

Risk E-Business: Seizing the Opportunity of Global E-Readiness

August 2000

A Report Prepared By



in collaboration with



Risk E-Business: Seizing the Opportunity of Global E-Readiness

August 2000

OVERVIEW

The world entered the 21st century on a wave of technology optimism. Far from bringing the world to a halt at the end of 1999, information and communications technologies (ICT) seem capable of generating a new level of global prosperity. Around the world, ICT-led growth is raising productivity, creating jobs, and increasing incomes.

This ICT-led expansion is at risk, threatening the global economy. Global e-society stands at a turning point. Action or inaction by national governments and industry leaders will produce a very mixed set of outcomes. Some countries will make technology a driver for a new national economy, leaping from an agrarian or industrial base into the knowledge economy. Others will fail to take the necessary steps and will be left behind in the race for cyber markets.

This report examines 42 critical economies for their E-Readiness – their capacity to participate in the global digital economy.¹ The countries were selected because they represent the source of the next phase of world economic growth. They comprise nearly three-quarters of the world's population and a quarter of the world's GDP. Businesses whose supply chains or marketing plans require e-commerce in these countries must move quickly in an environment rich with risk and opportunity.

These 42 critical economies have recognized the potential of ICT, but many have a great deal of work ahead. Twenty-three have at least two areas where substantial improvement is needed.² Without significant progress over the next three years, these countries will face great challenges in catching up with the global leaders.

A failure of key countries to act promptly would have an impact far beyond their borders. Nations and businesses around the world need these markets to prosper. The recent economic expansion has been enabled by the exponential growth in value that comes with connecting more people and organizations to the global network. ICT-led growth does not come from buying computers, but from connecting them to each other. The network can transform economic, political, and social relationships, but without the rapid participation of increasing numbers of

¹ The countries are: Argentina, Brazil, Bulgaria, Chile, China, Costa Rica, Czech Republic, Ecuador, Egypt, Estonia, Ghana, Greece, Hungary, India, Indonesia, Italy, Kenya, Latvia, Lithuania, Malaysia, Mexico, Nigeria, Pakistan, Peru, Philippines, Poland, Portugal, Romania, Russia, Saudi Arabia, Slovakia, Slovenia, South Africa, South Korea, Spain, Taiwan, Tanzania, Thailand, Turkey, Ukraine, Venezuela, and Vietnam.

² Countries are rated in five areas: Connectivity, E-Leadership, Information Security, Human Capital, and E-Business Climate.

people around the world, the global economy will stagnate and the potential of the networked world will be unrealized.³

It is true that, even in countries with red ratings, there are pockets of amber and even blue.⁴ These pockets represent significant short-term opportunities for global e-business. The longer-term picture is more mixed. Extensive conversations with governments and business around the world reveal a troubling tendency among many to dismiss the level of effort and the speed of action needed to join the networked world. This tendency is exacerbated by a myopic view of the state of national E-Readiness in some capitals. The ratings in this report reflect the situation in each country as a whole. The low ratings in many countries highlight the toughest challenge, that of expanding the benefits of the network from the few to the many within each country.

In contrast to the tendency of some to underestimate the work needed, the most successful economies rated demonstrate great attention to moving quickly and getting the details right. In these countries, progress is promoted by strong industry and government leadership and is sustained by dynamic public-private partnerships. These leaders are creating new, responsive models of governance and are pointing the way forward.

In each area considered, the ways to improve are relatively clear. Increased *connectivity* requires an environment that encourages private sector investment. Effective *e-leadership* depends on effective government-industry partnerships. Improved *information security* entails clear, enforced legal frameworks and public education about security. The development of *human capital* necessitates incentives to attract, train, and retain the best technical and managerial talent. A world-class *e-business climate* exhibits competition, transparency, predictability, broad participation, and an up-to-date financial services infrastructure.

The networked economy has just begun. The world is at an early stage of the revolution that information and communications technology is creating. When every person and device is connected to the network, economic, political, and social relationships will change forever. The balance between intellectual and material power, the concept of privacy, the nature of information ownership, and the purpose of travel will be transformed.

The potential of the network to assist in bringing prosperity to all nations is enormous. Exciting opportunities abound in each of the countries analyzed in this report. Diligent firms will examine each specific situation carefully and make sound investments, turning knowledge of risk into comparative advantage. Attentive governments will remove barriers to competition and leverage market-led growth to the benefit of all citizens. Sustained progress requires collective action at Internet speed, but with traditional care.

³ A description of the potential of the networked world can be found in *Living in the Networked World*, Computer Systems Policy Project, www.cspp.org.

⁴ Countries are rated on a blue-amber-red scale. Blue indicates that the majority of conditions are suitable to the conduct of e-business and e-government. Amber indicates that improvement is needed in the conditions to support e-business and e-government. Red indicates that substantial improvement is needed in the conditions necessary to support e-business and e-government. Blue is used for the highest rating rather than green, because no country is ever completely e-ready.

PURPOSE

This report assesses the current E-Readiness of 42 critical national economies. It provides an independent public assessment of the most important economic question of the early 21st century: “Who is poised to prosper in the networked economy?”

“E-Readiness” measures the capacity of nations to participate in the digital economy. E-Readiness is the source of national economic growth in the networked century and the prerequisite for successful e-business. Neither countries nor companies can prosper unless the basic building blocks are in place. For countries that have taken the basic steps, the pace of change makes complacency a constant danger.

This report will --

- Promote awareness of the need for action to increase E-Readiness throughout the world.
- Focus attention on where action is needed most.
- Help companies evaluate international e-business opportunities, whether B-to-B, B-to-C, or B-to-G.⁵
- Encourage countries to improve the climate for e-business and move forward on e-government.
- Establish clear E-Readiness evaluation criteria that apply across nations.

The assessment was developed with the assistance of governments and in-country experts from private industry in the countries rated. Global leaders in information technology strategy and development reviewed the results. The methodology is discussed further at the end of this report.

⁵ Business to business, business to consumer, business to government.

THE E-READINESS ATTRIBUTES

Assessing the capacity of nations to participate in the new economy is an art, not a science. Statistics abound but must be viewed with skepticism. Rapid changes in technology and markets quickly make most statistics out of date. Existing statistical categories overemphasize the old economy and old technology. Numbers are blind to cultural differences. Because of these shortcomings in the data, a robust approach must take into account a broad range of qualitative and quantitative factors. This report does so, based on the latest information available globally and locally. Its conclusions are current.

The Global E-Readiness Summary on page 11 provides ratings by country for each attribute. The E-Readiness ratings combine a dynamic evaluation of the relevance and accuracy of available quantitative data with an understanding of myriad cultural, institutional, and historical factors relevant to the actual situation in each country. The ratings measure status and progress on five interrelated attributes:

- Connectivity
- E-Leadership
- Information Security
- Human Capital
- E-Business Climate.

The ratings are by nature general, not definitive. They provide an initial basis for understanding what is in each case a complex situation. In order to make sound business or policy decisions, companies and countries must focus on the many underlying details that, when considered together, produce the conditions described by these ratings.

Connectivity

Are networks easy and affordable to access and to use?

The ability to exchange information, goods, and services with the rest of the world, including affordable information and communications technology and services, reliable electrical power, and a reasonable transportation system for people and goods, is a necessary but not sufficient condition for participation in the networked economy. Connectivity addresses the overall availability and reliability of these infrastructures. Key elements include:

- Availability of wireline and wireless communication services, community access centers (free and paid), and networked computers in businesses, schools, and homes.
- Affordability and reliability of network access, including the cost of service, downtime, and the prevalence of sharing access among individuals.
- Underlying infrastructure, including the reliability of electrical supply for business-critical computer operations, and the ease of importing and exporting goods and of transporting them within a country.

As the ratings show, few of the economies assessed have the infrastructure necessary to be full participants in creating and disseminating information. Twenty-five of these critical

economies, representing nearly 3.6 billion people, require substantial improvement in their connectivity. In the remaining 17, conditions are marginally better, and 11 of these are demonstrating improvement.

The explosion of mobile access to the network will help change this picture. Over eight million new wireless subscribers are signing up for service each month, most of them outside developed markets. Within 24 months, wireless will become the dominant form of access to the network in the rated countries, as new arrivals choose the ease of wireless networking from a handheld device rather than a sometimes intimidating and more expensive computer keyboard.

Wireless will not bridge the digital divide. However, wireless access to network services, coupled with the general rising demand for connections, will create huge opportunities and challenges for network service and content providers. The small screens on handheld, mobile devices and the more limited bandwidth of most developing country wireline connections require a very different way of thinking about design than the large screen, high bandwidth PC-based environment.

The broad benefits of e-business and e-government will not be available without substantial investments in infrastructure. These investments must be made by the private sector, which requires a suitable investment climate. Critical to that climate, and to affordable communications service, is the ability to compete. Where monopolistic telecommunications suppliers remain in place, progress will be slow.

E-Leadership

Is E-Readiness a national priority?

National progress on E-Readiness depends on industry to supply solutions that are responsive to the specific needs of each market. But without the commitment of national governments partnered with industry to create conditions favorable for advancement, progress will be slow and uneven. Leadership is not the same as control. Government's principal role is to create an environment that encourages private sector action, while protecting consumers.

E-Leadership addresses the scope and nature of government and industry efforts to promote the networked world within a country and to promote the country as a regional or global center in the networked world. (The current regulatory and institutional environment for e-business is rated under E-Business Climate, below.) Key elements include:

- Priority given by government to promoting the development of an e-society on a national level.
- Extent of demonstrated progress on e-government, including efforts to automate governmental processes.
- Quality of partnerships between industry leaders and government to improve E-Readiness.
- Level of effort to promote access for all citizens.

Only a few rated countries are benefiting from strong e-leadership, demonstrating a limited awareness of the critical importance of helping their countries move forward quickly into the new economy. Some governments are beginning to automate their own processes, and a few are offering online services to citizens. A growing number of governments are creating public-private councils that work together to meet national goals. For the most part, efforts to assure access for all citizens have not reached much beyond the discussion stage. In other countries, recent changes in national leadership have interrupted ongoing initiatives and slowed the rate of progress.

The assessments reflect the perspectives of government and industry experts in the rated countries. Their often-conflicting views make it clear that, unless government leaders are proactive in taking the initiative to establish a national information technology policy and strategy, private sector buy-in will be weak, and program development and implementation haphazard.

Information Security

Can the processing and storage of networked information be trusted?

A vital aspect of E-Readiness is the level of information security that an emerging market can assure. At base the question is one of trust. Obsolete laws or weak enforcement to protect the creation, maintenance, and dissemination of information make an inhospitable environment in which to conduct e-business. Poor protection of intellectual property can stunt the growth of the national software development industry. Inadequate protection of personal data creates barriers to information exchange. Failure to recognize electronic signatures or to permit the use of encryption undercuts trust in the new ways of doing business. Key elements include:

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

Protection of intellectual property is essential to promote local e-business. Without confidence that they will be rewarded for their work, content creators – from artists to software engineers – have little incentive to create, hampering the development of local content and a strong local software industry. Similarly, foreign e-businesses must factor in the risk of loss of intellectual property when evaluating investment opportunities. In many of the countries evaluated, software piracy remains a serious issue.

Expectations of privacy vary widely across cultures. As e-business continues to expand globally, the need for harmonization of the methods and extent of privacy protection will grow. Although some degree of online privacy will ultimately be recognized as a basic human right, in most of the rated countries today, e-businesses must stay abreast of the specific privacy laws and norms in each market, and individuals have little assurance that their personal information will be treated with any great respect.

In the face of cyber crime, many countries expect to rely on standard copyright, personal property, and consumer protection laws, the majority of which predate the birth of cyberspace, and have yet to be tested in a court of law. After it was unable to fully prosecute the student responsible for the global “I Love You” virus and the estimated \$8 billion⁶ in damages that it caused, the Philippine government took steps to create enforceable laws to punish cyber crimes. A few other countries have initiatives underway to address this concern.

Nations should enact and enforce laws governing data interception and interference, fraud, and forgery via computer systems and the Internet. European nations’ security standards may benefit from the Council of Europe’s Draft Convention on Cyber-Crime. While harmonization of laws is essential to global e-commerce, the current draft Convention is overly broad, in part because of the absence of a thorough public discussion on its contents.

Digital signatures, encryption, and the infrastructures to support their use are becoming essential for further growth of e-business. Several countries have recently adopted laws that recognize the validity of electronic signatures, and most countries do not regulate the use of encryption. In only a few countries is a coordinated national effort underway to establish the public key infrastructure that is necessary to support the widespread use of these tools.

India and Malaysia serve as two examples of countries that have been particularly forward-looking in the realm of information technology legislation. Both are notable for the comprehensiveness of recently enacted legal frameworks designed to create predictability about information security.

Human Capital

Are the right people available to support e-business and build a knowledge-based society?

The world faces an incredible need for more qualified people. Shortages are greatest in four areas: managers capable of completing complex technology projects; policy analysts who understand government regulation’s tendency to dampen business, particularly in a changing technology environment; local content creators aware of the network’s potential; and, software, hardware, and communications engineers. Beyond a cadre of skilled partners, e-business needs a population that is able to use the network and is interested in it. Key elements include:

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

As the ratings show, intellectual capital is the greatest strength of the countries rated. Many of these economies are long time participants in the global economy, and enjoy great cultural and intellectual traditions. Although they may be coming late to the networked world,

⁶ Monetary figures in this report are in US dollars.

they are positioned to leap from agrarian or industrial economies to knowledge economies, provided their institutions and people are agile and open to change. The more successful countries, often with private sector assistance and leadership, will invest heavily in raising general public awareness and in promoting technological education. Such investments create increased interest and skills, and produce long-term economic growth.

Another important approach is the tailoring of immigration policy to welcome skilled high-tech workers from abroad. This is of course a two-way street – the other side being the negative impact of losing good technical people to other countries. International competition for skilled workers will only increase as the knowledge economy expands. Imagination in the use of incentives to educate, attract, and retain skilled people will weigh heavily in nations' future economic success.

E-Business Climate

How easy is it to do e-business today?

While a nation's connectivity, e-leadership, information security, and human capital can each contribute to the quality of the e-business climate, this fifth criterion is not a summary of the other four. E-businesses operate in a complex context of regulatory policies and institutional arrangements that set and enforce the rules of private action in a competitive marketplace. Where policies and practices favor e-business, returns on investment will be higher. Where competition is stifled or the rule of law is weak, investors rightly demand greater premiums for risk. Key elements include:

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

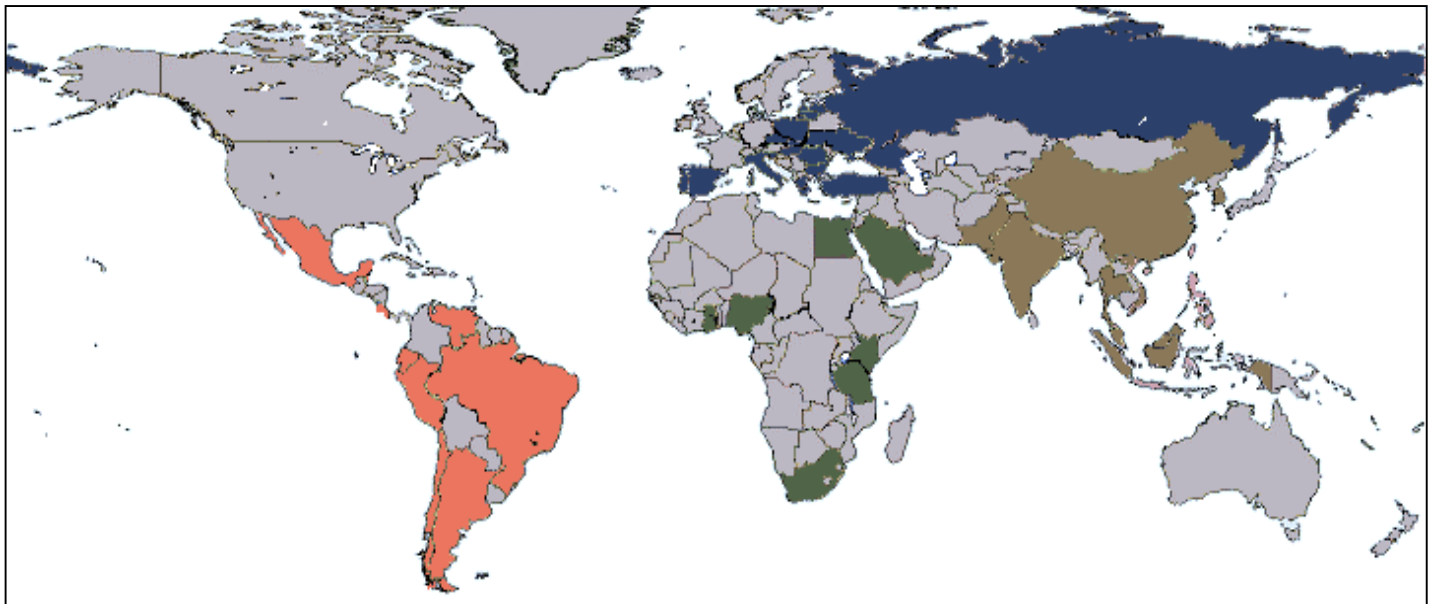
The ratings show that much work is needed to promote a sound climate for the development of e-business, even in countries where the leadership has recognized the need to act. Although most countries are trying to open up markets to maximize competition and opportunity, many internal obstacles remain. Privatization, effective competition, and the independent regulation of telecommunications services are understood by most governments to be necessary for success. Actual progress is often slow, as incumbents often yield their monopoly positions reluctantly.

The degree of regulation of Internet service providers ranges widely. Where governments attempt to curb market entry or control content, investors and entrepreneurs will display increasing reluctance as better opportunities emerge elsewhere. Electronic transactions remain generally exempt from special taxes, but must remain so for progress to continue. Similarly, enabling investment and participation from foreign firms interested in forming strong local partnerships is critical to success.

Predictability is of great value to business. Today's fast changing economic and technology environment creates great uncertainty, and increase the risk to investors. This situation increases the value of predictability in governance. Openness and transparency in governmental decision-making, coupled with a legal system that is clear and evenly enforced, will attract private capital and promote local entrepreneurship. Attention to the rule of law and open government can be a crucial competitive edge in the networked world.

A variety of multilateral private and public initiatives are underway to improve the e-business climate in the countries listed. Some of these are industry-led, such as the Global Business Dialogue on E-Commerce and the Global Internet Project. Others, such as the efforts of the United Nations Economic and Social Council and the European Union are government-led. The recent announcement of the G8 nations (Canada, France, Germany, Italy, Japan, Russia, United Kingdom, and United States) of the creation of a Digital Opportunity Task Force (*dot force*) is of interest because of the international political weight behind it. Ultimate success will hinge on these groups' ability to partner with the governments of emerging economies and with industry.

MAP OF COUNTRIES ASSESSED



Orange: The Americas; Dark Green: Middle East and Africa; Dark Blue: Europe;
Brown: Asia and the Pacific; Gray: all countries that were not assessed.

The E-Readiness Attributes

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

- Availability of wireline and wireless communication services, community access centers (free and paid), and networked computers in businesses, schools, and homes.
- Affordability and reliability of network access, including the cost of service, downtime, and the prevalence of sharing access among individuals.
- Reliability of electrical supply for business-critical computer operations; and the ease of importing and exporting goods and of transporting them within a country.

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

- Priority given by government to promoting the development of an e-society on a national level.
- Extent of demonstrated progress on e-government, including efforts to automate governmental processes.
- Quality of partnerships between industry leaders and government to improve E-Readiness.
- Level of effort to promote access for all citizens.

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

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

Human Capital – Are the right people available to support e-business and to build a knowledge-based society?

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

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

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

Country	Connectivity	E-Leadership	Information Security	Human Capital	E-Business Climate
---------	--------------	--------------	----------------------	---------------	--------------------

The Americas

1 Argentina	A ↗	A	A	A	A ↗
2 Brazil	A	A ↗	A	A	R ↗
3 Chile	A ↗	A	A ↗	A	A ↗
4 Costa Rica	A	A ↗	R ↗	B	B
5 Ecuador	R	R	R	R	R ↗
6 Mexico	R ↗	A	A ↗	A	A
7 Peru	R	A ↗	A	R	A
8 Venezuela	R ↗	R ↗	R ↗	A	R ↗

Asia / Pacific

9 China	R	A	R	A	A
10 India	R	A ↗	A ↗	A	A
11 Indonesia	R	R ↗	R	R ↗	R
12 Malaysia	R ↗	B	A	A	A ↗
13 Pakistan	R	R ↗	R	R	R
14 Philippines	R	R ↗	R ↗	A	R ↗
15 South Korea	A ↗	A ↗	A ↗	B	B
16 Taiwan	A ↗	B	A ↗	B	B
17 Thailand	R	A	R	R ↗	R ↗
18 Vietnam	R	R ↗	R	R	R

Europe

19 Bulgaria	R ↗	A	R	A	R ↗
20 Czech Rep.	A ↗	A	A	A	R ↗
21 Estonia	A ↗	B	A	B	B
22 Greece	A	R ↗	A ↗	A	R
23 Hungary	A ↗	A ↘	A	B	A
24 Italy	A ↗	A	B	A ↗	A
25 Latvia	R ↗	R ↗	A	A ↗	A ↗
26 Lithuania	A	A	A	A	A
27 Poland	R ↗	A	A	A ↗	A
28 Portugal	A ↗	B	A ↗	A	A ↗
29 Romania	R	A	R	A	R ↗
30 Russia	R	R	R	A ↘	R
31 Slovakia	A	R ↗	A ↗	A	R ↗
32 Slovenia	A ↗	A ↗	A	A	R ↗
33 Spain	A ↗	A ↗	A ↗	A ↗	A ↗
34 Turkey	A	A	R ↗	A ↗	A
35 Ukraine	R	R	R	A ↘	R

Middle East/Africa

36 Egypt	R	A ↗	R	R ↗	R ↗
37 Ghana	R	A	R	R ↗	R ↗
38 Kenya	R	R	R	R	R
39 Nigeria	R	R	R	R	R
40 Saudi Arabia	R	R ↗	R ↗	R ↗	R ↗
41 South Africa	R ↗	A	A	R ↗	R ↗
42 Tanzania	R	R	R	R	R

LEGEND

B
A
R

Blue - indicates the majority of conditions are suitable to the conduct of e-business and e-government
 Amber - indicates improvement needed in the conditions necessary to support e-business and e-government
 Red - indicates substantial improvement needed in the conditions necessary to support e-business and e-government

up arrow
down arrow



↗ indicates improving relative to prior time periods
↘ indicates weakening relative to prior time periods

REGIONAL PATTERNS AND COUNTRY HIGHLIGHTS

The Americas

Argentina, Brazil, Chile, Costa Rica, Ecuador, Mexico, Peru, and Venezuela

The Americas present some favorable opportunities for e-business investment and growth. Nonetheless, it is important to exercise caution in the region, particularly because of inadequate improvements in the assurance of information security. While strong human capital and growing e-leadership show a foundation for progress, low connectivity and lack of investment incentives also require attention.

The ratings of the eight countries selected in the Americas indicate that the region's promise lies in its *E-Leadership*. Six of the eight countries rate amber⁷ or blue⁸ for this attribute, and half of the countries demonstrate that improvement is underway.⁹ For example, interactive online government services in Brazil enabled ten million of the nation's citizens to file their income taxes electronically last year. Peru has made progress in automating its government processes, and is making an effort to extend the telecommunications network to remote areas in 2000. Ecuador, rated red¹⁰ in this area, has not yet demonstrated the same level of progress. As in most countries, more attention needs to be placed on addressing the connectivity of all citizens.

The Americas' *Information Security* ratings indicate that much improvement is needed, with three of the eight countries rated red. Costa Rica provides an example of a country that has made substantial improvement in some areas, but remains red for this attribute due to its high rate of software piracy. In Brazil, one of the five countries rated amber, a bill providing for the protection of personal data under OECD guidelines was proposed in the Senate in 1996, but has yet to be voted on. Only Chile and Mexico, which have demonstrated progress by decreasing software piracy by over 25 percent since the mid 1990s, are rated amber with improvement.

While improvement is underway in the four countries assessed as red for *E-Business Climate*, slow progress on the privatization of national telephone monopolies remains a concern. Opportunity exists for private industry to take a more active role in persuading government to institute regulatory changes favorable to e-business. In Brazil, for example, private leadership could be focused on reducing the barrier created by the country's complicated tax structure. Costa Rica provides an example of initiatives that can improve human capital and e-business climate.

⁷ Amber indicates improvement needed in the conditions necessary to support e-business and e-government

⁸ Blue indicates conditions are suitable to the conduct of e-business and e-government

⁹ Up Arrow indicates improving relative to prior time periods. Down Arrow indicates weakening relative to prior time periods.

¹⁰ Red indicates substantial improvement needed in the conditions necessary to support e-business and e-government.

As a whole, the region indicates potential in *Human Capital*, with six of the eight countries scoring amber or blue. The most substantial efforts are needed in Ecuador and Peru, where a shortage of skilled management and technical personnel is a major hindrance.

In terms of *Connectivity*, Argentina and Chile are leading the way; while Argentina ranks slightly higher in terms of multimedia access, Chile's existing telecommunications infrastructure is state-of-the-art. In four of the six remaining countries, however, connectivity remains red. Without concentrated efforts to improve low Internet penetration rates, further e-business growth will be a challenge.

COSTA RICA

Spotlight on ... E-Business Climate and Human Capital

Costa Rica offers one of the more welcoming environments for e-business in the region. In the 1980s, the government took an important step towards fostering ICT development by removing import taxes on computer-related equipment. Although the country's telecommunications network is still government-owned, local, domestic long-distance, and wireless access rates are the lowest in the countries evaluated in this region.

The number of skilled local partners in Costa Rica is on the rise. In 1998, the government launched an aggressive campaign to upgrade IT facilities in schools and universities. As a result, management and technical training, led by a strong microchip manufacturing presence, has become increasingly available.

In addition, Costa Rica's government is currently spending \$2.5 million to increase the number of professionals in the education system and to improve the country's intellectual property regime.

Asia

China, India, Indonesia, Malaysia, Pakistan, Philippines, South Korea, Taiwan, Thailand, and Vietnam

Asia is highlighted by a few economies that have taken effective measures to attract e-business as part of their recovery from the so-called "IMF Crisis" of 1997-98. Lack of adequate information security, however, is the region's greatest drawback. In addition, large populations and land mass make broad participation in the digital economy a particular challenge.

One of Asia's greatest strengths has been its *E-Leadership*. Six of the ten economies are amber or blue for this attribute. "Build it, and they will come" is the premise behind Malaysian, Taiwanese, and South Korean government-led investments in multi-million dollar, state-of-the-art technology hubs. For these three countries, much progress is being made. Several of their neighbors, however, have been slow to follow suit.

In some parts of the region, the increasing presence of multi-nationals has fostered improvements in Asia's *E-Business Climate*. This is an important step, in an area where only half of the rated economies received an amber or blue for this attribute. Indonesia, Pakistan, and Vietnam, in particular, have yet to adequately address numerous investment obstacles.

Asia's *Human Capital* resources are strong. In addition to three economies rated blue, four are amber, showing that sufficiently skilled workforces are in place to drive E-Business forward. South Korea, for example, takes pride in its "gold card" immigration policy, designed to make immigration as easy and smooth a process as possible for the recruiting of high-tech experts, particularly software engineers from India.

Despite its progress in these areas, *Connectivity* in Asia remains an important issue. Eight of the ten economies are red. India, for example, even with its reputation as a software powerhouse, has one of the lowest tele-densities in the world, standing currently at approximately 1.5 lines per 100 persons. PC penetration is considerably lower, at approximately 0.2 per 100.

Information Security is not adequately addressed in six of the economies in the region. Although South Korea provides one example of a government's determination to confront the issue, only one of the six economies rated red demonstrates recent progress.

SOUTH KOREA

Spotlight on ... Information Security

In the nineteenth century, Korea's lack of openness to change at the onset of the industrial age created long-term economic hardship. In contrast, President Kim Dae-jung recently announced the promotion of e-business as a national priority, calling it the engine of growth.

As part of this initiative, the Korean government is aggressively pursuing improvements in information security. A new cyber crime office has been established in the Ministry of Interior. Rules for protecting individual information have been produced, with fines for violators. Laws are being developed to protect critical telecommunications and information processing centers by requiring compliance with security standards.

Recognizing the importance of intellectual property protection to the successful development of the domestic software industry, the government inspected each of its own computers and removed pirated software.

In addition, a significant effort is underway to establish a national public key infrastructure, which will enable the widespread use of digital signatures and encryption, promoting trust and confidence in electronic business and government interactions. Digital signatures were made legal in 1999, and three private sector and one governmental organization have already been certified by the government to issue and manage signature keys.

Central and Southern Europe

Bulgaria, Czech Republic, Estonia, Greece, Hungary, Italy, Latvia, Lithuania, Poland, Portugal, Romania, Russia, Slovakia, Slovenia, Spain, Turkey, and Ukraine

Central and Southern Europe is the most e-ready region considered. In particular, a highly skilled populace and reasonable information security considerably reduce e-business risks. Nonetheless, substantial room remains in many countries for improvement in the e-business climate, especially the regulatory environment.

Without a single red, the region's strength clearly lies in its *Human Capital*. Excellent educational and vocational training has been a regional tradition for centuries. Central Europe, in particular, is a very "risk-knowledgeable" society – entrepreneurs who are successful now have effectively overcome the adversity that resulted after the fall of communism. Hungary, for example, has been active in preparing its citizens for the networked world.

Information Security is also rated higher in this region than in the others. While only one country, Italy, is rated blue, 11 of the 17 countries in the region are amber. Slovakia, for example, has reduced software piracy by over 30 percent since 1994. Nonetheless, five countries have yet to demonstrate much needed improvements. Those rated red, Bulgaria, Portugal, Romania, Russia, Turkey and the Ukraine, will require substantial restructuring of their legal frameworks before the enforcement of legislation ensuring information security is a possibility.

HUNGARY

Spotlight on ... Human Capital

Hungary has invested heavily in ICT education, the effect being an ever-increasing base of highly skilled citizens. As a result of a government initiative begun four years ago, all secondary schools are connected through network computers.

Government spending on education totals approximately 4.4 percent of the nation's GDP, and over two-thirds of the country's workforce has completed some form of secondary, technical, or vocational education. Hungary is particularly strong in engineering, medicine, economics, and the natural sciences.

Hungary's private sector has also taken the important first step towards improving the general population's familiarity with Internet-based learning, as "telehouses," sponsored by businesses and government, and run out of municipal buildings, provide community Internet access free of charge.

E-Leadership is relatively strong in the region, with two countries rated blue. Of the remaining five countries rated red and ten countries rated amber; one third of these have demonstrated improvement initiatives underway. The remaining two-thirds need to be wary of the detrimental effects of inaction. Estonia provides a strong example of the E-Readiness success that can be achieved with government leadership.

Relative to per capita income figures, the nations of Central and Southern Europe have invested heavily in computers and ICT infrastructure. In most countries, wireless access is gaining momentum as well, and are set to outpace computers as the Internet access mode of choice in the within the next 24 months. Nonetheless, as is the case worldwide, the region's least

ready attribute is *Connectivity*. Six of the countries are rated red -- substantial improvement is needed.

Central and Southern Europe's *E-Business Climate* is mixed. Although successful government initiatives in Estonia have created a particularly strong IT presence that is actively seeking foreign business partners, eight countries in the region are red. Slow privatization of telephone monopolies has stalled efforts to improve competition in several of these countries.

ESTONIA

Spotlight on ... E-Leadership

Estonia has benefited greatly from a close relationship with its Scandinavian neighbors. Thanks to numerous government initiatives, connectivity is on a par with the most-connected countries. In February 2000, the Estonian parliament approved a proposal to guarantee Internet access, just as any other constitutional right, to each of its citizens.

Today, 28 percent of Estonia's population is connected to the Internet. Not only do 90 percent of public employees enjoy a computerized workplace, but by setting E-Readiness as a national priority, Estonia has been able to coordinate the efforts of dozens of associations dedicated to information society development.

Additionally, Estonia's government has been actively addressing equity issues by offering free Internet access points.

Middle East/Africa

Egypt, Ghana, Kenya, Nigeria, Saudi Arabia, South Africa, and Tanzania

Of the four regions, the Middle East and Africa presents the greatest challenge to e-business. Even taking into consideration the cultural propensity to share ICT access among multiple users, the thin infrastructure remains an enormous barrier to improvements in other areas.

The cost of Internet access relative to per capita income is a critical factor, along with inefficient transportation systems, inadequate treatment of *Information Security*, and low *Human Capital* levels. Although only seven countries have been assessed, the percentage of red across all five attributes, currently at 89 percent, would only increase with a more inclusive evaluation.

While the ambers in E-Leadership for Ghana and Saudi Arabia, and South Africa's two amber attributes are noteworthy, further short-term progress will be difficult given the fundamental lack of *Connectivity*. With nearly 15 percent of the world's population, the African continent possesses just two percent of the world's total number of telephones and less than 0.1 percent of all Internet users. There is, however, some progress. Five years ago, only five African nations even had Internet access; this year all 54 are connected. Africa has witnessed complementary growth in Internet host numbers, at nearly double the rest of the world's 18 percent rate. Ghana provides an example of how connectivity issues are being addressed.

A critical step in improving connectivity is investment in ICT. In 1999, the total combined ICT expenditure by Egypt, Saudi Arabia, and the Gulf States was US \$8.2 billion, or about three percent of their GDPs. In striking contrast, South Africa spent US \$10.6 billion or seven percent of its GDP.¹¹ This low spending can be attributed in part to a lack of *E-Leadership*. Although Saudi Arabian state institutions gained Internet access in 1994, it was not until January 1999 that the general population was granted access to the Internet. Egypt has taken a more liberal stance, although it was not until 1998 that it became legal for citizens to own a second telephone line. The Middle Eastern ICT market currently is moving forward, however, with both nations witnessing approximately 25-30 percent annual growth rates, the result of pent-up demand following the removal of government restrictions on Internet access.

The region's *E-Business Climate* is also mixed. Four of the seven countries received up

arrows in this indicator, although all nations still need substantial improvement. Much can be learned from South Africa's province of Gauteng, for example, which has approved plans to begin construction on an "Innovation Hub" -- an incubator and training center for rising high-tech enterprises. Modeled after similar undertakings in Asia, the project will include the creation of a "tech corridor" leading from Pretoria to Johannesburg.

GHANA

Spotlight on ... Connectivity

Through a 1994 private-sector initiative, Ghana was the first West African nation to attain connectivity to the Internet. Today, there are two national telecommunications operators, four cellular operators and five ISPs. Nonetheless, mobile phone and PC density remain at approximately 0.2 percent, and Internet users still constitute less than 0.1 percent of the population.

If recently announced government initiatives in Ghana materialize, however, the country's burgeoning telecommunications industry may soon bloom. The government has committed to two key public-private sector projects designed to connect 42 sites across the nation, utilizing wide area networks to connect key government ministries and agencies and to computerize all aspects of the public finance system. If enacted, this plan will be the first step towards sustainable ICT development in Ghana, and may create a regional model for its sub-Saharan neighbors.

¹¹ *Digital Planet 2000*, WITSA/IDC, forthcoming.

METHODOLOGY

The countries selected for this initial assessment are critical to the growth of the new economy. While the developed world is mostly e-ready, the 42 rated countries are positioned to have a profound impact on the new global economy. Collectively they represent nearly three-quarters of the world's population and the greatest potential markets.

These E-Readiness ratings are based on a methodology proven successful during the effort to manage the threat that Y2K posed to the global economy. In developing this report, trusted global networks of public and private sector experts collaborated internationally to shape the assessment tool and analyze each country's capacity to participate in the networked world. Over 300 individuals participated directly in this work.

Governments. MI consulted face-to-face with government officials from nearly a third of the countries being assessed, including personal visits to eight countries. For nearly all the remaining countries, MI discussed the ratings with government officials either over the phone or via e-mail.

In-Country Experts. In many countries, private industry played a key role in verifying and substantiating the ratings. These consultations were aided by the participation of the member associations of the World Information Technology Services Alliance (www.witsa.org).

Global Leaders. The results were reviewed by leaders in global information technology strategy and development:

- Carlos Primo Braga, Manager, Information for Development (*infoDev*), World Bank
- Sandra Callagan, Principal Administrator, Directorate General for Enterprise, European Commission
- James Dempsey, Center for Democracy and Technology
- John Hamre, President and CEO, Center for Strategic and International Studies
- Geoffrey Kirkman, Managing Director, Information Technologies Group, Center for International Development, Harvard University
- Ambassador Percy Mangoela, Chairman, United Nations Working Group on Informatics
- Harris Miller, President, World Information Technology Services Alliance
- Jonathan Peizer, Director, Internet Project, Soros Foundation

Although the ratings in this report were created using the methodology described above, they are the sole views of McConnell International LLC at the time of publication. McConnell International LLC provides these ratings as information only, and is not responsible for the consequences of any decisions made on the basis of these ratings.

RECOMMENDATIONS AND NEXT STEPS

No nation will become “E-Ready” overnight; and nations that are today’s e-leaders are not guaranteed to be tomorrow’s. However, due to the nature of the new economy, those nations and businesses that can adapt quickly to new technology, seize new opportunities, and take strategic risks will prosper. Less prepared economies have an opportunity to learn from the global community and leap to higher levels of preparedness.

Just as there was no silver bullet for Y2K, there is no one-size-fits all prescription for E-Readiness. No checklist of actions will guarantee that a nation will be a global e-player. There are, however, common trends, policies, and procedures that have proven to help quickly propel some nations toward E-Readiness. This report demonstrates that IT investments in education by Costa Rica and Hungary led to greater human capital and a lucrative software industry. Opening the telecommunication industry, as demonstrated by Chile and South Korea allows for improved connectivity and a better e-business climate. Cyber laws, as evidenced in India and Italy, are important steps towards effective information security. Other obvious actions include: de-regulation, transparency in governance, fostering competition, promoting wireless or alternative access, balanced and enforced regulation, and open financing.

These actions require strong leaders in both government and industry. More importantly they call for a new approach in solving problems that are at the intersection of business, government and technology: they call for public-private partnerships. Industry and governments must learn new ways to forge relationship that are truly mutually beneficial and that promote long-term sustained growth for all citizens of this networked world. The network model, bringing people together to collaborate across organizational and geographical distances, needs to be applied at all levels to promote global E-Readiness. Governments must build them within their nations and among the nations of the world. Businesses must learn to expand their networks to include local partners. And, these networks must come together to take action.

McConnell International is committed to fostering and tailoring global networks to promote E-Readiness. We plan to continue to lead nations and business to a better understanding of their potentials to prosper in the networked world. Our plans for the next six months include:

Updating country assessments. McConnell International will publish revisions to this assessment early next year. Interested parties can consult MI’s web page for information about this update.

Adding additional countries. McConnell International will expand its evaluation to include additional countries that are positioning themselves to be active players in the new economy. Responses to this report and requests from governments and industry will be considered in the country selection process.

Producing best practice guide(s). McConnell International has collected the computer crime laws of over 40 countries. These laws are being analyzed to develop a best practice guide for governments. Many governments have already requested this assistance, and MI is working with its corporate sponsors to produce this guide in

October. Additional corporate sponsors are still being considered, and new best practice guides are under consideration.

Forming a global public-private partnership. McConnell International will launch the International Internet Information Forum (*i3forum*) as the preeminent public-private partnership for collective international action on E-Readiness. The *i3forum* works by identifying common business problems among its member companies, and creating opportunities to solve those problems by working directly with selected governments. It will partner nations and businesses in order to accelerate electronic government, improve information security, and develop human capacity.

HOW TO USE THIS REPORT

Business and policy decisions cannot be made based on colors and comparisons alone. A lesson learned from Y2K is that details count. The MI E-Readiness Report provides companies and governments interested in the potential of the new economy with a distinctive panorama of global e-markets.

Companies get a dependable evaluation and timely comparison of new market risk and opportunities from a reliable source, one that came closer than most to predicting the outcome of Y2K. Firms whose supply chains or marketing plans require e-commerce in these countries must move quickly in an environment rich with risk and opportunity. Companies looking to expand e-business in a country or region need to understand their risks and weigh them with the benefits of being first to market and long term growth potential.

Governments receive an independent evaluation of their economy's readiness for the digital economy, the ability to compare readiness with other countries, and the chance to promote their progress to the global community. Governments interested in reducing their information security risks, expanding their e-leadership, cultivating human capital, opening their infrastructure, and creating a more favorable e-business climate need to develop concrete action plans and the means of cooperating with private sector leaders.

McConnell International can --

- Provide in-depth insight and analysis on the risks, opportunities, and e-market potential of particular countries, regions or industry sectors.
- Produce detailed comparisons across countries on strengths, successes, and shortcomings.
- Design strategic action plans to enable firms and nations to accelerate their growth in the networked world.
- Create tailored, trusted, global networks of internal and external partners to share best practices and solve tough business and policy problems.
- Identify reliable partners and opportunities for collaboration in countries around the world.

* * *

McConnell International LLC is owned and managed by Bruce McConnell and Roslyn Docktor. These principals led the International Y2K Cooperation Center (www.iy2kcc.org) and the global effort that averted the threat posed by Y2K. They have a world-class track record of solving complex information security and technology policy problems for large organizations.