and data exchange and a new entity in chart 32 is the standard-setting body of ACORD, whose role is discussed in box 23. Another novelty is middleware, which provides connectivity between insurers' legacy IT systems and the Internet economy and is briefly discussed on page 206.

Agents and brokers were an irreplaceable link in the pre-Internet insurance industry. Agents intermediated sales of policies to non-businesses, such as personal life insurance, motor vehicle insurance, homeowners insurance and various savings and investment schemes. They also intermediated insurance for small and medium-sized business. Brokers intermediated insurance between large organizations, or businesses, and insurers, as well as between insurers and reinsurers. Their economic role was to enhance market efficiency by diminishing information asymmetries between buyers and sellers caused by any of the following situations:

1. The insurer is not fully informed of the scope of the demand, or the insured is not knowledgeable about the selection of insurance policies and prices available; or

Chart 32
Internet-Enabled Insurance



Box 23

ACORD insurance standards

ACORD is a nonprofit insurance association whose mission is to facilitate the development and implementation of data standards for the insurance and related financial services industries. Standards improve efficiency, expand market reach and eliminate friction and cost from the process of contracting and servicing insurance.

Established in 1970, ACORD began by developing paper forms to streamline the distribution system between independent agents and brokers and their markets for property and casualty insurance. The data requirements have remained basically the same as the standards moved from paper to electronic format and as the electronic formats evolved. Today, ACORD standards cover all lines of national and international business (life, non-life and reinsurance), and include all distribution channels and all business models.

After a recent merger with Joint Venture, a standard-setting body for reinsurance and large commercial risks insurance and other organizations in the United Kingdom, United States and Europe, ACORD also established relationships with regional management groups in South Africa and Canada, thus becoming the de facto keeper of global insurance standards. As the goal of global insurance standards can only be achieved through collaboration, ACORD works in partnership with all the standards organizations across the globe to harmonize, assist convergence and build standards on behalf of its collective members.

ACORD works within the United Nations CEFACT community building ebXML (electronic business XML) compliant core components and technology-neutral process models alongside partners in Europe (eEG7) and Canada (CSIO) that will allow interoperability around the globe and across industries.

There are many business drivers fueling interest in standards. E-business and e-commerce expansion is a primary driver. Others include the convergence of financial services, economic globalization and mergers and acquisitions.

Success in standard setting requires the integration several key activities:

- Cooperation: It is through cooperative efforts that redundancies in data and process modeling are eliminated and progress is made toward straight through processing.
- Education: In the rapidly evolving e-business environment, educating the industry about the application and strategic value of standards is critical.
- Implementation: It is not enough to develop standards. Strong implementation campaigns and certification programs are all necessary to drive the implementation numbers to critical mass.
- Technological neutrality: Remaining independent of a specific application or system is an important principle. All suppliers and solution providers are encouraged to join in and build the standards into their solutions so that the industry has a broad selection of best-of-breed tools and applications.
- Cross-industry commitment: There is no business that the insurance industry does not touch in some way. Because of that, the standards must be able to operate in an international cross-industry environment.

Having released the 1.0 version of its XML standards in August 2001, ACORD will be developing eMerge, a global insurance business message specification based on a technology-neutral model and a common data dictionary.

Source: ACORD

2. The insurer has not fully mastered the technical and economic details of the proposed risk, or the insured does not clearly understand the insurance policy's proposed terms and conditions.

In practice, agents are generally authorized to sell policies from only one or a few insurers. Further, the terms and policy wordings of different insurers, even if distributed by the same agent, often do not match. To clarify these differences and enable cross-comparisons is perhaps the most important role of the agent. The obvious question is: can Internet and e-commerce technologies do better than the physical agent-broker system at improving market transparency and competitiveness and educating consumers and insurers about policy and risk technicalities?

The answer is a qualified yes. Online buyers compare a wide range of prices and policy conditions for a particular type of policy and then choose the lowest-

priced product. In theory, this practice should cause overall price decreases in specific insurance product categories. Early research suggests that the price of term life insurance in the United States fell 8 to 15 per cent in the late 1990s, a drop attributable to increasing Internet use by prospecting clients.[25] Insurance companies selling online can, on their end, exploit cost efficiencies arising from the application of IT in production or distribution and pass these savings on to consumers, while still staying profitable.

However, research on the relationship between e-commerce and prices is still limited, and the notion that the Internet makes insurance, or any other service or product, cheaper and influences its market to be more competitive should not be treated as an axiom. For example, the ease of price discovery may equally help sellers collude in price fixing. Further, promoting brand names and advertising online services, combined with investments in technology, imposes high fixed operating costs and can lead to market concentration and an overall decrease in competitiveness. Sellers may also pursue different strategies to decrease market homogeneity, from bundling products with "free" services and promoting loyalty schemes, or locking-in clients by offering policy upgrades. Finally, the Internet enables insurers to conduct client profiling and discover their lifestyle and Internet habits, which may push the information balance back in favor of the insurer.[26]

E-insurance cannot happen if clients, intermediaries and insurers cannot exchange policy data in a meaningful and standardized way. Pre-Internet proprietary IT systems were unique to particular insurers and their agency network. Reincarnating these systems on the Internet requires establishing broadly accepted and public data definitions and standards. A key technology is XML (extensible markup language), which provides a way of labeling data so that they can be exchanged online in a coherent and meaningful way. The insurance industry needs to avoid the technological exclusion of any of the entities in chart 31, and thus steer clear of anti-competitive technology practices that would neutralize the efficiency and welfare gains offered by e-commerce technology.

The following discussion will review recent developments in personal lines and commercial lines business and in the reinsurance sector.

2. Personal lines

Personal lines insurance refers to coverage bought by individuals such as motor vehicle insurance, property insurance, personal liability cover, and health and life insurance. In the pre-Internet scenario, personal lines occupy the least IT-intensive area and are therefore subject to the greatest disruption from the introduction of e-commerce technologies. The disruption level is further increased by the intensity of agents' intermediation in these insurance lines.

Table 29 provides a ranking by Gomez.com of the United States online insurance market based on the quality of its e-commerce websites. The total revenues generated online by both markets and carriers are difficult to assess. Of the markets, Insurweb and Quotesmith are public companies and reported revenue figures of $24.9 and $8.7 million respectively, year on year, in the first quarter of 2002. The listed insurance carriers, which are public companies, do not report separate revenue figures for online business.

Data and analysis for Europe are even less accessible and more fragmented. Table 30 provides an overview of the main players in the European online personal insurance business. None of the listed markets or pure-play[27] carriers is a public company, while those insurance companies that are publicly listed do not provide separate data regarding their online or e-insurance revenue or income in their financial statements. Suffice it to say that European insurers generate less than 1 per cent of their premiums online and only one out of twenty has integrated Internet and e-commerce technologies throughout their systems.[28]

Tables 29 and 30 are not exhaustive and should not imply any permanence in the present scope of players or strategies. Indeed, the sector is in flux, and many businesses are continuously re-examining their business models hoping to strike a profitable and promising balance of online, direct and agency-based distribution. For insurers in developing countries, it may be particularly useful to track these companies, as their fates may indicate promising strategies or dead ends. All the listed insurance markets and carriers can provide product information and at least an unconfirmed quote. Business models begin to vary when a firm quote is requested. Certain insurers will guide the client to an agency for further processing, while Internet pure-play insurers should be able to complete the contract, issue the policy, accept payment online, and handle claims and renewals.

Table 29

Online personal insurance markets and carriers in the Unite States

Top 10 U.S. Online Insurance Markets*	Top 10 U.S. Online Insurance Carriers**
Insweb	Progressive Insurance
Answer Financial	Allstate
insurance.com	Safeco
Pivot	Amica
YouDecide.com	GE Financial Network
QuickQuote	Geico Insurance
Countrywide	State Farm Insurance
Netinsurance	Nationwide
Quotesmith	Esurance
ReliaQuote.com	Electric Insurance Company

* Insurance markets are online agents that do not have financial underwriting capacity.
** Insurance carriers accept risk and manage premium and reserves funds to assure liquidity for reimbursing claims.
Source: Gomez.com (2001).

Table 30

Selected examples of European online personal insurance markets and carriers

Insurance markets	Direct insurance carriers	Multi-channel insurers**
eInsurance (Germany)	Ineas (Netherlands)*	Allianz (Germany
Screentrade (United Kingdom)	HUK24 (Germany)*	Royal & SunAlliance (United Kingdom)
Insurancewide (United Kingdom)	eSure (United Kingdom)*	Pohjola (Finland)
Onsecure (Germany)	Elephant (United Kingdom)*	Generali (Italy)
InsuranceCity (Germany)	Genialloyd (Italy)*	R+V (Germany)
Asuro (Germany)	CosmosDirekt (Germany)	LVM (Germany)
Censio (Germany)	Sicher Direkt (Germany)	Sampo (Finland)
eGeas (Italy)	Royal (Italy)	Zurich (Switzerland)
Autocity (Spain)	Norwich Union Direct (United Kingdom)	HUK-Coburg (Germany)
MoneyeXtra (United Kingdom/Spain)	Direct Assurance (France)	AXA (France)
Insure (United Kingdom)	L'equite (Italy)	CGNU (United Kingdom)
	okassurance (France)	Cornhill (United Kingdom)
	Reflex (France)	
	DirectSeguros (Spain)	
	Regal (Spain)	
	Direct Line (United Kingdom)	
	Genertel (Italy)	
	Linea Directa (Spain)	

* Internet pure-play insurers.
** Insurers that use a model combining online sales and physical agency distribution.
Source: Datamonitor Corporation (2001).

However modest the progress, many insurers see e-commerce, and its disintermediating effects, as a source of increased competitiveness. This judgement has affected the expectations within the agents community. As a counter-strategy, many physical agents see their future in improving their e-commerce capacities vis-à-vis the carriers they serve. Examples of pro-agent IT providers are Applied Systems and Doris Inc.. An interesting entity is MarketScout whose business model is outlined in box 24.

The agency system was previously discussed from the point of view of the nature of the insurance product and the role of intermediaries in the industry market

Box 24

MarketScount: An e-market for insurance agents

MarketScout is an independent portal through which agents and brokers can easily find and explore specific insurance products and market segments online. It is an Internet-interactive marketing vehicle based on e-commerce technology that provides an online conduit between the independent agent/broker and MarketScout's approved companies.

The portal is designed to help retail insurance agents locate insurance quotes from insurance companies with proven success in a particular insurance line or coverage class. The approved insurance carriers are designated as "Best of Class". Apart from striving to provide quality carriers to its associated agents and brokers, MarketScout sees its "Best of Class" designations as part of an overall branding strategy. Insurance quotes are provided from over 60 different insurance companies with new ones signing on regularly.

Within MarketScout, specialized insurance line experts work with insurance agents and their clients to define policies and their terms and conditions, and to secure the most favorable insurance quotes from approved insurance carriers.

Source: MarketScout.com

structure. Their position in the online business models that insurance carriers intend to implement is also often debated.

In general, insurers are wary of alienating their agents. In a recent survey in the United States, the majority of insurers confirmed that they were "focusing their technological efforts on upgrading outdated IT infrastructure that strengthens the independent agent distribution channel."[29] The same survey found that only 15 per cent of insurance carriers practiced e-insurance, broadly defined. Among agents there is a similar, if not identical, approach. The majority of agents in the United States use the Internet to communicate with insurers, while only 15 per cent use it to generate leads that may bring new business. An UNCTAD analysis in 2000 suggested that the growth of e-insurance would not meet expectations if insurers focused their investment on marketing, customer support and support of intermediaries rather than on establishing Internet sales.[30]

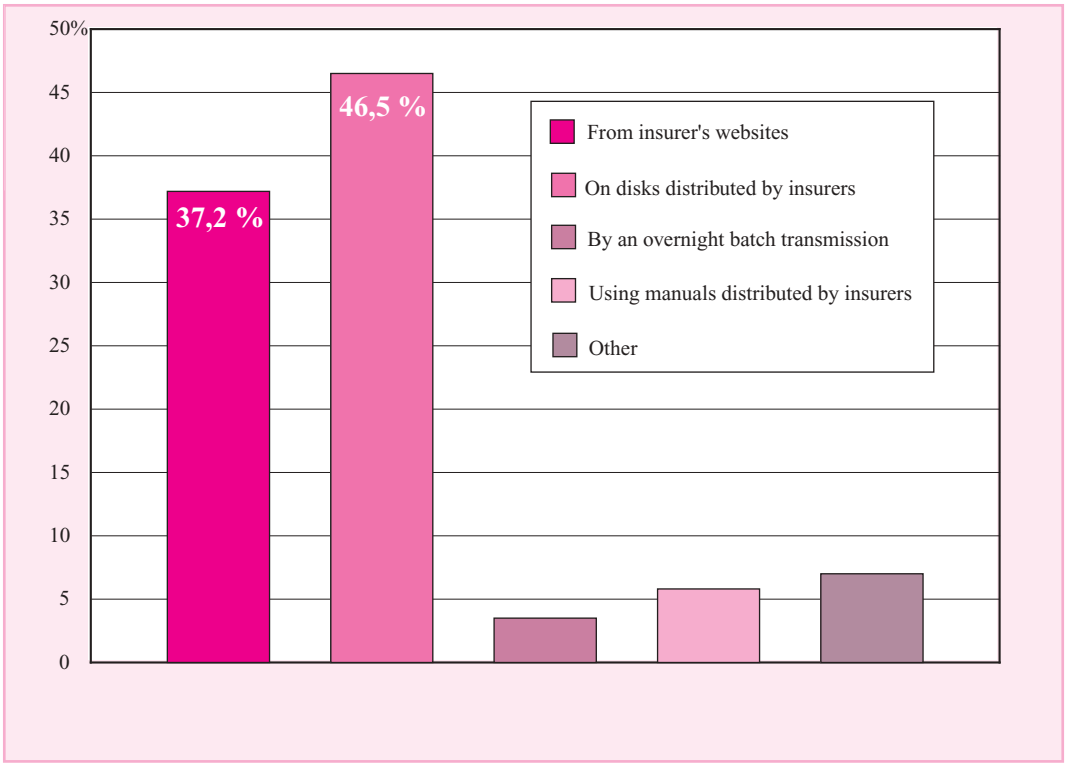
Whereas many insurers have extensive internal IT applications, policy and client data are not easily accessed outside the physical confines of the company office. Such introverted IT systems have been made possible by the agency distribution system, which has insulated insurers from their policy-holding clients. At the same time, insulated IT has satisfied the need for security, an important consideration since insurers use clients' private and personal data in everyday business. Chart 33 describes how insurers in the United States enable agents to quote premium rates to prospecting clients. It is interesting to note that more than 50 per cent of agents do not have real-time connectivity with their insurers.

In fact, the physical agency system addresses what is perhaps the greatest weakness of online insurance distribution: the low frequency of website repeat visits. Typically, once a policy is contracted online, the policyholder sees little reason to periodically check the insurer's site: there is little or no account activity between policy renewals, unless the policyholder acquires new assets needing coverage, or submits a claim. A client's contact with an agent for policy renewals is seen as an opportunity to push and sell other insurance products. However, it may well turn out that banks, not the e-insurer, are the insurance agents' worst enemy.

In countries where banks are licensed to sell personal insurance products, insurers and their agents may be under threat. While clients renew insurance policies yearly, they typically check their bank accounts, offline and online, on a daily or weekly basis, thus providing opportunities for banks to promote their own insurance and investment products.

To compete successfully for attention online, insurers and agents must provide clients with reasons to visit their sites. The content should reflect the clients' or communities' interests and lifestyle, as determined by an analysis of data submitted by policyholders for insurance purposes. However, such analysis may raise legal concerns, as policy data is submitted for specific and restricted purposes and often may not be used otherwise. Where regulations permit, insurers may

Chart 33
How Insurers Enable Agents to Quote
(Figures are for the United States, sample size: 175 insurance company)



Source: Ivans 2001.

explore offering financial products related to mortgages, investments and financing of motor vehicles and durable goods.

In developing countries, the issue of disintermediation in the personal lines business will become critical when access to and use of the Internet, credit cards and other means of online payment increase significantly. As in developed countries, in many developing countries clients do not hold the agency system in high regard. When online insurance and *bancassurance*[31] become a real alternative, one can expect a decrease in agency-based delivery of insurance products.

Monitoring national and regional Internet user and financial demographics can help insurers in developing countries predict when and how to move in becoming a competitive online player. Even where the figures do not necessarily justify investing in a full-blown e-commerce infrastructure, it is advantageous for all insurers to have a web presence with the following components:

- Corporate and financial information;
- Insurance education and awareness building;
- FAQs;
- Product descriptions;
- Examples of typical policies and prices;
- Contact information;
- A functioning e-mail help desk; and
- Agent locators.

An UNCTAD survey of 249 insurers in Africa found that only 54 had websites. Of these 42 provided insurance and policy information. The rest provided only basic company information and contact details. Twenty-nine insurers had e-mail addresses, but very few seemed to be functional. While this is a start, even considering the underdeveloped IT infrastructure, there is much room for growth in Internet presence.

Insurers in developing countries should not assume that establishing a basic Internet functionality constitutes an e-commerce strategy or presence. When the time comes to adopt a more intense Internet and

e-commerce practice, insurers may find their operational business process IT system out of date or underdeveloped and may be unable to interface it with their website. This problem has been recognized by UNCTAD which, to help remedy such deficiencies, is cooperating with the AIO in developing operational insurance software tailored for small and medium-size insurers in Africa. Part 5 of this subsection will give more details on its significance and progress made to-date.

The main threat to insurers in developing countries may come from foreign insurers incorporating locally that have substantial IT budgets and international and regional experience in transplanting their IT solutions. Companies like John Hancock, AIG, Manulife Financial, Prudential Financial, ING and New York Life International have made forays into a number of developing countries. However, implementing IT and e-commerce technology is never a goal in itself. AIG has suggested that it would not implement an IT-based processing solution in a developing country if it were cheaper to hire people to do manual processing.[32]

A further issue for insurers in developing countries is the use of business process outsourcing (BPO) by global insurers. Hartford Life has been transferring operations to Argentina, while MetLife has established partnerships to outsource business processes to India. Prudential has been outsourcing to Barbados and India for a number of years.[33] This indicates that, as far as e-readiness is concerned, the human resources needed for e-insurance are within reach in a number of developing countries.

3. Commercial lines

Buyers of commercial insurance often require tailored underwriting as many of them are large businesses operating in multiple locations with varying degrees of hazard, or running sophisticated industrial systems.

Companies with significant assets normally set up their own risk management departments. These departments are knowledgeable about the risk profiles and exposures of their business and are indispensable in coverage negotiations. Due to the size and complexity of commercial risks, few insurers have made progress in offering commercial lines insurance via the Internet. In a recent survey conducted by the fifth largest workers' compensation insurer in the United States, Kemper Insurance, not one of the surveyed SME businesses said it would buy commercial insurance online.[34] A similar study by IVANS, a U.S. insurance e-business integrator, found that only 4 per cent of small businesses would definitely buy insurance online, while 51 per cent are interested in using the Internet to research insurance products.[35]

One of the largest global financial companies and insurers, AIG promotes its commercial insurance activities online but does not actually give quotes. After requesting existing policy information that may be submitted online, AIG follows up with a response from a particular expert or department.[36]

An important reason for the relatively minor role of e-insurance for commercial lines is that large businesses do not consider the transfer of risk to an insurer by way of a policy to be the only or even the primary motivation for purchasing insurance. A recent study suggests that a "company's purchase of insurance is intended to introduce the external monitoring role of the insurance underwriter, hence inhibiting opportunistic behavior on part of the company and so enhancing the degree of co-operation among stakeholders and reducing transaction costs."[37] Large companies may choose to do business with insurers even when they have the financial capacity to self-insure in order to have the insurer as a neutral advisor. Further, insuring own assets with own capital may be imprudent in cases of catastrophic risks.[38] Finally, a company's stake- or shareholders may look askance at the insured's diversification into insurance underwriting through self-insurance. Investors can always diversify their portfolios on the securities markets, should they wish to do so.

For all these reasons, commercial lines e-insurance may eventually face the challenge of providing intelligent online risk management consultancy. However, in the near future, its scope may be limited to providing contact and product information and generating leads.

4. Reinsurance

The application of IT in reinsurance has traditionally been intense, both internally and among reinsurers and reinsurance brokers. The three original European networks, Limnet, Rinet and WIN, and Joint Venture merged in 1999 and operated until November 2001 under the name WISe (Worldwide Insurance Electronic Commerce). Before the merger, Limnet estimated that, among its members, 15 per cent of all risks were being handled electronically as opposed to 90 per cent of claims.[39] Rinet estimated that 60 per cent of world and 80 per cent of European reinsurance

Box 25

inreon.com

inreon is an independent, Internet-based marketplace founded in December 2000 by the world's two largest reinsurers, Munich Re and Swiss Re, together with Accenture and the Internet Capital Group. inreon is an independent company and its management is separate from that of its founders. inreon's aim has been to build a trading platform that delivers improved efficiency and reduced costs for all participants in the reinsurance sector.

inreon was set up to take better advantage of the enormous efficiency gains that have been achieved in other financial services through the use of IT and standardized instruments and trading practices. While some reinsurance requirements need tailred solutions, in many areas there is considerable scope for a more standardized approach and a more open marketplace where contracts can be freely exchanged.

inreon has developed a simplified trading process using robust and sophisticated technology. Trades are initiated by reinsurance buyers entering submissions for cover. Key parameters for the risk are defined within specific fields. The buyer also chooses the time frame for a response and the sellers to whom it wishes to submit the risk. Sellers may then either decline or quote the risk. All quotes offered to buyers on the platform are binding.

Participation in this electronic marketplace enables improved trading efficiency and immediate, convenient access to a wide variety of new business partners. Comprehensive management information reports and full online administration support allow members to exploit the benefits of online trading.

Initial criticism that inreon was a "sellers" platform was provoked by the fact that the founding partners were the world's two largest reinsurers. The business model was, however, designed to be a market-wide platform to provide value and service to all sections of the reinsurnace sector. Acceptance from reinsurance buyers has grown steadily and there are now around 60 brokers and primary insurers operating on the platform. Brokers and insurers have influenced the development of the platform, and inreon aims to widen its initial shareholding to incorporate major reinsurance buying groups.

Concerning trading volumes, todate there have been around 350 submissions on the platform representing an original gross premium of over €255 million. While the majority of inreon members are from developed countries, several insurers, brokers and reinsurers from the Republic of Korea, Taiwan Province of Chinaand Hong Kong (China) have recently joined

Source: inreon.com

income was transacted through its network, as well as 50 per cent of United States gross reinsurance premium income.[40]

In addition to its basic mission to develop e-commerce solutions for insurers, WISe was involved in developing e-insurance data standards through its Joint Venture activities. In October 2001, WISe merged its standard-setting activities with ACORD. As a result ACORD has become the *de facto* global e-commerce standards body for insurance. WISe's commercial activities have since been acquired by Ins-sure, which provides the London insurance market and European insurers with electronic business processing, policy administration, premium and claim settlement services.

Reinsurance is rapidly coming online. While examples abound, approaches vary. Certain companies are marketing and distributing their own reinsurance products on their websites. Others have engaged in cooperative strategies and are attempting to set up reinsurance markets or exchanges. The world's second largest reinsurer, Swiss Re, debuted in 2000 with an online reinsurance capacity auction system called Elrix. Today, all of its efforts have been thrown behind inreon.com, a joint venture with Munich Re, another global insurance giant. Box 25 provides a brief description of inreon.com.

Other e-market-based or exchange platforms include RI3K, backed by BRIT Insurance Ltd. and assisted by AXA and Citibank; UniRisX, backed by the technology company Unisys and the reinsurance broker Price Forbes; and E-Reinsurer, backed by Chubb. RI3K intends to use the 2002 reinsurance renewals as a test, when it would trade a designated $100 million. Other prominent reinsurers, such as Frankona GE, St. Paul and AXA-ACS, are developing company-specific e-commerce platforms as well.[41]

The essence of the debate in the reinsurance sector is which will prevail: the reinsurance e-markets or the individual reinsurance company portals. While it is too early to judge, the following list of the pros and cons of reinsurance e-markets may give some guidance:

Pros

- Buyers get access to multiple quotes from several reinsurers;
- Capacity can be larger;

Cons

- Few players are fully committed, many are developing own solutions in tandem;
- Standardized products may not satisfy buyers' needs;
- Aside from reinsurers, e-markets need to attract brokers and cedants.

Proprietary reinsurance portals or markets that meet the narrow definition of e-insurance may not be trading more than 1 per cent of global reinsurance premiums by the end of 2002. However, because reinsurers have been operating in an IT-enabled environment for almost two decades, e-insurance is expected to catch on quickly. The fact that reinsurers' clients are ceding insurers and brokers (i.e. insurance professionals) may hasten the adoption of e-commerce in reinsurance.

The implications for developing countries will become material when reinsurance markets and exchanges start trading a significant part of global reinsurance premiums. Developing-country insurers will be expected to work with the e-insurance infrastructure being set up by the market leaders; failing to do so will increase the risk of technological marginalization and may also increase their costs of reinsurance cession and acceptance. There is a need to anticipate these developments and be prepared.

5. IT and insurance

This subsection will touch on a limited number of IT issues that are often discussed in the context of e-insurance.

M-insurance[42]

In the insurance context, the main application for m-insurance (insurance using m-commerce methods) will probably be in enhancing the performance of the field agent or employee. Wireless devices will enable field staffers to access data resources that will enhance distribution, improve cross-selling, and appreciably speed up loss assessment, claims submissions and reimbursements.

Attitudes to m-insurance vary in line with the general acceptance level of m-commerce technology. In Japan, where wireless communications have made significant progress, the Tokio Marine & Fire Insurance Company has a fully developed m-system. Agents use mobile devices to access the company's Intranet to source quotes, and for e-mail communication. New York Life is also preparing a mobile initiative for implementation in Asia.[43]

A mobile strategy for insurance agents in developing countries may be a workable proposition especially since it does not necessarily have to be related to a sales oriented e-commerce strategy. The objective is to increase agents' efficiency and enhance their ability to close a contract. Chapter 4 of this report sheds light on the particular issues and potential of m-commerce.

Business process IT

While many insurance carriers in the developed world are concerned about how to bring their proprietary/legacy computer systems online, many insurers in developing countries are still working with paper-form-based administration systems. They are motivated to start building company IT infrastructures for three reasons:

1. Markets are liberalizing, and competitive pressures are forcing insurers to increase productivity and efficiency;
2. Their counterparts in developed countries require Internet-based electronic data interchange for ceding or accepting reinsurance;
3. Any prospective e-commerce strategy needs back-office IT that can communicate with an Internet-based front end or website.

While many IT companies in developed countries produce software for the insurance business, developing countries need not necessarily look very far for suppliers. An interesting example is Infosys, an IT services and consulting company from Bangalore, India. Aetna, Aon Corporation, AXA Online Japan, Fairfax Financial Services, Marsh Canada, New York Life, SunAmerica, Suncorp Metway and Swiss Re have all been listed as insurance clients on the Infosys website. In its most recent collaboration with Northwestern Mutual Life Insurance, Infosys has developed an

online funds transfer option for variable life and annuity policyholders. Customers can now log on and make immediate transfers from their accounts, thus eliminating potential delays associated with processing allocation change and asset transfer requests.[44]

While a number of off-the-shelf products are available in developed countries, due to the differing operating standards and national regulatory principles, it is no easy task to find an application that works out of the box. Having reviewed the possibilities, the African Insurance Organization and UNCTAD have established a project to produce a fully functional software application for SME African insurance companies. An overview of this venture is presented in box 26.

Box 26

AIS-AIO Insurance Software

The software grew out of the various management and computerization seminars the AIO has organized for its members over the years. These seminars revealed serious deficiencies in the IT capability of the African insurance industry. It was noted that the available software was inadequate and too expensive for a large number of AIO member companies. The AIO Secretariat embarked on developing insurance operations software in collaboration with UNCTAD and a number of African and international Insurers and reinsurers. The software currently covers all non-life (general) insurance classes and is under trail in 3 companies. So far, 20 African insurance companies have indicated that they will join the venture and buy the software.

The objective was to provide AIO members with affordable and functional software that handles underwriting, claims, reinsurance, accounts, and management information and enables e-business capability. AIS is PC-based, runs in the MS Windows operating system environment and was built using Visual C++ and Visual Basic 6 and MS-SQL server 7.0. It is designed to handle multiple languages, currencies, and calendars. It can operate in single- or multi-user mode, is modular, and has user-defined setup options and context-sensitive online help.

AIS was designed for insurance professionals who typically do not have much or any programming knowledge, and it has a uniform presentation and set-up suitable for all classes of insurance business. A detailed operating manual for each class and activity is provided. The software allows the set-up of its main options at the head office level for functions that are common throughout an entire insurance company.

The software provides a uniform approach to performing underwriting operations in 35 classes of insurance arranged into 10 groups. Various codes, rates and underwriting details can be defined in accordance with the specific requirements of the insurer. All standard reports generally required by insurance companies have been predefined, while particular insurers can easily define additional report formats. The system produces all reports and outputs required by an insurance company such as policy documentation; statements for clients, reinsurers, agents and tax authorities; and internal management reports.

AIS enables insurers to maintain up-to-date information on the status of claims, whether paid or outstanding. It also handles allocation of claims to reinsurers and co-insurers, accumulation and analysis.

The system provides treaty set-up procedures for proportional and nonproportional reinsurance. Underwriting and claims transactions are automatically applied to the appropriate reinsurance programme. Quarter-end and year-end procedures, treaty renewal and cancellations, and other similar procedures can be fully handled by the system.

AIS can be used as a stand-alone module, or can be fully integrated with financial accounting software running in an MS Windows environment. Insurance companies can use an accounting module of their picking, while the preferred choice is Microsoft Dynamics, which is currently used by AIO.

The AIO provides general advice and guidelines for insurers converting from an existing information system. Specific assistance with installation, training and maintenance, as well as free upgrades and enhancements, are provided to all users. Data and system security have been addressed at all levels and are continually being reassessed and improved.

Source: www.africaninsurance.com. For more information contact: aio@sprynet.com.

Middleware

Middleware is a general term for software that provides an interface for two separate and usually already existing software applications.[45] For example, middleware is often used to enable two or more distinct databases to exchange data. The movement in the insurance industry from proprietary IT systems to Internet-based IT and e-business applications for e-insurance may require extensive and robust middleware applications. Apart from e-insurance, mergers and acquisitions and the globalization of the financial services industry also support the demand for middleware. The speed of e-insurance adoption may also depend on how much support integration middleware developers show for the adoption of XML for data transformation, exchange and integration. Those developers that can provide solutions for integrating existing or legacy systems while ensuring that users can easily and cost-effectively transform data between other data formats and XML using Acord standards may have a competitive advantage.[46]

D. Regulatory and supervisory issues and insurance activities on the Internet

The development of e-commerce, particularly on the Internet, presents new challenges and concerns for insurance regulators and supervisors from developed, as well as developing countries.[47]

1. Background

The establishment of Internet-based insurance businesses offers both individual insurance consumers and insurers and intermediaries potential efficiency and cost benefits. E-insurance improves information symmetry and market transparency conditions and may enhance competition that can lead to reduced prices.

For insurance regulators from developing countries, Internet-based supervisory tools may increase efficiency by streamlining and speeding up reporting from insurance enterprises. The possibilities offered by Internet communication can also greatly improve the delivery of information to the public, insurers and local and international investors regarding market conditions, rights and obligations. Also, secure Internet communication could be a major tool for fostering international cooperation among regulators to improve the security of insurance markets.

From the perspective of a supervisory authority in a developing country, major concerns pertaining to e-insurance relate to cross-border activities and how to safeguard the interests of consumers if they contract policies in other jurisdictions. However, as most countries continue to require local licensing for insurers offering products in the domestic market and prohibit cross-border activity, cross-border trade in personal lines and mass insurance products has not expanded. Also, the cost of establishing e-insurance platforms, along with related marketing costs, has deterred financially unsound operators from establishing a significant web presence.

E-insurance provides a new channel for distributing insurance products that accelerates transaction processes, creating more opportunities for fraud. It imposes on supervisors the burden of developing supervision methods that permit quick responses to threats to the interests of insurance consumers. However, the emergence of e-insurance does not fundamentally alter the principles on which today's insurance supervision is based.

For regulators, the essential question relating to e-insurance, as well as to other distribution methods, is how to protect insurance consumers. Supervisors have therefore approached e-insurance operations in the same way they supervise business and market of traditional insurance operations, including rate monitoring, surveying the marketing of insurance products, responding to public complaints, conducting consumer education and fraud monitoring.

To tackle the particularities of e-insurance supervision, the International Association of Insurance Supervisors (IAIS) established a working group on e-commerce and the Internet.[48] This working group has issued "The Principles on the Supervision of Insurance Activities on the Internet" that were approved by the IAIS at its annual conference in Cape Town on 10 October 2000. The full text of the principles is contained in the annex to this chapter.[49]

More generally, insurance supervisory authorities have the same concerns as those regulating other e-businesses, particularly e-finance businesses: business continuity, personal data privacy, payment procedures and security, electronic signatures and IT platforms.

2. Supervision of established E-insurance operations

E-insurance was once perceived as a distribution channel that would erase national boundaries, since a single e-insurance platform established in one jurisdiction could offer insurance services globally. This has not occurred, since in most countries the establishment of a locally licensed business is required before insurance services can be offered to domestic consumers.

E-insurance platforms thus fall under the laws and regulations of the respective jurisdictions where services are offered. More precisely, existing regulations relating to market conduct determine how insurance providers may conduct their business online. Competition rules and transparency and information requirements form the core of market conduct regulations. Monitoring of rates, marketing of insurance products, handling of public complaints, consumer education and fraud are areas included under this aspect of supervision.

3. Approval of rates, terms, conditions and contractual documentation

In many developing countries, insurers are required to file rates, terms, conditions and contractual documentation for approval by supervisory authorities before the underlying product is offered to the public. E-insurance offerings too, are governed by such requirements.

Often minimum and maximum rates are established for compulsory individual insurance products such as motor vehicle insurance, workmen's compensation and some fire exposures. This is making it difficult for e-insurance operators to undercut prices offered by traditional competitors. Supervisory authorities should pay particular attention to the terms, conditions and contractual documentation that are presented on insurance providers' websites. The supervisory authority should ensure that the contractual relationships have a legal basis that is not prejudicial to the interests of the insured, since the insured does not generally participate in the negotiations relating to policy clauses.

In the case of life insurance, supervisors should require that certain clauses be contained in the policies published on websites. This includes clauses such as incontestability, under which the insurer, after a certain period, can no longer contest statements made by applicants. Also, a clause on nonforfeiture should be shown. Such a clause protects the cash value of the policy and provides for a grace period after the premium is due, during which the policy cannot lapse. Such a clause is particularly pertinent for Internet transactions where contracting and payment cannot occur at the same time.

In the developing country context, because of a general lack of insurance education and in order to allow consumers to make informed decisions, a large degree of comparability between contracts offered over the web should be maintained during the initial phase of establishing e-insurance operations. Two other problems to be addressed are that (a) because of different hardware and software configurations, information presented on the web may look different to different viewers, and (b) computer proficiency may lead to an unintended contractual result. Certain guidelines regulating basic website content may be needed: for example, companies could be required to inform who is the supervising body and who are the final risk carriers in the cases where purchases are made from an agent's or broker's website.

Electronic signatures are important not only to confirm the existence of a contract but also for specifying the starting date of the purchased insurance coverage. The validity and effectiveness of a contract may be influenced by failures in data transmission. A consumer may be under the impression that a contract is in place, while the insurer may have received corrupted data that does not allow a policy to be issued. The existence of a problem may not be obvious until the insured attempts to make claim under the non-existent policy. Also, after a policy takes effect, it may be necessary to cancel, change or complement it. Possible reasons for such an intervention include the discovery of an error or a fundamental change in the insured's risk profile. In such a case, it may be prudent to ask whether online insurance products should carry a "return or exchange of goods policy" and what kind of security is needed to prevent accidental or unauthorized cancellation.

Also, supervisors should determine whether an insurer posting offerings on the Internet is discriminating against certain categories of consumers. The traditional roles of supervisors - to ensure that compulsory mass products or personal lines are affordable and available, and to ensure the fair treatment of consumers - should be maintained with regard to products offered on the Internet.

4. Marketing of E-insurance products

Supervisory bodies should preserve the fairness of information presented to consumers and should attentively monitor the marketing of e-insurance products. Advertisements should not be misleading, past experience should not be used to predict future results, and products should not misrepresent benefits. Often insurers differentiate their products from those of competitors by inaccurately describing or overstating advantages and benefits. When an intermediary (an agent or broker) offers insurance products over the Internet, such a seller should be required to obtain a license before establishing a presence on the web. The licensing procedure should require the intermediary to undergo competence tests, and the its e-insurance platform and website should be screened in the same way as those established by insurers.

5. Combating fraud

Supervisors and regulators typically maintain that sales over the Internet increase opportunities for insurance fraud, money laundering and the misselling of insurance products.[50] Some criminal groups engage in mass subscription of single policies under false or given identities, redeeming the policies quickly thereafter in order to launder money. As no direct contact is established between parties to an insurance contract established via the Internet, e-insurance is an obvious target for money laundering operations. Supervisors should ensure that e-insurance providers have sound mechanisms in place for authenticating the identity of policyholders.

Also, to trace unsound or fraudulent operators and consumers, it is paramount that supervisory authorities establish communication networks among themselves to share information on such perpetrators. E-insurance, like other e-finance businesses, is at risk from both internal and external security threats (infiltration, corruption and theft of customer data files). Increased connectivity, in particular the connection of internal networks with the Internet, introduces new vulnerabilities that require the deployment of more advanced and effective security tools.[51] Regulators should take steps to ensure that e-insurance providers have the necessary security in place to protect the integrity of information and the privacy and confidentiality of policyholders' data, whether the data storage is performed by the e-insurance provider or outsourced to Internet service providers.

6. Public Complaints

Internet-based reporting and monitoring of public complaints could prove an indispensable tool for insurance supervisors. In a number of countries, formal offices within the supervisory authority have been established to respond to insurance customers' complaints. Their purpose is to streamline administrative procedures and sometimes to serve as an alternative to judiciary proceedings. For supervisors, the monitoring of complaints provides a very useful source of information for holding insurers responsible for their offered services. To resolve complaints, supervisors should facilitate communication between insurers and complaining customers. They should make sure that companies have complied with the law and have responded promptly and fairly, and they should inform insurers of problems that customers experience with contract language, customer service or technical aspects of the website. Also, websites posting insurance offerings should give contact information for the official authority dealing with consumer complaints, and the site should clearly describe the mechanism for dispute settlement.[52] One of the simplest and most useful Internet tools is the FAQ (frequently asked questions) page. A well-structured, comprehensive and easily navigable FAQ page can satisfy the vast majority of public queries.

7. Consumer education

To build consumer's awareness and understanding of insurance and to improve market efficiency, consumer education is paramount. E-insurance offerings should include educational material to help consumers understand the products they buy. Also, supervisory authorities should provide guidance and educational material on their websites for consumers interested in purchasing insurance online. Insurance laws, regulations and statistics can be made more easily and widely accessible through the Internet. Most Latin American and Asian as well as many African and Central and Eastern European insurance supervisory authorities have already established websites designed to inform the public.

8. Supervisory efficiency

The advantages that the electronic format offers for compiling and processing data allow supervisors to devote more time and resources to analysing periodic financial reporting by insurers. Many supervisors in developing and emerging markets have dedicated web-

sites for the submission and processing of reporting from insurance companies, and several have developed Internet-based solutions. The Egyptian Insurance Supervisory Authority is offering a financial reporting application, on a cooperative basis to its counterparts in other African countries.

Whenever an insurance provider establishes an e-insurance operation in a country, a continuous dialogue should be established between the e-insurer and the regulatory body to resolve areas of uncertainty before the operation is launched, and to contribute to regulatory development. Authorities should continually adapt their insurance legislation to the needs of their insurance consumers, taking into account shifting consumer interests.

9. Supervising cross-border E-insurance activities

Among factors that have inhibited the development of cross-border e-insurance are the wide variations regulatory and supervisory requirements between national and state jurisdictions. If an e-insurance operator wants to offer services in several jurisdictions, it needs to undergo obtain licenses and comply with the respective jurisdictions' supervisory, tax and other authorities. It may be difficult to incorporate all the different and sometimes contradictory requirements into a single e-insurance platform.

Recent studies have concluded that the actual differences between national approaches are so extensive that e-insurers are unlikely to do business on a multi-country basis in the near future. A more likely development would be increased targeted penetration of national markets, with whose regulatory and supervisory requirements e-insurers are familiar.[53]

To avoid being indicted by a national supervisory authority for unlawfully offering insurance services in that national market, e-insurers should clearly indicate on their website their identity (address, home country) and the jurisdictions in which they are legally permitted to provide insurance services. Also, e-insurance providers should post strong specific disclaimers and risk warnings directed to citizens of countries where the e-insurer is not authorized to operate. The home country supervisory authority should oblige e-insurers to post such disclaimers and warnings.

The growth of cross-border e-insurance will necessitate a harmonization of regulatory and supervisory frameworks, the recognition by insurers of home country regulators and of home country complaints and dispute settlement mechanisms. Thus it will require extensive cooperation between regulatory bodies around the world. Such developments could be part of international negotiations on the opening of national financial markets such as those conducted under the aegis of the World Trade Organization.

E. Conclusions

It is evident that the insurance industry is gearing up for e-insurance. Insurers, intermediaries and reinsurers are investing in IT and trying to determine the proper business model to follow. The fundamentally information intensive nature of the insurance product will eventually make full e-business treatment a workable option provided that efficiencies do materialize and are passed on to consumers. To succeed as e-insurance, online personal insurance has to be cheaper *and* better than the traditional offline option. For commercial lines insurance the situation is less clear-cut as covers tend to be less commodified and clients often require bespoke risk management services. The reinsurance industry has been an early adopter of IT, and embracing Internet-based e-insurance technologies should come naturally.

Many insurers and intermediaries have realized that e-insurance is not just about distributing insurance products on the Internet and have incorporated their e-business plans into their overall business strategy. Initial market analyses should consider present and potential structures and partnerships. Adopting e-insurance and introducing change in IT systems is an incremental process, not an event, and should stem from a fundamental need to reengineer and modernize business processes in order to better respond to client demand, as well as to the client's own adoption of Internet technology. Substantial investments may be required and open communication with stakeholders and policyholders should be a given. Insurers should focus on growth as well as on cost reduction. Efficiencies may materialize, but forecasts and calculations must not undermine the costs of online client acquisition and retention, and marketing, in particular if the insurer is of the Internet pure-play type.

E-insurance faces three serious challenges. The first is to redefine relationships with agents and intermediaries. The ideal solution would be to pursue multiple-channel distribution on technologically neutral platforms with open data standards. Each e-insurance actor would then compete for business on the basis of

value added. The second is to bring existing proprietary IT systems out of the back office and online. An important angle of this debate is whether and how to outsource IT development and maintenance. The answer may be related to the universal or niche qualities of an insurer's line of business. The third challenge is to interface the business process into a fully functional website thereby bringing e-insurance to the client's computer screen.

Website functionality is an issue in its own right, requiring a proper definition of customer and product profiles. It also needs precise interlocking with powerful back-office IT. Insurers and intermediaries need to examine how they can achieve the most possible value added through an online presence. A fundamental problem of all insurance websites is the low rate of repeat visits by existing customers: insurance policies are purchased once and then renewed annually, without much contact or interaction between the insurer and the insured. Increasing repeat visits, as well as new traffic, to the insurers website is essential.

Unfortunately, there is no clear recipe for success and e-insurers may have to look very closely at the Internet habits, demographics and lifestyles of their clients to find answers. Once improvements are achieved, the existing e-insurance infrastructure must be used to market financial products related to a customer's insured assets, within the limitations set by insurance and financial regulations of the market. Functionality also depends on planning for system failures and having back-up schemes in place. Regular updates are a requisite feature. Online traffic should be analyzed from the point of view of how it can be converted to income and whether the website and the general IT infrastructure are well matched.

For insurers and intermediaries from developing countries, the adoption of e-insurance practices will most likely be stimulated from abroad. The first push towards e-insurance will come from business relations with international reinsurers. The subsequent motivating event will probably be the entry and local incorporation of foreign personal lines insurers transplanting tried and tested e-insurance operations. Commercial insurance may be the last to be affected by e-insurance practices; however, this is a broad generalization, and insurers must carefully scrutinize market developments. Achieving efficiency gains is not a simple procedure even in developed countries, although, lacking the burden of proprietary IT systems, insurers in developing countries may leapfrog directly to e-insurance without the problems and costs of re-engineering and middleware.

Having an Internet-ready business process IT system is particularly critical for developing countries. Existing applications may not be well suited for developing countries, in particular for many African insurers, which may be regarded as financial SMEs. A positive e-insurance presence with modest but robust website functionality should, however, already be within the reach of most insurers.

The same applies to insurance supervisors and regulators in developed and developing countries. The power of the Internet should be harnessed to improve consumer protection and education and awareness building. It can also be used to receive and process periodic financial reports, thereby freeing up resources for supervising management and insurance practices. Finally, national insurance supervisors can use Internet technologies to communicate among themselves and coordinate activities related to preventing fraud and money laundering. Once seen as a potentially important regulatory issue for e-insurance, cross-border sales of personal lines have not yet reached significant levels. That said, regulators should stay tuned and actively monitor online offerings from suspect or fraudulent websites.

Notes

1 SIGMA (2001), *World Insurance in 2000*, No. 6, Zurich.

2 A detailed discussion on the development role of insurance can be found in Outreville, JF (1990), *The economic significance of insurance markets in developing countries*, Journal of Risk and Insurance, 57 (3).

3 Pure risks do not provide the risk taker with an upside. Pure risks are always a net loss for society, and a rational way to deal with them is to transfer and pool them and then redistribute them among large number of concerned entities. Business, speculative and gambling risks are considered uninsurable, as someone's loss is another party's profit. These risks are collectively called"speculative risks".

4 See www.unctad.org/insuranceprogramme/.

5 For example, some national or state regulatory regimes do not allow credit card payment for certain types of cover. Further, regulations sometimes require the physical delivery of a printed policy with a strictly prescribed format. Finally, claims processing may require physical inspection of damage by assessors.

6 Bender A and Marks J (2000), *E-Insurance: Revolutionizing Insurance*, CSFB Equity Research; SIGMA (2001), *The Impact Of E-Business on the Insurance Industry: Pressure to Adapt – Chance to Reinvent*, No. 5, Zurich; Frey J (2000), *Hidden Rivers of Incentive: How Agent Commissions Affect Your Insurance Shopping*, Insure.com.

7 Premiums as a percentage of GDP.

8 Forrester Research, quoted in Bender A and Marks J (2000), *E-Insurance: Revolutionizing Insurance*, CSFB Equity Research; SIGMA (2001), *The Impact Of E-Business on the Insurance Industry: Pressure to Adapt – Chance to Reinvent*, No. 5, Zurich.

9 UNCTAD (2000), *Building Confidence: Electronic Commerce and Development*, UNCTAD/SDTE/Misc.11, Geneva.

10 Brown J R (2000), *Does the Internet Make Markets More Competitive? Evidence from the Life Insurance Industry*, Harvard University, Research Working Papers Series, RWP00-007; and gsbwww.uchicago.edu/news/capideas/win02/lifeinsurance.html.

11 Many online brokers are not public companies and do not publicize their financial statements. Insurers, which are mostly public companies, do not report online sales as a separate item in their income statements.

12 Nielsen//NetRatings, http://pm.netratings.com/nnpm/owa/NRpublicreports.usagemonthly.

13 See LOMA Cybertalk, Improving the Internet Distribution System, www.loma.org/cybmay98.htm.

14 In insurance practice, the term ìriskî is also used to describe the insured asset. Thus, an aircraft or an industrial plant is a ìriskî. The reason for this is that underlying risk characteristics are inseparable from the asset itself. For academic discussions of risk and insurance terminology refer to Green M R and Treischmann J S, *Risk &Insurance*, 6th edition; Reigel R and Miller J S and Williams C A, *Insurance Principles and Practice*, 6th edition; and Rejda G E, *Principles of Risk Management and Insurance*, 7th edition.

15 In fact, premium rates are highly subject to supply and demand conditions as well as to conditions prevailing on the international capital markets, to the point where charged rates may sometimes bear little relation to the initial actuarial and statistical calculations.

16 To maintain the discussion's focus, the issues of administration and management expenses and investment income have been omitted.

17 UNCTAD, *E-commerce and Development Report 2001*, Chapter 6: Overview of selected legal and regulatory developments in electronic commerce, UNCTAD/SDTE/ECB/1, 2000; UNCTAD, *Electronic Commerce: Legal considerations*, UNCTAD/SDTE/BFB/1, 1998.

18 Walker T (1999), NAIC Electronic Commerce and Regulation Working Group, NAIC Research Quarterly, 5(2).

19 Carlson D K (2000), *Nurses Remain at Top of Honesty* and *Ethics Poll: Car Salesmen Still Seen As Least Honest and Ethical*, Gallup Poll Analyses, www.gallup.com/poll/releases/pr001127ii.asp.

20 Bender A and Marks J (2000), *E-Insurance: Revolutionizing Insurance*, CSFB Equity Research; SIGMA (2001), *The Impact Of E-Business on the Insurance Industry: Pressure to Adapt – Chance to Reinvent*, No. 5, Zurich.

21 The results of the KPMG LLP e-insurance survey were reported at www.ivans.com.

22 Insurance Networking (2001), *The Business Context for IT Investment*, special issue: 2001 Top Technologies, August.

23 Newsfactor.com (2002), *How Big is E-commerce?*, www.newsfactor.com/perl/story/18403.html

24 Technology Decisions for Insurance, *The Tangled Webs They Weave*, www.technologydecisions.com/backissue/0102/1_18_02_23.asp.

25 Brown J R (2000), *Does the Internet Make Markets More Competitive? Evidence from the Life Insurance Industry*, Harvard University, Research Working Papers Series, RWP00-007; and gsbwww.uchicago.edu/news/capideas/win02/lifeinsurance.html.

26 Smith M D, Bailey J and Brynjolfsson E. (1999), *Understanding Digital Markets*, MIT, ecommerce.mit.edu/papers/ude/ude.pdf; and Daripa A and Sandeep K (2001), *Pricing on the Internet*, University of London, Birbeck School of Economics, Economics Working Papers, www.econ.bbk.ac.uk/faculty/kapur/personal/epricing.pdf.

27 An Internet pure-play insurer, agent or broker is one that has only an Internet-based operation.

28 Datamonitor (2001), *eInsurance Strategies in Europe 2001*, DMFS1406.

29 IVANS (2001), *Emerging Strategies in Insurance and Technology*, September.

30 UNCTAD (2000), *Building Confidence: Electronic Commerce and Development*, Section IV, E-commerce in Insurance, UNCTAD/SDTE/Misc.11, Geneva.

31 Insurance sold by banks at their retail counters or online.

32 Helwig D B (2001), *Burning Issues: CIOs Detail Their Top Priorities*, LOMA, www.loma.org.

33 Helwig D B (2001), *Burning Issues: CIOs Detail Their Top Priorities*, LOMA, www.loma.org.

34 Reported in PropertyandCasualty.com, December 2001.

35 BusinessWeek Online (2000), *Wanted: Reassurance about Online Insurance - Business Owners Say They Need Guidance and Trust before Buying Coverage on the Web*, September.

36 See www.aigdirect.com.

37 Main B G M (2000), *Large Companies and Insurance Purchases: Some Survey Evidence*, The Geneva Papers on Risk and Insurance, 25(2).

38 An indicative example is the national earthquake insurance scheme of New Zealand, where regulation expressly forbids the investment of reserves in New Zealand assets or securities.

39 Limnet was a consortium of the Institute of London Underwriters, the London International Insurance and Reinsurance Market Association, Lloyd's and Lloyd's Insurance Brokers Committee. Rinet was a Brussels-based association of insurers and reinsurers. Limnet and Rinet were established in the late 1980s. Six prominent insurance brokers established WIN in 1996.

40 See UNCTAD (2000), *Building Confidence: Electronic Commerce and Development*, Section IV – E-commerce and Financial Services, UNCTAD/SDTE/Misc.11, Geneva.

41 Dyson B (2001), *Online Reinsurance: Exchanges Built on Shifting Sands*, Reactions, October.

42 Chapter 4 of this publication deals extensively with m-commerce and the reader is invited to refer to it for definitions and a general discussion.

43 Helwig D B (2001), *Burning Issues: CIOs Detail Their Top Priorities*, LOMA, www.loma.org.

44 Infosys Press Release, www.infy.com/media/NM_26-Mar-2002.pdf, May 2002.

45 See www.whatis.com.

46 An extensive discussion on the role of XML and middleware can be found at www.datamirror.com/resourcecenter/download/dbxmlvision/pdfs/dbxmltransform/XML_Solutions.pdf.

47 For a comprehensive review of regulatory issues see UNCTAD (1995), *Establishment of effective insurance regulatory and supervisory systems*, TD/B/CN.4/52; Carmichael J and Pomerleano M (2002), *The Development and Regulation of Non-Bank Financial Institutions*, World Bank.; and OECD (1997), *Insurance Guidelines for Economies in Transistion*, April.

48 The IAIS is an international body that issues guidelines and principles for insurance supervisory authorities worldwide.

49 The full text of The Principles on the Supervision of Insurance Activities on the Internet can be found on the IAIS website www.iaisweb.org.

50 IAIS (2000), Principles on the Supervision of Insurance Activities on the Internet, www.iaisweb.org.

51 OECD (2001), Electronic Finance: Economics and Institutional Factors, November.

52 IAIS (2000), Principles on the Supervision of Insurance Activities on the Internet, www.iaisweb.org.

53 OECD (2002), Financial Markets Trends, 81.

ANNEX I

IAIS Principles on the Supervision of Insurance Activities on the Internet

Contents

1. Background

1. The development of electronic commerce, particularly on the Internet, presents insurance supervisors and regulators with new kinds of opportunities, challenges and questions. The use of the Internet will undoubtedly affect the ways in which insurance companies, intermediaries and insurance supervisors function in the future. For example, the number of cross border insurance transactions will increase.

2. In principle, there are benefits for insurers and consumers alike from the development of the Internet. The use of information networks has the potential to make the offering of insurance products more efficient and less costly than before. Insurance companies and intermediaries are provided with the technical capability to reach many millions of potential policyholders with good quality information on their products and services. Consumers increasingly have access to more and more sophisticated programs for searching for, identifying and purchasing insurance products.

3. However, whilst the Internet creates a new environment in which insurance products can be advertised, sold and delivered, it does not alter the fundamental principles of insurance and insurance supervision. It is a new medium through which to transact business.

4. Current concerns over the security of concluding contracts over the Internet are being addressed, but there remain substantial risks to consumers. Sales over the Internet extend the opportunities for insurance fraud, money laundering and the miss-selling of insurance products. It presents insurance supervisors with new challenges in delivering the level of protection that consumers in their jurisdiction expect. In particular it raises questions for consumers and insurance supervisors alike over the contract law applicable, and means of redress where there is a dispute between the insurer and insured.

5. One of the most important tasks of insurance supervision is the protection of policyholders and potential policyholders. The Internet does not change this basic premise. Where it helps is in offering insurance supervisors a new kind of medium for cooperation.

6. This paper proposes an environment for the supervision of insurance activities on the Internet which aims at ensuring that relevant information is available to consumers, insurers and insurance supervisors. Due to the extremely fast development of electronic commerce, the framework for the supervision of insurance activities on the Internet needs to be regularly reviewed.

2. Supervision of insurance activities on the Internet

7. Insurance supervisors should require that the sale, purchase, and delivery of insurance over the Internet is conducted in a secure environment, and that policyholders are adequately protected. The primary responsibility for the supervision of insurance activities rests with the supervisors of the insurers' home jurisdictions.

8. IAIS members are encouraged to adopt and implement the following principles.

Principle 1: Consistency of approach

The supervisory approach to insurance activities on the Internet should be consistent with that applied to insurance activities through other media.

9. Insurance supervisors should seek to apply standards of consumer protection to Internet related activities equivalent to those applied to the provision of services off-line. They should not constrain the legitimate use of the Internet.

10. Insurance supervisors should be prepared to provide guidance on the circumstances under which they will seek to assert supervisory authority over Internet activities. Factors that may support an assertion of authority may include evidence that:

a. an internet site is targeted at residents and/or risks within the supervisor's jurisdiction;

b. insurance services are, in practice, being provided via the Internet site to residents in the supervisor's jurisdiction; and

c. attempts are made to present information to potential policyholders within the supervisor's jurisdiction through proactive means, e.g. e-mail.

11. Factors that may support a decision not to assert supervisory authority over Internet activities may include evidence that:

a. the insurer or intermediary clearly states that the services are offered to persons and risks outside the supervisor's jurisdiction;

b. the Internet site contains a list of those jurisdictions in which the insurer or intermediary is entitled to provide services and the list does not include the supervisor's jurisdiction; and

c. the insurer has in place effective systems and procedures that are designed to prevent sales to residents in the supervisor's jurisdiction.

Principle 2: Transparency and disclosure

Insurance supervisors should require insurers and intermediaries over which they exercise jurisdiction to ensure that the principles of transparency and disclosure applied to Internet insurance activities are equivalent to those applied to insurance

12. The level of consumer protection should not be dependent on the medium used for insurance activities. The same basic principles of transparency and disclosure should apply for the Internet as for other media.

13. For example, the information provided to consumers should be broadly equivalent to that which would be expected in a traditional transaction, and should always be adequate for a consumer to make an informed decision on whether or not to avail of the services offered.

14. In order to protect the consumer, insurance supervisors should require that insurers and intermediaries over which they exercise jurisdiction and which offer insurance products over the Internet display certain minimum information on their Internet sites. In addition to the information that is mandatory in the jurisdiction in which services are being offered, the minimum information should generally include:

a. the address of the insurer's head office, and the contact details for the supervisory authority responsible for the supervision of the head office;

b. contact details for the insurer, branch or intermediary, and for the supervisory authority responsible for the supervision of the business, if different from the above;

c. the jurisdictions in which the insurer or intermediary is legally permitted to provide insurance services;

d. procedures for the submission of claims and a description of the insurer's claims handling procedure; and

e. contact information on the authority or organisation dealing with consumer complaints.

Principle 3: Effective supervision of Internet activities based on cooperation

Supervisors should cooperate with one another, as necessary, in supervising insurance activities on the Internet.

15. The regulation of Internet activities based purely on actions capable of being taken within a single jurisdiction is often inadequate. It is evident that the regulation and supervision of Internet activities requires a greater degree of cooperation amongst insurance supervisors. Therefore insurance supervisors should have the ability to cooperate with one another, for example in providing assistance when needed or in dealing with cases of abuse in each other's markets.

16. Internet operations are highly dependent on system reliability and integrity and, as a result, are vulnerable to operational risks. Insurance supervisors should require that their supervised companies that offer insurance services over the Internet have sufficient control systems in place (including security, confidentiality, control of personal data, back-up and record-keeping systems) to transact that business in a proper manner. Supervisors should look closely at any outsourcing arrangements to ensure that appropriate contracts are in place and that risks are being addressed effectively.

17. The exchange of information between supervisory authorities is a key element in pursuing effective supervision of Internet activities. The Internet can be an effective tool for exchanging basic information.

18. Insurance supervisors should generally make the information listed below available on their own websites:

a. Structure and organisation chart of the supervisory authority, including contact information;

b. A listing of relevant insurance legislation;

c. A list of supervised insurance and reinsurance companies, including contact information or a central point within the supervisory authority from whom such information can be easily obtained; and

d. A link to the website of the IAIS.

19. Insurance supervisors may also consider making available the information listed below available on or through their own website:

a. Texts of the relevant insurance legislation;

b. A list of licensed intermediaries, including contact information;

c. The Annual Report of the supervisory authority;

d. Annual insurance statistics;

e. Links to the websites of other relevant supervisors in the same jurisdiction; and

f. Other information, as the supervisor deems relevant.

Chapter 9

EXPORT PERFORMANCE AND E-SERVICES

A. Introduction

Information and communications technologies (ICT) and electronic commerce (e-commerce) have been particularly influential in the services industries. For example, the Internet makes it possible to sell a variety of services, airline tickets, financial or insurance products, customer support, data processing or legal, health, education or software consultancy, to name only a few, rapidly, around the clock, and from anywhere in the world. This form of e-commerce is profoundly reshaping many of the existing services industries and creating new services as related technologies develop. The increasing demand for ICT has also generated major growth in communication services, which are expanding in all countries. Through e-commerce, the services industries have enjoyed an increase particularly in cross-border trade. The digitization of business processes, coupled with the universality of the Internet, has allowed companies to outsource activities and services to more cost-effective locations as well as to access new clients in foreign markets.

As a result of these changes in the global services market, an increasing number of countries, including developing ones, are directing their efforts towards expanding their services exports. Their objective is to increase export capacities in services that are increasingly in demand on the global market, and to become more competitive in exporting these services. But which sectors have been most affected by these changes? How much are services exports really growing, and in which sectors? Which countries have succeeded in gaining competitive advantage in their services exports?

The role of manufactured goods exports in enhancing a country's global competitiveness has been widely acknowledged, as numerous studies show.[1] Using trade flow analysis as a standard approach for assessing competitiveness, these studies have found that countries which have succeeded in gaining market share over a sustained time period are also gaining competitive advantage.

By contrast, few studies have examined exports of commercial services as indicators of increasing competitiveness, despite the fact that services trade accounts for 20 per cent of total world trade and has grown as rapidly as merchandise trade (8.5%) over the past 15 years. In particular, the increasing use of ICT in the services sector has played an important role in enhancing international trade in services.

This chapter analyses the contribution of ICT and e-commerce to the services exports and export competitiveness of a country. More specifically, it focuses on services that have been substantially affected by ICT developments (such as computer-related services, financial services or communications services) and identifies their role as dynamic export services contributing to the competitiveness of a country. The chapter also uses examples from developing countries that have developed ICT-related export services and discusses various factors that have led to their success.

The chapter is structured as follows: section B first discusses the role of ICT in services exports and then briefly reviews the concepts and indicators used to assess export competitiveness and their application to the services industries. The empirical part of the chapter begins with section C, which gives an overview of international trade in services data and then applies existing methodologies to measuring export competitiveness in the services sectors, particularly e-services. Section D presents two countries (Costa Rica and India) that have diversified their exports into e-services in the software and IT-enabled services sector. The final section draws some conclusions and gives recommendations regarding the role of services exports in enhancing competitiveness in ICT-based sectors.

B. Information technology and services export performance

Studies on the impact of ICT and e-commerce on productivity growth in the United States have shown that labour productivity growth in the services sectors (measured by value added per full-time employee) has been particularly high in sectors such as wholesale and retail trade and financial and personal services. Other studies based on macroeconomic or computable general equilibrium (CGE) models have supported the argument that e-commerce has a positive impact on productivity and growth (UNCTAD, 2001a).[2]

Knowledge- and information-based services, such as communications, computer, financial, insurance and royalty services, are contributing an increasing share of GDP in many OECD countries (UNCTAD, 2001b). For example:

- In Canada, the value added of telecommunications services increased by 19 per cent from 1998 to 1999, accounting for 2.5 per cent of total GDP, up from 1.9 per cent in 1990 (Industry Canada, 2000)

- In the Republic of Korea, the share of the IT industry (20 per cent of which is based on IT services) in GDP increased from 8.6 per cent (1997) to 13 per cent (2000)[3]

- In the Philippines, the share of communication services (combined with transportation and storage) in GDP increased by 4.6 per cent from 1999 to 2000, to 9.9 per cent, largely due to the growing use of cellular phones and the increasing accessibility of Internet and cable services (NSCB, 2000).

Export performance and competitiveness are closely related. Traditionally, the competitiveness of a country has been identified with the performance of its exports. A country's firms and industries are considered competitive in products in which they are increasing world market share. Furthermore, countries that provide a favourable environment for companies to operate in, which allows them to develop innovations and exploit new market opportunities, also tend to be successful exporters (IDB, 2001). The dynamism and performance of exports often explain the conditions under which firms operate and the difficulties they face. As most firms are price takers in international markets, gaining market share over a sustained period of time usually requires the achievement of competitive advantage. In this sense, export performance is a good indicator of competitiveness.

Export performance can be measured in a number of ways. This chapter will use two of the most common approaches and indicators for measuring export competitiveness:

- The revealed comparative advantage (RCA) index, which measures relative export performance by country and industry or product, defined as a country's share of world exports of a good divided by its share of total world trade; and

- Dynamism of demand, measured by changes in the world market shares (WMS) of a given product over a certain period of time; the rate of growth over alternative periods; and the rate of growth in a product's share in world exports.

A detailed description of the calculation and interpretation of the various measures and indicators used in this chapter is provided in annex I.

Services activities contribute a major share to national output. For example, services value added contributed 71 per cent to Europe's GDP in 1999 and 67 per cent to Canada's (World Bank, 2001). While these figures are globally the highest, it can safely be said that the share of services value added increased between 1990 and 1999 in all regions. In 1999, it comprised 62 per cent of GDP in Latin America, 41 per cent in East Asia and 56 per cent in Sub-Saharan Africa. Hence, services activities are an increasingly important sector for economic development and growth.

At the same time, exports of services are becoming increasingly important. Between 1990 and 2000, world trade in services grew at an annual average rate of 6.6 per cent, which almost equals the rate for merchandise trade (6.8%). Growth rates in developing countries' services exports were particularly high, accounting for 10.1 per cent over the 10-year period, compared to 9.5 per cent annual growth in merchandise trade exports (table 31). The share of services in world exports amounted to 19.6 per cent in 1999. Developing countries also account for a growing share of world trade in services. While in 1990 their share in world exports amounted to 15.7 per cent, it had increased to 21.2 per cent by 2000. Over the same period, their share in

Box 27

Limited statistics on international trade in services

Statistics on merchandise trade are collected at the border and reflected in customs returns. These packaged goods are accompanied by detailed information regarding their content (including an international commodity code), quantity, value, origin and destination.

Data on international trade in services, on the other hand, are more difficult to define and collect. The main source of data on international trade in services is currently the International Monetary Fund (IMF) Balance of Payment statistics, which have some limits. For example, countries use different methods for collecting the data, such as surveys, government sources or simply estimates. The data may come from business accounting or be reported by individuals, and the reporting of major flows is often based on net items, such as premiums less claims in insurance transactions.

The international standard for classifying trade in services is currently the fifth edition of the IMF's Balance of Payment Manual (BPM5), which is usually highly aggregated, and disaggregation varies considerably among reporting countries. The OECD and Eurostat are making efforts to improve the quality of the data and have further disaggregated BPM5 in their Joint Classification. A new Manual on Statistics in International Trade in Services has been developed jointly by the United Nations, Eurostat, the IMF, the OECD, the WTO and UNCTAD, introducing the Extended Balance of Payment Services classification (EBOPS) to include the value of services provided through foreign affiliates established abroad (see www.oecd.org).

BPM5 captures mainly one mode of supply used in services trade, namely cross-border, and to some extent consumption abroad and movement of natural persons, whereas the "commercial presence" is not captured. Hence, the vast majority of trade reflected in the statistics is that between residents and non-residents of countries, whereas, for example, foreign affiliate trade in services is not documented (WTO, 2001a).

world imports increased from 20 per cent (1990) to 22.7 per cent (2000).

Given the limitations of currently available statistics on trade in services (box 27), the data on the services exports of developing countries presented in the following sections should be considered as approximations, describing trends rather than providing absolute figures.

C. Measuring export performance in the services sectors

This section will apply to services trade the methodologies previously applied to measuring competitiveness in merchandise trade. First, it will provide an overview of trade flows in international services trade. Then, it will identify dynamic export services, using the above definition, for both developed and developing countries. Next, it will identify ICT-related services, or e-services, among those services previously identified as dynamic. Finally, using the above-mentioned methodologies and indicators (RCA, world market shares, dynamic products), it will assess the countries' competitiveness in these e-services sectors. The data analysis will largely focus on developing countries, provided the data are available.

1. Services exports: global trends

Table 31 presents data on international trade in goods and services. On the export side, in 2000, developed countries accounted for 79 per cent of world exports in services and 72 per cent of exports in goods. However, their share in both goods and services exports is shrinking as developing countries are gaining international market share. The services exports of the latter grew at an annual average rate of more than 10 per cent between 1990 and 2000, and their merchandise exports at a rate of 9.5 per cent. Developed countries' exports, on the other hand, grew by only 5.9 per cent (merchandise exports) and 5.4 per cent (services exports) during the same period.

As far as imports are concerned, the developing countries' share in the world market is similar to their export share, 27 per cent in merchandise imports and 23.6 per cent in services imports. However, the developing countries' share has not increased as much in imports as in exports over the 10-year period; their annual growth rates for services imports are 7.9 per cent (compared to 10 per cent for exports) and for merchandise imports 8.7 per cent (compared to 9.5%

Table 31

World exports and imports in goods and services

	Merchandise						Services					
	World		Developed countries		Developing countries		World		Developed countries		Developing countries	
	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports
Value 2000 ($ billions)	5 784	6 230	4' 50	4 553	1 633	1 677	1 462	1 442	1 154	1 099	308	323
Share of world exports/ imports 2000 (%)	..	..	71.7	73.1	28.2	26.9	..	..	78.9	77.3	21.1	22.7
Value 1990 ($ billions)	3 137	3 326	2 478	2 616	659	710	797	824	672	659	125	165
Share of world exports/ imports 1990 (%)	..	..	79.0	45.2	21.0	12.3	..	..	84.	14.5	15.7	3.6
1990-2000 annual growth rate	6.8	6.8	5.9	6.2	9.5	8.7	6.6	6.0	5.4	5.2	10.1	7.6
1995-2000 annual growth rate	3.6	4.0	2.8	4.7	5.9	2.4	3.9	3.6	3.7	3.8	5.5	3.5

Source: IMF Balance of Payments Statistics.

for exports). Based on this, we can conclude that developing countries' services exports account for the most dynamic changes in world trade in the past 10 years.

The main exporter of services is the United States, which accounted for 20 per cent of the global market in 2000 (see detailed table in annex II). It is followed by the United Kingdom, Germany, France and Japan, which combined account for almost half of all services exports. Among the developing countries, major services exporters are Hong Kong (China), China, the Republic of Korea, Singapore, Turkey and India. On the importing side, the United States, followed by Germany, Japan, the United Kingdom and France, dominate 44 per cent of the world market. The main developing-country services importers are China, the Republic of Korea, Hong Kong (China), Saudi Arabia, Singapore and India. In fact, developing Asia accounts for almost two-thirds of all developing-country services exports, whereas Africa's share is minimal, partly due to the scant statistics available from the region.

Table 32 shows services exports according to the major categories contained in the BPM5 classification. Travel, transportation and other business services[4] constitute by far the most important services exports (75% of total trade in services) and also reflect the main services exports in developed countries. In developing countries, travel takes the largest share of exports, followed by other business services and transport services. The table also clearly shows the traditional distribution of services exports in the developing countries, which have very small market shares in the newly emerging services such as royalties and license fees, computer and information services, and financial and insurance services, whereas they take 23 per cent of the world market in travel services. An interesting exception is the 20 per cent market share of the developing countries in communication services exports, a fairly recent development. This and other dynamic changes in services exports will be discussed in the following sections.

2. Dynamic export services

Exports experiencing above-average growth over a certain time period are considered "dynamic" (see annex I). Table 33 presents average annual growth rates for different types of services exports for the period 1990-2000 and 1995-2000.[5] For all services exports, these were 6.6 per cent (10 years) and 4 per cent (five years). Based on these averages and the above definition, the following services can be considered to have been dynamic at the global level during the 10-year period (annual growth rates in parentheses):

- Computer-related services[6] (31%)
- Personal, cultural and recreational services[7] (20%)
- Communication services[8] (15%)
- Financial services (10.6%)
- Royalties and license fees[9] (10.4%)
- Construction services (8.8%).

Table 32

Services exports by major category, 2000

	World	Developing countries		Developed countries		World (AGR)		Developing C.		Developed C.	
	(US$'000)	(US$'000)	Market share (%)	(US$'000)	Market share (%)	10 Years	5 Years	10 Years	5 Years	10 Years	5 Years
Transportation	313 810 084	51 651 558	16.5	262 158 526	83.5	5.1	1.9	5.9	1.2	4.9	2.1
Travel	442 002 946	102 290 473	23.1	339 712 473	76.9	6.3	2.6	8.5	2.9	5.7	2.5
Communication services	28 955 934	5 832 095	20.1	23 123 839	79.9	14.8	5.1	23.2	1.3	13.4	6.1
Construction services	29 039 749	2 402 103	8.3	26 637 647	91.7	8.8	-2.9	17.0	4.4	8.2	-3.5
Insurance services	28 181 323	4 503 820	16.0	23 677 503	84.0	5.4	3.7	6.2	4.6	5.3	3.7
Financial services	79 531 818	2 290 594	2.9	77 241 225	97.1	10.6	13.0	41.1	10.0	10.3	13.1
Computer and information services	30 758 896	811 463	2.6	29 947 433	97.4	31.3	25.6	58.4	45.3	31.1	25.3
Royalties and license fees	72 375 424	1 513 862	2.1	70 861 562	97.9	10.4	5.9	19.6	16.1	10.3	5.7
Other business services	320 998 468	68 813 436	21.4	252 185 032	78.6	6.2	2.4	9.4	-0.5	5.3	3.3
Personal, cultural and recreational services	20 009693	3 289 496	16.4	16 720 198	83.6	19.7	15.3	53.4	15.5	18.7	15.7
Government services	40 952 452	7 000 529	17.1	33 951 923	82.9	-1.0	-2.3	-0.4	0.2	-1.1	-2.8
SERVICES	**1 450 649 731**	**294 431 941**	**20.3**	**1 156 217 790**	**79.7**	**6.6**	**4.0**	**10.2**	**5.7**	**5.8**	**3.6**

Source: IMF Balance of Payments Statistics.

At the five-year level, the same types of services can be identified as dynamic, with the exception of construction services, which experienced negative growth between 1995 and 2000. Overall, export growth slowed during the five-year period, with the exception of financial services exports, which grew at an annual rate of 13 per cent, compared to 10.6 per cent over the 10-year period.

A comparison of developing and developed countries' growth rates for different types of services exports reveals that the developing countries' services growth rates were higher than the world average for all of the dynamic services, and particularly high for three services: computer and information services (58%), personal, cultural and recreational services (53%) and financial services (41%). It is important to keep in mind, though, that the global market shares of developing countries in computer and financial services trade are still very low (less than 3% respectively).

In order to account for high growth rates resulting from a low initial base, growth rates of *shares* in world services exports were considered. As a result, all of the dynamic services saw their shares in world exports increase during the 10-year period, whereas all of the non-dynamic services (i.e. those with below-average value growth rates) saw their shares in the world export market decrease (table 33). Hence, the growth rates of shares confirm the dynamic services identified based on value growth rates. They also confirm that computer-related services are by far the most dynamic export service: this sector gained 23.3 per cent market share between 1990 and 2000.

3. E-services and export competitiveness

Box 28 compares those services that can be easily provided electronically, and are thus most affected by ICT and e-commerce, with those previously identified as "dynamic" export services.[10]

Except for construction services, all of the dynamic services are ones that can easily be provided electronically. Hence one can safely conclude that, except for insurance services[11] and other business services,[12] all services that can be provided electronically – so-called "e-services" – are also dynamic export services. This supports the notion that e-commerce and ICT have an important role to play in changing the pattern of international trade in services.

Which countries have a comparative advantage in the export of e-services? Which countries are gaining ground in the international markets for dynamic services? To answer the first question, the following discussion will first present a calculation of the revealed comparative advantage (RCA) index. Then, to address

Table 33

Growth rate of selected service products' share in world export

Service Category	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	10-year growth
Transportation	25.0	25.1	23.9	23.6	24.0	23.7	22.7	22.4	22.1	21.9	22.3	-1.4
Travel	32.9	31.3	32.1	32.2	32.2	32.3	32.5	31.6	31.5	31.9	31.4	-0.2
Communication services	1.0	1.2	1.3	1.3	1.6	1.9	2.0	2.0	2.2	2.1	2.1	7.8
Construction services	1.6	2.2	2.5	2.5	2.6	2.9	2.8	2.9	2.9	2.5	2.1	2.1
Insurance services	2.1	2.0	2.2	2.4	2.1	2.0	2.0	1.9	2.0	2.1	2.0	-1.0
Financial services	3.6	3.5	4.3	3.9	3.4	3.6	3.9	4.2	4.5	5.1	5.7	3.9
Computer and information services	0.3	0.5	0.4	0.5	0.6	0.9	1.1	1.3	2.0	2.2	2.2	23.3
Royalties and license fees	3.6	3.8	3.9	4.1	4.6	4.6	4.7	4.7	4.9	5.1	5.1	3.6
Other business services	23.4	24.4	23.5	23.7	23.9	23.3	23.9	24.6	23.3	22.9	22.8	-0.3
Personal, cultural and recreational services	0.4	0.4	0.7	0.7	0.8	0.9	0.8	1.0	1.3	1.3	1.4	12.4
Government services	6.0	5.7	5.1	4.9	4.2	3.9	3.7	3.4	3.5	3.1	2.9	-7.0

Source: IMF Balance of Payments Statistics.

the second question, it will look at changes in countries' world market shares (WMS) during the five-year period to identify which countries have improved their export competitiveness in dynamic e-services. The services categories focused on include communication, financial, computer, royalties and license fees and personal, cultural and recreational services.

4. Revealed comparative advantage in e-services exports

Table 34 shows developing and developed countries' RCA indices for each of the identified e-service sectors. According to the definition provided earlier (see annex I for details), an RCA of greater than one indicates a region's (country's) specialization or comparative advantage in exporting a particular service.[13] Interestingly, developing countries (as a group) have a comparative advantage in exporting communication services, whereas developed countries have a comparative advantage in all the other selected services. This also reflects the rapid growth that communication services exports have experienced in the developing countries during the 10-year period (23%). A closer look at the five-year period reveals that in both insurance services and personal, cultural and recreational services, developing countries have an index very close to one, and in some years their RCA was even greater than one. Hence, in these services they are close to gaining comparative advantage, whereas in others, such as computer-related services and royalties, they (as a group) have no comparative advantage.

Box 28

Dynamic e-services

The following e-services saw above-average export growth rates during the 1990-2000 period:

Communication services	*dynamic*
Insurance services	--
Financial services	*dynamic*
Computer-related services	*dynamic*
Royalties and license fees	*dynamic*
Other business services	--
Personal, cultural and recreational services	*dynamic*

Table 34

RCA by service sector for developing and developed countries

	1995	1996	1997	1998	1999	2000
Communication services						
Developed countries	0.94	0.95	0.97	0.98	0.98	0.98
Developing countries	1.25	1.22	1.11	1.07	1.07	1.07
Insurance services						
Developed countries	0.98	1.07	1.11	1.03	1.04	1.02
Developing countries	1.07	0.69	0.57	0.85	0.83	0.93
Financial services						
Developed countries	1.19	1.20	1.21	1.19	1.19	1.20
Developing countries	0.21	0.15	0.14	0.17	0.18	0.16
Computer and information services						
Developed countries	1.22	1.22	1.23	1.21	1.20	1.21
Developing countries	0.06	0.04	0.07	0.06	0.1	0.12
Royalties and license fees						
Developed countries	1.22	1.22	1.23	1.20	1.20	1.21
Developing countries	0.07	0.08	0.09	0.09	0.1	0.11
Personal, cultural and recreational services						
Developed countries	0.96	1.11	1.02	0.94	1.00	1.03
Developing countries	1.18	0.55	0.93	1.25	0.98	0.89

Source: IMF Balance of Payment Statistics

Since these figures look only at two very large groupings (developed and developing countries) and do not provide much information on individual countries' comparative advantage in the export of specific services, table 35 provides the RCA index for the year 2000 by country, as well as RCA trend growth rates during the 1995-2000 period.[14] Growth rates of RCA indices demonstrate whether a country has gained or lost comparative advantage in exporting a service over the five-year period. The following can be observed.

First, countries with RCA indices of >1 and positive RCA growth rates are the most competitive in the sector and are discussed separately below. Some countries have low RCA indices but (high) positive growth rates, meaning that they are gaining competitive advantage. Others have RCA indices of >1 but (high) negative growth rates, meaning that they are losing competitiveness. The least competitive countries are those with both RCA indices <1 and (high) negative growth rates.

Second, few developing countries have a comparative advantage in more than one sector. Exceptions include Mexico (communications and personal, cultural and recreational services), Panama (financial and computer services), Ecuador (communications and personal, cultural and recreational services, but a strong negative trend), and Costa Rica (communications and computer services).

Third, it is important to keep in mind that some countries (mainly from the developing world) do not report in certain services subcategories and hence are not considered here.

Since this chapter aims to identify those developing countries which have gained comparative advantage in e-services exports, Table 36 lists all countries with RCA indices of > 1 *and* positive RCA growth rates over the five-year period. While in most of the services categories the developed countries clearly dominate, the communications services category includes many developing countries. As was pointed out earlier, developing countries' exports in communications services have grown strongly during the past decade, and, as this table demonstrates, many developing countries have specialized in the export of this service.

Another case worthwhile mentioning is that of the Eastern European countries, including Bulgaria, the

Table 35

RCA indices and growth rates by country

	COMMUNICATION SERVICES		FINANCIAL SERVICES		COMPUTER AND INFORMATION SERVICES		ROYALTIES AND LICENSE FEES		PERSONAL, CULTURAL AND RECREATIONAL SERVICES	
Country	RCA 2000	RCA 5-yr growth (%)	RCA 2000	RCA 5-yr growth (%)	RCA 2000	RCA 5-yr growth (%)	RCA 2000	RCA 5-yr growth (%)	RCA 2000	RCA 5-yr growth (%)
Albania	2.14	-8.14	0.04	-43.60	0.04	-22.49	..	..	..	..
Angola	..	..	..	..	..	..	0.3 *	-28.4 *	..	..
Anguilla	..	..	0.40	..	0.40	..	..	..	..	..
Antigua and Barbuda	..	..	0.24	..	0.24	..	..	..	..	..
Argentina	1.45	-22.18	0.03	-15.02	0.03	21.99	0.1	-0.2	0.08	-13.06
Aruba	0.22	4.10	0.10	-27.97	0.10	-21.01 #	..	..	..	..
Australia	2.43	4.06	0.47	-7.63	0.47	5.71	0.4	4.2	3.36	16.57
Austria	0.78	10.38	0.87	6.74	0.87	-7.08	0.1	-3.2	0.47	-4.43
Bangladesh	1.32	-10.54 #	0.32	-8.4 #	0.32	17.25 #	0.0	..	0.05	20.96 #
Barbados	1.30	-3.07	1.35 *	-3.93 *	0.73 *	-25.45 *	0.0	..	0.02 *	-1.5 *
Belgium+Luxembourg	2.13	6.15	3.31	0.53	3.31	-15.01	0.4	-1.4	1.04	-0.37
Belize	1.94	-13.76	..	..	..	..	..	..	..	..
Benin	2.08	77.24	0.63	-6.90	0.63	..	..	..	0.00	..
Bolivia	7.92	-16.5 #	0.40	6.74 #	0.40	..	0.1	..	0.36	..
Botswana	0.10	125.63 #	0.05	-42.1 #	0.05	..	..	..	..	..
Brazil	0.19	-25.22	0.79	-26.20	0.79	-19.64	0.3	13.3	0.49	-17.60
Bulgaria	1.04	3.7 #	0.12	-57.25 #	0.12	..	0.0	..	0.75	..
Cambodia	7.54	-1.27	..	..	..	..	..	..	..	..
Canada	1.64	-7.53	0.66	-2.22	0.66	-15.49	0.7	15.4	2.42	-6.66
Cape Verde	2.15	-17.99	..	..	..	..	..	..	..	..
Chile	2.60	-1.01	..	..	..	..	0.5	75.3	..	..
China	2.22	7.24	0.05	35.19 #	0.05	29.49 #	0.1	3.0 #	0.03	-18.09 #
Colombia	4.42	-11.87	0.71	-13.70	0.71	-11.08	0.0	64.4 #	0.80	27.26
Costa Rica	3.05	-2.56	0.27	97.75	1.59	919.66 #	0.0	-27.3	..	..
Côte d'Ivoire	4.11	61.97	0.85	-13.13	0.85	-29.22 #	0.0	-6.4	..	..
Cyprus	0.43	14.57	..	..	..	..	..	..	0.01	..
Czech Republic	0.91	-9.27	1.10	29.88	1.10	38.22	0.1	19.6	2.05	16.67
Dominica	..	..	0.20	..	0.20	..	0.0	..	..	..
Dominican Republic	2.16	-19.64	..	..	..	..	..	..	..	..
Ecuador	3.60	-10.30	..	..	..	..	..	..	3.36	-7.02
Egypt	1.57	3.75	0.10	-9.74	0.10	56.06	0.1	-2.0	0.11	29.85
El Salvador	6.42	-10.01	0.20	-12.56 #	0.20	..	0.1	..	0.07	..
Estonia	0.69	-2.36	0.14	3.90	0.14	14.51	0.0	-2.9	0.04	5.34
Ethiopia	1.76	-10.44	0.14	-3.11	0.14	11.90	..	..	0.21	153.89 #
Fiji	0.52	16.85	..	..	..	..	..	..	..	..
Finland	1.68	5.57	0.08	-36.30	0.08	-0.98	3.7	89.2	0.04	-54.32
France	0.81	22.20	0.30	-18.11	0.30	-1.76	0.6	1.9	1.42	-5.05
Gabon	0.28	-8.74	..	..	..	..	..	..	3.25	-2.76
Germany	0.86	-7.44	0.96	2.93	0.96	0.00	0.7	-4.7	0.18	-8.99
Greece	0.67	11.50	0.11	-50.21	0.11	-47.23	0.0	..	0.94	-14.16
Grenada	..	..	0.92	11.59 #	0.92	..	..	..	..	..
Guatemala	0.02	-76.85	0.12	-35.99	0.12	-8.59	..	..	..	..

Table 35 (*continued*)

	COMMUNICATION SERVICES		FINANCIAL SERVICES		COMPUTER AND INFORMATION SERVICES		ROYALTIES AND LICENSE FEES		PERSONAL, CULTURAL AND RECREATIONAL SERVICES	
Country	RCA 2000	RCA 5-yr growth (%)	RCA 2000	RCA 5-yr growth (%)	RCA 2000	RCA 5-yr growth (%)	RCA 2000	RCA 5-yr growth (%)	RCA 2000	RCA 5-yr growth (%)
Honduras	10.16	-9.32	0.00	..	0.00	..	..	..	..	..
Hungary	0.55	10.84	0.46	-10.53	0.46	-12.5 #	0.4	15.0	2.42	24.26 #
Iceland	0.49	-25.28	..	..	0.00	-8.04 #	..	..	0.76	16.47
India	..	..	..	..	..	..	0.1	59.6	..	..
Indonesia	0.83	-11.45	..	..	..	..	..	..	..	..
Ireland	0.98	9.47	2.43	27.58	2.43	79.79	0.6	2.7	0.71	-4.44
Israel	0.59	-28.85	..	..	..	..	0.7	9.8	..	..
Italy	1.14	33.29	0.15	-38.28	0.15	3.49	0.2	6.3	0.71	-0.18
Jamaica	5.18	-0.97	0.12	3.83	0.12	-16.86	0.1	2.5	0.35	-7.73
Japan	0.60	0.81	0.81	24.19	0.81	-13.08 #	2.9	7.8	0.12	-6.64
Kenya	1.14	-12.21	0.00	..	0.00	..	0.1	-13.7	0.00	..
Korea, Republic of	0.65	-14.12	0.47	30.20	0.47	-14.46	0.5	13.5	0.34	155.36 #
Lao People's Dem. Rep.	0.18	-2.03	..	..	..	..	..	..	..	..
Latvia	1.91	26.98	0.56	-4.78	0.56	93.06	0.0	164.8 #	0.05	51.61
Lithuania	1.67	-8.00	0.06	-11.16	0.06	95.28	0.0	-70 #	0.78	55.93 #
Madagascar	0.89	0.61	0.05	-21.99 #	0.05	..	0.0	-16.4	0.02	..
Maldives	..	..	..	..	..	..	0.2	9.7	..	..
Malta	0.94	2.03	..	..	..	..	..	..	..	..
Mexico	4.42	0.57	..	..	..	..	0.1	-26.5	1.74	120.08
Moldova, Republic of	4.41	28.01	0.22	-28.31	0.22	13.51	0.1	..	0.13	..
Morocco	1.88	10.57	..	..	..	..	0.2	36.6	..	..
Myanmar	0.02	..	..	..	..	..	0.0	..	..	..
Namibia	0.75	-12.76	0.44	3.81	0.44	-16.39	0.4	113.7		..
Netherlands	1.34	16.17	0.29	3.33	0.29	-7.25	0.8	-5.7	0.76	-9.01
New Zealand	2.11	..	0.19	11.77	0.19	10.89	0.2	38.9	0.70	6.83
Nicaragua	4.19	-15.67	..	..	..	..	..	..	..	..
Norway	0.95	8.61	0.07	-6.50	0.07	-12.72	0.2	-2.8	0.51	-9.43
Oman	6.44	2 #	..	..	..	..	..	..	..	..
Panama	0.92	-3.76	1.51	8.11	1.51	..	..	..	..	..
Paraguay	0.98	-5.29	0.21	-11.53	0.21	1.77	6.7	5.4	..	..
Peru	2.71	-20.11	..	..	..	..	0.0	..	..	..
Philippines	2.19	..	0.38	..	0.38	..	0.0	..	0.75	..
Poland	1.13	-1.81	0.20	-12.37	0.20	7.28	0.1	33.9	0.36	7.05
Portugal	1.05	-14.80	0.57	-9.17	0.57	-6.93	0.0	1.1	1.17	-7.42
Romania	4.12	12.29	1.23	-1.10	1.23	58.08	0.0	-9.6 #	3.15	0.74
Russian Federation	2.01	-1.39	0.20	3.56	0.20	..	0.2	36.0	..	..
Saint Kitts and Nevis	..	..	1.40	..	1.40	..	..	..	.	..
Saint Vincent and the Grenadines	..	..	2.32	24.46 #	2.32	..	..	..	..	..
Senegal	..	..	..	..	..	..	0.1	54.8	..	..
Slovakia	1.15	-13.30	0.32	-27.09	0.32	32.83 #	0.1	2.5	1.77	10.69 #
Slovenia	0.66	18.02	0.08	-7.60	0.08	11.49	0.1	20.5	0.53	11.64
South Africa	0.56	-0.98	..	..	..	..	0.2	1.4		

Table 35 (*concluded*)

Country	COMMUNICATION SERVICES		FINANCIAL SERVICES		COMPUTER AND INFORMATION SERVICES		ROYALTIES AND LICENSE FEES		PERSONAL, CULTURAL AND RECREATIONAL SERVICES	
	RCA 2000	RCA 5-yr growth (%)	RCA 2000	RCA 5-yr growth (%)	RCA 2000	RCA 5-yr growth (%)	RCA 2000	RCA 5-yr growth (%)	RCA 2000	RCA 5-yr growth (%)
Spain	0.63	-4.96	0.51	4.46	0.51	-9.95	0.1	6.8	0.73	2.77
Swaziland	1.10	4.18	..	..	..	-44.11	0.1	1.7		
Sweden	1.60	-14.05	0.67	4.45	0.67	34.03	1.2	0.9	0.41	-4.78
Switzerland	1.61	10.31	6.20	-0.16	6.20	..	..	..	0.02	-21.55
Thailand	0.48	-8.42	..	..	..	..	0.0	36.7		
The former Yugoslav Republic of Macedonia	6.45	1.88 #	0.12	-37.98 #	0.12	-10.79	0.2	6.3 #	0.34	-34.38 #
Tunisia	0.22	-14.33	0.24	-1.46	0.24	25.42	0.1	68.4	0.08	-8.85
Turkey			0.41	-0.94	0.41	..	..	..	9.72	-4.31
Ukraine	1.17	-13.79	0.11	-26.29	0.11	..	0.0	..	0.06	..
United Kingdom	1.07	0.92	3.08	-1.30	3.08	-3.97	1.2	-5.4	1.06	-8.27
United Republic of Tanzania	2.18	4.77	0.66	2.27 #	0.66	..	0.0	-60.5 #	0.02	..
United States	0.71	-2.51	1.15	5.02	1.15	-9.11	2.6	-3.1	1.62	4.62
Uruguay	1.16	-13.54	0.92	-4.1 #	0.92	..	0.0	..	0.01	..
Venezuela	0.45	-17.40	..	..	..	..	..	..	..	..
Yemen	16.58	-2.40	..	..	..	..	..	..	..	..

Source: UNCTAD calculation based on IMF Balance-of-Payment Statistics.
Notes: # 3- or 4-year data.
* Year 2000 data estimate.

Czech Republic, Hungary, Latvia, Macedonia, Romania and Slovakia, all of which appear in this most dynamic and competitive group of services exporters.

Finally, it should be noted that many developing countries, while not yet having a comparative advantage in exporting e-services, showed positive RCA growth rates during the five-year period, indicating that they are gaining comparative advantage. Some of them are likely to join the most dynamic group of e-services exporters within a few years.

5. Changes in world market shares

While the RCA index provides information about a country's comparative advantage in exporting a certain product (and changes in the index indicate whether a country gained or lost comparative advantage), the calculation of WMS indices allows the identification of countries that have gained world market shares in the export of specific services during a certain time period. Hence, while the RCA considers only the country's exports and its degree of specialization, the WMS places these exports in the context of the world market. An increase or decrease in WMS thus indicates whether a country is becoming more or less competitive at the global level.

Table 37 provides the average WMS index over the five-year period, by country and service sector. Recalling the definition of the WMS index and the formula used for its calculation (see annex I), an index of 1 indicates no change in WMS, an index of >1 indicates an increase in WMS and an index of <1 indicates a decrease in WMS. Again, a change in the WMS index as measured here does not reflect the actual percentage share of a country's export product in the world market, but only the factor by which this share has changed. In other words, a country with a very small share in world exports could have a positive or high average WMS index over the five-year period. The purpose of this exercise is not to show which countries are the main exporters but to identify those that gained market share and thus increased their competitiveness.

Table 36

Countries with RCA indices >1 and positive growth rates

COMMUNICATION SERVICES	FINANCIAL SERVICES	COMPUTER AND INFORMATION SERVICES	ROYALTIES AND LICENSE FEES	PERSONAL, CULTURAL AND RECREATIONAL SERVICES
Australia	Belgium and Luxembourg	Costa Rica	Finland	Australia
Belgium and Luxembourg	Czech Republic	Czech Republic	Japan	Czech Republic
Benin	Ireland	Ireland	Paraguay	Hungary
Bulgaria	Panama	Romania	Sweden	Mexico
China	Saint Vincent and the Grenadines			Romania
Côte d'Ivoire	United States			Slovakia
Egypt				United States
Finland				
Italy				
Latvia				
Mexico				
Moldova, Republic of				
Morocco				
Netherlands				
Oman				
Romania				
Swaziland				
Switzerland				
The former Yugoslav Republic of Macedonia				
United Kingdom				
United Republic of Tanzania				

To complement the WMS index indicator, Table 37 also shows the average percentage increases in actual world market shares, measured as a country's share of an export product in the global market for this product.

Many developing countries have WMS indices of > 1 (five-year average), meaning that they have gained WMS in the export of e-services. A number of developing countries have experienced double-digit growth rates in world market share, notably Moldova and Côte d'Ivoire (communications services), China and Costa Rica (financial services), Costa Rica and Egypt (computer services), Chile and Tunisia (royalty services) and Mexico and Ethiopia (personal and cultural services, especially audiovisual services).

As in the earlier analysis of the RCA, the most dynamic countries (i.e. those with average WMS >1 and positive WMS trend growth between 1995 and 2000) have been selected (Table 38). These countries have been the most successful in increasing their WMS in the export of e-services and thus have become more competitive. They include many developing countries, which in particular account for 50 per cent of communications and financial services exports and about 40 per cent of royalty services exports. Also noteworthy is the dominance of the Eastern European countries, many of which have successfully increased their WMS in the export of e-services.

6. Combining comparative advantage and world market shares: identifying the most dynamic e-services exporters

So far this chapter has focused on countries' performance in exporting dynamic e-services as measured by comparative advantage or world market share. The next and final step in the analysis will be to compare

Table 37

WMS 5-year average and growth rates by country

	COMMUNICATION SERVICES		FINANCIAL SERVICES		COMPUTER AND INFO SERVICES		ROYALTIES AND LICENSE FEES		PERSONAL, CULTURAL AND REC. SEVICES	
Country	WMS 5-yr average	WMS 5-yr growth (%)	WMS 5-yr average	WMS 5-yr growth (%)	WMS 5-yr average	WMS 5-yr growth (%)	WMS 5-yr average	WMS 5-yr growth (%)	WMS 5-yr average	WMS 5-yr growth (%)
Albania	1.19	18.41	1.16	-27.30	1.05	-0.09	..	..	..	..
Angola	..	..	..	..	..	..	0.98 *	-30.78 *	..	..
Argentina	0.80	-22.28	0.91	-15.13	1.29	21.83	0.98	-0.30	1.11	-13.17
Aruba	1.15	10.25	2.39	-23.72	1.04 #	-17.02 #	..	..	..	..
Australia	1.02	1.49	0.91	-9.91	1.07	3.10	1.03	1.59	1.38	13.69
Austria	1.05	5.02	1.07	1.56	0.91	-11.59	1.03	-7.89	0.94	-9.07
Bangladesh	1.01 #	-6.57 #	0.97 #	-4.33 #	1.57 #	22.46 #	..	..	1.55 #	26.33 #
Barbados	0.98	-2.36	1 *	-3.23 *	0.79 *	-24.91 *	..	..	1.95 *	-0.61 *
Belgium+Luxembourg	1.09	7.65	1.01	1.95	0.88	-13.81	1.00	0.03	1.04	1.03
Belize	0.94	-12.23	..	..	..	..	..	..	..	..
Benin	9.69	75.89	1.01	-7.60	..	..	..	..	0.39 * #	-69.18 * #
Bolivia	0.79 #	-20.95 #	1.01 #	1.05 #	..	..	..	..	..	..
Botswana	6.13 #	175.1 #	1 #	-29.4 #	..	..	..	..	..	..
Brazil	1.76	-19.71	0.81	-20.76	1.23	-13.72	1.32	21.65	1.09	-11.52
Bulgaria	1.19 #	16.6 #	0.5 #	-51.93 #	..	..	..	..	..	..
Cambodia	1.04	-1.92	..	..	..	..	..	..	..	..
Canada	0.95	-4.40	1.03	1.09	0.88	-12.63	1.29	19.35	0.99	-3.50
Cape Verde	0.87	-13.55	..	..	..	..	..	..	..	..
Chile	0.98	-1.71	..	..	..	..	6.94	74.01	..	..
China	1.38	13.02	1.71 #	41.4 #	1.35 #	35.44 #	1.07 #	7.77 #	1.02 #	-14.32 #
Colombia	0.89	-13.89	0.83	-15.68	0.87	-13.12	1.65 #	35.93 #	1.55	24.34
Costa Rica	1.08	5.64	6.81	114.38	37.81	1'028.90	1.59	-21.14	..	..
Côte d'Ivoire	2.57	52.94	0.82	-17.97	0.67 #	-34.65 #	0.88	-11.60	..	..
Cyprus	1.11	12.99	..	..	..	..	..	..	..	..
Czech Republic	0.94	-13.39	1.39	23.98	1.76	31.94	1.40	14.12	1.15	11.37
Dominican Republic	0.86	-14.39	..	..	..	..	..	..	..	..
Ecuador	0.90	-10.87	..	..	..	..	..	..	1.18	-7.61
Egypt	1.04	2.01	0.89	-11.26	1.89	53.45	1.00	-3.66	1.58	27.67
El Salvador	1.00	-1.86	0.98 #	-3.69 #	..	..	..	..	..	..
Estonia	1.06	4.88	1.68	11.60	1.30	23.00	1.08	4.29	1.20	13.15
Ethiopia	0.93	-6.47	1.27	1.18	1.21	16.86	..	..	25.63 #	166.77 #
Fiji	1.53	9.87	..	..	..	..	..	..	..	..
Finland	0.99	-1.56	0.65	-40.60	0.95	-7.67	2.18	76.41	0.60	-57.40
France	1.18	17.70	0.78	-21.13	0.96	-5.39	0.99	-1.89	0.96	-8.55
Gabon	2.71	-6.48	..	..	..	..	..	..	1.06	-0.35
Germany	0.90	-10.10	0.99	-0.03	1.00	-2.87	0.93	-7.47	0.92	-11.60
Greece	1.35	25.65	0.76	-43.88	0.91	-40.53	..	..	2.91	-3.26
Grenada			1.24 #	23.23 #	..	..	..	..	..	..
Guatemala	0.70	-76.48	0.84	-34.97	1.15	-7.13	..	..	..	..
Honduras	1.05	0.46	..	..	..	..	..	..	..	..
Hungary	1.11	9.64	1.07	-11.50	0.94 #	-14.33 #	1.37	13.78	1.3 #	21.66 #
Iceland	0.84	-21.68	..	..	1.06 #	-3.83 #	..	..	1.32	22.07

Table 37 (*continued*)

	COMMUNICATION SERVICES		FINANCIAL SERVICES		COMPUTER AND INFO SERVICES		ROYALTIES AND LICENSE FEES		PERSONAL, CULTURAL AND REC. SEVICES	
Country	WMS 5-yr average	WMS 5-yr growth (%)	WMS 5-yr average	WMS 5-yr growth (%)	WMS 5-yr average	WMS 5-yr growth (%)	WMS 5-yr average	WMS 5-yr growth (%)	WMS 5-yr average	WMS 5-yr growth (%)
Indonesia	1.06	-18.62	..	..	..	..	..	..	..	..
Ireland	1.52	40.90	1.90	64.21	5.84	131.40	1.31	32.14	1.32	22.99
Israel	0.81	-22.65	..	..	..	..	1.26	19.36	..	..
Italy	1.33	25.99	0.72	-41.66	1.00	-2.18	1.00	0.45	0.97	-5.65
Jamaica	1.03	0.97	1.05	5.86	0.86	-15.23	1.07	4.50	0.95	-5.93
Japan	1.20	-2.88	2.34	19.64	0.89 #	-16.23 #	1.05	3.81	0.97	-10.06
Kenya	0.83	-16.06	..	..	..	..	1.96	-17.49	..	..
Korea, Republic of	0.90	-12.94	1.44	32.00	1.13	-13.28	1.19	15.10	2.8 #	158.32 #
Lao People's Dem. Rep.	1.04	4.36	..	..	..	..	..	..	..	..
Latvia	1.88	31.45	1.08	-1.43	3.20	99.85	3.77 #	160.97 #	8.21	56.94
Lithuania	1.08	2.36	1.23	-1.16	7.09	117.26	0.57 #	-70.7 #	3.39 #	52.47 #
Madagascar	1.06	4.23	0.86 #	-16.29 #	..	..	1.01	-13.37	..	..
Maldives	..	..	..	..	..	..	1.30	14.18	..	..
Malta	1.04	0.66	..	..	..	..	..	..	..	..
Mexico	1.04	2.90	..	..	..	..	0.85	-24.80	11.00	125.18
Moldova, Republic of	1.27	28.34	1.30	-28.13	1.27	13.80	..	..	..	..
Morocco	1.15	13.78	..	..	..	..	2.16	40.52	..	..
Myanmar	..	..	..	..	..	..	..	..	..	..
Namibia	0.89	-12.18	1.40	4.51	0.90	-15.83	47.20	115.10	..	..
Netherlands	1.15	15.55	1.05	2.78	0.92	-7.74	0.93	-6.25	0.93	-9.49
New Zealand	..	..	1.12	6.38	1.08	5.54	1.33	32.18	1.03	1.68
Nicaragua	0.96	-4.81	..	..	..	..	..	..	..	..
Norway	1.05	6.58	0.96	-8.25	0.91	-14.36	1.06	-4.61	0.97	-11.13
Oman	1.18 #	2.97 #	..	..	..	..	..	..	..	..
Panama	0.97	-3.30	1.08	8.63	..	..	..	..	..	..
Paraguay	0.93	-8.86	0.95	-14.86	1.04	-2.06	1.02	1.41	..	..
Peru	0.83	-17.99	..	..	..	..	..	..	..	..
Poland	0.93	-6.14	0.91	-16.24	1.23	2.54	1.94	28.01	1.07	2.32
Portugal	0.85	-16.61	0.90	-11.10	0.93	-8.91	1.02	-1.03	0.92	-9.39
Romania	1.13	9.21	1.22	-3.82	1.61	53.74	..	-9.51 #	1.03	-2.02
Russian Federation	0.92	-9.28	1.00	-4.73	..	..	8.22	25.16	..	..
Saint Vincent and the Grenadines	..	..	1.31 #	30.62 #	..	..	..	..	..	..
Senegal	1.07 * #	5.14 * #	2.08 * #	101.79 * #	..	..	17.33	46.52	..	..
Slovakia	1.00	-17.35	0.72	-30.50	1.3 #	29.49 #	1.05	-2.26	1.16 #	7.91 #
Slovenia	1.12	11.77	0.90	-12.49	1.15	5.59	1.22	14.16	1.12	5.73
South Africa	1.06	-2.89	..	..	..	..	1.02	-0.53	..	..
Spain	1.00	-2.48	1.06	7.18	0.93	-7.61	1.10	9.55	1.06	5.45
Swaziland	0.91	-9.38			0.87	-51.38	0.88	-11.55	..	..
Sweden	0.97	-12.53	1.43	6.30	1.44	36.39	1.02	2.67	1.39	-3.11
Switzerland	1.07	7.96	0.97	-2.29	..	..	..	..	0.84	-23.22
Thailand	0.89	-13.88	..	..	..	..	8.66	28.53	..	..

Table 37 (*concluded*)

	COMMUNICATION SERVICES		FINANCIAL SERVICES		COMPUTER AND INFO SERVICES		ROYALTIES AND LICENSE FEES		PERSONAL, CULTURAL AND REC. SEVICES	
Country	WMS 5-yr average	WMS 5-yr growth (%)	WMS 5-yr average	WMS 5-yr growth (%)	WMS 5-yr average	WMS 5-yr growth (%)	WMS 5-yr average	WMS 5-yr growth (%)	WMS 5-yr average	WMS 5-yr growth (%)
The former Yugoslav Republic of Macedonia	1.22 #	21.07 #	0.98 #	-26.29 #	1.36 #	6.01 #	1.35 #	26.33 #	0.85 #	-22.02 #
Togo	1.23 * #	1.18 * #	1.41 * #	37.04 * #	..	..	..	..	..	..
Tunisia	0.84	-15.12	0.99	-2.37	1.36	24.25	2.88	66.82	1.03	-9.70
Turkey			1.07	2.31	..	..	..	..	1.03	-1.17
Ukraine	0.84	-15.28	0.77	-27.57	..	..	..	..	..	..
United Kingdom	1.05	5.97	1.04	3.63	1.01	0.83	0.98	-0.69	0.97	-3.68
United Republic of Tanzania	1.08	2.64	1.02 #	1.96 #	..	..	0.42 #	-58.51 #	..	..
United States	1.00	-0.61	1.06	7.07	0.94	-7.34	0.99	-1.20	1.07	6.67
Uruguay	0.82	-17.38	0.96 #	-8.53 #	..	..	..	..	..	..
Venezuela	0.81	-24.73	..	..	..	..	..	..	..	..
Yemen	1.22	-5.11	..	..	..	..	..	..	..	..

Source: UNCTAD calculation based on IMF Balance-of-Payment Statistics.
Notes: # 3- or 4-year data.
* Year 2000 data estimate.

and combine these two indices of export competitiveness. This will allow the ranking of countries' competitiveness as far as their exports of e-services are concerned. Accordingly, those that have gained market share and comparative advantage *and* have values of > 1 for both RCA and (average) WMS indices are the most dynamic and competitive countries for a particular export sector (see table 39). By contrast, those that have lost market share and comparative advantage *and* have values < 1 for both RCA and (average) WMS indices are the least dynamic and least competitive countries for a particular export sector. Most countries, in fact, are somewhere in between, meaning that they are gaining market share or competitiveness but have no revealed comparative advantage (yet), or that they have a declining revealed comparative advantage or are loosing market share, or any other combination of the indices provided and discussed in this analysis.

Table 39 lists those countries that are characterized by the optimal combination of all indicators considered here. Accordingly, the countries listed under the specific services category are those that in this particular e-service sector possess a combination of the following indicators: an RCA index of >1, positive RCA growth rates over the five-year period, an average WMS index of >1 and positive WMS growth between 1995 and 2000. These are the "rising stars", the countries which have been the most dynamic and most competitive in these services sector exports during the past five years.

Significantly, table 39 includes almost all countries with an RCA index of >1 and positive RCA growth rates, except for Romania in the personal and recreational services category (see table 36). In other words, all countries that meet these two criteria also have positive WMS indices and are gaining world market share. On the other hand, not all countries meeting the latter two criteria (see table 38) also meet the former two. This seems logical, as countries that have specialized in the export of a particular service (i.e. gained comparative advantage) and have increased these exports must also have gained market share. On the other hand, countries may have gained market share but not comparative advantage if they increased their exports in a number of other services at the same time.

As the table indicates, there are developing countries in all of the services sectors, although the developed countries and Eastern Europe clearly dominate the table. In communication services, both China and Morocco had rapid growth in their comparative advantage and market share indicators during the five

Table 38

Countries with WMS 5-year average >1 and positive growth rates

COMMUNICATION SERVICES	FINANCIAL SERVICES	COMPUTER AND INFORMATION SERVICES	ROYALTIES AND LICENSE FEES	PERSONAL, CULTURAL AND RECREATIONAL SERVICES
Albania	Austria	Argentina	Australia	Australia
Aruba	Belgium and Luxembourg	Australia	Belgium and Luxembourg	Bangladesh
Australia	Bolivia	Bangladesh	Brazil	Belgium and Luxembourg
Austria	Canada	China	Canada	Colombia
Belgium and Luxembourg	China	Costa Rica	Chile	Czech Republic
Benin	Costa Rica	Czech Republic	China	Egypt
Botswana	Czech Republic	Egypt	Colombia	Estonia
Bulgaria	Estonia	Estonia	Czech Republic	Ethiopia
China	Ethiopia	Ethiopia	Estonia	Hungary
Costa Rica	Grenada	Ireland	Finland	Iceland
Côte d'Ivoire	Ireland	Latvia	Hungary	Ireland
Cyprus	Jamaica	Lithuania	Ireland	Latvia
Egypt	Japan	Moldova, Republic of	Israel	Mexico
Estonia	Korea, Republic of	New Zealand	Jamaica	New Zealand
Fiji	Namibia	Poland	Japan	Poland
France	Netherlands	Romania	Korea, Republic of	Slovakia
Greece	New Zealand	Slovakia	Latvia	Slovenia
Honduras	Panama	Slovenia	Maldives	Spain
Hungary	Saint Vincent and the Grenadines	Sweden	Morocco	United States
Ireland	Spain	The former Yugoslav Republic of Macedonia	Namibia	
Italy	Sweden	Tunisia	New Zealand	
Jamaica	Togo	United Kingdom	Paraguay	
Lao People's Dem. Rep.	Turkey		Poland	
Latvia	United Kingdom		Russian Federation	
Lithuania	United Republic of Tanzania		Senegal	
Madagascar	United States		Slovenia	
Malta			Spain	
Mexico			Sweden	
Moldova, Republic of			Thailand	
Morocco			The former Yugoslav Republic of Macedonia	
Netherlands			Tunisia	
Norway				
Oman				
Romania				
Slovenia				
Switzerland				
The former Yugoslav Republic of Macedonia				
United Kingdom				
United Republic of Tanzania				

Table 39

Countries with WMS 5-year average >1, RCA indices >1 and positive growth rates in both

COMMUNICATION SERVICES	FINANCIAL SERVICES	COMPUTER AND INFORMATION SERVICES	ROYALTIES AND LICENSE FEES	PERSONAL, CULTURAL AND RECREATIONAL SERVICES
Australia	Belgium+Luxemburg	Costa Rica	Finland	Australia
Belgium and Luxembourg	Czech Republic	Czech Republic	Japan	Czech Republic
Benin	Ireland	Ireland	Paraguay	Hungary
Bulgaria	Panama	Romania	Sweden	Slovakia
China	Saint Vincent and the Grenadines			United States
Côte d'Ivoire	United States			
Egypt				
Italy				
Latvia				
Mexico				
Moldova, Republic of				
Morocco				
Netherlands				
Oman				
Romania				
Switzerland				
The former Yugoslav Republic of Macedonia				
United Kingdom				
United Republic of Tanzania				

years in question. In financial services, a small island nation – Saint Vincent and the Grenadines – succeeded in substantially increasing its competitiveness in the world market. Among computer and information services, Costa Rica is clearly the outstanding case and will be considered in more detail below. As far as royalty services exports are concerned, the case of Paraguay is special, since its indicators are largely based on the export of hydropower. In the area of personal and cultural services, Mexico has experienced the most dynamic growth in gaining competitiveness and market share (mainly in audiovisual services).

Unlike these "rising stars", many countries fall in the middle range. They may be gaining competitiveness, characterized by positive growth of either their RCA or their WMS indices; or they may have a comparative advantage and high market share but negative trends (e.g. losing market share and competitiveness in the short to medium term). Finally, as was mentioned in section C, losses in market share in one product or service may be accompanied by gains in market share in other products; hence, each case needs to be interpreted individually.

7. Summary of main findings

The empirical analysis provided in this section has shown the following:

- Almost all export services that can be defined as dynamic services can also be defined as e-services.

- Developing countries have experienced the highest growth rates in the exports of e-services during the period 1990-2000.

- Computer-related services exports from developing countries were the most dynamic exports during this time period.

- While developed countries have a comparative advantage in the export of most e-services, an increasing number of developing countries are gaining comparative advantage in some e-services.

- A large number of developing countries are gaining world market share (in both relative and absolute terms) in the export of e-services, notably in communications services, financial services and royalty services.

- "Rising stars" (i.e. the most dynamic and competitive exporters) consist largely of developed and transition economies, but also include a few developing countries. However, given the high growth rates in a number of developing countries, their share in this category is expected to increase in the near future.

D. Case studies from developing countries: computer-related services exports

The statistics presented in the previous section demonstrated that computer-related services were the most dynamic services export sector during the past decade, in particular for developing countries and countries in transition. Although developing countries still account for a small share in total exports of these services, their share is growing and will even become more visible once they start to further disaggregate their services statistics (currently in some countries computer-related services are hidden in other categories).[15]

Computer-related services play a key role in the development of knowledge-based services because they produce high-value-added services. Although the developed countries dominate the computer industry, some developing countries have been successful in tapping into the computer-related service market, providing software and IT-enabled services, and showing high export growth rates in these sectors (UNCTAD, 2001b; ITU, 2001). Besides their potential role in export-led growth, computer software and services also play an important economic role in facilitating growth and development in other domestic industries, which increasingly depend on software as a core component in their design, production and distribution processes.

Given the importance of this sector for increasing export competitiveness, this section focuses on two developing countries (Costa Rica and India) that have been successful in developing their computer-related services (and in particular their software and IT-enabled services) and discusses some of their achievements and the difficulties they have faced during this process.

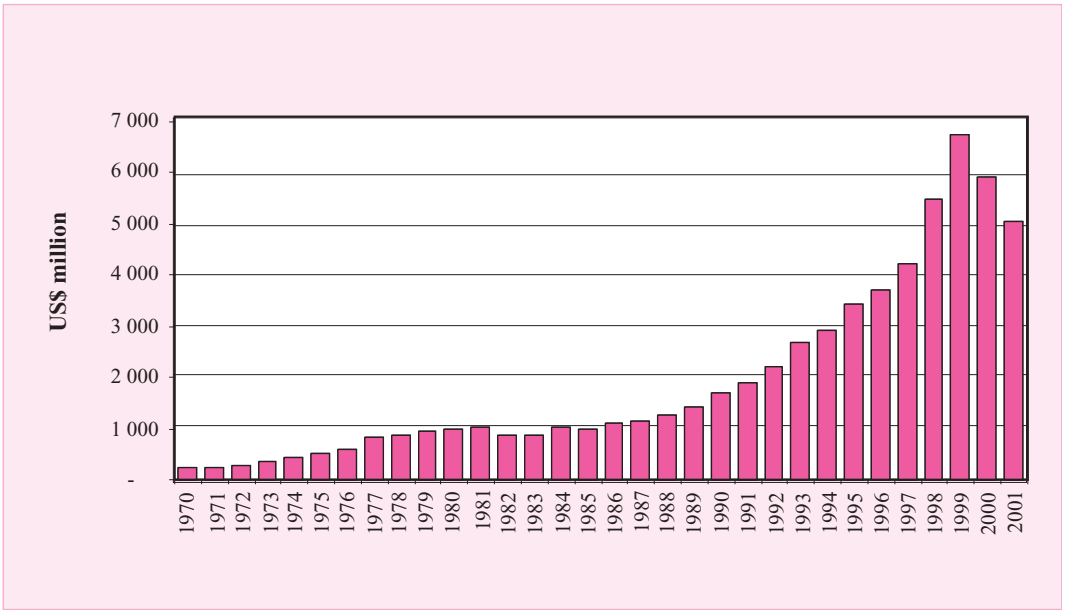
1. Costa Rica: From IT production to IT services

Costa Rica is well known for an export-driven development strategy based on the ICT sector. As chart 34 shows, exports grew exponentially during the 1990s, from $ 1.6 billion (1990) to $ 6.7 billion (1999), followed by a decrease in 2001/02. During the same period, there was a clear shift from traditional to non-traditional exports, largely based on the exports of IT-related products, which experienced annual growth rates of up to 500 per cent (1998). While "office and telecommunications equipment" accounted for only 0.1 per cent of exports in 1995, this share had increased to 41 per cent of exports by 1999 (WTO, 2001b). By 2001, one product category (computer parts/modular circuits) accounted for the largest share in exports (15.6%), followed by bananas (10%).[16] This development resulted largely from the establishment in Costa Rica of Intel, one of world's largest producers of electronic components.[17]

The success of the Costa Rican IT industry (and the ability of the country to attract foreign investment in this sector) can be explained by a number of factors, such as the country's geographic location, its political stability, its educated workforce and its advanced infrastructure, coupled with policies that improved the telecommunications infrastructure and services, attracted foreign investment and, generally, heavily promoted the country's assets abroad.

While the development and growth of the IT-producing industry in Costa Rica is well researched, little attention has been paid thus far to another fast-growing export sector of the Costa Rican economy: exports of computer- and information-related services. These will be the focus of this section.

Chart 34
Costa Rica: Total exports (1970-2001)



Source: PROCOMER, IMF

The previous analysis (section C) already identified Costa Rica as a rising star in computer-related services exports, one with a strong and rapidly growing revealed comparative advantage in this export sector as well as a sharp increase in world market share over the past five years. More specifically, chart 35 shows the exponential growth of computer-related services exports during the past few years, from $16,000 (1997) to $60 million (2000). The share of computer-related services exports in Costa Rica's total services exports has thus increased from almost 0 to 3.2 per cent in just three years. Computer-related services exports account for an important share of total exports and have overtaken sugar exports (their share is double that of sugar exports).

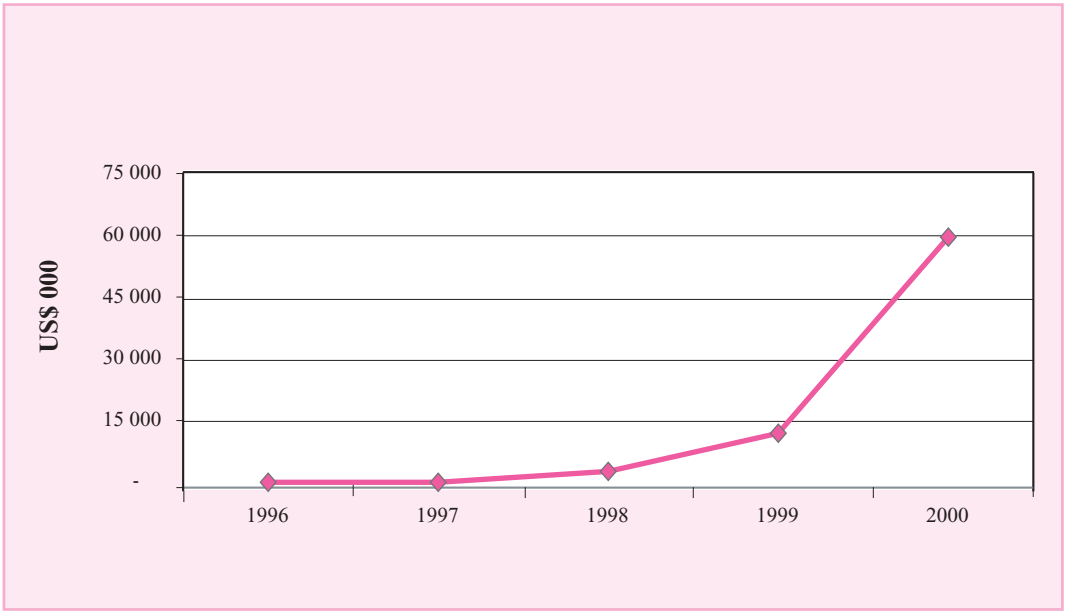
What prompted this extraordinary development? One explanation can be found in the fact that the growth of the domestic IT industry and the favourable environment it brought about also led an increasing number of companies to use ICT in their business activities, moving rapidly into e-commerce, e-banking or e-tourism. In particular, the past decade saw the creation of a significant number of enterprises (small to large) offering computer-related (in particular software) services and products.

The computer-related service industry started to develop in Costa Rica in the 1980s, but really took off in the early 1990s (IDD, 2001). 30 per cent of the companies were created during the 1980s and 70 per cent during the 1990s, mainly with domestic capital. Over 80 per cent of the companies are locally owned and about half of them export their services. While initially most of the companies produced for the domestic market, beginning in 1999 they rapidly expanded into the international market.

So far, computer-related services have been dominated by software services.[18] It has been estimated that software production has a national value added exceeding 90 per cent (Mata and Vartanián, 2001). The Costa Rican software production derives mainly from small and medium-sized enterprises producing tailor-made applications or providing advisory services in the area of software development for other companies. A survey by Mata and Vartanián (2001) indicated that 88 per cent of the software companies offer tailor-made software services, 60 per cent software packages, 39 per cent software consulting and 22 per cent other services. The sector is characterized by rapid sales growth: between 1997 and 2000, 30 per cent of the companies doubled their sales. Even faster growth was predicted for the next few years: 55 per cent of the companies expect their sales to double between 2000 and 2003.

Initially, most software companies served the domestic market. As of 2000, half of the companies produced for export, but only 16 per cent (mainly the larger companies) exclusively served the export market. Only 9 per cent of the companies exported more

Chart 35
Costa Rica: Computer-related services exports (1996-2000)



Source: Balance of Payments Department, Central Bank of Costa Rica.

than $1 million per year (28% exported between $100,000 and 500,000 and 53% less than $100,000). Hence, the rapid export growth during the three-year period is likely to be based on exports by large companies. According to the survey, export growth rates accelerated between 1997 and 1999: 14 per cent of the companies increased their exports by more than 100 per cent, 26 per cent by more than 51 per cent and 45 per cent by more than 30 per cent. Estimates for the years 2000-2003 were even higher, and, as the latest figures demonstrate (see chart 35), they probably exceeded all expectations.

The software sector is essentially a knowledge-based industry requiring highly skilled professionals, and a large pool of educated labour has allowed Costa Rican companies to successfully enter this sector. The government has played an important role in creating an educated population by continuously expanding the education system and including IT in the curriculum. This policy has been pursued actively by the government in its channelling of defence spending to education (after abolition of the armed forces in 1949). Costa Rica has a tradition of investing heavily in education and is currently spending 6 per cent of its GDP on education (Tacsan, 2001). According to the survey of software companies cited earlier, the key factors influencing the development of the software sector are the availability of highly skilled employees, possibilities for training and capacity building, the number of IT professionals available and the legal framework in the country.

Acknowledging the sector's dynamism and growth potential, the Inter-American Development Bank (IDB) in 1999 approved a project to develop the software sector in Costa Rica. The project aims to improve the sector's competitiveness in the global market as well as make local software companies engines of economic development by helping them produce hard-currency revenue and create high-paying jobs. The project emphasizes training and curriculum building for software technicians to improve the overall technical capabilities in the country and to enable local software producers to compete in the international market.[19] The project, which is ongoing, is carried out in cooperation with PROCOMER (Promotora del Comercio Exterior de Costa Rica), CAPROSOFT (Cámara de Productores de Software) and CENAT (Centro de Alta Tecnología), each of which contributes financially to the project and participate actively in it.

Challenges faced by exporting companies

Given the small size of the domestic market, Costa Rican software companies aim at the export market. The advantages enjoyed by Costa Rica in comparison with other Latin American countries also developing their software sector include a pool of low-cost skilled

IT workers and current trade agreements in the North American market.

Nevertheless, software exporters face a number of challenges in their efforts to increase their software services and exports, such as growing competition in the global market, the unavailability of export financing and the lack of an existing structure to support their clients in the export market. The expensive air travel within the region, barriers faced in foreign markets,[20] the lack of export marketing and distribution channels and the migration from proprietary systems to open platforms are further obstacles mentioned by software exporters (IDD, 2001).

2. India: business process outsourcing (BPO) – the new panacea?

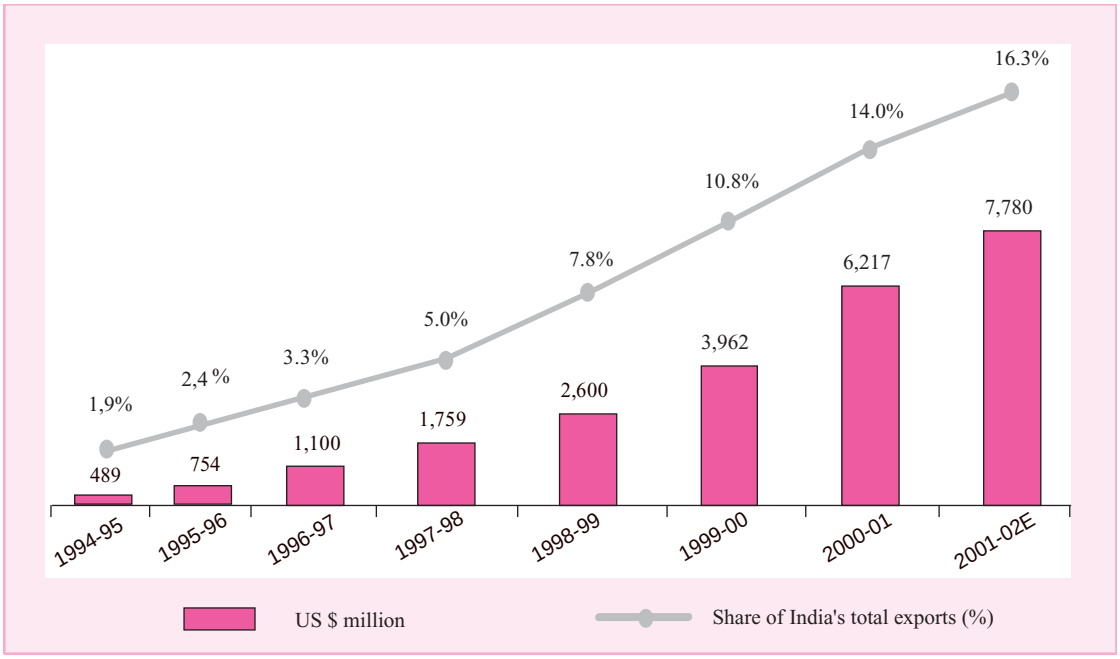
The Indian software sector has been studied extensively because of its breathtaking growth during the past decade (Heeks, 1998; OECD, 2000; ILO, 2001; DOI, 2001).[21] As chart 36 shows, exports of software and related services have increased from less than $500 million (1994/95) to almost $8 billion (2001/02). Between 1999/00 and 2001/02, exports grew from $3.9 billion to $6.2 billion, an increase of almost 60 per cent. Software exports now comprise more than 16 per cent of India's total exports.[22] A revised version of an often-cited NASSCOM-McKinsey study estimates that IT services exports will reach $77 billion by 2008, contributing 10 per cent to the country's GDP (up from 2% in 2002) and 30 per cent of all foreign exchange (up from 8%) and creating four million new (direct and indirect) jobs.[23]

These figures comprise both software services and IT-enabled services[24] – increasingly called business process outsourcing (BPO) – such as those related to customer interaction centers, back-office operations, revenue accounting, data entry and transcription services or GIS (geographic information system) services (see table 40). Revenues are expected to reach $1.5 billion by the end of 2002. IT-enabled services exports grew at over 45 per cent annually in 1999 and 2000 and 70 per cent annually during 2001 and 2002. The number of jobs created by this sector is expected to increase from 107,000 (2001-02) to 1.1 million (2008), generating revenues of $21 – 24 billion. Hence, this is the most dynamic segment of India's IT-related services export sector and will be the focus of this section.

Business process outsourcing (BPO)

Overshadowed by the exponentially growing software sector during the 1990s, BPO in India received little attention from researchers or the business community until the start of the new millennium. It has now become the new buzzword, reflecting this sector's great potential for creating new business opportunities

Chart 36
India: Software and services exports



Source: www.nasscom.org

Table 40

Indian software and services exports: Key service lines (US$millions)

	2000-01	2001-02
Software and services	**4 750**	**5 780**
Legacy application management, maintenance, migrations	1 700	2 100
Custom application development	1 950	2 350
Packaged software integration	300	350
E-business solutions	550	600
Wireless integration	75	100
System integration	75	110
Network infrastructure management services	50	65
Consulting	50	55
IT-enabled services	**900**	**1 475**
Customer interaction centers	185	350
Back-office operations/revenue accounting/data entry and conversion	295	600
GIS/engineering services/content development	350	450
Others	70	75
R&D services	**550**	**575**
Total	**6 200**	**7 780**

Source: www.nasscom.org

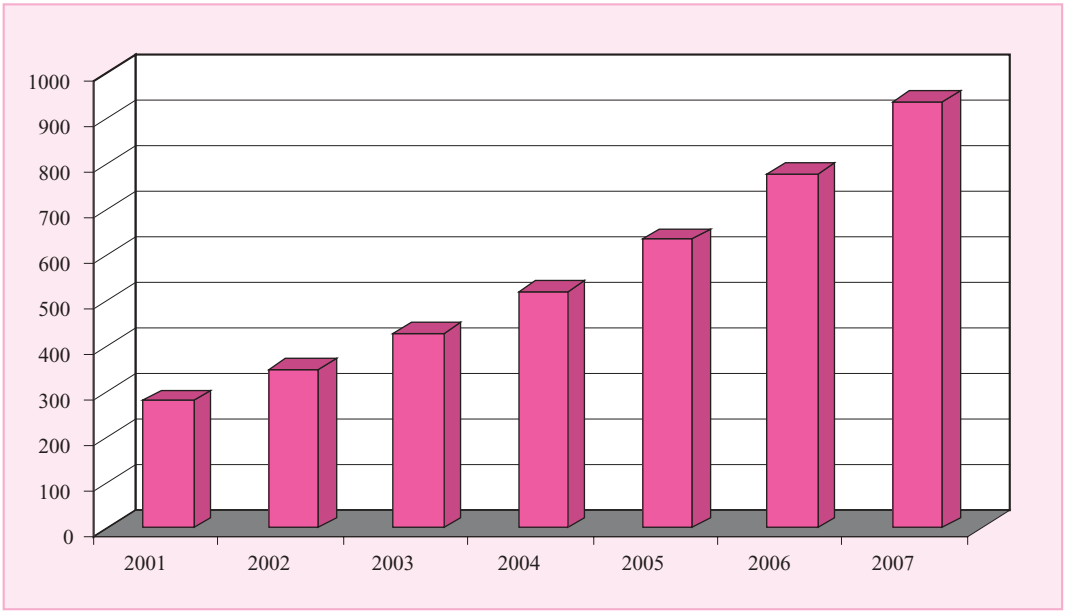
and suggesting that the sector will grow quickly in the short to medium term.

BPO refers to outsourcing (often, but not necessarily, by big multinational companies) of business processes and functions in the areas of administration, finance, human resources, distribution logistics, manufacturing services, sales, marketing and customer care to locations that can provide these services at a lower cost through high-speed data communication links, which guarantee timely delivery of the data and services. BPO often involves large-scale data processing (such as that required by banks, insurance companies and airlines) – for example, in revenue accounting and payroll processing. These IT-intensive outsourced tasks range from routine business processes to strategic tasks directly affecting revenues. As a result of the improved global telecommunications infrastructure, companies now have the choice to outsource their business processes to service providers located (almost) anywhere in the world. This allows management to focus on building core business activities and cut back spending on office facilities and computer systems. While BPO is clearly a cost-driven process, the potential to continuously improve processes as well as service levels is an additional reason for outsourcing.

Projections for the BPO market are extremely high: it is expected to grow from less than $300 billion (2001) to close to $1 trillion by 2007 (chart 37). Today, distribution and logistics take the largest share of the market (29%), followed by human resources (24%) and payment services (16%).[25] According to a survey by Forrester (2002) with 57 Global 3,500 firms, more than 50 per cent of the companies reported spending more than $1 million annually on BPO. Forrester predicts that the BPO market in the United States will increase annually by 70 per cent (2000-6). Even if these figures are exaggerated, there is undoubtedly huge business potential in the BPO market.

India is planning to capture a significant share of the BPO world market by 2007-08.[26] However, the Indian BPO sector is still in its initial stages, often capturing outsourced overflow work from international BPO service providers rather than receiving direct contracts.[27] Many of the large BPO providers are foreign affiliates working from India (such as GE, Dell or American Express) and staffed and managed by Indians. According to NASSCOM, the IT industry's national association, there are currently 204 Indian companies providing IT-enabled services. Most of them focus on financial, telecommunications and manufacturing services. The latest NASSCOM-McKinsey report cited earlier suggests that the banking and insurance sectors are likely to provide the greatest opportunities in offshore BPO, followed by the telecommunications, retail, utilities, automotive, computer and pharmaceuticals sectors.[28]

Chart 37
Expected business process outsourcing market (US$billion)



Source: Gartner, McKinsey, Dataquest, as cited at www.nasscom.org.

India is building heavily on its already well-established software and IT-enabled service industries. The initial phase of IT-enabled services in India was dominated by customer contact centers (e.g. call centers) and transaction-intensive services (e.g. back-office operations and data processing, medical transcriptions, content development and administration). These services are considered to be lower in the value chain than more specialized services like research and development (R&D) or customized business services. Like the latter, BPO is viewed as being higher in the value chain, since it involves the complete management of a process.[29]

Indian companies are planning to develop the quality of their BPO services by applying a new business framework created by Carnegie Mellon University (CMU) of the United States. This so-called eServices Capability Model (escm) employs best practices for measuring and improving the value of outsourcing relationships, such as increased productivity, reduced cycle time, decreased transaction costs and improved time to the market (Hyder et al., 2001). CMU also provides certification of service providers' capabilities and performance, which assures clients of high quality and reduced risk when they do business with a certified provider.

Advantages enjoyed by BPO providers in India

Companies based in the United States or Europe increasingly look to India in their efforts to outsource part of their software development to more cost-effective locations. NASSCOM estimates that during the period 2000-2001, one in four of the global majors outsourced its key software development to India; they also report that 82 per cent of United States companies rank India as their first choice for software outsourcing.

The reputation built over the past decade is one key reason why companies look to India for BPO. Other advantages include the large pool of English-speaking IT and engineering graduates, which the Government is augmenting by taking steps, such as establishing Indian Institutes of Technology in various cities, to triple the number of engineering students by 2008. Furthermore, India's time zone vis-à-vis the United States encourages BPO with the latter as it allows, for example, companies based on the United States East Coast to provide customer services 24 hours a day.

The potential for India to become a hub for IT-enabled services (particularly BPO) has been recognized by the Indian Government and NASSOM, both of which have started a dialogue aimed at defining and creating a favourable environment for each segment of the IT-enabled services sector. These efforts include

actions in the areas of tax exemption,[30] telecommunications infrastructure, financial assistance for start-ups, establishment of a venture capital (VC) fund, training and the promotion of entrepreneurship and teleworking for women in the IT-enabled sector.

Challenges BPO exporters face

Business based on outsourcing is highly dependent on the volatility of foreign markets. As Indian BPO exporters are largely focused on the United States market, a downturn in their main export market could negatively affect their business. For example, in the software sector (which is equally dependent on the United States market), the Nasdaq crash led to cuts in IT investment, which directly affected Indian programmers and led to an oversupply of IT professionals in India. Fortunately, IT-enabled services were less affected by the recession in the United States because they are the indispensable back-office processes of brick-and-mortar companies. By contrast, the slowdown of the United States economy has prompted an increasing number of companies to outsource to India to maintain their margins.[31]

New market entrants such as China and the Philippines may pose serious competition to Indian BPO providers within a few years' time. In particular, if the BPO business model is based primarily on cost advantage and low labour cost, it can be easily replicated elsewhere, leading to a constant decrease in profit margins. Therefore, Indian companies have a great interest in working continuously to develop more sophisticated, specialized and higher-value-added BPO services to safeguard their current leadership position in the world market. This will require specialists not only in the IT and engineering professions but also in other areas such as medicine, law, accountancy, statistics and human resource management.

International telephony was deregulated on 1 April 2002, and since then prices have dropped significantly, favouring IT-enabled services such as call centres. However, to respond to the needs of the emerging BPO sector, deregulation should go further and allow interconnectivity between networks and different Internet service providers, the establishment of international gateways by the IT-enabling industry and deregulation of international bandwidth to allow companies to buy high-capacity cable and satellite connectivity at competitive prices.

E. Conclusions and policy implications

The empirical research presented in this chapter revealed that most e-services sectors are also dynamic export sectors, characterized by above-average growth rates in the world market. Significantly, developing countries' exports of e-services experienced the highest growth rates during the past decade and computer-related services exports from developing countries were the most dynamic export sector during this period.

At the same time, developing countries' global share in e-services exports is still small and few of them have a comparative advantage in this area. However, many developing countries are gaining world market share in the export of, for example, communication services and, to a lesser extent, financial services and royalty services. This trend, coupled with the rapid growth of e-services exports, is likely to increase the number of developing countries among the "rising stars" (i.e. the most dynamic and competitive exporters worldwide). Although the methods employed in this study do not provide for forecasting, one can assume that developing countries that export dynamic services are less likely to face saturation of their export markets in the short to medium term, compared to those that export services less in demand on the world market. One can also conclude that, given the higher growth rate of services exports in the developing countries, the potential impact of e-commerce is much greater than their current share of world trade or the size of their services trade indicates.

Case studies: lessons learned?

Two rising stars in the export of computer-related services are Costa Rica and India. What do their cases demonstrate, and do they offer lessons for other countries that are currently developing this export sector?

What is remarkable about the two countries is that they greatly differ in size, political structure and institutions, cultural background, geographic location (also vis-à-vis their main export markets, with Costa Rica being close to the United States and India far away) and languages. Despite these differences, both countries have successfully developed their domestic IT capacities and their IT-related export sectors. It is therefore worth noting what both countries have in common: an educated workforce, IT know-how, long-time experience in high-tech development, contacts in their major export markets and a good reputation abroad. In addition, both countries have received large

amounts of foreign capital for establishing a domestic IT sector.

The availability of skilled labour (including employees with foreign-language literacy) is important for all ICT-driven export services, as business processes are increasingly being carried out digitally and are based on the exchange of knowledge and information rather than on activities requiring physical skills. Both Costa Rica and India have benefited from a highly skilled labour force and a large pool of IT professionals. Hence, in their cases, investment in education has proved beneficial for the development of the IT sector.

Business process outsourcing may in the future play an increasingly important role for developing countries. More and more traditional industries, including in the retail, energy, transportation and manufacturing sectors, will outsource parts of their services. This will increase international trade in services, as most of these business processes will be outsourced to foreign providers. These knowledge-intensive services offer a great opportunity to developing countries with abundant labour. But to what extent will companies from developing countries be able to compete for outsourcing contracts with those in industrialized countries and transition economies? Not only do they need skilled labour, world-class telecommunication services and a stable political environment, but identifying new business opportunities abroad will be a challenging task for many companies from poorer countries. Both Costa Rica and India have been able to build a national brand in the global market by heavily advertising their assets abroad. Some companies in India have been able to compete with foreign software companies for direct, higher-value-added contracts, rather than the usual outsourcing that has dominated most of the software services thus far. Most newcomers on the market, however, will depend on subcontracts from foreign firms, which are less stable and less profitable.

Export promotion as a strategy?

Focusing on the export of dynamic services may not always be the best strategy, as it is difficult to predict future demand for particular products and services. Experience in Latin America has shown that the countries with the best export performance do not always owe their success to the export of dynamic products, but often to increased market access opportunities (IDB, 2001). In order for developing countries to increase their services exports by taking advantage of new technologies and e-commerce, open markets are needed in the potential importing countries.[32]

Moreover, in certain software services, close interaction with the client is necessary, including on-site visits.[33] While some interaction with clients can be carried out remotely, other services require face-to-face meetings. This could be accomplished by employing foreign workers or temporarily sending local engineers abroad. However, only 4 to 7 per cent of WTO members have made full commitments on market access for the presence of natural persons in computer-related services (WTO, 2002).

Apart from these market entry barriers, e-services exporters face a number of other (domestic) obstacles, including those related to technology, payments, infrastructure (telecommunications) and standards, most of which have been extensively covered in other chapters of this report as well as in the *E-Commerce and Development Report 2001*. While many of the recommendations made for addressing these obstacles could be implemented to support exporters of e-services, Governments would do well to consider the following measures:

- Facilitating foreign investment by reducing regulatory and procedural bottlenecks;
- Reducing customs duties on imports of IT-related products;
- Encouraging the establishment of venture capital funds for IT-related companies;
- Encouraging competition in the telecommunications sector;
- Taking all measures necessary to ensure a fast, high-capacity, reliable and cost-effective data communication infrastructure in the country and setting up technology parks compatible with world-class infrastructure;
- Adopting e-government practices, especially in the procurement of IT services;
- Harmonizing and ensuring consistency in taxation policies;
- Developing the country brand internationally and informing potential export markets and foreign investors of the capacities available domestically; and
- Stepping up efforts to enhance IT literacy, IT education and the number of IT professionals in the country; coordinating with private training institutes to increase course offerings in all technical and engineering fields; and encouraging the specialized training needed by the BPO sector.

Notes

1 See, for example, Lall and Wignaraja (1998), OECD (1992), UNCTAD (1997), Lall (2000), Mahmood (1999), Bhattacharyya (2001), IDB (2001) and OECD (1998).

2 The latest productivity figures from the United States show 4.2 per cent growth from 2001 to 2002 (first quarter). Since the United States is emerging from a recession, it has been suggested that the increase is based on trend productivity growth linked to investments in the IT sector (The Economist, 11 May 2002).

3 Ministry of Information and Communication, Korea. See www.mic.go.kr.

4 "Other business services" include merchanting, operational leasing, legal services, accounting, management consulting, advertising, research and development, and architectural agricultural services. A number of developing countries do not yet classify their services using all of the major BPM5 categories; instead, they include many of their services statistics under "other business services".

5 It is important to note that this table excludes Hong Kong (China), which reports only total services, not subcategories. Since Hong Kong is one of the major developing-country services exporter – in 2000 it accounted for $41 billion (almost 3% of world exports and 14% of developing country exports) – all developing-country export values and market share figures are significantly lower in this table than in the tables providing total services export figures.

6 Include computer (hardware- and software-related) and information services. It should be noted that the database does not include countries (e.g. India) which have classified computer-related services as "other business services" and hence do not provide any data under this category.

7 Include audiovisual, educational and health services.

8 Include postal and courier services and telecommunication services.

9 Include franchises and similar rights such as those related to registered trademarks; and payments for the authorized use of copyrights, patents, industrial processes and designs. Furthermore, royalties and license fees include those related to software transactions; hence, some of the computer-related services (i.e. software) are included in royalties. A survey carried out by the OECD on the measurement of software in the national accounts revealed that in the countries responding to the question, royalties as a proportion of total software trade (including software goods) ranged between 6 per cent and 62 per cent (median 25%) (exports) and 22 per cent and 59 per cent (imports) (OECD, 2002). Hence, royalties play an important role in identifying and measuring trade in software services.

10 According to the BPM5 classification, purchases by individuals that are paid for by credit card are usually classified as "travel". Hence, most of the business-to-consumer e-commerce is not captured in the different categories of services trade.

11 While the insurance sector has the potential to be greatly transformed by ICT, it is also heavily concentrated on domestic markets, which explains its low export growth rates compared to other e-services. See chapter 8.

12 Include merchanting, legal, advertising, accounting, taxation, research, medical, architectural, consulting, agricultural and waste treatment services.

13 An RCA of more than indicates services that account for a larger share of the country's exports than the share these services account for in world trade.

14 Much of the following analysis is based on growth rates during the five-year period 1995-2000. It should be noted that during this time period there was a general slowdown in world exports of services, including all of the services discussed here (except for financial services). In addition, many Asian countries were severely affected by the Asian financial crisis of 1997. At the same time, data for the 10-year period are not available for most of the countries; hence the five-year period was chosen.

15 Some countries (e.g. India) include computer-related services in "other business services"; or, as was mentioned earlier, the "royalties and license fee" category may also cover software trade to some extent (see OECD, 2002).

16 Data provided to UNCTAD by Costa Rica's Ministry of Foreign Trade.

17 In 1998, Intel built a $500 million, 400,000-square-foot manufacturing plant outside San José, employing 2,000 workers producing primarily Pentium II microprocessors. Other high-tech and IT companies followed, taking advantage of Costa

Rica's investment-friendly environment. For more information on foreign direct investment and Intel's operation in Costa Rica, see DOI (2001), Tacsan (2001), www.offshorecostarica.com and www.american.edu/carmel/LD4718A/Computer.html.

18 IT-enabled services are also growing: in 1998, Acer, a computer and IT company based in Taiwan Province of China, moved its technical support call center from California to one of the Costa Rican free export zones, creating employment for around 600 workers.

19 The plan aims at obtaining the internationally recognized ISO 9000 quality certification for locally produced software. See www.iadb.org for further details.

20 These include discriminatory tax treatment for foreigners, excessive capital transfer and/or repatriation taxes, and restrictions on or excessive requirements for temporary entry and exit of specialized technical personnel (WTO, 2001c).

21 India's software industry is largely based on software services. According to an estimate by Heeks (1998), less than 5 per cent of India's software exports are based on packaged software. In 2002, India has only been able to capture 0.2 per cent of the United States software package/product market. Until the late 1990s, the majority of software exports (more than 50%) were provided on-site (i.e. based on the movement of labour to foreign sites); today, an increasing share of software services is being provided "off-shore" (i.e. from within the country) ("NASSCOM forecasts Indian software exports to clock 30% growth in financial year 2002-2003", available at www.nasscom.org).

22 In our previous analysis (section C), India does not appear in the statistics. This is explained by the fact that India does not report "computer-related services" as a separate services category; instead, it includes software-related services in the "other business services" category, which, as a result, has experienced average annual growth of 22 per cent (1990-2000) or 47 per cent (1995-2000). In other words, software exports have been India's most dynamic export sector.

23 "NASSCOM – McKinsey Report 2002", press release, available at www.nasscom.org.

24 NASSCOM (2001) defines IT-enabled services as "business processes and services performed or provided from a location different to that of their users to beneficiaries and delivered over telecommunication networks and the Internet".

25 See Indiatimes Infotech "BPO: Nuts and Bolts", www.infotech.indiatimes.com/enterprise/emergintech/bpo.htm

26 Based on IDC estimates (as provided in "The BPO Boom", *Businessworld*, 14 January 2002), India's share could go up to 3.8 per cent; this would be significantly higher than the estimate for IT-enabled services provided by NASSCOM-McKinsey.

27 At the end of 2001, General Electric Capital Services India was the largest IT-enabled service provider in India, employing 10,000 workers. See www.renodis.com/media/siliconindia/SiliconIndia 4.htm.

28 See www.nasscom.org/mediaroom/press-releases.asp.

29 It is expected that in the future firms will outsource, for example, not only their payroll function but their whole human resources department ("IT-enabled services hitch on to BPO bandwagon", 25 March 2002, at www.express-computer.com).

30 In September 2000, the Ministry of Finance of the Government of India issued a notification listing a large number of IT-enabled services that would be exempted from income taxation. For details see www.nasscom.org/it_industry/gov_incentives.asp.

31 "IT enabled services not perturbed by recession", www.careerindia.com/careerhub/news/may/16shift. html.

32 This would require commitments to be taken under the GATS on market access (for example, the removal of quantitative restrictions) and national treatment (for example, the removal of discriminatory taxation). For example, in computer-related services, only about 50 countries made commitments in mode 1 (cross-border supply), and of those only half made full commitments, meaning unrestricted market access and full national treatment (Mattoo and Schuknecht, 2000). In data-processing services, 66 WTO members have made commitments, 61 per cent of which are full commitments; in accounting, auditing and bookkeeping services, 67 members have made commitments, 24 per cent of which are full commitments; and in legal services, 56 members have made commitments, 14 per cent of which are full commitments (Thompson, 1999).

33 It has been estimated that the professionals-to-clients ratio in software packages is 1:1000, whereas in software services it is 1:25 (UNCTAD, 2001).

References

Balassa B (1965). Trade liberalization and "revealed" comparative advantage. *The Manchester School of Economic and Social Studies*, vol.33 (2): 99-124.

Bhatnagar P (1999). Electronic commerce, trade and development. *Development Policy Review*, vol. 17: 281-291.

Bhattacharyya B (2001). Export performance: Increasing competitiveness through new sources of productivity growth. Paper presented at ESCAP, Bangkok, March.

Digital Opportunity Initiative (DOI) (2001). *Creating a Development Dynamic: Final Report of the Digital Opportunity Initiative*. See www.opt-init.org/framework.html.

Forrester (2002). US Outsourcing Decelerates. Techstrategy Report. February. See www.forrester.com.

Heeks R (1998). The uneven profile of Indian software exports. Development Informatics Working Paper No. 3, October, Institute for Development Policy Management, University of Manchester.

Hyder E, Kumar B, Mahendra V, Siegel J, Gupta R, Mahaboob H, and Subramanian P (2001). The capability model for IT-enabled outsourcing service providers. School of Computer Science, Carnegie Mellon University, Pittsburgh, Technical Report CMU-CS-01-162, November 19.

Industry Canada (2000). The Canadian Telecommunications Service Industry 1999-2000. See www.strategis.ic.gc.ca.

Inter-American Development Bank (IDB) (2001). *Competitiveness: The Business of Growth*. Economic and Social Progress in Latin America, 2001 Report. Washington, D.C, IDB and Johns Hopkins University Press.

Interamericana de Desarollo S.A (IDD) (2001). *Estudio sobre la industria de desarollo de software en Costa Rica*. San José, IDD, March.

International Labour Organization (ILO) (2001). *Life at Work in the Information Economy. World Employment Report 2001*. Geneva, ILO.

International Telecommunication Union (ITU) (2001). Various case studies on Internet use in developing countries. See www.itu.int.

International Trade Centre (ITC) (1999a). Foreign trade statistics: A guide for their use in market research. Research paper, Geneva, ITC.

International Trade Centre (ITC) (1999b). Tools for strategic market research. Research paper, Geneva, ITC.

Lall S (2000). Export performance and competitiveness in the Philippines. QEH Working Paper No. 49, August.

Lall S and Wignaraja G (1998). Mauritius: Dynamising Export Competitiveness. London, Commonwealth Secretariat.

Mahmood A (1999). Trade liberalisation and Malaysian export competitiveness: Prospects, problems and policy implications. Paper prepared for the International Conference on the Challenges of Globalisation, Thammasat University, Bangkok, Thailand, 21-22 October.

Mata FJ and Vartanián AJ (2001). *Programa de apoyo a la competitividad del sector de desarrollo de software de Costa Rica. Informe final: estudio de oferta y demanda del recurso humano*. San Jose, Costa Rica, June.

Mattoo A and Schuknecht L (2000). Trade policies for electronic commerce. World Bank Working Paper No. 2380. Washington, DC.

Mayer J, Butkevicius A and Kadri A (2002). Dynamic products in world exports. UNCTAD Discussion Paper No. 152.

National Association of Software and Service Companies (NASSCOM) (2001). IT enabled services. Background and Reference Resource. New Delhi, NASSCOM.

National Association of Software and Service Companies (NASSCOM) (2002). Software exports. See www.nasscom.org/it_industry/SW_export.asp.

National Statistical Coordination Board (NSCB) (2000). *Gross Value Added Services. Annual 2000*. Available at www.nscb.gov.ph/sna/2000/4q-2000/2000ser4.htm.

Organisation for Economic Co-operation and Development (OECD) (1992). *Industrial Policy in OECD Countries: Annual Review 1992*. Paris, OECD.

Organisation for Economic Co-operation and Development (OECD) (1998). Trends in OECD countries' international competitiveness: the influence of emerging market economies. Economics Department Working Paper No. 195, ECO/WKP(98)8.

Organisation for Economic Co-operation and Development (OECD) (2000). *Information Technology Outlook: ICTs, E-Commerce and the Information Economy*. Paris, OECD.

Organisation for Economic Co-operation and Development (OECD) (2002). Task force on software measurement in the national accounts: April 22-23, Point 4: Computer software: International trade flows. Paper prepared by Bill Cave. OECD/STD/TIAS 27/03/02.

Pavitt K (1984). Sectoral patterns of technical change: Towards a taxonomy and a theory. *Research Policy* 13 (6).

Tacsan R (2001). The potentials of leapfrogging in Costa Rica. Background paper for the *ILO World Employment Report 2001*, Geneva.

Thompson R (1999). Electronic commerce: Liberalising existing barriers to online services. Paper prepared for the World Services Congress, Atlanta, Georgia, November.

UNCTAD (2001a). *E-Commerce and Development Report 2001*. Geneva.

UNCTAD (2001b). Changing dynamics of global computer software and services industry: Implications for developing countries. Paper prepared for the Commission on Science and Technology, E/CN.16/2001/Misc.5.

UNCTAD (1997). Ways and means for improving the opportunities for the expansion of exports of goods and services from developing countries. TD/B/COM.1/13.

World Bank (2001). *World Development Indicators 2001*. See www.worldbank.org.

World Trade Organization (WTO) (2001b). *Computer and Related Services*. Council for Trade in Services. Communication from Costa Rica. S/CSS7W/129, 30 November.

World Trade Organization (WTO) (2001c). *Trade Policy Review Costa Rica*. Report by the Secretariat. WT/TPR/S/83, 9 April.

World Trade Organization (WTO) (2001a). *Assessment of Trade in Services: The Participation of Developing Countries*. Council for Trade in Services. Communication from Argentina. S/CSS/W/44, 29 January.

World Trade Organization (WTO) (2002). *Negotiating Proposal on Computer and Related Services*. Council for Trade in Services. Communication from India. S/CSS/W/141, 22 March.

ANNEX I

METHODOLOGIES EMPLOYED FOR MEASURING EXPORT COMPETITIVENESS

Revealed comparative advantage (RCA)

Revealed comparative advantage (RCA) is an indicator used to demonstrate the relative export performance of a country and an industry or product. It goes back to Balassa (1965), who defines RCA as a country's share of world exports of a good divided by its share of total world exports. RCA indicates the relative specialization and performance of manufacturing export industries.

If x_{ij} is the value of country *i*'s exports of product *j* and X_{it} the value of country *i*'s total exports, then the country's RCA index is calculated as follows:

$$RCA = (x_{ij} / X_{it}) / (X_{wj} / X_{wt})$$

where *w* denotes the world total. If the RCA is > 1, the country has a comparative advantage in the export of the product under consideration.

By comparing past export performance, the RCA allows the analysis of changing patterns of exports and thus identification of structural changes in the economy. It indicates shifts in specialization between industries, which, combined with an analysis of export market shares, can provide a good indication of a country's competitiveness.

Of course, the RCA measure has certain limitations. For example, it does not provide any information about future trends and potential shifts or about intra-firm cross-border exchanges, and it is calculated based on current prices. It is best used for products whose export figures are not distorted by incentives or trade barriers, which could affect the country's real comparative advantage. (Similar limitations apply for most trade indicators.)

Dynamic Export Products

Another common approach to measuring export competitiveness is to examine the composition of exports according to dynamism of demand. Goods with high dynamism of demand are considered as enhancing a country's competitiveness, whereas those with low dynamism are considered to negatively affect competitiveness. Dynamic products are defined as export products experiencing above-average growth rates (for all products) over a certain period. Another measure of dynamism is the growth rate of a product's share in world exports (Mayer, Butkevicius and Kadri, 2002). This takes into account the possibility that high growth rates based on export values may simply reflect an initial low base.

Measuring changes in a country's world market share (WMS) of dynamic products is a good way to assess its competitiveness. Changes in WMS are typically calculated as follows (ITC, 1999b, p.32):

$$\text{Changes in WMS}_{C,p,t} = \frac{\text{Exports}_{C,p,t} / \text{World exports}_{p,t}}{\text{Exports}_{C,p,t-1} / \text{World exports}_{p,t-1}}$$

where *C* is the country, *p* the product, *t* the year under review and *t-1* the previous year. If the index is > 1, the country has gained world market share, if it is < 1, it has lost WMS for the product under consideration.

Apart from looking at the change in WMS from one year to another (i.e. the WMS index), it is also useful to compare the actual percentage change in a country's WMS in exports of a particular product and analyse the trend share over a certain period. This analysis, combined with the WMS index, provides good insight into changes in the country's WMS over a certain time period.

"Rising stars" are countries that are gaining market shares in (globally) fast-growing products, the most desirable position according to this measurement. On the other hand, careful interpretation is necessary since in some cases losses in market share for one product can be accompanied by gains in market share for other products and thus a desirable change in competitiveness.

Technology content of exports

Since the early 1980s, high-technology goods have been the most dynamic export products worldwide, and a clear association between technology content and export dynamism has been observed. Therefore, studies analysing trends in manufacturing exports have usually focused on levels of technology as an indicator of competitiveness of industries.

One of the most common ways of characterizing levels of technology is by level of research and development (R&D) intensity, where high-technology industries are characterized by high R&D intensity and vice versa (Pavitt, 1984; OECD, 1992). Another classification used by the OECD is based on major factors affecting competitiveness in particular industries, such as access to natural resources, labour costs, the length of production runs, tailoring of products to demand and application of scientific advances. These variables are then used to classify industries into different groupings and examine changes in their export structure, using the above-mentioned methodologies, as a way of analysing the export competitiveness of particular industries and countries.

ANNEX II

INTERNATIONAL TRADE IN SERVICES, 2000

Country/Economy	Exports			Imports		
	Value ($ millions)	1990 - 2000 annual growth (%)	Share in world exports (%)	Value ($ millions)	1990 - 2000 annual growth (%)	Share in world imports (%)
United States	290 880	7.0	20.1	217 070	6.6	15.2
United Kingdom	117 437	8.7	8.1	95 162	7.9	6.7
Germany	83 886	3.6	5.8	134 018	5.5	9.4
France	81 740	0.2	5.6	62 628	0.0	4.4
Japan	69 238	4.8	4.8	116 864	3.7	8.2
Italy	56 116	2.4	3.9	56 172	2.6	3.9
Spain	53 382	7.3	3.7	31 151	6.7	2.2
Netherlands	53 299	6.2	3.7	53 517	5.5	3.8
Belgium	43 743	3.5	3.0	38 701	2.9	2.7
Hong Kong (China)	41 331	..	2.9	25 420	..	1.8
Canada	37 248	7.3	2.6	41 773	3.7	2.9
China	30 431	18.0	2.1	36 031	24.2	2.5
Austria	30 223	2.5	2.1	29 182	8.2	2.0
Korea, Republic of	29 697	13.4	2.1	33 423	12.2	2.3
Switzerland	27 450	4.0	1.9	15 481	4.0	1.1
Singapore	27 040	7.2	1.9	21 408	10.2	1.5
Denmark	20 489	3.4	1.4	18 297	5.9	1.3
Sweden	20 252	4.0	1.4	23 440	3.7	1.6
Turkey	19 484	10.8	1.3	8 149	13.6	0.6
Greece	19 239	..	1.3	11 286	..	0.8
Australia	18 346	6.6	1.3	18 025	3.8	1.3
India	18 331	14.7	1.3	19 913	13.7	1.4
Ireland	16 788	19.1	1.2	28 745	21.2	2.0
Norway	15 114	1.6	1.0	14 625	2.3	1.0
Israel	14 342	10.9	1.0	12 347	9.6	0.9
Luxembourg	13 877	..	1.0	10 520	..	0.7
Thailand	13 868	8.3	1.0	15 460	7.5	1.1
Mexico	13 756	4.6	0.9	17 437	3.6	1.2
Malaysia	13 511	14.7	0.9	16 726	11.8	1.2
Poland	10 392	13.1	0.7	9 000	11.6	0.6
Egypt	9 803	4.1	0.7	7 513	6.8	0.5
Russian Federation	9 632	..	0.7	17 352	..	1.2
Brazil	9 382	9.8	0.6	16 956	9.9	1.2
Portugal	8 415	6.0	0.6	6 652	5.6	0.5
Czech Republic	6 726	..	0.5	5 414	..	0.4
Hungary	6 252	10.3	0.4	4 476	7.8	0.3
Finland	6 061	5.0	0.4	8 347	1.2	0.6
Indonesia	5 213	7.5	0.4	15 011	8.8	1.1
South Africa	5 088	6.1	0.4	5 615	4.6	0.4
Saudi Arabia	4 785	5.6	0.3	25 262	-3.4	1.8
Argentina	4 536	7.4	0.3	8 871	10.0	0.6
New Zealand	4 326	6.5	0.3	4 511	3.9	0.3
Philippines	4 170	6.3	0.3	6 084	20.0	0.4

ANNEX II (*continued*)

Country/Economy	Exports			Imports		
	Value ($ millions)	1990 - 2000 annual growth (%)	Share in world exports (%)	Value ($ millions)	1990 - 2000 annual growth (%)	Share in world imports (%)
Croatia	4 084	..	0.3	1 827	..	0.1
Chile	3 931	8.5	0.3	4 488	8.7	0.3
Ukraine	3 800	..	0.3	3 173	..	0.2
Dominican Republic	3 228	11.3	0.2	1 373	12.6	0.1
Cyprus	3 200	5.1	0.2	1 160	5.9	0.1
Morocco	3 034	5.8	0.2	1 884	3.3	0.1
Tunisia	2 767	6.6	0.2	1 219	3.0	0.1
Viet Nam	2 702	..	0.2	3 252	..	0.2
Slovakia	2 241	..	0.2	1 805	..	0.1
Bulgaria	2 175	12.2	0.2	1 669	9.6	0.1
Colombia	2 058	1.7	0.1	3 295	7.6	0.2
Kuwait	2 041	5.0	0.1	4 939	2.7	0.3
Jamaica	2 026	7.8	0.1	1 432	8.6	0.1
Bahamas	2 023	2.9	0.1	975	7.3	0.1
Slovenia	1 886	..	0.1	1 450	..	0.1
Panama	1 830	5.6	0.1	1 138	4.7	0.1
Romania	1 767	11.2	0.1	2 021	11.4	0.1
Syrian Arab Republic	1 700	5.4	0.1	1 667	5.6	0.1
Peru	1 572	9.3	0.1	2 355	8.4	0.2
Estonia	1 499	..	0.1	959	..	0.1
Uruguay	1 354	9.9	0.1	900	7.9	0.1
Venezuela	1 237	0.9	0.1	4 255	3.7	0.3
Latvia	1 212	..	0.1	770	..	0.1
Kazakhstan	1 135	..	0.1	2 165	..	0.2
Malta	1 104	4.5	0.1	873	5.5	0.1
Mauritius	1 071	8.9	0.1	746	6.0	0.1
Lithuania	1 059	..	0.1	679	..	0.0
Iceland	1 049	7.0	0.1	1 165	7.7	0.1
Aruba	1 032	9.2	0.1	679	21.5	0.0
Belarus	993	..	0.1	432	..	0.0
Kenya	968	-2.1	0.1	725	1.2	0.1
Sri Lanka	939	7.4	0.1	1 621	9.1	0.1
Ecuador	849	3.5	0.1	1 256	4.0	0.1
Bahrain	830	6.8	0.1	683	2.7	0.0
Bangladesh	815	7.3	0.1	1 620	8.6	0.1
Guatemala	810	5.1	0.1	842	8.1	0.1
El Salvador	674	8.0	0.0	952	12.1	0.1
United Republic of Tanzania	615	18.3	0.0	670	11.5	0.0
Paraguay	589	5.2	0.0	425	1.0	0.0
Myanmar	526	25.0	0.0	514	26.9	0.0
Bosnia and Herzegovina	508	..	0.0	347	..	0.0
Ethiopia	506	6.7	0.0	491	4.7	0.0
Nepal	506	12.4	0.0	200	0.6	0.0
Ghana	504	19.0	0.0	597	7.7	0.0
Honduras	462	12.7	0.0	577	9.8	0.0
Albania	448	32.8	0.0	429	20.6	0.0

ANNEX II (*concluded*)

Country/Economy	Exports			Imports		
	Value ($ millions)	1990 - 2000 annual growth (%)	Share in world exports (%)	Value ($ millions)	1990 - 2000 annual growth (%)	Share in world imports (%)
Côte d'Ivoire	436	-1.9	0.0	1,216	-0.6	0.1
Antigua and Barbuda	415	3.3	0.0	164	5.5	0.0
Madagascar	364	9.6	0.0	522	8.2	0.0
Maldives	349	14.4	0.0	110	12.0	0.0
Mozambique	325	10.9	0.0	446	7.4	0.0
Saint Lucia	309	7.9	0.0	118	5.3	0.0
Yugoslavia	303	..	0.0	358	..	0.0
Nicaragua	300	18.5	0.0	339	11.6	0.0
Oman	283	32.8	0.0	1,501	7.8	0.1
Azerbaijan	260	..	0.0	485	..	0.0
Bolivia	224	5.6	0.0	468	4.8	0.0
Georgia	206	..	0.0	216	..	0.0
Belize	172	2.8	0.0	120	5.5	0.0
Cambodia	170	..	0.0	244	..	0.0
Moldova, Republic of	164	..	0.0	207	..	0.0
Grenada	151	8.5	0.0	83	10.0	0.0
Saint Vincent and the Grenadines	126	11.9	0.0	60	8.1	0.0
Saint Kitts and Nevis	97	5.1	0.0	74	9.1	0.0
Suriname	91	10.2	0.0	216	2.4	0.0
Dominica	88	11.9	0.0	51	7.3	0.0
Swaziland	74	-0.7	0.0	177	0.4	0.0
Anguilla	65	5.8	0.0	41	10.0	0.0
Kyrgyzstan	62	..	0.0	149	..	0.0
Rwanda	62	..	0.0	181	6.0	0.0
Lesotho	43	2.9	0.0	43	-6.1	0.0
Sudan	27	-15.0	0.0	648	6.9	0.0
Montserrat	16	-2.7	0.0	19	6.4	0.0
Burundi	6	-12.4	0.0	43	-14.4	0.0
Developing Countries	**308 210**	**10.1**	**21.1**	**340 211**	**7.9**	**23.6**
Developed Countries	**1 153 654**	**5.8**	**78.9**	**1 098 811**	**5.6**	**76.4**
World	**1 461 865**	**6.6**	**100.0**	**1 439 022**	**6.1**	**100.0**

Source: IMF Balance-of-Payments Statistics.

Printed at United Nations, Geneva
GE.02-51847–October 2002–4,400

UNCTAD/SDTE/ECB/2