

Executive Summary

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When *The Global Information Technology Report* (GITR) and the Networked Readiness Index (NRI) were created some 12 years ago, the attention of decision makers and investors was on adopting business and financial strategies that would allow them to develop in the context of a fast-moving but nascent Internet economy. Over more than a decade, the NRI has provided decision leaders with a useful conceptual framework to evaluate the impact of information and communications technologies (ICTs) at a global level, and to benchmark the ICT readiness and the usage of their economies.

Today, the world has undergone massive changes: the Internet bubble has come and gone, and emerging countries such as China and India have become prominent global users and providers of ICT equipment and services. Struggling to emerge from the financial crisis, developed economies are striving to return to higher levels of growth and competitiveness while fighting stubbornly high unemployment rates, especially among their youth. Both emerging and developed economies are focusing on innovation, competing globally for talent, resources, and market shares. Information flows and networks have spread across borders in ways that could not be imagined before the onset of the Internet, the global adoption of mobile telephony and social networks, and the rapid growth of broadband. Business models have been redefined, the workplace has been redesigned, small startups have evolved into large companies, and entire functions of society (education, health, security, privacy) are being rethought.

ICTs, COMPETITIVENESS, GROWTH, AND JOBS: A COMPLEX RELATIONSHIP

The links between ICTs (their tools, services, and models) on the one hand and the unwavering importance of competitiveness, growth, and jobs on the other have never before been the subject of so much attention and concern. This is hardly surprising when one considers the “pull” of technology: developed economies need to reinvent themselves to maintain or restore their competitiveness, retain or regain market shares, and create jobs; emerging and developing economies are seeking ways to improve productivity and find new sources of growth through new technologies. Finally,

the world needs to collectively address environmental and social challenges to ensure a more sustainable development path and a better quality of life for its people.

On the “push” side, technological progress continues at a relentless speed. The growing availability of technology has empowered citizens of both developed and emerging economies with fairly good access to the digital world. The rise of cloud computing has reduced the competitive differentials in technology availability across larger and smaller firms. Low entry barriers in the digital space have sparked creativity and given rise to a class of young entrepreneurs around the world. It is clear that ICTs offer higher benefit-to-cost ratios in all sectors of production, while simultaneously offering new ways to create value by better and more efficiently organizing the use of natural, financial, and human resources.

Numerous studies have been presented in the literature on the connections between ICTs on the one hand, and development and growth on the other. Although the first analyses of the economic impact of fixed telephone density on economic growth were conducted more than three decades ago,¹ such studies have proliferated in recent years. Despite the ubiquity of ICTs in society and business, such research has not been easy. For one thing, the pace of adoption of many technologies (broadband, mobile, etc.) has been fast and recent—thus limiting the validity of longitudinal studies and making it difficult for data collection agencies to keep pace with the definition and collection of appropriate metrics. Also, it remains challenging to isolate the impact of ICTs as their economic impacts have often occurred when combined with other broad social and business changes.

For more than a decade, the NRI has included aspects of how ICTs are transforming the economy and society. Among the expressions of transformation is the development of new skills that are important in knowledge-based, information-rich societies and that are crucial for employment. Despite the fact that ICTs are becoming increasingly universal, the question of access and usage remains important—especially for developing countries, given their need to narrow the digital divide. The NRI includes features related to access and usage that cover not only affordable ICT infrastructure but

also digital resources, including software and skills. In addition, the NRI includes proxies to assessing some of the economic and social impacts accruing from ICTs. Thus, the Index facilitates the identification of areas where policy intervention—through investment, smart regulation, and/or incentives—could boost the impact of ICTs on development and growth.

PART 1: THE CURRENT NETWORKED READINESS LANDSCAPE

Part 1 presents the latest findings of the NRI, offering a comprehensive assessment of the present state of networked readiness in the world. Furthermore, a number of expert contributions inquiring into the relation between ICTs and growth and jobs in the current economic and digital context are also included. These relate to (1) the role of digitization for economic growth and job creation; (2) the description of a taxonomy of national broadband and ICT plans; (3) the importance of national policy leadership; (4) the role of fiber broadband for economic and social growth; (5) the economic impact of next-generation mobile technologies; (6) the need for better measurement to realize the potential of health information technologies; (7) the role of ICTs for Europe to regain its competitiveness, and (8) the potential of ICTs to support social inclusion.

Insight from the NRI 2013 on the world's networked readiness

Given the potential high returns that ICTs can provide in transforming a nation's economy and its citizens' well-being, assessing ICT developments has been the object of much academic and policy attention in the past decade. Several organizations have made significant efforts to measure and benchmark ICT deployment and uptake, but few have aimed at equally assessing the returns that ICTs can actually provide to both the economy and society. Although data availability is still scarce in terms of ICT impacts, policy interest in measuring ICTs has shifted from measuring ICT access to measuring ICT impacts.

Last year, after two years of research and consultations with ICT practitioners, policy and industry experts, and academia, a new subindex on ICT impacts that aimed at holistically assessing the way that countries go about leveraging ICTs and benefiting from them in terms of enhanced competitiveness and well-being has been introduced in the NRI. This evolution ensures that the NRI framework remains at the forefront of ICT measurement. As one of the most authoritative assessments of its kind, it has been adopted by several governments as a valuable tool for informing their competitiveness and policy agendas.

As a result, the framework gauges:

- the friendliness of a country's market and regulatory framework in supporting high levels of ICT uptake;
- the degree of a society's preparation to make good use of an affordable ICT infrastructure;
- the efforts of the main social agents—that is, individuals, business, and government—to increase their capacity to use ICTs as well as their actual use of ICTs in day-to-day activities; and
- the broad economic and social impacts accruing from ICTs and the transformation of a country toward an ICT- and technology-savvy economy and society.

As in previous editions, the NRI is composed of a mixture of quantitative data collected by international organizations—such as International Telecommunication Union (ITU), other UN agencies, the Organisation for Economic Co-operation and Development (OECD), and the World Bank—and survey data from the Executive Opinion Survey (the Survey), conducted annually by the Forum in each of the economies covered by the *Report*. The NRI 2013 covers a record number of 144 economies, accounting for over 98 percent of world GDP.

In terms of the results (see the Networked Readiness Index Rankings provided on page xix), two groups of economies dominate the NRI: Northern European economies and the so-called Asian Tigers. Among the Northern European countries, four out of the five **Nordic economies** featured in the NRI—Finland, Sweden, Norway, and Denmark (in rank order)—continue to feature in the top 10. Iceland, the last of the Nordics, is not too far behind, at 17th place. The performance of this group in terms of readiness is particularly outstanding. All five Nordics feature in the top 10 of this subindex. Within this subindex, on the infrastructure and digital content pillar, four countries occupy the top positions. As highlighted in the previous edition and in this *Report*, the gap between those countries and the ones in the Southern and Eastern parts of Europe is profound. A second group of economies that posts a remarkable performance are the **Asian Tigers**: Singapore, Taiwan (China), the Republic of Korea, and Hong Kong SAR. All boast outstanding business and innovation environments that are consistently ranked among the most conducive in the world. The Tigers also stand out for their governments' leadership in promoting the digital agenda, and the impact of ICTs on society tends to be larger in these economies.

Finland (1st) reaches the top of the NRI rankings for the first time, thanks to improvements across the board. The country shows progress on two-thirds of the 54 indicators of the NRI and posts a very consistent performance across all categories of the NRI. **Singapore**

remains 2nd overall, while slightly improving its score. The extreme efficiency and business friendliness of its institutional framework, strong intellectual property protection, intense competition, and high university enrollment rate lead to these outstanding outcomes.

Sweden (3rd) maintains its score, but declines two positions and abandons the top spot to Finland. Despite this slight decline in rankings, the country undeniably remains one of the few truly knowledge-based economies of this world.

Up three notches, the **United Kingdom** (7th) posts the biggest rank improvement among the top 10 economies. The country offers one of the most conducive environments for ICT development. In particular, it offers a sound and conducive political and regulatory environment (7th). The country also boasts high levels of ICT adoption. ICTs are pervasive among the population, businesses, and the government. Down one, the **United States** slips to 9th place despite a performance essentially unchanged from the previous year. This constitutes the country's worst showing since the first edition of the GTR in 2001, in which it ranked 1st, although changes to the methodology and in the composition of the NRI over time cause the results not to be strictly comparable. The country still possesses many strengths, however, which have contributed to making it the world's innovation powerhouse for decades.

Several European countries continue to lead the rankings, showcasing their strong efforts and commitment to fully develop and leverage ICTs to boost their competitiveness and the well-being of their citizens. Within the **European Union (EU)**, while stark intra-regional disparities persist, it is worth noting that the divergence across Member States in the NRI is significantly narrower than it is in the Global Competitiveness Index,² the most comprehensive analysis for measuring the set of policies, institutions, and factors that drive the productivity of an economy. This reflects the longstanding efforts of the European Union to narrow the digital divide in Europe and build an internal digital market, as corroborated by the launch of a new Digital Agenda for Europe,³ one of the seven flagship initiatives of the European Commission's Europe 2020 Strategy for growth and jobs for the present decade.

Within the **Commonwealth of Independent States**, several countries have fully recognized the potential of ICTs to leapfrog and diversify their economies, and important progress has been recorded since last year.

Asia is home to some of the world's wealthiest, most successful economies in the world and also to some of its poorest. Unsurprisingly, a similarly profound diversity characterizes Asia's digital landscape, thus making it impossible to draw a uniform picture of the region. The most digitized and innovative nations—the

Asian Tigers—on the planet are next to some of the least-connected ones. Nowhere else does the regional digital divide run as deeply as it does in Asia. Regardless of their position on the development ladder, all Asian economies have much to gain from increased networked readiness. It will allow populations of the least-advanced countries to gain access to much-needed basic services, improved government transparency and efficiency, and—for the most advanced, many of which suffer from anemic economic growth—it will contribute to boosting their innovation capacity. The NRI reveals that in the case of Asia's best-performing economies, governments typically lead the digital effort, unlike in Europe. At the heart of Asia, and representative of its immense diversity, the **Association of Southeast Asian Nations (ASEAN)** is fairly dynamic. Led by Singapore, all eight ASEAN members covered by the NRI improve their overall score and a majority progress in the rankings, albeit in some cases—such as Cambodia and the Philippines—from a low base.

Digitally connecting the hemisphere remains one of the key challenges for **Latin America and the Caribbean**, as recognized during the Sixth Summit of the Americas, which took place in Colombia in April 2012.⁴ While several countries have made remarkable improvements that are clearly reflected in important gains in the scores and rankings of the NRI—including Panama, Mexico, Colombia, and El Salvador—overall, Latin American and the Caribbean still suffers from a serious lag that prevents it from fully leveraging the potential of ICT to boost the regional productivity. The social and, most remarkably, economic impacts accruing from ICTs remain low in comparison with other regions despite government-led efforts to develop and upgrade ICT infrastructure and also despite governments' increasing use of the Internet to communicate and interact with individuals and the business community. Weaknesses in the political and regulatory environment, the existence of large segments of the population with a low skill base, and poor development of the innovation system are all factors hindering the potential that ICT developments could have on the regional economy.

Sub-Saharan Africa has continued to make significant efforts to build its ICT infrastructure, as reflected by important improvements in developing its broadband infrastructure and the expansion of its mobile network coverage. As a result, ICT usage, while still very low, has picked up slightly, as seen especially by an increase in the number of Internet users and also by the continued commitment of some governments in the region to expand the number of available online services. Despite this positive trend, the stubbornly high sharp digital divide from more advanced economies, notably in terms of ICT-driven economic and social impacts, persists. A still-costly access to ICT infrastructure,

relatively low levels of skills with low educational attainments, and unfavorable business conditions for entrepreneurship and innovation are hindering the region's capacity to fully leverage the potential of the increasingly available ICT infrastructure. As a result, only two countries—Mauritius (55th) and South Africa (70th)—are positioned in the top half of the rankings, while nine out of the bottom ten belong to the region.

The **Middle East and North Africa** region boasts one of the most diverse performances in the world. On the one hand, Israel and several Gulf Cooperation Council states have sharply improved their overall performances and have continued their investments to make ICTs one of the key national industries that attempt to diversify and transform their economies. On the other hand, several North African and Levant nations have either fallen—or stagnated, in the best cases—in their efforts to leverage ICTs as part of their economic and social transformation process toward more knowledge-intensive activities and open societies.

Digitization for Economic Growth and Job Creation: Regional and Industry Perspectives

Chapter 1.2, contributed by Karim Sabbagh, Roman Friedrich, Bahjat El-Darwiche, Milind Singh, and Alex Koster at Booz & Company, analyses the rise of digitization—the mass adoption of connected digital services by consumers, enterprises, and governments—as a key economic driver that accelerates growth and facilitates job creation. In the current context of a sluggish global economy, digitization can play an important role in assisting policymakers to spur economic growth and employment. Booz & Company's econometric analysis estimates that, despite the unfavorable global economic climate, digitization provided a US\$193 billion boost to world economic output and created 6 million jobs globally in 2011.⁵

However, the impact of digitization by country and by sector is uneven. Developed economies enjoy higher economic growth benefits by a factor of almost 25 percent, although they tend to lag behind emerging economies in job creation by a similar margin. The main reason for the differing effects of digitization lies in the economic structures of developed and emerging economies. Developed countries rely chiefly on domestic consumption, which makes nontradable sectors important. Across developed economies, digitization improves productivity and has a measurable effect on growth. However, the result can be job losses because lower-skilled, lower-value-added work is sent abroad to emerging markets where labor is cheaper. By contrast, emerging markets are more export-oriented and driven by tradable sectors. They tend to gain more from digitization's effect on employment than from its influence on growth.

Policymakers can harness these varying effects of digitization through three main measures that go beyond their current roles of setting policy and regulations. First, they should create digitization plans for targeted sectors in which they wish to maximize the impact of digitization. Second, they should encourage the development of the necessary capabilities and enablers to achieve these digitization plans. Finally, policymakers should work in concert with industry, consumers, and government agencies to establish an inclusive ICT ecosystem that encourages greater uptake and usage of digital services.

Convergent Objectives, Divergent Strategies: A Taxonomy of National Broadband and ICT Plans

In Chapter 1.3, Robert Pepper and John Garrity from Cisco Systems analyze the wide range of formal broadband policies around the world. A critical question now is whether the divergence in policy packages will result in significant differences in the efficacy of plans. To begin this research and establish a foundation for understanding the global landscape of national broadband and ICT plans, this chapter reviews plans around the world and presents a taxonomy for classification. The authors first detail the existing relationship among broadband, economic growth, and employment. Next they analyze a cross-section of national plans, their objectives, and their policy components. Subsequently they propose a taxonomy examining the degree of broadband supply- and demand-side emphasis. This taxonomy establishes a common language that can guide governments through the development of national broadband plans and serves as a baseline for evaluating the factors of success for implemented plans.

They find that as countries around the world have developed national plans to accelerate broadband adoption, the plans vary by both goals and policy recommendations. Their taxonomy of *broad-based*, *supply-driven*, *demand-driven*, and *emergent* plans provides a clear method for categorizing national broadband and ICT plans on the breadth of their policy options; the classification also provides a starting point for the review and comparison of national plans. Further, it can aid policymakers in countries with strategic plans underway as they work to increase broadband adoption.

The Importance of National Policy Leadership

Chapter 1.4, contributed by Phillippa Biggs and Anna Polomska at the ITU/UNESCO Broadband Commission for Digital Development, evaluates recent growth in national broadband plans and the importance of national policy leadership for driving the rollout of broadband networks, services, and applications. In light of recent evidence for strong positive externalities to investments in broadband networks, rapid technological evolution, and a changing institutional environment, the chapter

explores the changing role of policymakers in helping to facilitate and set national policy.

A growing number of countries now recognize the importance of policy leadership and a clear cross-sectoral vision to maximize the economic and social returns to ICTs, as shown by strong growth in the number of national broadband plans. This chapter provides a brief overview of the growth in these plans and the key characteristics of good ones, with reference to several examples: the US, UK, and Polish national broadband plans.

Fiber Broadband: A Foundation for Social and Economic Growth

In Chapter 1.5, Sean Williams from BT highlights the fact that, as the foundation for knowledge- and ICT-based jobs, fiber broadband has the potential to drive social and economic growth and help create jobs. As Europe, and the wider developed world, look to emerge from the recent financial crisis and downturn, such growth will be vital. The issue is not whether fiber broadband can help drive social and economic growth, but how the vision of coverage as close as possible to 100 percent can be achieved.

This chapter aims to advance the debate in two ways: first, by reviewing recent independent research from Regeneris, an economic development consulting firm, detailing the economic impact of high-speed broadband infrastructure on environments as diverse as capital cities and economically deprived rural regions. And second, by articulating technical and market solutions that are fit for purpose in the current economic climate.

The chapter recommends policy responses that national governments and regional authorities should implement to put these solutions into action.

The Economic Impact of Next-Generation Mobile Services: How 3G Connections and the Use of Mobile Data Impact GDP Growth

In Chapter 1.6, Chris Williams, Davide Strusani, David Vincent, and David Kovo from Deloitte LLP argue that the mobile telecommunication sector continues to offer unprecedented opportunities for economic growth in both developing and developed markets, and that mobile communication services have become an essential part of how economies work and function.

As technology develops, mobile telephony has the potential to impact economic development further through the provision of high-value 3G and 4G data services accessed via smartphones, tablets, and dongles that deliver mobile data services to businesses and consumers. For the first time, applying econometric analysis, the authors study the impact, on GDP per capita growth, of consumers substituting a 2G connection with a 3G connection and, based on data

from Cisco Systems, the impact of increasing usage of mobile data per 3G connection. This study finds that:

- For a given level of mobile penetration, a 10 percent increase in 3G penetration increases GDP per capita growth by 0.15 percentage points.
- A doubling of mobile data use is associated with an increase in the GDP per capita growth rate of 0.5 percentage points.

These results suggest that policy activity should focus on increasing 3G penetration and mobile data consumption. This focus should include making spectrum available for mobile broadband and encouraging the substitution of basic mobile services with more-advanced 3G connections.

Better Measurements for Realizing the Full Potential of Health Information Technologies

Healthcare has become an increasingly dominant topic of discussion in recent years because of rising costs and the need to improve the efficiency and quality of healthcare delivery. Although ICTs cannot, alone, provide the solution for overcoming these issues, they are seen by many governments as potentially playing a significant role as enablers of the changes required in health systems.

In light of this, a critical question now facing policymakers is how to realize the full potential of these technologies, particularly since the challenges to achieving widespread ICT adoption and use are proving daunting.

In Chapter 1.7, Elettra Ronchi from the Organisation for Economic Co-operation and Development (OECD), Julia Adler-Milstein and Genna R. Cohen from the University of Michigan, and Laura P. Winn and Ashish K. Jha from the Harvard School of Public Health argue that countries have much to gain by combining their efforts and sharing the burden of developing comparable measures for evidence-based policy in this sector. Risk, delay, and cost can be minimized by learning from good international practices.

The chapter reviews what is currently known about the state of implementation of ICTs in the health sector across OECD countries and the benefits that can be realized from these technologies, including the opportunities for economic growth. It then discusses the efforts, led by the OECD, to develop a common set of indicators, describing the policy motivation for this work, the process followed, the current status of these measures, and the key remaining challenges.

Re-Establishing the European Union's Competitiveness with the Next Wave of Investment in Telecommunications

In Chapter 1.8, Scott Beardsley, Luis Enriquez, Wim Torfs, Ferry Grijpink, Stagg Newman, Sergio Sandoval, and Malin Strandell-Jansson from McKinsey & Company argue that Europe's fixed and mobile telecommunication networks need a massive upgrade to satisfy burgeoning consumer demand for new Internet services. McKinsey & Company estimates that modernizing the EU-15's fixed telecommunication infrastructure to give all households access to high-speed broadband will take €200 to €250 billion, while revamping Europe's mobile infrastructure to offer 4G services to 95 percent of the region's population would cost another €50 to €70 billion.

Unless they make investments on this scale, Europe's economies risk losing technology leadership across the telecommunication value chain to Asia and the United States. High-speed network investment is far ahead in both regions. For instance, around 64 percent of 4G mobile subscriptions worldwide are in North America, 33 percent in Asia Pacific, but only 3 percent in Europe. Value-added by the US telecommunication industry grew in real terms by 18 percent from 2007 to 2010, but only 7 percent in Europe.

Downward pressure on both wholesale and retail prices is choking growth and profitability among Europe's telecommunication players, hindering them from meeting their investment challenge. This chapter offers four ideas for shaping a region-wide policy framework that could lift those constraints:

- **Allow a reduction in the number of fixed and mobile operators.** Europe's consumers could be better served by an industry with fewer players that are strong enough to make large investments but sufficiently plentiful to ensure vibrant competition.
- **Allow more pricing flexibility,** so operators get a proportionate return from customers who generate the most data traffic and take up the most bandwidth.
- **Restrict wholesale access regulation to a few basic services,** and allow "regulatory" holidays. This would give operators a better chance of recouping their investments.
- **Release more spectrum to operators,** giving them more options for extending network capacity.

The Big Opportunity for Inclusive Growth

The social and economic environment is changing, and the way that business and government look at the economy must change with it. If not, we run the risk of social exclusion and further economic slowdown.

Big data is a new asset class that has great potential to help resurrect the global economy. Unlike

other essential assets—oil and water, for instance—it exists in abundance and can help reduce conflict and tension instead of proliferating discord.

In Chapter 1.9, Mikael Hagström and Ian Manocha from SAS Institute Inc. identify how big data and analytics can help energize the economy through efficiency, innovation and creative gains, by:

- using big data to stimulate new ways of doing business;
- using linguistic-based analytics to formulate policies and target action plans to tackle unemployment before problems manifest themselves;
- using big data and analytics to match people to jobs and jobs to people more proactively—the chapter draws on experiences at the national and state government level, and from working with financial institutions; and
- putting the tools and methods of analytics into the hands of an existing workforce to industrialize the service economy (the sleeping giant), much as Henry Ford's innovation industrialized factory production.

The chapter analyzes advances in ICTs and current applications—such as how a major retail organization comes to understand what customers want (what products, where, and when) and the flow of this information back down their supply chain to manufacturers, based on demand. Such approaches can help ensure we have qualified labor in the right location at the right time.

PART 2: CASE STUDIES OF LEVERAGING ICTS FOR COMPETITIVENESS AND WELL-BEING

Part 2 presents deep-dive studies of selected national experiences of leveraging ICTs or developing the sector, showcasing the main challenges faced and the articulation of strategies to overcome them. In this edition, the cases of Colombia and Rwanda, as well as a comparative case study of e-government in three Latin American countries, are presented.

Colombia's Digital Agenda: Successes and Challenges Ahead

In recent years, the ICT sector has gained importance in Colombian public policy because the government has given priority to the development of Plan Vive Digital, which seeks to give the country a technological leap forward that affects the economy and development in a positive way, reducing poverty and increasing competitiveness and productivity.

In Chapter 2.1, Diego Molano Vega, Minister of Information and Communication Technologies of Colombia, identifies the four obstacles to achieving the

widespread use of the Internet in his country: (1) people and businesses do not perceive the Internet as useful; (2) the costs of installing the necessary infrastructure are high; (3) the state has limited resources to invest in infrastructure; and (4) Colombians' purchasing power is limited.

To achieve widespread Internet use, Plan Vive Digital has defined some concrete goals for the year 2014:

1. Triple the number of municipalities connected to the information highway. The aim is to extend the infrastructure to connect 1,053 of the country's municipalities to the national fiber-optic network.
2. Connect 50 percent of micro-enterprises and small- and medium-sized enterprises, and 50 percent of homes to the Internet.
3. Increase the number of Internet connections fourfold. By 2014, we want to reach 8.8 million Internet connections.

Vive Digital aims to develop the country's digital environment through its four principal components by:

1. expanding the infrastructure,
2. creating new services at lower prices,
3. developing digital applications and contents, and
4. fostering ICT adoption and use.

The main goal is to establish a virtuous circle that can act as a method of feedback, in which a better infrastructure will allow more and better services at lower prices and also stimulate the development of content, applications, and demand.

The Metamorphosis to a Knowledge-Based Society: Rwanda

Chapter 2.2, by Alex Ntale from the Rwanda ICT Chamber and Private Sector Federation, Atsushi Yamanaka from the Rwanda Development Board-ICT/Japan International Cooperation Agency, and Didier Nkurikiyimfura from Rwanda's Ministry of Youth and ICT, present Rwanda's remarkable journey from an agrarian economy to a knowledge-based one that has put the country at the forefront of the region in terms of ICTs.

Rwanda's economy has continued to grow at comparably good rates, averaging 8 percent per annum, despite a global recessionary environment starting in 2008 and containing high inflationary pressures. This growth in such adverse circumstances can be attributed to good governance, sound fiscal discipline, and the commitment from both the public and private sector to build a more equitable country.

In the World Bank's *Doing Business 2012* report, Rwanda is ranked number one in East Africa with respect to starting up a business, registering property, protecting investors' interests, enforcing contracts, and

obtaining access to credit. The *Global Competitiveness Report 2012–2013* published by the World Economic Forum ranked Rwanda the most competitive economy in the East Africa Community (EAC) countries and third in sub-Saharan Africa. Rwanda also received top ranking in East Africa, and 7th in Africa among countries with active mobile-broadband subscriptions per 100 inhabitants in 2011 in the United Nations Broadband Commission report.

In many respects, this progress has come as a result of visionary leadership and good governance practices that have been embraced by Rwanda's leaders. Rwanda has systematically fought corruption, which is one of the biggest impediments to development in Africa and everywhere in the world.

In its Vision 2020, developed in 2000, Rwanda set out on a journey to becoming a knowledge-based economy. To this end, the government integrated ICTs into its Vision 2020 to enable the country to leapfrog the key stages of industrialization and transform its agro-based economy into a service-oriented, information-rich and knowledge-based one that is globally competitive. This integration came in the form of its national ICT strategy and plan, commonly known as the National Information Communication Infrastructure Plan (NICI Plan), which Rwanda adopted in 2000 as an approach to use ICTs holistically for development. Each five-year phase (the NICI Plan includes four five-year phases spanning 20 years) characterizes this strategy and is aligned with the country's overall development goals and vision.

The plan, now in its third phase, has delivered a number of successes. These include a nationwide fiber-optic backbone network, a state-of-the-art tier 3 data center, 96 percent cell phone/data coverage, and multipurpose community tele-centers, to mention but a few of the plan's successes.

E-Government in Latin America: A Review of the Success in Colombia, Uruguay, and Panama

Although Latin America entered in the 21st century with abundant initiatives aimed at introducing ICTs in the public sector, as evidenced by the numerous e-government solutions documented by the excelGov Awards, very few countries have been able to maintain a rhythm of progress comparable to the most advanced nations in the world. Colombia, Uruguay, Panama, Chile, and occasionally Mexico and Brazil, have occupied a place among the top 50 e-government countries in the most recognized worldwide rankings.

Chapter 2.3, by Miguel A. Porrúa from the Organization of American States, looks at three Latin American countries—Colombia, Uruguay, and Panama—and charts their respective paths to achieving success in establishing ICTs in public administration, and identifies some of their common elements.

For the past five years, Colombia, Uruguay, and Panama have seen progress that not only becomes empirical proof of the validity of most of the recommendations made by e-government authors and practitioners but also positions these three countries as a valuable reference for others around the world.

The three have built their success upon solid political support that comes from the highest office, the presidential, and goes to the next level, the ministerial. In all three countries, presidents have shown their commitment not just with words but with actions. Presidential decrees have sent an unmistakable message to citizens and government officers alike about their unwavering commitment to bringing ICTs to the public administration.

Usually, an immediate consequence of that political support is the availability of financial resources to undertake the main initiatives. Unfortunately, Latin America offers numerous examples of fruitless, well-designed e-government plans that, years after launching, are still waiting to see some financial investment that would allow the projects to be implemented. Although Colombia, Uruguay, and Panama could have done more in providing funding to e-government initiatives, they clearly understood that nice documents with no backing money produce no results. Smartly using international cooperation and public-private partnerships, they managed to allocate financial resources to their e-government plans every year.

The virtuous triangle of success in these three countries adds another vertex in the careful attention paid to human resources. The systematic investment in the qualification of government officers as well as a carefully designed institutional framework allowed Colombia, Uruguay, and Panama to advance more quickly than other countries in the region.

Other ingredients, such as the operational autonomy of AGESIC in Uruguay and AIG in Panama; the appropriation office in Colombia; the strong IT sector in Uruguay; the international cooperation in Panama; the implication of the private sector in Colombia; and the commitment of three, well-qualified champions in the three countries added the necessary spice to a recipe made of the best ingredients: political support, financial backing, and qualified human resources.

PARTS 3 AND 4: COUNTRY/ECONOMY PROFILES AND DATA PRESENTATION

Parts 3 and 4 feature comprehensive profiles for each of the 144 economies covered in this year's *Report* and data tables for each of the 54 variables composing the NRI, with global rankings. Each part begins with a description of how to interpret the data provided.

Technical notes and sources, included at the end of Part 4, provide additional insight and information on the definitions and sources of specific quantitative

non-Survey data variables included in the NRI computation this year.

NOTES

- 1 Jipp 1963.
- 2 See World Economic Forum 2012.
- 3 See the European Commission's Digital Agenda, available at <http://ec.europa.eu/digital-agenda/>.
- 4 See http://www.summit-americas.org/default_en.htm.
- 5 The authors have estimated the GDP and employment impact caused by the increased digitization in most countries and aggregated to get the global impact.

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