CHAPTER 1.1

How Networked Is the World? Insights from the Networked Readiness Index 2009–2010

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A year ago, when the last *Global Information Technology Report* (GITR) was going to print, the world was on the brink of a global recession. There was widespread concern that the financial meltdown of autumn of 2008 would soon make its effect felt on the real economy and drag down investments in all sectors, including information and communication technologies (ICT). There was a fear that the largest emerging economies were not strong enough to pull the world out of recession and start leading a course toward recovery. A year later, in early 2010, the economic outlook appears rosier. Thanks to active government intervention all over the world, the financial sector did not capsize—in fact, it surprised many by achieving healthy profits by the end of 2009. The real economy also turned out to be surprisingly resilient. While unemployment and consumer confidence remain stubborn challenges in many parts of the developed world, emerging markets such as China and India have spearheaded the global recovery by achieving GDP growth rates of 8.5 and 5.4 percent, respectively, in 2009.[1] Despite differences in the economic upturn across the globe, it is fair to say that the world is looking at a healthy resurgence of growth in most of its regions in 2010.

The ICT sector has done well in these difficult times. While some subsectors, such as semiconductors, have suffered because of decreased consumer demand, most segments of the ICT sector have continued to grow through the difficult months of 2009. The information technology (IT) services sector expanded as firms, even in struggling sectors of the economy, turned to technology to increase automation levels and reduce costs. Social networking and Web 2.0 companies such as Facebook grew at a brisk pace over the last year and have emerged as major players in the technology space. The growing popularity of smart phones such as those produced by Apple and Google have enabled the creation of thousands of innovative applications (more than 100,000 of them on Apple's iPhone platform alone), which are changing the lives of millions on a daily basis. With an estimated 4 billion mobile telephone subscriptions around the world, technology has made the world more connected than ever before.

The growing importance of technology for the future is now reflected in the market capitalization of the largest firms in the world. Google moved from 35th to 10th position globally in terms of market capitalization in 2009.[2] Apple, which was not in the top 50 global firms at the end of 2008, is now ranked 11th, having gained nearly 150 percent in market capitalization in 2009. At the start of this new decade, eight of the fifty largest firms as measured by market capitalization are technology firms: Microsoft, Google, Apple, IBM, Cisco, Oracle, HP, and Intel, as compared with eleven firms from the oil and energy sector, nine from the financial services sector, and only one from the automotive sector. Clearly a shift is occurring from the traditional sectors of energy and automotive to the new economy and technology-intensive sectors—the market capitalization of the top five technology firms is close to that of the top five from the oil and energy sector.

The World Economic Forum has devoted particular attention to innovation and technology in its three decade research on competitiveness, given the role these play in building long-term growth and prosperity. In particular, *The Global Information Technology Report* series, produced jointly with INSEAD since 2002, intends to shed light on the extent to which 133 developed and developing economies worldwide, representing over 98 percent of global GDP, benefit from latest ICT advances for increased competitiveness.

The *Report* series features, as the main methodological tool, the Networked Readiness Index (NRI), identifying the enabling factors for ICT readiness and providing governments and relevant stakeholders across the world with a unique benchmarking assessment of their respective economy's strengths and weaknesses vis-à-vis their past performance and relevant comparators.[3] Each year the *Report* has also included a number of contributions written by eminent experts and academics on topics of particular interest for the industry. This year the focal theme is sustainability, as this has emerged to be both

a major challenge and an opportunity for firms in the ICT sector. Energy efficiency is included as one of the key performance parameters—along with productivity, scalability, security, and availability—for ICT firms. Firms in the sector are both actively trying to reduce their own energy footprints and re-design the data centers and desktop management of their customers' ICT systems to reduce energy consumption. ICT has truly become an important enabler for improving the sustainability of firms in all sectors. For example, the use of advanced video conferencing allows firms to significantly reduce the expenses and ecological footprint associated with travel. ICT firms are discovering this to be a major opportunity to provide more innovative services, as well as to help their clients to achieve their sustainability goals. In this respect, many ICT providers are creating specific software suites to help firms collect and report data on their sustainability performance on a more accurate and regular basis.

While the *Report* deals with some of the questions raised above, this chapter presents the methodology and framework for the NRI 2009–2010, and maps out the world's current networked readiness according to the latest findings of the Index.

Benchmarking ICT progress of nations and societies

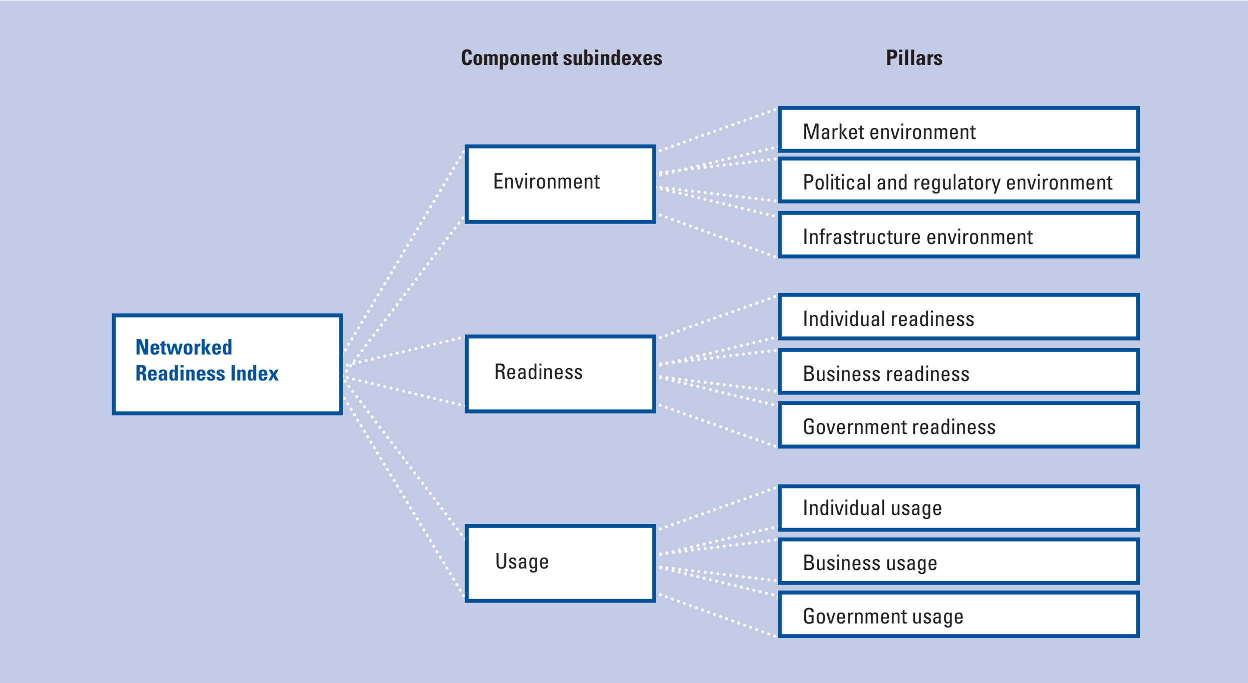
Nine years ago, when the NRI was first conceived, the global context was quite different. The world was in the midst of the Internet boom. There was much hype (and little scepticism) about the role of technology in development and economic change. Stories abounded of the Internet being used for the benefit of corporations and society at large. In the midst of the excitement surrounding the Internet, it was difficult to differentiate the trees from the forest. While there was a lot of anecdotal evidence about the benefits of technology, there were little hard data for evidence-based decision making with regard to technology policy. Leaders from both public and private sectors were left wanting for comprehensible roadmaps to better leverage technology in their national competitiveness strategies.

The publication of the first edition of the GITR in 2001 was an attempt to provide conceptual and academic guidance to senior decision makers on the design of technology policies and actions to enhance overall competitiveness and development. Central to the GITR was the creation of a theoretical model, the networked readiness framework, to identify the factors enabling the different national stakeholders—individuals, businesses, the government—to fully benefit from ICT. The networked readiness framework was grounded in academic research and benefited from prior studies in the management literature and also ongoing similar work by other institutions and multilateral agencies.[4] Each edition of the GITR over the last nine years has included a multi-dimensional assessment, based on the above framework and resulting NRI, of the use of technology for competitiveness and development in an expanding number of economies (up from 75 in the 2001–02 edition to 133 this year). This has lead to the creation of a valuable database of technology metrics, providing unique insight for research as well as for decision makers in the adoption of concrete policy decisions. A holistic approach has been central to the success of the GITR. While the numerical analyses of the NRI have proven to be very useful for identifying overall trends and have offered evidence for policy directions (such as supporting the conclusion that greater competition in the ICT sector does lead to lower prices and increased usage of ICT), the essays included every year on specific topics and on selected country experiences with ICT have provided important insight into the industry and showcased best practices in networked readiness to be emulated by other countries.

The networked readiness framework 2009–10: Theoretical underpinnings and methodology

The theoretical framework underlying the NRI 2009–2010 was introduced in the 2002–03 edition of the *Report* and has remained stable ever since, allowing for meaningful comparisons over time. The above notwithstanding, the actual variables included in the Index have experienced some variation over the years, given the dynamic trends in the technology landscape and the need to update the NRI accordingly.[5] For example, because mobile telephony has become increas-

Figure 1: The Networked Readiness Index 2009–2010: The framework



ingly important in recent years as a key networked readiness enabler, more variables related to that element have been included in the Index.

Also, time-sensitive variables that have not been recently updated by relevant international institutions may need to be dropped in any given year. As detailed below, there have been some modifications in the number and nature of variables included in the NRI this year to accommodate for the changes in the data computation methodology of the International Telecommunication Union (ITU) and prepare for the evolution envisaged for the networked readiness framework over the next few years (see Box 1).

The framework assesses the extent to which different economies benefit from latest ICT advances, based on three main principles, as follows:

1. **Environment is a crucial enabler of networked readiness.** The successful leveraging of ICT is strongly influenced by the overall environment provided for innovation and ICT use. In this sense, efforts made by the government and other relevant actors to put in place policies for a supportive market and regulatory environment are considered beneficial.

2. **A multi-stakeholder effort is key.** Although the government has a natural leadership role to play when it comes to establishing an ICT and innovation friendly environment, a joint effort from all the main societal actors—namely, the government, businesses, and civil society—is needed to achieve optimal networked readiness. This is amply supported by the field research conducted over the years in preparation for the country case studies featured in various editions of the GITR. The recent development history of some of the most networked economies in the world, be they Estonia, Israel, Korea, or Singapore, shows that the alliance between a farsighted government and an actively engaged private sector on the definition and implementation of a common ICT vision has been extremely powerful.

3. **ICT readiness facilitates ICT usage.** Preparation and willingness to use ICT is a critical determinant of effective ICT usage by all parts of a society. An economy whose stakeholders are more ready and show a greater interest toward ICT advances will be likely to use it more effectively and extensively. This link between enablers and usage is a key lesson learned from prior research in the management literature, where all models of Total Quality Management made an explicit distinction between "Enablers" and "Results."[6]

Figure 1 depicts the networked readiness framework, together with its three dimensions: environment,

Box 1: The networked readiness framework going forward

Nearly a decade since the publication of the first GITR, we have recently undertaken a thorough review of the networked readiness framework. This review has been triggered by the following three observations about changes in the context of ICT use:

Blurring boundaries. The boundaries of the ICT sector are shifting, and this change has become accentuated over the last few years as there is increasing convergence of technologies and digital media. For example, the boundaries between "traditional" ICT sectors and the consumer electronics sectors are blurring as devices such as television sets now routinely incorporate Internet access as a standard feature. The same is true for the software and entertainment sectors, as movies and other types of content are increasingly placed, processed, and shared on digital media. Thus there is a need to take a broader, more future orientated definition of ICT and not be limited to traditional notions of hardware and software.

Beyond access. For much of the first part of the last decade, the focus was on providing access to ICT for all. The digital divide in the world—primarily between developed and emerging economies—was the major challenge to overcome. Although the problem of access has not disappeared, it is fair to say that the issue of how to make the best use of access to ICT is increasingly becoming the key one. This is partially caused by the rapid spread of mobile telephony across the globe, the decreasing cost of Internet access via residential and public connections, and the emergence of lower-cost access devices such as mobile telephones and cheap personal computers. Thus, for example, it is not surprising to see that topics such e-skills have gained in importance in recent years.

Broader goals. ICT has become omnipresent and an integral part of our lives—both professional and personal—over the last few years. Hence, it is not surprising that questions are being raised about the broader goals toward which technology should be used in society and within organizations in both the public and private sectors. It is not good enough for organizations to use technology to reduce costs—they have to be able to use ICT to enhance innovation in all aspects of what they do. Governments have to move beyond providing online services (traditional e-government boundaries) to provide more effective governance to their citizens. While individual citizens will increase their use of the Internet, ICT has to be deployed to create cohesive and harmonious societies.

In line with the above observations, we feel the need to evolve the focus of the networked readiness framework so that it is better aligned with the realities underlying technological trends and also reflective of the broader goals that we think ICT should have in serving businesses, governments, and society over the coming years. The networked readiness framework has proven to be comprehensive and robust over the last decade and we believe that the above trends can be incorporated within the framework in the near future, as follows:

1. By adapting the variables used to measure the subcomponents of the networked readiness framework. This is particularly needed so that the usage component will reflect the broader goals as outlined above and the environment component will reflect the shifting boundaries of the ICT sector (for example, including specific variables to reflect the media and entertainment sectors).

2. By changing the titles of the usage pillars to more accurately reflect the goals of ICT usage, as follows:

    - Individual usage ➔ Cohesive society
    - Business usage ➔ Business innovation
    - Government usage ➔ Effective governance

Given our unique experience in conducting longitudinal studies of the ICT sector, we do understand that it will take us a few years to fully capture the above changes within the networked readiness framework and the NRI. Data definition and availability remain a challenge, especially when the ambition is to cover over 130 economies. However, we have started the process of change with this edition of the networked readiness framework, for example, by including variables related to creative industries exports (variable 8.05). Data availability along the new directions outlined above remains poor and we intend to put more effort into strengthening data collection on the above elements over the next couple of years. We have chosen not to change the labels on the subcomponents of the networked readiness framework for the time being, as we could not obtain adequate data on many of the desired new dimensions. However, we believe that it is useful now to outline our thoughts about the future evolution of the networked readiness framework and seek out readers' feedback and collaboration in the process.[1]

Note

1 Any specific comments on the suggested directions for the future Networked Readiness Index should be addressed to the co-editors of the *Report:* Soumitra Dutta (soumitra.dutta@insead.edu) and Irene Mia (Irene.Mia@weforum.org).

readiness, and usage. The environment component is in turn broken down along market, regulatory, and infrastructure lines, while the readiness and usage components are along the lines of the three main stakeholders (i.e., individuals, businesses, and government).

The networked readiness framework translates into the NRI, composed by three subindexes, gauging the environment for ICT, as well as the main stakeholders' readiness, and usage, with a total of 9 pillars and 68 variables, as follows:

1. Environment subindex
   — Market environment
   — Political and regulatory environment
   — Infrastructure environment

2. Readiness subindex
   — Individual readiness
   — Business readiness
   — Government readiness

3. Usage subindex
   — Individual usage
   — Business usage
   — Government usage

The final NRI score is a simple average of the three composing subindex scores, while each subindex's score is a simple average of those of the composing pillars, the underlying assumption being that all Index components give a similar contribution to national networked readiness. The Technical Appendix at the end of this chapter includes detailed information on the composition and computation of the NRI 2009–2010.

A brief description of the different composing elements (at the subindex and pillar level) of the NRI follows.

Environment subindex

The environment subindex measures the extent to which the market, regulatory, and infrastructure environment of a given country is conducive to innovation and ICT development. It includes a total of 30 variables grouped into three different pillars, relating to the market, regulatory, and hard and soft infrastructure dimensions.

The *market environment pillar* (11 variables) gauges the quality of the business environment for ICT development and diffusion in any given economy, taking into account dimensions such as the availability of appropriate financing sources (notably venture capital) and the extent of business sophistication (as captured by cluster development), together with the ease of doing business (including the presence of red tape and fiscal charges) and the freedom of exchanging information over the Internet (proxied by the freedom of the press).

The *political and regulatory environment pillar* (10 variables) captures the degree to which the national legal framework facilitates innovation and ICT development. In this sense, general aspects having to do with the protection afforded to property rights, the independence of the judiciary, and the efficiency of the law-making process are taken into account. ICT-specific features, such as the development of ICT laws and the extent to which intellectual property—key to generating innovation—is protected, are also considered, along with the level of competition in Internet, international long distance, and mobile telephone services.

The *infrastructure environment pillar* (9 variables) assesses the quality of the national ICT-related infrastructure, both in its hard elements (namely the number of telephone lines and secure Internet servers, electricity production, Internet bandwidth, and accessibility of digital content) and softer, human resources, ones. In particular, to capture the human infrastructure in a given economy, quantitative measures such as tertiary enrollment rates and education expenditure are combined with a qualitative assessment of the scientific research institutions and the availability of scientists and engineers.

Readiness subindex

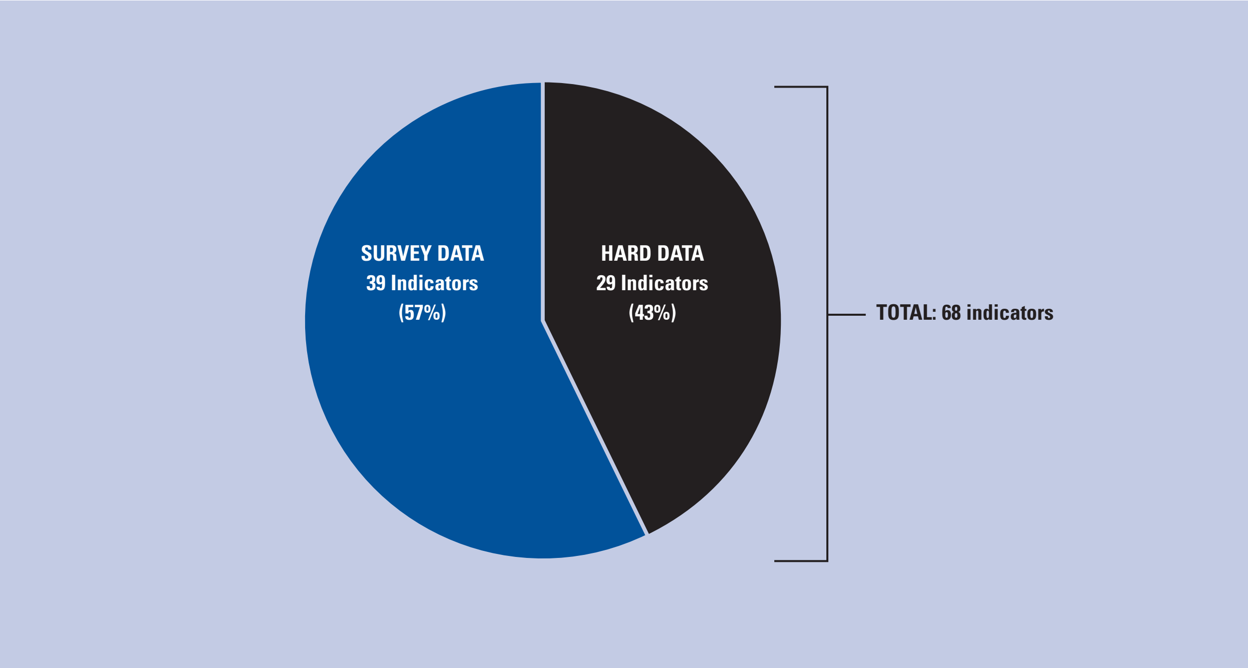
The readiness subindex assesses the preparation and interest of the three stakeholders to use technology, particularly ICT, in their day-to-day activities and transactions. With a total of 21 variables, this subindex gauges the main aspects of individual and business readiness (including the existence of appropriate human skills for using ICT and ICT affordability) as well as of government readiness (among these indicators is the prioritization of ICT in the national agenda).

The *individual readiness pillar* (8 variables) measures citizens' preparedness to use ICT through a comprehensive selection of indicators, including the quality of the educational system (notably math and science education), Internet access in schools, and residential telephone connection charges and monthly subscription costs, together with fixed broadband, mobile cellular, and fixed telephone lines tariffs.

The *business readiness pillar* (10 variables) provides insight on the degree to which firms are inclined and ready to incorporate ICT into their operations and processes. Elements taken into consideration are the quality of on-the-job training; spending on research and development (R&D); collaboration between academia and the industry, key to fostering applied innovation and intrinsic to solid clusters; the quality of suppliers in the economy; and the affordability of ICT for business.

Last but not least, the *government readiness pillar* (3 variables) represents an attempt to capture government's vision and prioritization of ICT in the national agenda and competitiveness strategies, including the extent to which public procurement of high-tech products are used as a tool to promote efficiency and innovation.

Figure 2: Hard and Survey data composition of the NRI 2009–2010



Usage subindex

The last component of the NRI measures the actual ICT usage by an economy's main stakeholders, focusing in particular on the impact of ICT in terms of efficiency and productivity gains, with a total of 17 variables.

The *individual usage pillar* (5 variables) measures ICT penetration and diffusion at the individual level, using indicators that present the number of mobile and broadband Internet subscribers, Internet users, personal computers (PCs), and Internet access in schools.

The *business usage pillar* (7 variables) captures the capacity of the business sector to absorb and generate innovation and technology by factoring in variables such as the prevalence of foreign licensing, the capacity for innovation (including the number of utility patents per 100 population, high-tech exports, and creative industry exports as a percentage of total exports of these industries), as well as the extent to which businesses use the Internet in their daily transactions and operations.

The *government usage pillar* (5 variables), in turn, analyzes the implementation of the vision captured by the government readiness pillar described above as well as the actual usage of ICT by the government. Government's success in promoting ICT penetration, e-participation, and the development and quality of e-government services are assessed, as well as the government's own ICT usage and the extent to which this has led to productivity and efficiency gains, among other factors.

Computation methodology and data

In line with past editions of the *Report* and the Forum's competitiveness methodology, the NRI 2009–2010 is composed of a mixture of hard and survey data capturing both quantitative and qualitative determinants of an economy's networked readiness. In this regard, as shown in Figure 2, 29 out of 68 (43 percent) of the variables composing the NRI are hard, quantitative data, collected from international organizations such as the ITU, the World Bank, and the United Nations. International sources ensure the validation and comparability of data across countries.

The remaining 39 variables gauge dimensions that are more qualitative in nature or for which hard data are not available for a large enough number of countries, but are nonetheless key in fully capturing national networked readiness. These data come from the Executive Opinion Survey (the Survey), which the Forum administers annually to over 13,000 business leaders in all the economies included in the GITR.[7] For dimensions relating to the development of ICT legislation, the quality of education, or the government's vision for ICT, the Survey represents an invaluable source of information.

The NRI's coverage every year depends on the Survey coverage and hard data availability. This year, the *Report* includes 133 economies, one less than last year, because Moldova could not be included in the 2009 Survey.

In terms of the NRI composition, as mentioned above, a number of changes have been made since last year, notably as a consequence of the changes the ITU has made in its computation methodology for ICT access costs and in preparation for the future developments envisaged for the networked readiness framework and outlined in Box 1. Below we detail the changes by pillar:

1. ***Market environment.*** The variables on utility patents per million inhabitants and high-tech exports as a percentage of total exports have been moved to the business readiness pillar to reflect business innovation and to prepare for the transition to the new framework. Accessibility of digital content has also been moved to the infrastructure pillar because of the blurring boundaries between different media and ICT sectors. Finally, variables 1.06 and 1.07 on taxation and variables 1.08 and 1.09 on the ease of starting a business have been included in the NRI computation as two single indicators. In both cases, the underlying variables are given half-weight.

2. ***Political and regulatory environment.*** The variable on the efficiency of the legal framework has been replaced by two distinct variables (i.e., efficiency of the legal framework in settling disputes and efficiency of the legal framework in challenging regulations), given that the original Survey question was split into two in the 2009 Survey to better capture the two concepts. In calculating the NRI, the two questions have been combined into one composite indicator. In addition, a new hard data variable assessing the level of competition in Internet, international long distance, and mobile telephone services has been introduced. Since this indicator also captures competition levels in Internet services, the Survey variable on quality of competition in the ISP sector has been dropped. Finally, similar to this year's treatment of variables 1.08 and 1.09, variables 2.08 and 2.09 on contract enforcement have been combined in one single indicator in the NRI computation.

3. ***Infrastructure environment.*** As mentioned above, the variable on the accessibility of digital content has been added here, along with the measure of Internet bandwidth, which has been moved from the individual usage pillar.

4. ***Individual readiness.*** The collection of data related to high-speed monthly subscription, lowest cost of broadband, and cost of mobile telephone calls have been discontinued by the ITU. These variables have been replaced by the ITU's new price basket variables that capture fixed broadband, mobile cellular, and fixed telephone lines tariffs. All these cost variables are valued at purchasing power parity (PPP) to account for differences in the cost of living across countries. To ensure comparability, the residential telephone connection charges and residential monthly telephone subscriptions (now combined in a composite indicator) are also valued at PPP. In the past, cost measures were normalized using monthly or annual GDP per capita. Although the new price basket indicators capture ICT affordability better than before, their coverage is not yet complete and excludes 15 of the countries covered in the NRI this year. Finally, the variable on Internet access in schools has been moved to individual usage, as it is more closely related to the usage of technology than to readiness.

5. ***Business readiness.*** As above, business telephone connection charges and business monthly telephone subscription (now combined into a composite indicator) are also valued at PPP. The variable on the availability of new telephone lines for business has also been moved to this pillar from business usage because it fits in better with the readiness dimension. In addition, the variable on supplier quantity has been dropped this year, as it is highly correlated with variable 7.04 (local supplier quality).

6. ***Government readiness.*** The E-Government Readiness Index variable is no longer used. One of its components, the Government Online Service Index, is now used in the government usage pillar to replace the Survey question on availability of online services.

7. ***Individual usage.*** As mentioned above, the measure of Internet bandwidth has been moved to the infrastructure pillar.

8. ***Business usage.*** As indicated above, the variable related to the availability of new telephone lines has been moved to the business readiness pillar, and the variables for utility patents per million inhabitants and high-tech exports as a percentage of total exports are moved to this pillar from the market environment pillar, in order to better capture business's innovation potential and ICT usage. In the same spirit, a new variable on creative industries exports (capturing an economy's share of the world's total exports of creative industries products such as art crafts, music, and book production) has been added.

9. ***Government usage.*** The Survey question on the availability of online services has been replaced by the Government Online Service Index, which captures with much more precision and sophistication the development of e-government services.

More details on the variables included in the Index and their computation methodology can be found in the Technical Appendix at the end of this chapter and in the Technical Notes and Sources section at the end of the *Report*.

The NRI rankings for 2009–10

This section details the results of the NRI 2009–2010 and provides a general overview of the current state of networked readiness both for the top 10 performing countries and by region: Europe, Asia and the Pacific, Latin America and the Caribbean, and sub-Saharan Africa and Middle East and North Africa (MENA).[8]

Table 1 displays the NRI rankings and scores for 2009–10, with 2008–09 comparisons, together with an indication of the income group to which each economy belongs and its rank within that group (see Box 2 for an analysis of the rankings by income group). Tables 2 through 4 show the rankings and scores for the three subindexes and nine pillars composing the NRI.

Tables 5 and 6, in turn, complement the information provided by Tables 1 through 4 with some detailed analysis on the most networked economies in the world, by looking respectively at the best three performers per pillar in the current NRI rankings and the evolution of the top 10 rankings since 2001–02.

Top 10

As shown in Table 1, the Nordic countries continue to feature prominently in the NRI rankings this year, with four of them among the top 10 and the fifth one, Iceland, ranked at a satisfactory 12th place. This highlights the region's impressive prowess when it comes to ICT. In the nine years of the NRI's existence, a Nordic nation has topped the rankings no less than five times.

A runner-up in the last three editions, **Sweden** overtakes Denmark as the world's most networked economy for the first time since the Index's inception. The country's showing is outstanding across the board: 1st, 4th, and 3rd for environment, readiness, and usage, respectively. This highlights the role of an ICT-conducive environment as a precondition for national stakeholders to fully leverage technology. Indeed, Sweden displays the best and second-best infrastructure and regulatory environments in the world, with comprehensive and efficient hard infrastructure, top-class human resources and education infrastructure, and an extremely friendly regulatory framework ensuring full protection of intellectual property (2nd) and providing for comprehensive ICT laws (4th). The market environment is also assessed as being very ICT-friendly at 5th place, notwithstanding very high taxation levels with a perceived distortive impact (111th for the extent and effect of taxation and 102nd for total tax rates). The three stakeholders show an important degree of propensity and capacity to use ICT, notably businesses (3rd) and individuals (6th), thanks to affordable ICT costs and top-class education and research fundamentals, among other factors. This provides the ideal context for extensive ICT usage, especially by citizens (1st for individual usage) with among the highest penetration rates in the world for PCs (4th) and Internet and broadband Internet (both 2nd), as well as mobile telephony (29th, with 118.3 subscriptions per 100 population). The extremely sophisticated and innovative Swedish business sector is also benefitting fully from ICT in its activities and operations, ranking 1st in the world for the extent of business Internet usage.[9]

Gaining two positions, **Singapore** places 2nd as a result of one of the most impressive development strategies based on ICT and innovation and a successful coherent multi-stakeholder effort in its implementation. The city-state ranks 1st in three of the nine pillars of the NRI (political and regulatory environment, individual readiness, and government readiness) and 2nd in government usage, reflecting the remarkable vision and role of the government in driving ICT penetration and leveraging ICT for economic and social modernization and increased competitiveness.[10] Like Sweden, Singapore appears in the top 10 in eight pillars. The government continues to spearhead ICT diffusion and development with yet another set of initiatives launched in 2006: the Intelligent Nation 2015 10-year master plan.

After topping the rankings for three consecutive years, **Denmark** loses its networked readiness primacy, sliding to 3rd position, with what remains nonetheless one of the most solid performances within the 133 economies covered. Denmark ranks 2nd for the quality of its environment and readiness, but scores lower in terms of ICT usage (11th). The country features among the top 10 in all pillars but one (17th in business usage). The conducive environment, coupled with an effective ICT vision and prioritization by the government (5th and 8th in government readiness and usage, respectively),[11] provide a unique basis for ICT development and innovation. Denmark continues to display among the highest ICT penetration rates in the world (4th for individual usage), with notably widespread Internet (4th) and broadband Internet (3rd) usage. Other notable competitive advantages are to be found in more general aspects, such as the well-functioning and developed internal market, which provided the national high-tech industry with a large domestic demand in its early stage; the top-notch education and research system (6th for the quality of the educational system); and the taste and talent of Danish citizens and businesses for developing, pioneering, and using new technologies and applications.

Over the years, **Switzerland** (4th) has evolved into an innovation powerhouse. Ranked 16th among 75 countries in the first NRI edition in 2001–02, the country has been consistently ranked in the top five for the last four editions. Unlike most of the NRI best performers, the government does not seem to play a leading role in ICT promotion and diffusion as compared to the other two stakeholders: Switzerland ranks

Box 2: The NRI 2009–2010 and its rankings by income group

This year sees an important innovation in the way we report the NRI results. In the spirit of making comparisons more relevant and the NRI findings more tailored to each economy included in the *Report*, its income group and rank within that group is shown next to its general rank and score in Table 1. This adds to the regional analysis, which already puts the general results into a more specific context. We hope that this will make the NRI results even more understandable and relevant for policymakers, business leaders, and all other national stakeholders interested in enhancing their economy's networked readiness. It will also help them identify relevant peers' best practices from which to learn.

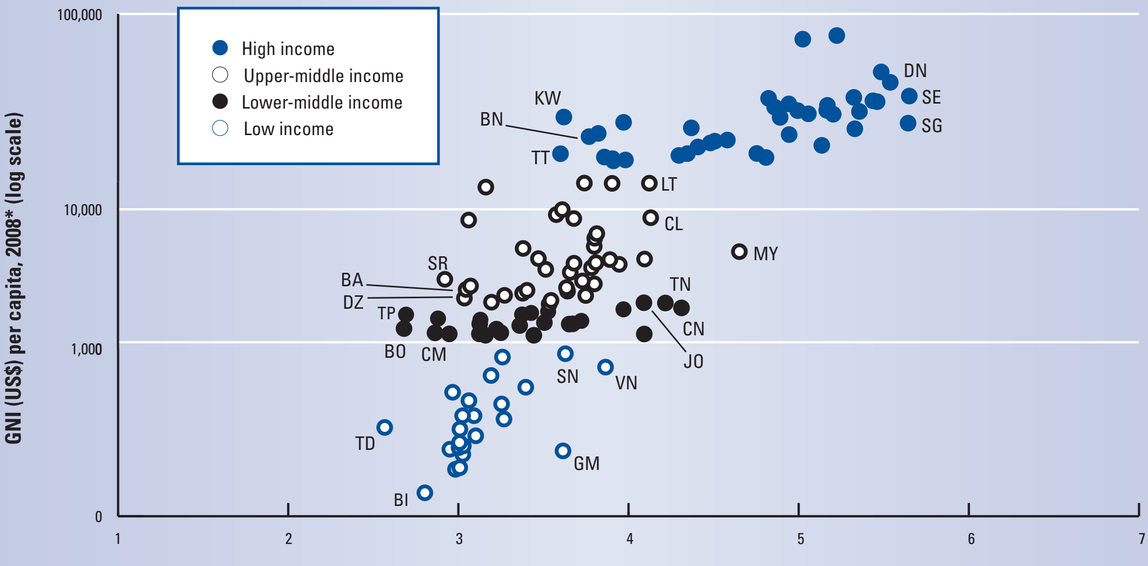
Figure A provides a graphic representation of NRI performances (captured by the 2009–10 NRI scores) according to income groups, with an indication of the top and bottom three performers for each group.[1] As highlighted in the table, Vietnam (3.87, 54th), Senegal (3.63, 75th), and Gambia (3.61, 77th) top the rankings for the low-income group, with Chad (2.57, 133rd) and Burundi (2.80, 129th) as laggards. Best performers in the lower-middle-income category are China (4.31, 37th), Tunisia (4.22, 39th), and Jordan (4.09, 44th), while worst are Bolivia (2.68th, 131st), Timor-Leste (2.69, 130th), and Cameroon (2.86, 128th). The upper-middle-income group is led by Malaysia (4.65, 27th), Chile (4.13, 40th), and Lithuania (4.12, 41st), while Suriname (2.92, 126th), Algeria (3.05, 113th), and Bosnia and Herzegovina (3.07, 110th) close the rankings. Finally, the high-income group is dominated by Sweden (5.65, 1st), Singapore (5.64, 2nd), and Denmark (5.54, 3rd), with Trinidad and Tobago (3.60, 79th), Kuwait (3.62, 76th), and Brunei (3.77, 63rd) trailing behind.

Figure A shows that, although NRI performance seems to be broadly correlated with income levels (i.e., the richer the country, the higher its score in the NRI), there are a number of economies that display higher levels of networked readiness than their income level would suggest. Some examples of this are third-best performer Gambia in the low-income group, with higher NRI scores than the majority of its richer peers in the group; China and Tunisia, which top the NRI rankings in the lower-middle cohort with a lower GNI per capita than laggard Algeria; best upper-middle group performer Malaysia, with a lower income than 2nd and 3rd ranked Lithuania and Chile as well as a large number of other countries in the group; Singapore, which is ranked 2nd within the high-income group and worldwide, with a much lower GNI per capita than Sweden and Denmark as well as a number of lower-ranked peer countries, such as Norway, Luxemburg, and Switzerland, among others.

Note

1 In classifying by income group, we have used the World Bank's classification of countries based on GNI (US$) per capita. The four groups are: low-income countries (under US$976), lower-middle-income countries (between US$976 and 3,855), upper-middle-income countries (between US$3,856 and 11,905), and high-income countries (above US$11,905).

Figure A: NRI performance by income group, 2009–10



Source: World Bank, *World Development Indicators Online Database* (consulted on January 15, 2010); World Economic Forum.
Note: Country labels identify top and bottom three countries in each income group; these are BA = Bosnia and Herzegovina, DZ = Algeria, BO = Bolivia, BN = Brunei Darussalam, BI = Burundi, CM = Cameroon, TD = Chad, CL = Chile, CN = China, DN = Denmark, GM = Gambia, JO = Jordan, KW = Kuwait, LT = Lithuania, MY = Malaysia, SN = Senegal, SG = Singapore, SR = Suriname, SE = Sweden, TP = Timor-Leste, TT = Trinidad and Tobago, TN = Tunisia, and VN = Vietnam. Not all countries are represented because of limited availability of income data.
* Or most recent year available. World Bank's Atlas method. Dollar amounts on the axis correspond to the lower threshold of each income group.

Table 1: The Networked Readiness Index 2009–2010 and 2008–2009 comparison

	NRI 2009–2010				NRI 2008–2009	
Country/Economy	Rank	Score	Rank within income group*		Rank	Score
Sweden	**1**	**5.65**	**HI**	**1**	2	5.84
Singapore	2	5.64	HI	2	4	5.67
Denmark	3	5.54	HI	3	1	5.85
Switzerland	4	5.48	HI	4	5	5.58
United States	5	5.46	HI	5	3	5.68
Finland	6	5.44	HI	6	6	5.53
Canada	7	5.36	HI	7	10	5.41
Hong Kong SAR	8	5.33	HI	8	12	5.30
Netherlands	9	5.32	HI	9	9	5.48
Norway	10	5.22	HI	10	8	5.49
Taiwan, China	11	5.20	HI	11	13	5.30
Iceland	12	5.20	HI	12	7	5.50
United Kingdom	13	5.17	HI	13	15	5.27
Germany	14	5.16	HI	14	20	5.17
Korea, Rep.	15	5.14	HI	15	11	5.37
Australia	16	5.06	HI	16	14	5.29
Luxembourg	17	5.02	HI	17	21	5.10
France	18	4.99	HI	18	19	5.17
New Zealand	19	4.94	HI	19	22	5.04
Austria	20	4.94	HI	20	16	5.22
Japan	21	4.89	HI	21	17	5.19
Belgium	22	4.86	HI	22	24	5.02
United Arab Emirates	23	4.85	HI	23	27	4.76
Ireland	24	4.82	HI	24	23	5.03
Estonia	25	4.81	HI	25	18	5.19
Malta	26	4.75	HI	26	26	4.79
Malaysia	**27**	**4.65**	**UM**	**1**	28	4.76
Israel	28	4.58	HI	27	25	4.98
Bahrain	29	4.58	HI	28	37	4.38
Qatar	30	4.53	HI	29	29	4.68
Slovenia	31	4.51	HI	30	31	4.57
Cyprus	32	4.48	HI	31	33	4.52
Portugal	33	4.41	HI	32	30	4.63
Spain	34	4.37	HI	33	34	4.50
Barbados	35	4.36	HI	34	36	4.38
Czech Republic	36	4.35	HI	35	32	4.53
China	**37**	**4.31**	**LM**	**1**	46	4.15
Saudi Arabia	38	4.30	HI	36	40	4.28
Tunisia	39	4.22	LM	2	38	4.34
Chile	40	4.13	UM	2	39	4.32
Lithuania	41	4.12	UM	3	35	4.40
Montenegro	42	4.10	UM	4	71	3.79
India	43	4.09	LM	3	54	4.03
Jordan	44	4.09	LM	4	44	4.19
Puerto Rico	45	4.07	HI	37	42	4.23
Hungary	46	3.98	HI	38	41	4.28
Thailand	47	3.97	LM	5	47	4.14
Italy	48	3.97	HI	39	45	4.16
Costa Rica	49	3.95	UM	5	56	3.99
Oman	50	3.91	HI	40	50	4.08
Croatia	51	3.91	HI	41	49	4.09
Latvia	52	3.90	UM	6	48	4.10
Mauritius	53	3.89	UM	7	51	4.07
Vietnam	**54**	**3.87**	**LO**	**1**	70	3.79
Slovak Republic	55	3.86	HI	42	43	4.19
Greece	56	3.82	HI	43	55	4.00
Uruguay	57	3.81	UM	8	65	3.85
Panama	58	3.81	UM	9	66	3.84
Romania	59	3.80	UM	10	58	3.97
Colombia	60	3.80	UM	11	64	3.87
Brazil	61	3.80	UM	12	59	3.94
South Africa	62	3.78	UM	13	52	4.07
Brunei Darussalam	63	3.77	HI	44	63	3.87
Azerbaijan	64	3.75	LM	6	60	3.93
Poland	65	3.74	UM	14	69	3.80
Jamaica	66	3.73	UM	15	53	4.03
Indonesia	67	3.72	LM	7	83	3.62

(Cont'd.)

Table 1: The Networked Readiness Index 2009–2010 and 2008–2009 comparison *(cont'd.)*

	NRI 2009–2010				NRI 2008–2009	
Country/Economy	Rank	Score	Rank within income group*		Rank	Score
Kazakhstan	68	3.68	UM	16	73	3.79
Turkey	69	3.68	UM	17	61	3.91
Egypt	70	3.67	LM	8	76	3.76
Bulgaria	71	3.66	UM	18	68	3.80
Sri Lanka	72	3.65	LM	9	72	3.79
Macedonia, FYR	73	3.64	UM	19	79	3.67
Dominican Republic	74	3.64	UM	20	75	3.76
Senegal	75	3.63	LO	2	80	3.67
Kuwait	76	3.62	HI	45	57	3.98
Gambia, The	77	3.61	LO	3	91	3.44
Mexico	78	3.61	UM	21	67	3.84
Trinidad and Tobago	79	3.60	HI	46	81	3.67
Russian Federation	80	3.58	UM	22	74	3.77
El Salvador	81	3.55	LM	10	78	3.69
Ukraine	82	3.53	LM	11	62	3.88
Guatemala	83	3.53	LM	12	82	3.64
Serbia	84	3.51	UM	23	84	3.62
Philippines	85	3.51	LM	13	85	3.60
Botswana	86	3.47	UM	24	77	3.72
Pakistan	87	3.44	LM	14	98	3.31
Morocco	88	3.43	LM	15	86	3.59
Namibia	89	3.40	UM	25	92	3.44
Kenya	90	3.40	LO	4	97	3.35
Argentina	91	3.38	UM	26	87	3.58
Peru	92	3.38	UM	27	89	3.47
Georgia	93	3.38	LM	16	88	3.48
Mongolia	94	3.36	LM	17	93	3.43
Albania	95	3.27	LM	18	105	3.23
Mali	96	3.27	LO	5	107	3.18
Zambia	97	3.26	LO	6	102	3.26
Ghana	98	3.25	LO	7	103	3.25
Nigeria	99	3.25	LM	19	90	3.45
Guyana	100	3.22	LM	20	100	3.29
Armenia	101	3.20	LM	21	114	3.06
Mauritania	102	3.19	LO	8	109	3.12
Libya	103	3.16	UM	28	101	3.28
Côte d'Ivoire	104	3.16	LM	22	111	3.12
Syria	105	3.13	LM	23	94	3.41
Honduras	106	3.13	LM	24	95	3.41
Lesotho	107	3.12	LM	25	118	3.02
Burkina Faso	108	3.10	LO	9	113	3.07
Tajikistan	109	3.09	LO	10	104	3.25
Bosnia and Herzegovina	110	3.07	UM	29	106	3.23
Benin	111	3.06	LO	11	121	2.96
Venezuela	112	3.06	UM	30	96	3.39
Algeria	113	3.05	UM	31	108	3.14
Ecuador	114	3.04	LM	26	116	3.03
Uganda	115	3.03	LO	12	120	2.98
Mozambique	116	3.03	LO	13	124	2.91
Cambodia	117	3.03	LO	14	126	2.89
Bangladesh	118	3.01	LO	15	130	2.70
Malawi	119	3.01	LO	16	110	3.12
Tanzania	120	3.01	LO	17	119	3.01
Madagascar	121	3.00	LO	18	112	3.09
Ethiopia	122	2.98	LO	19	129	2.80
Kyrgyz Republic	123	2.97	LO	20	115	3.04
Nepal	124	2.95	LO	21	127	2.85
Nicaragua	125	2.95	LM	27	125	2.90
Suriname	126	2.92	UM	32	117	3.03
Paraguay	127	2.88	LM	28	122	2.93
Cameroon	128	2.86	LM	29	123	2.93
Burundi	129	2.80	LO	22	131	2.63
Timor-Leste	130	2.69	LM	30	133	2.47
Bolivia	131	2.68	LM	31	128	2.82
Zimbabwe	132	2.67	LO	23	132	2.49
Chad	133	2.57	LO	24	134	2.44

* Income groups: HI = high income; UM = upper-middle income; LM = lower-middle income; LO = low income. The highest-ranked economy of each income group appears in bold blue typeface. Country classification by income group is from the World Bank (situation as of December 2009).

Table 2: Environment subindex

ENVIRONMENT SUBINDEX			Market environment		Political and regulatory environment		Infrastructure environment	
Rank	Country/Economy	Score	Rank	Score	Rank	Score	Rank	Score
1	Sweden	5.85	5	5.40	2	6.11	1	6.04
2	Denmark	5.67	10	5.30	5	5.97	3	5.74
3	Norway	5.60	8	5.32	8	5.90	4	5.58
4	Switzerland	5.58	3	5.47	9	5.89	7	5.39
5	Finland	5.56	6	5.38	6	5.95	8	5.36
6	Canada	5.48	7	5.35	13	5.66	6	5.44
7	Iceland	5.47	21	5.00	14	5.65	2	5.75
8	Netherlands	5.45	11	5.25	10	5.79	9	5.32
9	Singapore	5.44	2	5.49	1	6.33	21	4.51
10	United States	5.41	9	5.32	19	5.40	5	5.51
11	New Zealand	5.36	18	5.09	3	6.10	13	4.89
12	United Kingdom	5.35	17	5.10	16	5.63	10	5.31
13	Luxembourg	5.33	4	5.40	4	5.99	19	4.59
14	Australia	5.31	14	5.12	7	5.93	12	4.90
15	Hong Kong SAR	5.23	1	5.69	17	5.63	23	4.36
16	Germany	5.19	22	5.00	11	5.77	14	4.80
17	Austria	5.08	24	4.97	12	5.72	20	4.53
18	Ireland	5.08	26	4.95	15	5.64	18	4.64
19	France	5.04	30	4.84	18	5.51	15	4.77
20	Belgium	4.91	25	4.95	24	5.04	16	4.72
21	Taiwan, China	4.86	13	5.15	44	4.53	11	4.91
22	Japan	4.86	28	4.91	20	5.38	25	4.29
23	Estonia	4.77	20	5.02	23	5.10	26	4.21
24	United Arab Emirates	4.68	12	5.23	29	4.92	31	3.90
25	Cyprus	4.66	16	5.10	28	4.94	30	3.93
26	Israel	4.65	23	4.98	43	4.53	22	4.43
27	Korea, Rep.	4.63	43	4.53	38	4.72	17	4.65
28	Malta	4.61	47	4.49	22	5.15	27	4.21
29	Qatar	4.61	19	5.05	27	4.97	37	3.80
30	Slovenia	4.55	36	4.67	41	4.65	24	4.33
31	Barbados	4.50	51	4.44	26	4.99	28	4.06
32	Portugal	4.45	38	4.66	34	4.83	32	3.86
33	Bahrain	4.45	15	5.11	37	4.72	44	3.52
34	Spain	4.39	46	4.50	40	4.65	29	4.01
35	Chile	4.37	27	4.92	32	4.89	50	3.30
36	Puerto Rico	4.37	37	4.66	39	4.68	39	3.76
37	Malaysia	4.37	32	4.78	25	5.04	51	3.29
38	Saudi Arabia	4.34	33	4.76	35	4.79	48	3.45
39	South Africa	4.31	29	4.90	21	5.16	72	2.86
40	Czech Republic	4.27	44	4.52	50	4.44	34	3.85
41	Jordan	4.18	41	4.55	33	4.88	60	3.10
42	Mauritius	4.12	31	4.81	31	4.89	84	2.67
43	Montenegro	4.07	71	4.14	56	4.27	36	3.80
44	Lithuania	4.06	66	4.19	55	4.33	41	3.68
45	Hungary	4.04	80	4.07	59	4.19	33	3.86
46	Slovak Republic	4.02	45	4.51	58	4.24	49	3.31
47	Tunisia	4.02	55	4.26	42	4.57	53	3.22
48	Latvia	4.02	62	4.21	53	4.36	47	3.48
49	Greece	4.01	78	4.07	62	4.16	38	3.78
50	Thailand	3.99	42	4.55	51	4.39	64	3.03
51	Panama	3.98	39	4.66	65	4.07	55	3.21
52	Oman	3.98	34	4.70	49	4.45	77	2.79
53	India	3.96	35	4.67	46	4.52	83	2.70
54	Namibia	3.93	49	4.45	36	4.77	92	2.58
55	Italy	3.86	81	4.04	84	3.83	40	3.70
56	Croatia	3.86	91	3.91	67	4.05	42	3.61
57	China	3.85	72	4.13	47	4.52	70	2.89
58	Romania	3.80	79	4.07	64	4.11	54	3.22
59	Turkey	3.79	64	4.19	63	4.13	62	3.06
60	Kuwait	3.78	50	4.45	88	3.77	59	3.10
61	Bulgaria	3.77	88	3.94	104	3.53	35	3.85
62	Jamaica	3.77	56	4.25	57	4.25	74	2.81
63	Azerbaijan	3.77	59	4.21	54	4.33	78	2.75
64	Uruguay	3.75	96	3.80	52	4.36	61	3.10
65	Botswana	3.75	65	4.19	45	4.52	96	2.55
66	Indonesia	3.74	40	4.57	60	4.17	100	2.48
67	Poland	3.74	67	4.17	103	3.54	45	3.51
68	Trinidad and Tobago	3.73	53	4.36	80	3.88	66	2.96
69	Vietnam	3.72	85	3.98	48	4.46	80	2.72
70	Egypt	3.71	54	4.33	71	4.00	75	2.80
71	Costa Rica	3.70	63	4.20	93	3.73	56	3.17
72	Gambia, The	3.69	82	4.04	30	4.92	120	2.11
73	Mexico	3.68	73	4.13	70	4.01	67	2.91
74	Brazil	3.67	87	3.97	73	3.99	63	3.05
75	Morocco	3.64	69	4.16	61	4.17	90	2.60
76	El Salvador	3.60	48	4.46	76	3.92	103	2.42
77	Macedonia, FYR	3.60	83	4.03	87	3.79	65	2.97
78	Dominican Republic	3.59	77	4.08	68	4.05	87	2.65
79	Brunei Darussalam	3.58	92	3.87	72	4.00	71	2.87
80	Kazakhstan	3.58	93	3.86	89	3.77	58	3.10
81	Colombia	3.57	90	3.93	77	3.92	73	2.86
82	Senegal	3.54	61	4.21	82	3.85	94	2.56
83	Georgia	3.54	57	4.22	83	3.85	97	2.53
84	Sri Lanka	3.53	60	4.21	90	3.76	89	2.60
85	Ukraine	3.52	112	3.65	107	3.43	46	3.48
86	Russian Federation	3.50	116	3.57	109	3.40	43	3.54
87	Guatemala	3.48	52	4.39	100	3.56	98	2.50
88	Peru	3.48	58	4.22	92	3.74	101	2.47
89	Ghana	3.46	75	4.10	74	3.98	110	2.30
90	Serbia	3.45	114	3.61	99	3.58	57	3.16
91	Kenya	3.44	84	3.99	94	3.71	88	2.63
92	Zambia	3.42	74	4.10	66	4.06	123	2.09
93	Malawi	3.36	89	3.94	69	4.04	119	2.11
94	Mongolia	3.36	104	3.73	102	3.54	76	2.80
95	Philippines	3.35	86	3.98	91	3.74	107	2.34
96	Lesotho	3.34	101	3.75	86	3.81	102	2.45
97	Nigeria	3.33	70	4.15	85	3.82	127	2.01
98	Pakistan	3.32	68	4.17	97	3.61	115	2.19
99	Argentina	3.31	126	3.34	110	3.38	52	3.23
100	Burkina Faso	3.30	105	3.72	75	3.93	111	2.25
101	Mali	3.29	98	3.78	79	3.89	114	2.20
102	Uganda	3.25	110	3.66	81	3.86	112	2.22
103	Tanzania	3.23	99	3.76	78	3.92	126	2.02
104	Guyana	3.21	100	3.75	119	3.22	85	2.66
105	Albania	3.20	106	3.72	95	3.69	113	2.20
106	Kyrgyz Republic	3.20	121	3.41	106	3.47	81	2.72
107	Benin	3.17	103	3.74	98	3.59	116	2.19
108	Armenia	3.17	118	3.50	113	3.29	82	2.72
109	Honduras	3.16	76	4.09	128	2.98	106	2.40
110	Libya	3.13	124	3.39	125	3.09	68	2.90
111	Mauritania	3.13	97	3.80	96	3.65	131	1.93
112	Nicaragua	3.10	109	3.67	105	3.49	118	2.16
113	Syria	3.10	115	3.61	114	3.28	105	2.40
114	Mozambique	3.09	111	3.66	101	3.56	124	2.05
115	Tajikistan	3.08	127	3.34	111	3.34	95	2.55
116	Paraguay	3.07	95	3.84	130	2.88	99	2.48
117	Côte d'Ivoire	3.05	113	3.62	124	3.11	104	2.42
118	Bosnia and Herzegovina	3.04	125	3.34	126	3.06	79	2.73
119	Madagascar	3.04	102	3.74	116	3.27	121	2.10
120	Algeria	3.01	128	3.17	121	3.20	86	2.66
121	Cambodia	3.01	107	3.68	108	3.42	132	1.91
122	Bangladesh	2.99	94	3.86	123	3.12	128	2.00
123	Nepal	2.96	108	3.68	115	3.27	130	1.93
124	Ecuador	2.96	122	3.41	112	3.31	117	2.16
125	Timor-Leste	2.91	120	3.42	132	2.72	91	2.59
126	Cameroon	2.91	119	3.43	117	3.25	125	2.05
127	Ethiopia	2.90	117	3.54	120	3.21	129	1.94
128	Venezuela	2.90	132	2.77	127	3.03	69	2.89
129	Suriname	2.86	123	3.40	129	2.88	109	2.31
130	Zimbabwe	2.85	131	2.96	118	3.25	108	2.33
131	Burundi	2.76	129	2.99	122	3.20	122	2.10
132	Bolivia	2.75	130	2.99	133	2.69	93	2.56
133	Chad	2.41	133	2.77	131	2.74	133	1.72

(Cont'd.)

Table 3: Readiness subindex

READINESS SUBINDEX			Individual readiness		Business readiness		Government readiness	
Rank	Country/Economy	Score	Rank	Score	Rank	Score	Rank	Score
1	Singapore	5.94	1	6.11	5	5.59	1	6.12
2	Denmark	5.64	4	5.76	2	5.80	5	5.37
3	Finland	5.60	3	5.82	4	5.73	9	5.26
4	Sweden	5.56	6	5.73	3	5.77	12	5.17
5	United Arab Emirates	5.53	5	5.74	18	5.10	2	5.75
6	Switzerland	5.42	13	5.47	1	5.92	23	4.87
7	United States	5.29	19	5.32	8	5.45	13	5.10
8	Iceland	5.28	8	5.69	16	5.13	18	5.02
9	Hong Kong SAR	5.25	2	5.94	27	4.90	21	4.92
10	Taiwan, China	5.22	22	5.28	17	5.10	8	5.28
11	Malaysia	5.19	11	5.48	26	4.91	11	5.19
12	Qatar	5.18	27	5.18	32	4.80	3	5.54
13	Canada	5.16	16	5.42	11	5.29	27	4.77
14	Netherlands	5.15	14	5.47	7	5.51	44	4.49
15	Malta	5.14	15	5.46	42	4.46	4	5.49
16	Tunisia	5.13	12	5.47	37	4.61	7	5.32
17	Norway	5.13	20	5.31	15	5.18	22	4.89
18	Germany	5.11	24	5.24	6	5.56	42	4.52
19	China	5.10	9	5.50	34	4.72	14	5.09
20	Luxembourg	5.09	25	5.22	30	4.82	10	5.23
21	Korea, Rep.	5.07	29	5.17	20	4.98	15	5.07
22	India	5.07	7	5.69	23	4.93	35	4.58
23	Belgium	5.01	18	5.33	9	5.42	55	4.28
24	Estonia	4.98	32	5.11	33	4.76	16	5.05
25	Australia	4.97	31	5.16	21	4.97	28	4.77
26	France	4.92	45	4.92	12	5.26	37	4.57
27	Ireland	4.91	28	5.18	10	5.30	58	4.24
28	Austria	4.90	49	4.89	14	5.20	33	4.61
29	New Zealand	4.87	34	5.07	25	4.92	32	4.64
30	Saudi Arabia	4.87	46	4.92	28	4.89	25	4.80
31	Cyprus	4.84	17	5.35	40	4.51	31	4.67
32	Costa Rica	4.83	10	5.49	39	4.53	46	4.46
33	United Kingdom	4.81	42	4.94	22	4.94	39	4.55
34	Bahrain	4.80	21	5.30	72	4.08	17	5.02
35	Slovenia	4.78	35	5.05	31	4.82	47	4.46
36	Japan	4.77	68	4.55	13	5.22	38	4.55
37	Vietnam	4.70	43	4.93	52	4.33	24	4.85
38	Czech Republic	4.70	53	4.76	24	4.93	48	4.42
39	Portugal	4.69	84	4.09	36	4.63	6	5.34
40	Jordan	4.67	30	5.17	73	4.06	26	4.77
41	Montenegro	4.64	26	5.20	50	4.37	51	4.34
42	Barbados	4.61	40	4.99	61	4.23	34	4.61
43	Indonesia	4.53	23	5.26	65	4.18	64	4.14
44	Sri Lanka	4.49	47	4.90	77	4.00	36	4.57
45	Mauritius	4.48	44	4.92	68	4.14	50	4.39
46	Thailand	4.48	38	5.00	54	4.31	65	4.14
47	Senegal	4.43	74	4.38	48	4.38	41	4.52
48	Oman	4.42	87	4.07	62	4.22	19	4.97
49	Colombia	4.42	62	4.65	53	4.31	54	4.31
50	Israel	4.41	108	3.75	19	5.07	49	4.41
51	Brunei Darussalam	4.39	76	4.34	71	4.08	29	4.75
52	Gambia, The	4.37	101	3.85	57	4.30	20	4.95
53	Chile	4.35	85	4.09	41	4.48	45	4.48
54	Spain	4.34	81	4.16	29	4.84	72	4.02
55	Romania	4.34	37	5.01	64	4.20	94	3.79
56	Jamaica	4.32	54	4.75	60	4.25	74	3.98
57	Azerbaijan	4.31	106	3.80	44	4.42	30	4.72
58	Uruguay	4.30	70	4.49	66	4.16	57	4.25
59	Pakistan	4.30	39	4.99	70	4.08	90	3.82
60	Panama	4.27	58	4.69	80	3.97	63	4.15
61	Lithuania	4.25	64	4.63	58	4.27	85	3.86
62	Brazil	4.19	99	3.89	38	4.60	68	4.09
63	Croatia	4.19	75	4.36	56	4.30	80	3.92
64	Italy	4.19	51	4.80	45	4.41	120	3.36
65	Egypt	4.19	71	4.47	95	3.78	53	4.32
66	Serbia	4.18	33	5.08	99	3.75	95	3.71
67	Latvia	4.18	50	4.86	69	4.13	112	3.55
68	Puerto Rico	4.17	79	4.19	35	4.68	100	3.65
69	Poland	4.17	67	4.57	46	4.39	113	3.54
70	Trinidad and Tobago	4.17	41	4.96	91	3.84	96	3.69
71	Dominican Republic	4.16	89	4.04	84	3.92	43	4.51
72	Greece	4.14	65	4.60	74	4.03	93	3.80
73	Russian Federation	4.12	60	4.69	78	3.99	99	3.67
74	Kazakhstan	4.10	95	3.94	67	4.15	60	4.22
75	Macedonia, FYR	4.09	86	4.09	82	3.95	59	4.23
76	Ukraine	4.09	36	5.03	98	3.75	118	3.48
77	El Salvador	4.08	77	4.28	75	4.02	77	3.95
78	Guatemala	4.08	69	4.50	63	4.21	116	3.53
79	Philippines	4.06	57	4.70	86	3.89	106	3.60
80	Guyana	4.05	56	4.74	92	3.83	110	3.58
81	Kenya	4.01	114	3.62	55	4.30	66	4.12
82	Kuwait	4.00	48	4.89	107	3.58	115	3.53
83	Mali	3.99	98	3.89	109	3.56	40	4.53
84	South Africa	3.99	115	3.59	43	4.44	78	3.95
85	Hungary	3.98	92	3.98	49	4.38	107	3.59
86	Botswana	3.97	96	3.93	105	3.66	52	4.33
87	Ghana	3.96	73	4.38	106	3.65	84	3.86
88	Syria	3.95	59	4.69	110	3.56	105	3.61
89	Slovak Republic	3.95	102	3.82	47	4.39	102	3.63
90	Turkey	3.94	94	3.96	79	3.98	83	3.87
91	Armenia	3.89	52	4.76	120	3.34	111	3.57
92	Bulgaria	3.87	82	4.13	93	3.81	98	3.68
93	Algeria	3.87	66	4.58	102	3.68	121	3.34
94	Nigeria	3.86	116	3.59	51	4.36	101	3.64
95	Côte d'Ivoire	3.85	112	3.69	76	4.02	86	3.85
96	Ethiopia	3.85	90	3.99	108	3.56	73	3.99
97	Argentina	3.84	72	4.44	59	4.26	128	2.83
98	Zambia	3.84	110	3.75	83	3.94	87	3.85
99	Mexico	3.83	109	3.75	85	3.90	88	3.84
100	Bangladesh	3.82	61	4.69	127	3.25	117	3.52
101	Mauritania	3.81	118	3.53	100	3.69	61	4.21
102	Peru	3.78	97	3.90	87	3.89	114	3.54
103	Albania	3.76	88	4.06	129	3.24	76	3.97
104	Namibia	3.75	107	3.77	94	3.80	97	3.68
105	Georgia	3.75	93	3.96	116	3.48	92	3.80
106	Morocco	3.75	117	3.56	89	3.86	89	3.82
107	Nepal	3.73	55	4.74	122	3.29	123	3.15
108	Mongolia	3.71	104	3.82	123	3.29	71	4.02
109	Cambodia	3.69	111	3.71	112	3.54	91	3.82
110	Lesotho	3.67	100	3.88	111	3.54	109	3.58
111	Libya	3.64	103	3.82	130	3.24	82	3.87
112	Burkina Faso	3.64	130	2.79	90	3.86	56	4.27
113	Suriname	3.64	78	4.27	88	3.87	130	2.77
114	Benin	3.63	122	3.48	119	3.36	69	4.04
115	Mozambique	3.63	125	2.94	96	3.78	62	4.16
116	Bosnia and Herzegovina	3.62	63	4.63	117	3.43	129	2.78
117	Venezuela	3.59	83	4.10	103	3.67	126	3.00
118	Madagascar	3.59	131	2.76	81	3.96	70	4.04
119	Tajikistan	3.57	124	2.98	97	3.75	75	3.97
120	Burundi	3.57	105	3.81	124	3.29	104	3.61
121	Ecuador	3.55	80	4.19	118	3.41	125	3.04
122	Honduras	3.53	123	3.47	113	3.53	108	3.58
123	Tanzania	3.49	126	2.88	101	3.69	81	3.90
124	Uganda	3.46	133	2.61	104	3.66	67	4.10
125	Malawi	3.38	132	2.69	114	3.52	79	3.93
126	Nicaragua	3.34	113	3.64	125	3.27	124	3.11
127	Cameroon	3.31	128	2.81	115	3.52	103	3.62
128	Paraguay	3.25	91	3.98	132	3.08	132	2.69
129	Kyrgyz Republic	3.21	120	3.53	126	3.25	127	2.86
130	Chad	3.15	127	2.81	128	3.24	119	3.39
131	Zimbabwe	3.15	119	3.53	131	3.16	131	2.75
132	Bolivia	3.09	121	3.52	121	3.31	133	2.46
133	Timor-Leste	3.02	129	2.80	133	2.96	122	3.28

(Cont'd.)

Table 4: Usage subindex

USAGE SUBINDEX			Individual usage		Business usage		Government usage	
Rank	Country/Economy	Score	Rank	Score	Rank	Score	Rank	Score
1	Korea, Rep.	5.71	13	5.43	5	5.48	1	6.20
2	United States	5.69	16	5.28	1	6.10	4	5.69
3	Sweden	5.55	1	6.43	13	5.08	14	5.14
4	Singapore	5.55	9	5.63	9	5.16	2	5.85
5	Taiwan, China	5.53	14	5.35	6	5.47	3	5.78
6	Hong Kong SAR	5.51	7	5.73	7	5.33	7	5.48
7	Switzerland	5.45	3	6.13	2	5.82	34	4.41
8	Canada	5.43	12	5.50	8	5.19	6	5.59
9	Netherlands	5.36	2	6.24	14	4.91	17	4.94
10	United Kingdom	5.35	8	5.72	11	5.11	11	5.21
11	Denmark	5.30	4	5.86	17	4.62	8	5.42
12	Germany	5.20	15	5.30	4	5.49	20	4.80
13	Finland	5.14	10	5.60	10	5.14	23	4.68
14	Japan	5.04	26	4.84	3	5.52	22	4.77
15	France	5.03	22	5.02	12	5.10	16	4.97
16	Norway	4.94	11	5.60	24	4.07	13	5.17
17	Australia	4.89	20	5.16	30	3.91	5	5.60
18	Iceland	4.86	6	5.77	19	4.54	40	4.29
19	Austria	4.85	18	5.27	20	4.50	21	4.78
20	Israel	4.69	25	4.91	15	4.74	36	4.40
21	Estonia	4.67	19	5.18	40	3.52	9	5.33
22	Belgium	4.66	24	4.92	18	4.55	27	4.52
23	Luxembourg	4.65	5	5.82	28	3.94	41	4.19
24	New Zealand	4.60	23	5.00	36	3.68	15	5.12
25	Malta	4.51	27	4.73	27	3.97	19	4.83
26	Ireland	4.49	28	4.71	21	4.34	35	4.41
27	Bahrain	4.48	21	5.05	60	3.10	10	5.29
28	Malaysia	4.39	46	3.65	22	4.34	12	5.18
29	Spain	4.38	35	4.35	31	3.87	18	4.92
30	United Arab Emirates	4.34	29	4.69	32	3.86	29	4.47
31	Slovenia	4.20	30	4.60	41	3.42	26	4.56
32	Portugal	4.08	37	4.14	39	3.52	24	4.59
33	Czech Republic	4.07	31	4.56	29	3.92	58	3.72
34	Lithuania	4.05	32	4.50	48	3.21	31	4.45
35	Barbados	3.99	17	5.27	58	3.12	67	3.58
36	China	3.99	71	2.79	16	4.73	30	4.45
37	Cyprus	3.94	38	4.13	43	3.34	37	4.35
38	Hungary	3.92	34	4.36	38	3.56	54	3.84
39	Italy	3.86	36	4.22	25	4.06	87	3.31
40	Qatar	3.80	43	3.84	56	3.12	33	4.44
41	Saudi Arabia	3.68	42	3.96	49	3.20	52	3.89
42	Chile	3.67	53	3.24	51	3.19	25	4.59
43	Croatia	3.67	39	4.08	63	3.04	53	3.89
44	Puerto Rico	3.67	62	2.96	23	4.16	51	3.89
45	Slovak Republic	3.61	33	4.44	50	3.20	95	3.17
46	Montenegro	3.58	41	3.97	45	3.30	76	3.45
47	Brazil	3.53	61	2.97	37	3.62	45	4.00
48	Latvia	3.51	40	4.02	68	2.91	62	3.61
49	Tunisia	3.50	66	2.85	55	3.13	28	4.52
50	Thailand	3.44	67	2.84	33	3.80	60	3.68
51	Jordan	3.43	68	2.82	57	3.12	38	4.35
52	Colombia	3.41	63	2.92	77	2.85	32	4.45
53	Uruguay	3.39	51	3.40	86	2.78	47	3.99
54	Kazakhstan	3.36	57	3.01	88	2.76	39	4.30
55	Oman	3.33	56	3.04	67	2.92	44	4.04
56	Brunei Darussalam	3.33	50	3.42	85	2.80	56	3.78
57	Bulgaria	3.33	47	3.59	87	2.76	61	3.63
58	Mexico	3.32	76	2.67	42	3.39	50	3.90
59	Poland	3.32	45	3.75	53	3.15	105	3.04
60	Greece	3.31	48	3.52	73	2.87	70	3.55
61	Costa Rica	3.31	79	2.63	34	3.74	69	3.55
62	Turkey	3.31	55	3.04	54	3.15	57	3.73
63	Romania	3.27	49	3.43	72	2.89	75	3.49
64	India	3.25	109	1.83	26	3.97	48	3.95
65	Macedonia, FYR	3.24	44	3.75	125	2.37	66	3.59
66	Panama	3.18	64	2.89	75	2.85	55	3.79
67	Vietnam	3.17	75	2.70	46	3.25	68	3.56
68	Azerbaijan	3.17	77	2.66	70	2.90	49	3.95
69	Dominican Republic	3.16	78	2.65	82	2.82	46	4.00
70	Egypt	3.12	100	2.04	52	3.16	42	4.15
71	Russian Federation	3.11	52	3.39	71	2.89	107	3.03
72	Philippines	3.10	88	2.29	35	3.70	85	3.32
73	Jamaica	3.10	54	3.13	91	2.75	82	3.41
74	Kuwait	3.09	59	3.00	79	2.84	81	3.42
75	Mauritius	3.06	70	2.80	66	2.94	77	3.45
76	South Africa	3.05	89	2.29	44	3.33	71	3.53
77	Guatemala	3.02	85	2.42	62	3.04	63	3.61
78	Mongolia	3.02	86	2.38	104	2.54	43	4.13
79	Ukraine	2.99	74	2.72	78	2.85	80	3.42
80	Argentina	2.98	58	3.01	76	2.85	102	3.09
81	El Salvador	2.95	84	2.50	90	2.75	65	3.60
82	Sri Lanka	2.94	101	2.03	61	3.09	59	3.69
83	Senegal	2.92	96	2.12	64	3.03	64	3.61
84	Serbia	2.91	60	3.00	93	2.70	106	3.03
85	Trinidad and Tobago	2.90	65	2.87	100	2.60	93	3.23
86	Indonesia	2.90	92	2.17	47	3.21	86	3.31
87	Morocco	2.90	83	2.56	74	2.86	92	3.27
88	Peru	2.88	81	2.56	96	2.66	83	3.41
89	Albania	2.86	80	2.61	106	2.54	79	3.42
90	Georgia	2.84	73	2.72	111	2.49	88	3.31
91	Gambia, The	2.79	97	2.10	89	2.75	72	3.53
92	Kenya	2.73	111	1.80	69	2.91	74	3.50
93	Libya	2.72	103	1.93	59	3.11	100	3.12
94	Pakistan	2.71	102	2.00	80	2.83	91	3.29
95	Honduras	2.70	90	2.24	92	2.71	97	3.14
96	Venezuela	2.70	72	2.72	112	2.49	118	2.88
97	Botswana	2.69	95	2.13	97	2.63	90	3.31
98	Mauritania	2.64	108	1.84	94	2.68	84	3.40
99	Tajikistan	2.63	104	1.92	65	3.03	114	2.95
100	Ecuador	2.60	82	2.56	124	2.40	120	2.85
101	Côte d'Ivoire	2.58	114	1.72	84	2.80	94	3.22
102	Nigeria	2.56	105	1.91	83	2.82	113	2.95
103	Bosnia and Herzegovina	2.55	69	2.80	117	2.45	131	2.41
104	Namibia	2.53	98	2.08	81	2.83	122	2.67
105	Armenia	2.52	87	2.32	113	2.48	121	2.77
106	Mali	2.52	122	1.53	108	2.51	73	3.51
107	Zambia	2.52	118	1.57	105	2.54	78	3.45
108	Kyrgyz Republic	2.48	99	2.08	130	2.31	104	3.06
109	Guyana	2.41	106	1.88	118	2.45	117	2.90
110	Nicaragua	2.40	110	1.83	122	2.41	110	2.97
111	Madagascar	2.39	123	1.50	103	2.55	101	3.11
112	Benin	2.39	116	1.60	119	2.44	99	3.12
113	Uganda	2.38	117	1.59	109	2.50	103	3.06
114	Cambodia	2.38	121	1.54	101	2.60	109	3.01
115	Lesotho	2.37	119	1.57	98	2.62	116	2.92
116	Cameroon	2.37	115	1.61	107	2.53	111	2.96
117	Burkina Faso	2.36	128	1.33	116	2.45	89	3.31
118	Mozambique	2.36	126	1.44	110	2.49	96	3.15
119	Syria	2.34	112	1.78	95	2.67	126	2.58
120	Ghana	2.34	113	1.76	123	2.40	119	2.86
121	Paraguay	2.32	91	2.17	131	2.25	130	2.55
122	Tanzania	2.30	124	1.47	114	2.46	112	2.96
123	Malawi	2.28	129	1.30	120	2.42	98	3.14
124	Suriname	2.26	94	2.13	128	2.32	132	2.33
125	Algeria	2.26	93	2.14	133	2.06	128	2.58
126	Bangladesh	2.22	127	1.35	126	2.36	115	2.93
127	Bolivia	2.20	107	1.85	132	2.14	123	2.63
128	Ethiopia	2.20	132	1.26	127	2.32	108	3.03
129	Nepal	2.16	125	1.46	121	2.41	124	2.60
130	Timor-Leste	2.15	131	1.27	99	2.62	129	2.56
131	Chad	2.14	130	1.27	102	2.56	125	2.60
132	Burundi	2.08	133	1.21	115	2.46	127	2.58
133	Zimbabwe	2.01	120	1.55	129	2.31	133	2.17

(Cont'd.)

23rd and 34th in terms of government readiness and usage, respectively—its two lowest showings among the nine pillars. Businesses appear to be at the forefront of ICT readiness and diffusion, as suggested by the outstanding marks the business sector gets for its readiness (1st) and usage (2nd). Switzerland also offers an extremely conducive environment for ICT development (4th), with an extensive availability of quality soft and hard infrastructure, favorable regulations, and excellent market environment. Among the country's relative competitive weaknesses, telephony costs remain very high by international standards, even when accounting for differences in costs of living. As an example, Switzerland ranks 84th and 62nd for mobile cellular and fixed telephones tariffs, respectively.

Down two positions from last year, the **United States** places 5th. The country has not been able to regain the 1st position, earned for the last time in 2005. Yet its performance remains excellent in many ways. The country boasts a very conducive ICT environment (10th) thanks to intensive competition, excellent infrastructure, and top-notch education. The country ranks 2nd in ICT usage, with businesses (1st) and the government (4th) fully leveraging ICT. Individual usage is somewhat less satisfactory at 16th, mainly as a result of a comparatively low mobile subscription penetration rate (72nd, with some 86.8 mobile telephone subscriptions per 100 population). The enabling environment and widespread usage contribute to making the United States one of the world's most innovative countries, as reflected by its impressive 250.1 utility patents per million population (3rd). Yet some aspects of the US performance show room for improvement. Total taxes amount to 46 percent of corporate profits (85th) and the burden of government regulation remains high (53rd), while the quality of the general regulatory framework is fairly poor at 19th, with low marks for the effectiveness of law making (37th), the protection of property rights (30th), and the independence of the judiciary (26th), among other indicators.

Finland ranks 6th for the third consecutive year. The country obtains excellent marks in both the environment subindex (5th) and readiness subindex (3rd), while results in the usage component (13th) are slightly weaker—a pattern observed across all the Nordic countries.

Following its return to the top 10 last year, **Canada** continues its progression and now ranks 7th. Internet use is pervasive (11th, with 75.4 users per 100 population), and the country is second to none when it comes to PCs, with almost one computer per inhabitant. On a less positive note, with 66.4 subscriptions per 100 population (93rd), Canada's mobile telephony penetration rate remains by far the lowest among all advanced economies. This is attributable in part to the relatively high costs of mobile telephony (56th for mobile cellular tariffs).

Another of Asia's star economies, **Hong Kong SAR** (8th) improves four ranks and enters the top 10 for the second time after an incursion in 2004–05. The country displays the most conducive market environment for ICT in the world, owing to its developed financial sector, little taxation, and limited red tape. In this pillar, however, one observes a continuous deterioration in the assessment of the freedom of the press (51st, one of the lowest-ranked indicators). Hong Kong excels in individual readiness (2nd behind Singapore) and individual usage, thanks to one of the densest levels of ICT diffusion in the world. Also impressive is the government's use of ICT (7th). However, the unavailability of certain indicators makes comparisons with peers difficult. By contrast, ICT is not perceived to be a major priority for the government going forward (21st in the government readiness pillar).

The **Netherlands** (9th) remains firmly anchored within the top 10 for the fourth consecutive year. The country comes 2nd in the individual usage pillar, thanks to very high penetration rates. Mobile telephony has become universal, with more than one subscriber per inhabitant. Internet penetration is the 3rd highest in the world, with 86.5 users per 100 population, over a third of whom have broadband access (4th). It is therefore it is not a surprise that the country boasts the world's largest Internet bandwidth, equivalent to 78 kilobits per second per inhabitant. Last but not least, there are about 91 PCs per 100 population (3rd).

Fairly stable at 10th, **Norway** delivers a convincing performance, led by an extremely conducive ICT environment (3rd), notably in its infrastructure component (4th). Also individuals enjoy outstanding levels of ICT penetration (11th for individual usage), with among the highest in the world Internet usage (i.e., 6th for both Internet users and Broadband Internet subscribers).

Tables 5 and 6 provide some additional insight on the most successful economies in leveraging ICT this year, by respectively looking at the top three performers in each of the nine pillars composing the NRI, and at the evolution of the top 10 economies since 2001.

Table 5 highlights a number of features:

1. In eight of the nine pillars, the top spot belongs to a member of the overall top 10, the only exception being Korea, which ranks 15th overall and leads the government usage pillar.

2. As a sign of its outstanding performance, Singapore tops three pillars and ranks five times in the top 3, while Sweden ranks first in two pillars and four times in the top 3. No other country tops more than one pillar.

3. Presence in the top 10 gives an indication of the consistency and strength of a country's perform-

Table 5: Composition of the top 3 by pillar and presence in the top 10

Country/Economy	Overall NRI	Market environment	Political and regulatory environment	Infrastructure environment	Individual readiness	Business readiness	Government readiness	Individual usage	Business usage	Government usage	No. of times in top 10	No. of times in top 3
Sweden	**1**	—	**2**	**1**	—	**3**	—	**1**	—	—	6	4
Singapore	**2**	**2**	**1**	—	**1**	—	**1**	—	—	**2**	8	5
Denmark	**3**	—	—	**3**	—	**2**	—	—	—	—	8	2
Switzerland	**4**	**3**	—	—	—	**1**	—	**3**	**2**	—	6	4
United States	**5**	—	—	—	—	—	—	—	**1**	—	5	1
Finland	**6**	—	—	—	**3**	—	—	—	—	—	8	1
Canada	**7**	—	—	—	—	—	—	—	—	—	4	—
Hong Kong SAR	**8**	**1**	—	—	**2**	—	—	—	—	—	5	2
Netherlands	**9**	—	—	—	—	—	—	**2**	—	—	4	1
Norway	**10**	—	—	—	—	—	—	—	—	—	3	—
Taiwan, China	**11**	—	—	—	—	—	—	—	—	**3**	3	1
Iceland	**12**	—	—	**2**	—	—	—	—	—	—	3	1
Korea, Rep.	**15**	—	—	—	—	—	—	—	—	**1**	2	1
New Zealand	**19**	—	**3**	—	—	—	—	—	—	—	1	1
Japan	**21**	—	—	—	—	—	—	—	**3**	—	1	1
United Arab Emirates	**23**	—	—	—	—	—	**2**	—	—	—	2	1
Qatar	**30**	—	—	—	—	—	**3**	—	—	—	1	1

Table 6: Performance of the top 10 economies since 2001–02

Country/Economy	2009–10	2008–09	2007–08	2006–07	2005–06	2004–05	2003–04	2002–03	2001–02
Coverage	133	134	127	122	115	104	102	82	75
Sweden	**1**	**2**	**2**	**2**	8	6	4	4	4
Singapore	**2**	4	5	**3**	**2**	**1**	**2**	**3**	8
Denmark	**3**	**1**	**1**	**1**	**3**	4	5	8	7
Switzerland	**4**	5	**3**	5	9	9	7	13	16
United States	**5**	**3**	4	7	**1**	5	**1**	**2**	**1**
Finland	**6**	6	6	4	5	**3**	**3**	**1**	**3**
Canada	**7**	10	13	11	6	10	6	6	12
Hong Kong SAR	**8**	12	11	12	11	7	18	18	13
Netherlands	**9**	9	7	6	12	16	13	11	6
Norway	**10**	8	10	10	13	13	8	17	5
Iceland	11	7	8	8	4	**2**	10	5	**2**

Note: Top three ranks in each edition are in blue typeface.

ance. Singapore, Denmark and Finland appear *eight* times in the top 10, Switzerland and Sweden six times.

4. United Arab Emirates and Qatar, placing 2nd and 3rd in government readiness, just behind Singapore, are the two lowest-ranked countries to appear in the top 3 of any pillar.

As shown in Table 6, in the nine editions of the NRI, the top spot in the overall rankings has always been occupied by a member of the current top 10. Denmark and the United States each topped the rankings three times. Sweden is the current leader, while Finland and Singapore were number 1 in 2002–03 and 2004–05, respectively. In fact, since 2001–02, the top 3 places have been shared among just 11 countries. Iceland is the only country outside the current top 10 that has ever been ranked among the top 3 (2nd in the inaugural edition). Finally, Switzerland (4th) has realized the most impressive progression over the years. Ranked 16th in 2001, the country has been a member of the top 5 since 2006–07.

Box 3 presents the main findings of an analysis across time aimed at identifying the countries that have progressed the most in the nine years since the NRI's inception.

Europe

Europe remains one of the most networked regions of the world, with Sweden topping the NRI rankings for the first time and 11 other economies featuring among the top 20 best performers, namely Denmark (3rd), Switzerland (4th), Finland (6th), the Netherlands (9th), Norway (10th), **Iceland** (12th), **Germany** (14th), the **United Kingdom** (13th), **Luxembourg** (17th), **France** (18th), and **Austria** (20th).

The **Nordic countries** keep leveraging ICT to the fullest in their national competitiveness strategies, building on a number of enabling common factors that have allowed them to feature consistently among the best performers since the NRI's inception (see Table 6). Among these factors, one can cite an ICT-conducive market, regulatory, and infrastructure environment; a consistent focus on education as a key competitiveness lever, which resulted in top-class educational and research systems; a strong culture for innovation both at the private and public levels; and, last but not least, the central role given to ICT in the government's agenda, as an enabler of efficiency and sustained growth, coupled with a constant effort to promote ICT diffusion. As a result of the above, Nordic countries can boast extremely high ICT penetration rates and sophisticated businesses successfully competing in the international markets with their high-tech and innovative products.

These strengths represent solid foundations for these countries' continued competitiveness going forward. They may prove particularly crucial for Iceland in the design and implementation of its recovery plan in the wake of the near economic collapse experienced by the country in late 2008.

The **EU15** economies present a more mixed picture, with different degrees of ICT prowess displayed throughout the region.[12] While Sweden, Denmark, Finland, the Netherlands, Norway, Germany, the United Kingdom, Austria, France, **Belgium** (22nd), and **Ireland** (24th), among other countries, continue to be at the forefront of networked readiness and fully leverage ICT for the enhanced competitiveness of their economies, **Greece** (56th) and, to a lesser extent, **Italy** (48th) trail behind because of a number of similar weaknesses. In particular, in both countries the market and regulatory

Box 3: Tracking countries' evolution in networked readiness over time

Table A provides the updated results of an analysis of country performance in the Networked Readiness Index (NRI) based on decile rankings.[1] A decile ranking attributes ranks based on scores while taking into account the number of countries in the sample.[2] This allows a comparison of countries' performances over time in the presence of varying sample sizes, as is the case for the GITR, whose country coverage has fluctuated since its first edition, increasing from 75 countries to 133 this year. For a country to be ranked 50th among 75 countries is not the same as being ranked 50th out of 133.[3]

In Table A, for each economy we report the edition of the NRI when that economy was included for the first time, along with its rank and corresponding decile rank at that time; its 2009–10 rank and corresponding decile rank; and the difference between the two decile ranks, as an indication of the economy's dynamism.

The most dynamic region according to our analysis appears to be Asia, which hosts the economies that have progressed the most since their first inclusion in the NRI. China has gone from rank 64th out of 75 countries (9th decile) in 2001–02 to 37th out of 133 (3rd decile)—a giant leap across six deciles. Over the same period, Vietnam and India have gone up five and four decile ranks, respectively. Sri Lanka (up three decile ranks), Indonesia, Malaysia, and Thailand (all up two decile ranks) also contribute to the region's dynamism.

In Europe, Romania was among the worst performers in 2001–02 (65th out of 75 countries). It now belongs to the top half of the ranking—a gain of four decile ranks. In the Middle East, Jordan has gone up from 7th to 4th decile.

In Africa, Mauritius (53th) has progressed three decile ranks and now outperforms South Africa (57th). Gambia (77th) has achieved a similar performance in just seven editions, moving from 9th decile in 2003–04 to 6th decile today.

In Latin America, three countries stand out, having improved three decile ranks since 2001–02: Colombia, Guatemala, and Jamaica. Despite their dynamism, all these countries remain far below the leading positions in the rankings.

The closer to the top, the more static the ranking becomes. Switzerland is the only country initially ranked lower than the 2nd decile to have reached the 1st decile. Estonia, France, and Luxembourg are the only countries initially ranked beyond the 3rd decile that now belong to the 2nd decile. The seven countries ranked in the top decile in 2001–02, namely Denmark, Finland, Iceland, the Netherlands, Norway, Sweden, and the United States, still appear in the top decile of this year's ranking. Only two of these, Norway and the Netherlands, ranked in a lower decile at some point during this nine-year period.

Less successful stories include Tanzania (120th, 10th decile), which has dropped three decile ranks in the course of seven editions. Argentina (5th to 7th decile) and Venezuela

(Cont'd.)

Table A: Evolution in decile rankings since first inclusion

Country	Region*	First inclusion			NRI 2009–2010		Decile
		Edition	Rank	Decile	Rank	Decile	diff.
Albania	CEE	05–06	106	10	95	8	2
Algeria	AF	03–04	87	9	113	9	—
Argentina	WH	01–02	32	5	91	7	–2
Armenia	CIS	05–06	86	8	101	8	—
Australia	AE	01–02	14	2	16	2	—
Austria	AE	01–02	9	2	20	2	—
Azerbaijan	CIS	05–06	73	7	64	5	2
Bahrain	ME	04–05	33	4	29	3	1
Bangladesh	DA	01–02	73	10	118	9	1
Barbados	WH	06–07	40	4	35	3	1
Belgium	AE	01–02	18	3	22	2	1
Benin	AF	05–06	108	10	111	9	1
Bolivia	WH	01–02	67	9	131	10	–1
Bosnia and Herzegovina	CEE	04–05	89	9	110	9	—
Botswana	AF	02–03	44	6	86	7	–1
Brazil	WH	01–02	38	6	61	5	1
Bulgaria	CEE	01–02	53	8	71	6	2
Burkina Faso	AF	06–07	99	9	108	9	—
Burundi	AF	06–07	121	10	129	10	—
Cambodia	DA	05–06	104	10	117	9	1
Cameroon	AF	03–04	83	9	128	10	–1
Canada	AE	01–02	12	2	7	1	1
Chad	AF	03–04	102	10	133	10	—
Chile	WH	01–02	34	5	40	4	1
China	DA	01–02	64	9	37	3	6
Colombia	WH	01–02	57	8	60	5	3
Costa Rica	WH	01–02	45	6	49	4	2
Croatia	CEE	02–03	48	6	51	4	2
Cyprus	AE	04–05	37	4	32	3	1
Czech Republic	CEE	01–02	28	4	36	3	1
Denmark	AE	01–02	7	1	3	1	—
Dominican Republic	WH	01–02	47	7	74	6	1
Ecuador	WH	01–02	71	10	114	9	1
Egypt	ME	01–02	60	8	70	6	2
El Salvador	WH	01–02	55	8	81	7	1
Estonia	CEE	01–02	23	4	25	2	2
Ethiopia	AF	03–04	101	10	122	10	—
Finland	AE	01–02	3	1	6	1	—
France	AE	01–02	24	4	18	2	2
Gambia, The	AF	03–04	82	9	77	6	3
Georgia	CIS	04–05	91	9	93	7	2
Germany	AE	01–02	17	3	14	2	1
Ghana	AF	03–04	74	8	98	8	—
Greece	AE	01–02	31	5	56	5	—
Guatemala	WH	01–02	68	10	83	7	3
Guyana	WH	05–06	111	10	100	8	2
Honduras	WH	01–02	72	10	106	8	2
Hong Kong SAR	AE	01–02	13	2	8	1	1
Hungary	CEE	01–02	30	4	46	4	—
Iceland	AE	01–02	2	1	12	1	—
India	DA	01–02	54	8	43	4	4
Indonesia	DA	01–02	59	8	67	6	2
Ireland	AE	01–02	19	3	24	2	1
Israel	AE	01–02	22	3	28	3	—
Italy	AE	01–02	25	4	48	4	—
Jamaica	WH	01–02	56	8	66	5	3
Japan	AE	01–02	21	3	21	2	1
Jordan	ME	01–02	49	7	44	4	3
Kazakhstan	CIS	05–06	60	6	68	6	—
Kenya	AF	03–04	84	9	90	7	2
Korea, Rep.	AE	01–02	20	3	15	2	1
Kuwait	ME	05–06	46	4	76	6	–2
Kyrgyz Republic	CIS	05–06	103	9	123	10	–1
Latvia	CEE	01–02	39	6	52	4	2
Lesotho	AF	06–07	116	10	107	9	1
Libya	ME	07–08	105	9	103	8	1
Lithuania	CEE	01–02	42	6	41	4	2
Luxembourg	AE	02–03	27	4	17	2	2
Macedonia, FYR	CEE	03–04	75	8	73	6	2
Madagascar	AF	03–04	92	10	121	10	—
Malawi	AF	04–05	93	9	119	9	—
Malaysia	DA	01–02	36	5	27	3	2
Mali	AF	03–04	96	10	96	8	2
Malta	CEE	03–04	27	3	26	2	1
Mauritania	AF	06–07	87	8	102	8	—
Mauritius	AF	01–02	51	7	53	4	3
Mexico	WH	01–02	44	6	78	6	—
Mongolia	CIS	05–06	92	8	94	8	—
Morocco	AF	02–03	52	7	88	7	—
Mozambique	AF	03–04	97	10	116	9	1
Namibia	AF	02–03	53	7	89	7	—
Nepal	DA	06–07	108	9	124	10	–1
Netherlands	AE	01–02	6	1	9	1	—
New Zealand	AE	01–02	11	2	19	2	—
Nicaragua	WH	01–02	69	10	125	10	—
Nigeria	AF	01–02	75	10	99	8	2
Norway	AE	01–02	5	1	10	1	—
Oman	ME	07–08	53	5	50	4	1
Pakistan	DA	03–04	76	8	87	7	1
Panama	WH	01–02	48	7	58	5	2
Paraguay	WH	01–02	63	9	127	10	–1
Peru	WH	01–02	52	7	92	7	—
Philippines	DA	01–02	58	8	85	7	1
Poland	CEE	01–02	35	5	65	5	—
Portugal	AE	01–02	27	4	33	3	1
Puerto Rico	WH	07–08	39	4	45	4	—
Qatar	ME	05–06	39	4	30	3	1
Romania	CEE	01–02	65	9	59	5	4
Russian Federation	CIS	01–02	61	9	80	7	2
Saudi Arabia	ME	07–08	48	4	38	3	1
Senegal	AF	03–04	81	8	75	6	2
Singapore	AE	01–02	8	2	2	1	1
Slovak Republic	CEE	01–02	33	5	55	5	—
Slovenia	AE	01–02	29	4	31	3	1
South Africa	AF	01–02	40	6	62	5	1
Spain	AE	01–02	26	4	34	3	1
Sri Lanka	DA	01–02	62	9	72	6	3
Suriname	WH	06–07	110	10	126	10	—
Sweden	AE	01–02	4	1	1	1	—
Switzerland	AE	01–02	16	3	4	1	2
Syria	ME	07–08	110	9	105	8	1
Taiwan, China	AE	01–02	15	2	11	1	1
Tajikistan	CIS	05–06	93	9	109	9	—
Tanzania	AF	03–04	71	7	120	10	–3
Thailand	DA	01–02	43	6	47	4	2
Trinidad and Tobago	WH	01–02	46	7	79	6	1
Tunisia	AF	02–03	34	5	39	3	2
Turkey	CEE	01–02	41	6	69	6	—
Uganda	AF	03–04	80	8	115	9	–1
Ukraine	CIS	01–02	66	9	82	7	2
United Arab Emirates	ME	04–05	23	3	23	2	1
United Kingdom	AE	01–02	10	2	13	1	1
United States	AE	01–02	1	1	5	1	—
Uruguay	WH	01–02	37	5	57	5	—
Venezuela	WH	01–02	50	7	112	9	–2
Vietnam	DA	01–02	74	10	54	5	5
Zambia	AF	03–04	85	9	97	8	1
Zimbabwe	AF	01–02	70	10	132	10	—

Note: * Abbreviations: Advanced Economies (AE); Africa (AF); Central and Eastern Europe (CEE); CIS and Mongolia (CIS); Middle East (ME); Western Hemisphere (WH). See text for details. Countries added in, or after, the 2008–2009 edition are not reported.

Box 3: Tracking countries' evolution in networked readiness over time *(cont'd.)*

(7th to 9th) have both lost two decile positions since 2001–02. Meanwhile, Greece and Italy, two EU members, have not managed to improve by a single decile despite the nearly twofold increase in country coverage.

Note

1. This analysis was conducted for the first time two years ago and updated last year.
2. For each edition of the NRI, the overall ranking was divided into 10 segments called *deciles,* each with an equal count of ranks. The 1st and 10th deciles comprise the economies that rank the highest and the lowest, respectively. The 1st decile includes ranks 1 through 6 in the 2001–02 edition, and ranks 1 through 13 in the 2009–10 edition. Similarly, the 10th decile includes ranks 68 through 75 in 2001–02 and ranks 120 through 133 in 2009–10. Based on this approach, the 50th rank corresponds to the 7th decile in 2001–02 and to the 4th decile in 2009–10.
3. The decile ranking approach presents one caveat: countries that were included after the first edition of the NRI in 2001 are, in majority, from the developing world. Admittedly, their performance tends to be worse than that of incumbent countries. This means that it is enough for an incumbent country to maintain its rank to automatically progress in the decile ranking. However, there are several cases of incumbent countries losing ground to incoming countries and, as a result, stagnating or even dropping in the decile rankings, as detailed above.

environment does not seem to be very conducive to ICT and innovation development,[13] with little priority given by the two governments to ICT usage and diffusion in their overall strategy (93rd and 120th for government readiness and 70th and 87th for government usage for Greece and Italy, respectively). Chapters 2.1 and 2.2, respectively, provide interesting accounts of **Spain** (34th) and Ireland's innovation and ICT diffusion strategies of recent years.

Although losing some ground since last year (down seven places), **Estonia** (25th) continues to lead the **EU accession 12,**[14] with a solid networked readiness performance notwithstanding the economic turmoil prompted by the recent major global economic crisis. Since regaining independence in the early 1990s, Estonia has successfully leveraged ICT, and its revolutionary power, to transform itself into a very competitive and networked market economy in less than two decades, with top-class and widespread e-services for the benefit of its citizens. This has been achieved thanks to a visionary leadership and a consistent focus on innovation and ICT penetration as key levers of the general competitiveness strategy.[15]

Slovenia (31st), the **Czech Republic** (36th), and, to a lesser extent, **Lithuania** (41st) follow closely, with satisfactory levels of networked readiness. **Poland** (65th) and **Bulgaria** (71st) remain the laggards in the region. In particular, while Poland posts a remarkable four-place improvement from last year, Bulgaria appears to be losing some ground in networked readiness, with a three-place fall from 2008–09. The country continues to display important flaws in the quality of its market (88th) and regulatory (104th) environment, high ICT access costs (e.g., it is ranked 111th for its mobile telephone tariffs), and inadequate ICT prioritization and use by the government (98th and 61st for government readiness and usage, respectively). Poland suffers from similar weaknesses in its networked readiness landscape: although ICT usage has registered an important improvement (up 22 places), at 105th it remains disappointing, while government readiness is poorly assessed at 113th.

Turkey continues the downward trend observed in the last few years, with another eight-position drop to 69th place. The country can count on a fairly ICT friendly environment (59th) and on moderately high levels of ICT usage (62nd), especially by businesses (54th); however, the overall readiness of the country remains problematic at 90th, with especially low levels of individual readiness (94th). A stronger government vision and leadership in ICT diffusion would no doubt help the country in regaining ground and better leverage ICT for increased growth and development. Currently the government gets rather low marks both for its readiness (83rd) and use (57th).

Russia drops six positions to 80th place, with a deteriorating performance especially in the environment component (from 62nd in 2008–09 to 86th this year). Russia's showing appears quite mixed, with important elements of strength not able to completely offset the worrisome shortcomings highlighted by the NRI. A fairly ICT-conducive infrastructure (43rd), supported by good education and research bases and a fairly satisfactory individual readiness and usage (60th and 52nd), coexists with a bleak market (116th) and regulatory (109th) environment for ICT. There is also an almost nonexistent focus on ICT in the government's agenda, reflected in particularly poor marks for government readiness and usage (99th and 107th, respectively).

Asia and the Pacific

Home to two-thirds of the world's population, the Asia and Pacific region presents a very mixed picture in terms of economic, political, and social performances. This diversity is also reflected in the NRI assessment. The region spans the entire rankings from second-best Singapore to third-to-last Timor-Leste. It hosts some of the most successful and most dynamic economies when it comes to networked readiness. Singapore and Hong Kong are top 10 regulars, with Taiwan not too far behind. Malaysia (upper-middle income), China (lower-middle income), and Vietnam (low income) each top their respective income group (see Box 2); China, Vietnam, and India are also the countries progressing the most in the NRI rankings since 2001 (see Box 3). According to the ITU, in 2008 there were more mobile phone subscriptions in China (641 million) than in the entire European Union (609 million), while India (347 million subscriptions) surpassed the United States (271 million) in 2007, thanks to an annual growth of 65 percent in the past decade.

Following closely the best two performers in the region Singapore (2nd) and Hong Kong (8th), **Taiwan** (11th) posts a strong performance largely in line with last year, with high ICT penetration rates—notably with respect to PCs, with over 80 computers per 100 population (5th). Taiwan remains one of the world's most prolific innovators, achieving the highest number of utility patents per million population (279.25) in the world. Furthermore, nearly half of Taiwanese exports are high-tech products. As in Singapore and Hong Kong, the government has played a pivotal role in pushing the ICT agenda. Taiwan ranks 8th in terms of government readiness and 3rd for government usage. On a less positive note, its low rank in the political and regulatory environment pillar (44th) is a concern: Taiwan ranks no higher than 23rd on any of the nine indicators composing the pillar, and as low as 120th for the number of procedures required to enforce a contract.

Korea drops four places to 15th, with a worsening performance in most NRI indicators but nonetheless a convincing showing. The country continues to display outstanding levels of ICT usage by individuals (13th) and businesses (5th). Dense penetration of mobile telephony, Internet, and PCs; one of the world's best rates of patenting (155.97 per million population, corresponding to a 5th rank); and high-tech exports (6th) contribute to this excellent result. Last but not least, the country tops the government usage pillar, with the best-developed e-government services and most extensive e-participation in the world according to the United Nations. On the other hand, the environment for ICT development is assessed comparatively poorly at 29th, with particularly middling marks in its market (43rd) and regulatory (38th) components.

Australia is fairly stable at 16th, with its best showing in the market environment pillar (14th), thanks to intense competition and ICT-friendly regulations, among other indicators. The performance is more mixed when it comes to individual (31st) and business (21st) readiness, notably due to high telephony costs (76th and 82nd for mobile cellular and fixed telephone tariffs, respectively). On the other hand, business (30th) and, to a lesser extent, individual (20th) usage could be improved. This contrasts with the good results obtained in the government usage pillar (5th).

Similar to neighboring Australia, **New Zealand**'s good networked performance (19th) rests on the conduciveness of its environment for ICT (11th), although the pillar's overall rank conceals a very mixed assessment. While variables such as ease of creating a business (1st), contract enforcement, ICT regulations, judiciary independence, and property rights get excellent marks (i.e., rank 15 or better), availability of financing, taxation, and cluster development are assessed much more poorly. Government usage is another area of strength at 15th, with a remarkable 35-place leap in government success in ICT promotion (59th), partly because of the high priority given to ICT and innovation in the country's recent stimulus package. Among the relative weaknesses, ICT readiness (29th) and usage (24th) show some margin for improvement. In particular, the country's readiness is penalized by high residential monthly telephone subscription (125th), mobile cellular tariffs (92nd), business monthly telephone subscription (107th), limited government procurements of advanced technology (57th), and ICT focus in the government vision of the future (31st), among other elements.

Despite losing some ground in networked readiness this year, **Japan** (21st) remains one of the world's most innovative countries when measured in terms of utility patents per million habitants (263.35, 2nd). The country's satisfactory performance is largely driven by its sophisticated and innovative business sector, with world-class clusters (1st) and intense business competition (8th). Business readiness is excellent (13th) and business usage outstanding (3rd). On the other hand, the government's showing appears much weaker. Public institutions are perceived as lacking efficiency, the time to start a business is lengthy and procedures numerous, and taxation is high (105th), limiting the incentive to work and invest (101st). Moreover, both government readiness (38th) and usage (22nd) are fairly limited. Also undermining ICT diffusion are the costly communication tariffs, notably for mobile telephony (106th). If not addressed promptly, these shortcomings may start hurting Japan's capacity to innovate going forward.

At 27th, **Malaysia** is the highest-ranked nation not to belong to the group of high-income countries (see Box 2). The government seems to be clearly leading the way, with outstanding marks for its readiness (11th) and usage (12th). These two results boost Malaysia's showing in the readiness component (11th) and government usage pillar (12th). Malaysia posts a less convincing showing in its infrastructure environment (51st) and its level of individual usage (46th).

Leading the BRIC economies, **China** continues its progression in the NRI rankings, leapfrogging another nine places to 37th position. As mentioned in Box 3, China is the country that has progressed the most since 2001–02. It also tops the lower-middle-income country group, ahead of Tunisia and Jordan. It is interesting to note that the gap among the BRIC economies in terms of networked readiness seem to be widening,[16] with 43 places now between China and lowest-ranked BRIC, Russia (80th). China is the biggest exporter of products from creative industries when measured as a share of total world exports in these products (18.19 percent), and a major exporter of high-tech products (27.62 of GDP, 8th). Moreover, China ranks an impressive 9th in the individual readiness pillar. Yet there remains considerable room for improvement in a number of dimensions, notably in the environment component (57th), displaying overregulated markets, high taxation (123rd), and poor financial market sophistication (78th), among other indicators. Also key to ICT penetration and optimal use, both hard and soft infrastructure (70th) suffers from serious shortcomings. While it could do a lot more to make the environment more ICT-conducive, the government has declared ICT to be one of its priorities and already makes extensive use of ICT. China ranks an impressive 14th with respect to government readiness and 30th for government usage. Chapter 2.4 explores the sustainability of ICT development, focusing on the Internet in particular, in the country.

Significant improvements across the board help in lifting **India**'s position from 54th to 43rd. In particular, India benefits from the new method of computing telecommunication costs, which boosts the performance in the Individual readiness pillar (7th). Business readiness also remains high (23rd), and India has improved in the market environment pillar (35th, up from 50th). However, India is unlikely to pursue its fast-paced rise in the rankings unless it addresses some critical shortcomings having to do partly with the sheer size of its market. Infrastructure at 83rd remains inadequate to support optimal ICT usage in the country, notably given an insufficient number of telephone lines (3.21 per 100 population, 106th), few secure Internet servers (98th), poor Internet bandwidth (107th), and low tertiary education enrollment rates (11.85 percent, 100th). This is reflected in dismal ICT penetration rates (109th for individual usage), notably for mobile telephony (29.36 per 100 population, 116th), PCs (3.18 per 100 population, 93rd), Internet (4.38 per 100 population, 113th), and broadband Internet (0.45 per 100 population, 96th).

Vietnam realizes a remarkable 16-place leap forward to 54th rank, featuring for the first time in the top half of the NRI rankings. Vietnam has advanced five decile ranks since 2001–02. Compared with last year, Vietnam improves in all nine pillars and on 45 of the 68 indicators of the Index. Given its stage of development, Vietnam's performance in the readiness component (37th) is quite remarkable. Vietnam ranks 24th in the government readiness pillar, as a manifestation of the government's increasing focus on ICT. Over the last decade, the government has prioritized and taken initiatives to boost the development of ICT, particularly in software production, Internet infrastructure, IT education promotion, and human resources development. Yet usage by the government itself remains limited (68th).

Indonesia ranks 67th, significantly improving from last year. Asia's third-largest economy delivers a mixed performance, with rankings in the different pillars ranging from a 23rd place in individual readiness to a mediocre 100th position in the infrastructure environment.

Sri Lanka (72nd, unchanged), the **Philippines** (85th, unchanged), and **Mongolia** (94th, down one) deliver performances in line with last year, while **Pakistan** (87th) improves by some 11 places. **Bangladesh** (118th) and **Timor-Leste** (130th), at the bottom of the rankings, continue to lag the rest of the region by a wide margin.

Within the **Commonwealth of Independent States** (CIS), **Azerbaijan** (64th) leads the way. It is now the only CIS member in the top half of the overall NRI rankings. **Kazakhstan** (68th), up five positions, follows closely. Russia (80th, see the Europe section) and **Ukraine** (82nd), once a CIS frontrunner, both drop significantly, allowing **Armenia** (101st) to narrow the gap. **Kyrgyz Republic** falls eight places from last year, and at 123rd is now among the worst performers, while former CIS member **Georgia** ranks 93rd.

Latin America and the Caribbean

Similar to previous years, the networked readiness landscape of Latin America and the Caribbean, as assessed by the NRI, appears fairly varied, with a number of countries leveraging the latest ICT advances and consolidating progress in that direction, while others are progressing less. Moreover, the region's networked readiness shows a large margin for improvement if it is to catch up with best practices elsewhere: no Latin American or Caribbean economy features in the top 20 and only four are to be found in the top 50, namely **Barbados** (35th), **Chile** (40th), **Puerto Rico** (45th), and **Costa Rica** (49th).

The tiny Caribbean island of **Barbados,** at 35th, leads the region for the second year consecutively, after having overtaken long-standing best performer Chile in 2008–09. Among the country's many competitive advantages, one can cite its ICT-friendly environment (31st), notably in its regulatory (26th) and infrastructure (28th) components, coupled with remarkable levels of individual usage (17th) and, to a lesser extent, readiness (40th). Also ICT seems to be moving increasingly to the heart of the government's agenda and vision for future competitiveness: Barbados not only ranks 34th for government readiness, but the assessment for government usage has been substantially improving over the past two years, moving up from 87th in 2007–08 to 67th this year. On a less positive note, businesses continue to be the weakest link among the three stakeholders, with relatively poor levels of preparation (61st for business readiness) and ICT usage (58th). In particular, there are large margins for improvement in companies' investment in R&D (67th) and innovation potential (90th for utility patents and 83rd for creative industry exports).

Chile is fairly stable at 40th, confirming its ICT prowess in the region, especially for factors that relate to government readiness (45th) and usage (25th). ICT diffusion has been consistently prioritized by the government over the last 15 years or so, with an extremely ICT-conducive market and regulatory environment (27th and 32nd, respectively) and the adoption and successful implementation of one of the first digital agendas in the region, resulting in first-class e-government services (18th), among other features.[17] However, the country's individual readiness remains a problem at 85th, because of the quality of the educational system, notably in math and science (116th), coupled with high access costs for fixed lines (94th and 127th for residential telephone connection charges and residential monthly telephone subscription charges, respectively, and 78th for fixed telephone lines tariffs), broadband (85th for fixed broadband tariffs), and, to a lesser extent, mobile telephony (68th for mobile cellular tariffs).

Puerto Rico follows at 45th, with strong competitive strengths in the quality of its environment (36th) as well as in the readiness (35th) and usage (23rd) of its sophisticated business sector. Indeed, businesses seem the stakeholder leveraging ICT advances the most in the island, more than individuals (79th and 62nd for their readiness and usage, respectively) and the government (100th and 51st for its readiness and usage, respectively). In particular, the apparent lack of focus on ICT in the government agenda (102nd for government prioritization of ICT and 108th for the importance of ICT in the government vision of the future) is a reason for concern going forward.

Costa Rica continues the upward trend it started in 2007–08, climbing another seven places to 49th, with improvements across the board (10, 7, and 10 places up in the environment (71st), readiness (32nd), and usage (61st) subindexes, respectively). The country's networked readiness rests on a remarkable propensity to use ICT by all national stakeholders (10th, 39th, and 46th for individual, businesses, and government, respectively) together with satisfactory levels of business usage (34th). Moreover, the government appears to be placing increasing importance on ICT diffusion in its national strategy and using ICT more efficiently, as confirmed by the improving marks for government readiness over the last two years (from 66th in 2007–08 to 46th this year). However, the environment (71st), notably in its regulatory component (93rd), together with individual and government usage (79th and 69th, respectively) continue to be shortcomings toward a broader ICT use by all Costa Ricans.

Brazil's performance is fairly unchanged at 61st this year, with a solid showing driven mainly by businesses and the government. Both stakeholders display rather satisfactory levels of ICT readiness (38th and 68th for business and government readiness, respectively) and use ICT extensively in their transactions, operations, and service provision (37th and 45th for business and government usage, respectively). The business sector is at the forefront of leveraging ICT advances (26th for extent of business Internet use, among other indicators), thanks to its R&D investment (29th for company spending on R&D) and innovation potential (28th for capacity of innovation), among other factors. Brazil is also home of some of the most efficient and advanced e-government services worldwide (53rd for the development of government online services).[18] On the other hand, Brazil's market (87th) and regulatory (73rd) environment needs to be upgraded and made friendlier to ICT by reducing red tape and improving intellectual property protection as well as educational and training standards. The poor quality of the educational system (123rd), notably in math and science (103rd), coupled with the high cost of access to ICT (e.g., Brazil ranks 118th for mobile telephone tariffs) reflect in the country's low levels of individual readiness (99th) and in middling ICT penetration (61st for individual usage).

Uruguay moves up eight positions to 57th, with relevant advances across the board—9, 3, and 11 places up respectively in the environment (64th), readiness (58th), and usage (53rd) components. Despite a poor market environment (96th) and inadequate business usage (86th), the country can count on a fairly ICT-conducive regulatory and infrastructure environment (52nd and 61st, respectively), on a government with a clear vision on the importance of ICT for overall competitiveness (39th for government prioritization of ICT), and on relatively high levels of ICT penetration in civil society (51st for individual usage). In particular, government readiness is ranked a rather satisfactory 57th, improving 11 places from 2007–08. Uruguayan authorities have become more and more aware of the key role ICT can play in improving service provision and overall competitiveness. A good example of this is the country's Education Connect initiative, by which the government provided every single schoolchild in the country with a "One Laptop per Child" computer and distributed 18,000 computers to teachers across the country by late 2009. This initiative aims at dramatically improving traditional, computer, and Internet literacy rates as well as educational standards, ultimately contributing to a more competitive economy.[19]

Panama (58th), **Colombia** (60th), and **Jamaica** (66th) follow closely, with Panama and Colombia notably posting promising eight- and four-place improvements, respectively, from last year.

Losing further ground from last year (down 11 places), **Mexico,** at 78th, continues to suffer from a number of flaws obstructing a more comprehensive use of technology for increased competitiveness. Among these, one can cite the country's overregulated markets and poor regulatory (70th) and infrastructure (67th) environments and its weak educational standards (127th for the quality of science and math education and 115th for the quality of the educational system), which, together with high ICT access costs, translate into inadequate levels of individual readiness (109th) and usage (76th). On a more positive note, business usage is rather satisfactory (42nd), and the government displays a satisfactory degree of ICT usage (50th), also providing citizens with well-developed e-government services (38th), among other factors.

Argentina drops four places to 91st, with a mixed assessment pointing to important competitive strengths that do not seem to fully compensate for the elements of weaknesses still troubling the country. With respect to the former, Argentina can count on a rather conducive infrastructure environment (52nd) and good levels of business readiness (59th) and individual usage (58th). However, the serious flaws in the market (126th) and regulatory (110th) environments and the low prioritization of ICT in the government's national agenda (128th and 102nd for government readiness and usage, respectively) remain worrisome features in the country's networked readiness landscape.

Honduras (106th), **Venezuela** (112th), **Ecuador** (114th), **Nicaragua** (125th), **Paraguay** (127th), and **Bolivia** (131st) close the rankings for the region. These countries continue to lag behind the best regional performers, as well as most of the world, in networked readiness. Overregulated markets, poor education and research standards, and high ICT access costs are some of the shortcomings preventing these countries from increasingly leveraging ICT in their general competitiveness and development strategies.

Sub-Saharan Africa and Middle East and North Africa (MENA)

As in past editions of the *Report,* most of the countries in sub-Saharan Africa trail behind the rest of the world in network readiness, with only **Mauritius** (53rd) and **South Africa** (62nd) featuring in the top half of the NRI rankings. Indeed, although some countries realize encouraging improvements over last year, most of the region continues to appear in the bottom part of the rankings.

With a fairly stable 53rd rank, **Mauritius** confirms its ICT prowess and leadership in the region. The country displays a first-class market environment (31st) characterized by a non-distortive tax system (6th for the extent and effect of taxation) and ease for starting a business, with an average of six days (12th) and five procedures (22nd). The political and regulatory environment (31st) is also assessed as being conducive to ICT development, with favorable laws relating to ICT (52nd) and a high level of competition (1st) among Internet and telephony providers. With regard to ICT usage, the three main stakeholders show an even performance (70th for individuals, 66th for business, and 77th for government), with margin for improvement. However, ICT technologies are prioritized to a large extent by the government (26th), which identifies them as an important factor for its vision of the future (53rd). Furthermore, the country's individual and government readiness are also satisfactory, ranking 44th and 50th, respectively. On a more negative note, the infrastructure environment (84th) remains a reason for concern, especially in elements such as the accessibility to digital content (80th), the availability of scientists and engineers (107th), and tertiary education enrollment (97th, corresponding to a dismal 13.96 percent).

South Africa seems to be losing some ground this year, dropping 10 places to 62nd. The environment component (39th) continues to be one of the main strengths of the country, particularly in its regulatory (21st) and market (29th) components, thanks to strong intellectual property protection (24th), favorable laws relating to ICT (31st), and world-class financial market sophistication (6th), among other elements. Despite the weak individual preparation and uptake of ICT (115th and 89th for individual readiness and usage, respectively), South Africa's remarkable business readiness (43rd) benefits from extensive company spending on R&D (35th) and close university-industry collaboration (25th). Likewise, business usage is rather extensive (44th) with a remarkable prevalence of foreign technology licensing (22nd) and technology absorption (33rd) as well as capacity for innovation (36th). As for the government, if its prioritization of ICT is still low (78th), its ICT usage appears slightly better (71st), with fairly extensive e-participation (60th) and presence of ICT in public offices (52nd).

Senegal is up five positions to 75th, placing above **Botswana** (86th) and **Nigeria** (99th). The country's main competitive advantages are to be found in its overall readiness (47th) and in its business and government usage, both ranked 64th.

The rest of the region lags behind at the bottom of the rankings, with some mixed developments with respect to last year's performance. Although a few countries seem to have strengthened their networked readiness, notably **Kenya** (90th, up seven positions), **Zambia** (97th, up five positions), **Lesotho** (107th, up 11 positions), **Côte d'Ivoire** (104th, up seven positions), some others are stable or have lost further ground vis-à-vis the rest of the world. **Malawi** (119th, down nine positions), **Madagascar** (121st, down nine places), and **Cameroon** (128th, down five places) belong to this latter category.

At 39th, **Tunisia** once again leads North Africa, with a slightly weaker showing than last year. The country's outstanding individual readiness (12th) is driven by low residential connection telephone charges and monthly telephone subscription, ranked 18th and 6th, respectively. On a similar note, ICT seems to have a central role in the government agenda (7th for government readiness), as confirmed by the top-class marks obtained by the country in ICT prioritization (7th). This translates into extensive government usage (28th) with a high degree of success in ICT promotion (6th) and well-developed e-government services (29th), among other factors. Chapter 2.3 relates the steps and policies that the Tunisian government implemented to boost the country's networked readiness and overall competitiveness in recent years.

With the exception of **Egypt,** improving six positions from 76th to 70th, all other countries in the region either remain rather stable or fall in the rankings. This is the case for **Libya** dropping from 101st to 103rd, **Morocco** going from 86th to 88th, and **Algeria** from 108th to 113th.

On a more positive note, by and large the Middle East continues to progress in networked readiness, reflecting the accelerated ICT uptake by most countries in the region and their increasing prioritization of ICT as a key tool for economic diversification, increased competitiveness, and modernization.

The **United Arab Emirates** improves four positions to 23rd place, overtaking for the first time traditional best regional performer Israel (28th). The country's impressive performance in recent years has been driven by a strong and consistent government focus on ICT (2nd and 29th for government readiness and usage, respectively) as a key factor for its vision for the future (2nd). The government has not only been quite successful in promoting ICT diffusion (2nd), but is widely using it to improve its efficiency (2nd), albeit government online services and e-participation remain low (91st and 77th, respectively). Among the country's many other strengths, one can cite its outstanding individual preparation and ICT usage (5th and 29th, respectively) together with its ICT-conducive market environment (12th).

Israel drops three positions to 28th place, losing its supremacy in the region for the first time since the NRI's inception. Notwithstanding this slightly deteriorating performance, Israel continues to display extremely conducive market (23rd) and infrastructure (22th) environments, notably with widespread availability of venture capital (14th), top-class scientific research institutions (3rd), and an extensive availability of scientists and engineers (16th). Moreover, the business sector remains at the forefront of ICT readiness (19th) and usage (25th), displaying an outstanding innovation potential, with excellent marks for utility patents (4th, corresponding to 166.57 patents per million inhabitants) as well as creative industry and high-tech exports (36th and 35th, respectively). The above confirms the country's role as one of the world's ICT powerhouses, the result of a coherent and effective government development strategy that turned resource-poor small Israel into a global ICT player in less than three decades.[20] By contrast, government readiness (49th, down 33 places) and usage (36th, down 12 places) seem to be weakening from 2008–09. The same can be said for individual readiness (108th), with, in particular, a significantly worsening perception of the quality of math and science education (103rd, down 37 places) and of the general educational system (98th, down 53 places).

Bahrain (29th) consolidates the impressive upward trend started last year, with another eight-place improvement and a performance driven by an extremely ICT- and business-friendly market environment (15th) and high individual readiness (21st), as well as outstanding government readiness (17th) and usage (10th), including top-class e-government services (8th) and widespread e-participation (11th).

Qatar's rank is fairly unchanged at 30th. Similar to the United Arab Emirates, the country's remarkable ICT prowess rests on the government's effective leadership in ICT diffusion as a central enabler of enhanced competitiveness. Government readiness and usage are ranked 3rd and 33rd, respectively. Strong ICT prioritization (3rd), as a central element of the vision for the future (5th), has promoted ICT diffusion (4th) and significantly improved government efficiency (3rd), among other indicators. Also notable is the degree of individual readiness (27th) and usage (43rd), with more than universal mobile telephone access (16th, corresponding to 131.39 per 100 people), comprehensive Internet access in schools (15th), and top-quality math and science education (3rd).

While **Oman** is stable at 50th, **Saudi Arabia** moves up two places to 38th, building on its impressive eight-place jump from 2007–08 to 2008–09, with important improvements in individual readiness (46th, up 33 places) and, to a lesser extent, in the market (33rd, up five places) and regulatory (35th, up seven places) environments.

On a more negative note, **Kuwait** (76th) and **Syria** (105th) lose 19 and 11 positions, respectively, this year.

Conclusions

The recent major economic crisis has underlined the importance of solid competitiveness fundamentals for countries to grow in a sustainable manner going forward. The capacity to adopt and pioneer new technologies—among them ICT—has proven to be key for developed economies to maintain their competitive edge and support their growth potential in the long term, as well as for middle-income and developing countries to ease structural transformations in their economies and societies, increase efficiency, and leapfrog to higher development stages. ICT is crucial in promoting economic sustainability. The same is true for social and environmental sustainability: ICT has a major responsibility and role to play in this arena, both as an industry in itself and as an enabling infrastructure.

More and more governments across the globe have recognized the revolutionary power of ICT as a driver of sustainable economic growth and an enabler of better living conditions for their citizens. They have increasingly put ICT in a prominent position in their general competitiveness strategies and national agendas.

The GITR series and the NRI have contributed over almost a decade to raising awareness about the importance of ICT as a central tool in the design of policies aimed at increasing development and competitiveness. Not only has the NRI allowed countries to track
their improvements in networked readiness over time, but it has also provided diagnostics on weaknesses to be addressed and strengths on which to build. Furthermore, the showcasing of best practices at the international level has offered additional insights into the determinants of networked readiness as well as relevant examples to emulate in the development of national roadmaps toward increased growth and competitiveness.

We are proud of the guidance that the NRI and the *Report* series may have offered to decision makers and all relevant stakeholders across the world. We hope this year's edition will once again provide a useful instrument and will contribute to focusing attention on the important role of ICT in building a better, fairer, and more sustainable world.

Notes

1 IMF 2009.

2 Jiménez 2010.

3 This statement has a caveat: the NRI used in the first 2001–02 edition of the *Report* is not strictly comparable with the one developed by INSEAD in 2002, which has been used since then as the main methodological framework in the GITR series. For more information on the 2001–02 theoretical framework, see Kirkman et al. 2002.

4 For a detailed review of the literature and thinking behind the Networked Readiness framework developed by INSEAD and introduced in 2002–03, see Dutta and Jain 2003.

5 Until 2005–06, NRI variables were selected using factor analytical techniques from a larger set of possible variables. Although this was a technically rigorous approach, it reduced the ability to easily explain the underlying logic for including specific variables and to make strict comparisons over time. As a consequence, starting with the 2006–07 edition, expert opinion has played a predominant role in selecting the variables, obviously with the benefit of previous experience in identifying appropriate variables for computing the NRI, thus aligning the NRI's to the Forum's general competitiveness methodology. The treatment of missing variables has also changed: whereas until 2005–06, they were estimated using analytical techniques such as regression and clustering, beginning in 2006–07 they are indicated with "n/a" and not taken in consideration in the calculation of the specific pillar to which they belong. Moreover, the scale used to compute the NRI and the variables that compose it has been aligned to the Forum's (increasing) 1–7 scale, changing with respect to the scale used previously for a couple of years (i.e., positive and negative scores around a standardized mean of 0). For more information on the earlier computation methodology and changes introduced in 2006–07, see Dutta and Jain 2006 and Mia and Dutta 2007.

6 See EFQM at http://ww1.efqm.org/en/Home/aboutEFQM/Ourmodels/TheEFQMExcellenceModel/tabid/170/Default.aspx.

7 The NRI 2009–2010 uses the results of the 2008 and 2009 Surveys. For more details on the Survey methodology, see Browne and Geiger 2009.

8 North America as a region is not dealt with as such in this chapter. The United States' and Canada's performances are detailed in the top 10 section, and Mexico is included for analysis purposes in the Latin America and the Caribbean section.

9 This is shown by the excellent marks the country gets for the variables related to innovation capacity: Sweden ranks 4th for the capacity of innovation of its firms, generates 115.22 utility patents per million population (8th), accounts for 1.21 percent of total world creative industries (18th), and 11.94 percent of its total exports are high-tech products (24th).

10 For a more detailed analysis of Singapore's ICT success story, see Ng et al. 2008.

11 The Danish government's focus on ICT is reflected in the early liberalization of the telecommunications sector in 1996, well ahead of most of its fellow members of the European Union. This also contributed to the development of a world-class local high-tech industry, whose exports accounted in 2007 for 11.20 percent of total exports, corresponding to 26th place.

12 The EU15 comprises the countries that joined the European Union before the last two accession rounds in 2004 and 2007: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden, and the United Kingdom.

13 Italy and Greece rank 78th and 81st, respectively, for the quality of their market environment and 62nd and 84th for that of their political and regulatory environments.

14 The EU accession countries are Bulgaria, the Czech Republic, Cyprus, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, the Slovak Republic, and Slovenia.

15 For a more in-depth analysis of Estonia's recent development story and the role of ICT, see Dutta 2007.

16 A similar trend, though not as pronounced, is observed in our general assessment of competitiveness. In the *Global Competitiveness Index 2009–2010,* China ranks 29th, India 49th, Brazil 56th, and Russia 63rd. For more information, see Sala-í-Martin et al. 2009.

17 For a full account of Chile's ICT strategy, see Alvarez Voullième et al. 2005.

18 For a detailed overview of Brazil's recent achievements in terms of e-government services and strategy going forward in that area, see Magalhães et al. 2009.

19 See http://uruguay.suite101.com/article.cfm/uruguay_one_laptop_per_child for more information on the Education Connect initiative.

20 For an overview of Israel's recent development story, see Lopez-Claros and Mia 2006.

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Technical Appendix: Composition and computation of the Networked Readiness Index 2009–2010

This appendix presents the structure of the Networked Readiness Index (NRI). The NRI separates environmental factors from ICT readiness and usage, and is composed of three subindexes. Each subindex is divided into three pillars. The 68 variables (or *indicators*) used in the computation of the NRI are then distributed among the nine pillars.[a] The numbering of the variables matches the numbering of the Data Tables found at the end of the *Report*. The number preceding the period indicates to which pillar the variable belongs (e.g., variable **1.**01 belongs to the first pillar; variable **9.**02 belongs to the ninth pillar). The hard data indicators used in the NRI are normalized on a 1-to-7 scale in order to align them with the Executive Opinion Survey's results.[b] The Technical Notes and Sources at the end of this *Report* provide detailed information on all the hard data indicators.

NETWORKED READINESS INDEX

Networked Readiness Index = 1/3 Environment subindex
+ 1/3 Readiness subindex
+ 1/3 Usage subindex

Environment subindex

Environment subindex = 1/3 Market environment
+ 1/3 Political and regulatory environment
+ 1/3 Infrastructure environment

1st pillar: Market environment

1.01 Venture capital availability
1.02 Financial market sophistication
1.03 Availability of latest technologies
1.04 State of cluster development
1.05 Burden of government regulation
1.06 Extent and effect of taxation[c]
1.07 Total tax rate (hard data)[c]
1.08 Time required to start a business (hard data)[d]
1.09 Number of procedures required to start a business (hard data)[d]
1.10 Intensity of local competition
1.11 Freedom of the press

2nd pillar: Political and regulatory environment

2.01 Effectiveness of law-making bodies
2.02 Laws relating to ICT
2.03 Judicial independence
2.04 Intellectual property protection
2.05 Efficiency of legal framework in settling disputes[e]
2.06 Efficiency of legal framework in challenging regulations[e]
2.07 Property rights
2.08 Number of procedures to enforce a contract (hard data)[f]
2.09 Time to enforce a contract (hard data)[f]
2.10 Level of competition index (hard data)

3rd pillar: Infrastructure environment

3.01 Number of telephone lines (hard data)
3.02 Secure Internet servers (hard data)
3.03 Electricity production (hard data)
3.04 Availability of scientists and engineers
3.05 Quality of scientific research institutions
3.06 Tertiary enrollment (hard data)
3.07 Education expenditure (hard data)
3.08 Accessibility of digital content
3.09 Internet bandwidth (hard data)

Readiness subindex

Readiness subindex = 1/3 Individual readiness
+ 1/3 Business readiness
+ 1/3 Government readiness

4th pillar: Individual readiness

4.01 Quality of math and science education
4.02 Quality of the educational system
4.03 Buyer sophistication
4.04 Residential telephone connection charge (hard data)[g]
4.05 Residential monthly telephone subscription (hard data)[g]
4.06 Fixed broadband tariffs (hard data)
4.07 Mobile cellular tariffs (hard data)
4.08 Fixed telephone lines tariffs (hard data)

5th pillar: Business readiness

5.01 Extent of staff training
5.02 Local availability of specialized research and training services
5.03 Quality of management schools
5.04 Company spending on R&D
5.05 University-industry collaboration in R&D
5.06 Business telephone connection charge (hard data)[h]
5.07 Business monthly telephone subscription (hard data)[h]
5.08 Local supplier quality
5.09 Computer, communications, and other services imports (hard data)
5.10 Availability of new telephone lines

6th pillar: Government readiness

6.01 Government prioritization of ICT
6.02 Government procurement of advanced technology products
6.03 Importance of ICT to government vision of the future

Technical Appendix: Composition and computation of the Networked Readiness Index 2009–2010` *(cont'd.)*

Usage subindex

Usage subindex = 1/3 individual usage
+ 1/3 Business usage
+ 1/3 Government usage

7th pillar: Individual usage

7.01 Mobile telephone subscriptions (hard data)
7.02 Personal computers (hard data)
7.03 Broadband Internet subscribers (hard data)
7.04 Internet users (hard data)
7.05 Internet access in schools

8th pillar: Business usage

8.01 Prevalence of foreign technology licensing
8.02 Firm-level technology absorption
8.03 Capacity for innovation
8.04 Extent of business Internet use
8.05 Creative industries exports (hard data)
8.06 Utility patents (hard data)
8.07 High-tech exports (hard data)

9th pillar: Government usage

9.01 Government success in ICT promotion
9.02 Government Online Service Index (hard data)
9.03 ICT use and government efficiency
9.04 Presence of ICT in government agencies
9.05 E-Participation Index (hard data)

Notes

a The computation of the NRI is based on successive aggregations of scores, from the variables level (i.e., the lowest level) to the overall NRI score (i.e., the highest level). For example, the score a country achieves in the 3rd pillar, *Infrastructure environment,* accounts for one-third of the *Environment subindex.* Similarly, the *Usage subindex* accounts for one-third of the overall NRI score.

b The standard formula for converting hard data is the following:

$$6 \times \left(\frac{\text{country score} - \text{sample minimum}}{\text{sample maximum} - \text{sample minimum}} \right) + 1$$

The *sample minimum* and *sample maximum* are, respectively, the lowest and highest country scores in the sample of economies covered by the NRI. In some instances, adjustments were made to account for extreme outliers. For those hard data variables for which a higher value indicates a worse outcome (e.g., total tax rate, time to enforce a contract), we rely on a normalization formula that, in addition to converting the series to a 1-to-7 scale, reverses it, so that 1 and 7 still correspond to the worst and best possible outcomes, respectively:

$$-6 \times \left(\frac{\text{country score} - \text{sample minimum}}{\text{sample maximum} - \text{sample minimum}} \right) + 1$$

c Variables 1.06 and 1.07 combine to form one single variable.

d Variables 1.08 and 1.09 combine to form one single variable.

e Variables 2.05 and 2.06 combine to form one single variable.

f Variables 2.08 and 2.09 combine to form one single variable.

g Variables 4.04 and 4.05 combine to form one single variable.

h Variables 5.06 and 5.07 combine to form one single variable.