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How rapidly advancing nations can prosper in the Information Age

Leveraging information and communications technologies for national economic development



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E-readiness

We are grateful to the Economist Intelligence Unit for allowing us to use data presented in their E-readiness Rankings series of studies (published between 2001 and 2006) in our analysis of trends. The findings and views expressed here do not necessarily reflect those of the Economist Intelligence Unit. Neither the Economist Intelligence Unit, nor its affiliates, can accept any responsibility or liability for reliance by any person on this information.



How rapidly advancing nations can prosper in the Information Age

Leveraging information and communications technologies for national economic development By James W. Cortada, Ashish M. Gupta and Marc Le Noir

Globally, the use of information and communication technologies (ICT) continues to rise sharply. The overview of this series, "How nations thrive in the Information Age," describes research findings where the world's nations occupy one of three tiers: the most advanced "Established Leaders," the heterogeneous middle tier of "Rapid Adopters" and the "Late Entrants". In this paper, we highlight the opportunities for Rapid Adopter nations to become more competitive in the world economy. Countries in this tier need to work toward liberalizing their market regulation and implementing flexible labor practices to enable faster ICT diffusion. Focus of ICT needs to move from improving connectivity to increasing uptake of online services by citizens and businesses.

All nations in developing and advanced economies have become such extensive users of information and communications technologies (ICT) that their economic success now depends on governments' wise promotion and deployment of ICT at a national level. Most governments are committed to using these technologies to enhance their nations' competitiveness in the global economy and to improve the internal operations of public agencies.

However, just as ICT can offer nations potential opportunities to improve the economic and social quality of life of citizens, challenges to national success also exist. Thoughtful policies and effective implementation of national economic development policies that integrate economic, social, and technological strategies are essential to compete effectively in the globalized economy of the twenty-first century.

There is growing urgency for policy makers to incorporate ICT into economic policies because of expanding international competition for such resources as skilled labor, investment funds and trade. ICT has clearly become an important part of national strategy, largely due to remarkable improvements in various technologies over the past two decades.

Also, just in the past few years, there has been a signficant up-tick in the adoption of such tools as the Internet and wireless communications, as well as "computing" that is embedded in all manner of goods and services.²

Studies conducted over the past half-decade by the Economist Intelligence Unit (EIU), in collaboration with the IBM Institute for Business Value, have led to the E-readiness Rankings. These annual rankings have clearly documented a major shift in economic activities, with the growing use of ICT as the most obvious trend. Equally important, national strategies and best practices are emerging that can be leveraged by all nations that wish to remain competitive.

The E-readiness Rankings

The EIU has published an annual E-readiness ranking of the world's largest economies since 2000. *E-readiness* is defined as an indication of how amenable a national market is to Internet-based opportunities. The ranking evaluates the technological, economic, political and social assets of 68 countries and their cumulative impact on respective information economies. The rankings are based upon nearly 100 quantitative and qualitative criteria, organized in six distinct categories: Connectivity and Technology Infrastructure, Business Environment, Consumer and Business Adoption, Legal and Policy Environment, Social and Cultural Environment, and Supporting e-services.

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Analyses of the E-readiness research results demonstrate a number of patterns of practices around the world. The world's largest economies, within a specific tier, seem to share similar sets of political, economic, social and technological attributes, and can be categorized into three tiers based on the extent of ICT deployment:

- Established Leaders (or Tier 1 countries)
 The most extensive and mature users of ICT.
- Rapid Adopters (or Tier 2 countries) –
 Countries which have made rapid progress
 in ICT development in recent years and are
 beginning to challenge the most advanced
 economies or the Established Leaders.
- Late Entrants (or Tier 3 countries) –
 Countries that started the new century
 with less adequately developed social,
 economic, political and legal infrastructures,
 and where ICT only influences a very small
 part of their economies.

The Rapid Adopters (see Figure 1) are the focus of this executive brief. Across the world, Rapid Adopters are aggressively transforming their economies to join the top tier of world leaders, or are already highly advanced and pushing forward to become the most sophisticated users of ICT. They can be found all

over the world, although most are in Europe where they are largely integrating themselves most fully into the European Union, with a second cluster in Asia. However, this group is comprised of nations of all sizes that are located around the world, and represent diverse social and political cultures.

What do these Rapid Adopter nations have in common? When measured against several influential criteria, these countries have clearly started down the path of leveraging ICT in their economic development. They have also started embracing the key prerequisites for being competitive in the modern economy.

Over the past half-dozen years alone, the overall e-readiness performance of all countries has improved significantly, although the pace of development varied across the

nki	ng within the tie	er	
1	Japan	11	Chile
2	Israel	12	Czech Republic
3	Taiwan	13	Hungary
4	Spain	14	Poland
5	Italy	15	South Africa
6	Portugal	16	Slovakia
7	Estonia	17	Malaysia
8	Slovenia	18	Lithuania
9	Greece	19	Latvia
10	UAE	20	Mexico

Rapid Adopters – countries
which have made
rapid progress in ICT
development in recent
years – have begun
to embrace the key
prerequisites for being
competitive in the modern
global economy.

three tiers (see Figure 2). The most extensive and mature ICT users, Established Leaders, improved their e-readiness by 9 percent just in the past six years. Rapid Adopters improved their use of technology and creation of the necessary infrastructure (such as improving education) by 22 percent, thereby beginning to challenge the leaders in the pace of ICT enablement. Late Entrants – laggards in the use of ICT for national economic development – have also committed to transforming their societies, with rates of development now mimicking those of Rapid Adopters.

In short, over the past half decade, the over 60 countries surveyed had dramatically increased their e-readiness and thus their ability to compete on a global basis with both the necessary ICT and social/legal infrastructures. Rapid Adopters have made the greatest amount of progress, while Late Entrants have experienced more difficulty in embracing the practices of countries above them (see Figure 3).

FIGURE 3. Top 5 ranking countries, based on average

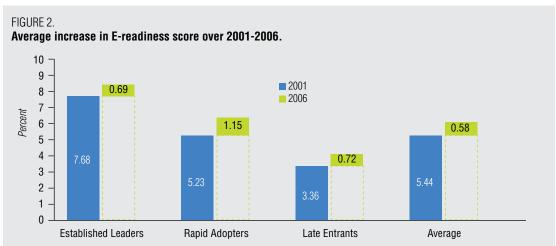
ranking during 2001-2006.

Rank	Established Leaders	Rapid Adopters	Late Entrants
1	Denmark	Italy	Bulgaria
2	United States	Spain	Turkey
3	Sweden	Japan	Thailand
4	Switzerland	Portugal	Venezuela
5	United Kingdom	Israel	Romania

Source: Annual E-readiness Rankings 2001-2006, Economist Intelligence Unit.

Rapid Adopters: Profile and key trends

The middle tier or Rapid Adopter countries consists of two types: those who fell behind their more developed peers due to slow pace of economic reforms; and nations that otherwise would have been designated as Late Entrant economies if they had not accelerated growth through fast-paced market reforms (see Appendix 2 for the list of countries in each tier).



Note: Average overall increase for all the countries between 2001 (60 countries) and 2006 (68 countries) is relatively lower (at 0.58) than the increases for individual tiers (at 0.69 for Established Leaders, 1.15 for Rapid Adopters and 0.72 for Late Entrants, respectively). This lower overall increase is because a majority of new countries added to the rankings during this period had lower absolute E-readiness scores.. Source: Annual E-readiness Rankings 2001-2006, Economist Intelligence Unit.

The political environments of Rapid Adopters tend to support slightly higher levels of product market regulations as compared to the Established Leaders, but are being liberalized at a very fast pace across many industries. Their labor markets are reasonably developed and have been shifting recently toward more permanently flexible forms that make it easier for firms to add and change personnel, and to use temporary workers. Governments have begun to develop Internet-based services and communications with their citizens, and are working on bringing their laws regarding the Internet and intellectual property management in line with those of leading nations.

The economic environment of these countries is rapidly improving, with per capita GDP in the range of US\$13,000 to US\$18,000. Procedures for registering new businesses take longer as compared to Established Leaders, ranging from 30 to 35 days on average, reflecting a slightly higher degree of bureaucracy and regulatory burdens. Regulatory impediments also exist for firms that want to downsize or expand. Most of these focus largely on rules regarding hiring and dismissal of workers.

In particular, this group of countries has a larger collection of regulatory barriers than the most advanced economies. Because of that, we conclude that regulatory practices serve as a drag on the economy as a whole, and most specifically on the ability of these nations to invest effectively in ICT and to diffuse its use across their societies. These nations – denoted as Tier 2 – have made much progress in liberalizing their economies (see Figures 4 and 5). In particular, they have more work to do to transform their employment protection legislation. In addition, many countries still need to reduce barriers to entrepreneurship.

Social environments in Rapid Adopter nations differ from the Established Leaders in several key ways. For the most part, they experience very low population growth rates – in some cases, the growth rate is even negative (as is the case with some Tier 1 countries). The amount of education per capita is generally lower, averaging 6 to 7 years. These nations also rank lower in the UN's HDI rankings.³

Their technological environments reflect lower levels of Internet use, at between 15 to 20 percent of the population, yet penetration of mobile phones is high (60 to 70 percent). Personal spending on ICT is below that of Established Leaders, in the range of US\$500 to US\$800 per capita, with 70 percent of it on mobile phones.

Yet, Rapid Adopters are experiencing sustained growth in the number of e-service firms and industries, reflecting the quickly expanding demand for ICT goods and services in most countries. Governments in these nations, however, lag their more advanced peers in adopting Internet laws and in managing intellectual property rights.

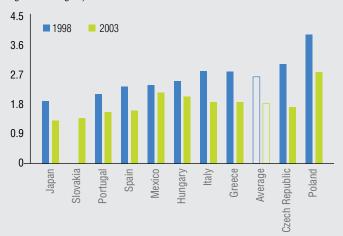
Of the three groups, Rapid Adopters experienced the greatest amount of change over the past half-dozen years. Today, Central and East European countries dominate this group as they move aggressively to modernize their economies as part of joining the European Union, and in support of national initiatives to become economically competitive in the global economy. Supporting e-services in the private and public sectors has been a major initiative.

FIGURE 4.

Product market regulation and employment protection legislation.

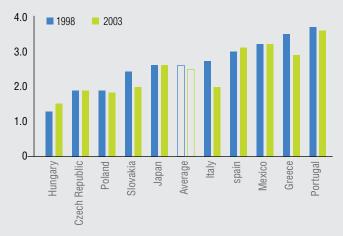
Product market regulation, Rapid Adopters (Tier 2 countries)

(0-6, with 6 being most stringent)



Employment protection legislation, Rapid Adopters (Tier 2 countries)

(0-6, with 6 being most stringent)



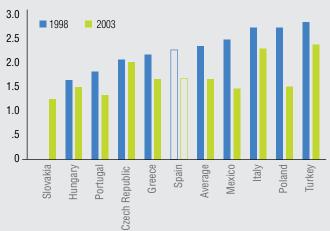
Note: Employment Protection Legislation (EPL) score is an average of Temporary and Permanent Employment Contract factor scores and does not include Collective Dismissal factor score. This is done to be able to compare EPL scores across countries and years. Data not available for rest of the countries in Tier 2.

Source: Economics Department Working Papers No 226 and Employment Outlook 2004, OECD; Conway, P., V. Janod, and G. Nicoletti (2005), "Product Market Regulation in OECD Countries, 1998 to 2003", OECD Economics Department Working Paper, No 419

FIGURE 5. Barriers to entrepreneurship and competition.

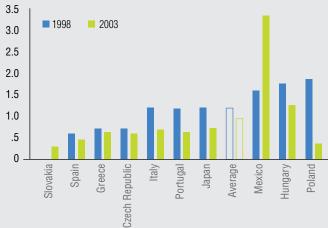
Barriers to entrepreneurship, Rapid Adopters (Tier 2 countries)

(0-6, with 6 being most stringent)



Barriers to competition, Rapid Adopters (Tier 2 countries)

(0-6, with 6 being most stringent)



Note: Data not available for rest of the countries in Tier 2.

Source: Economics Department Working Papers No 226 and Employment Outlook 2004, OECD; Conway, P., V. Janod, and G. Nicoletti (2005), "Product Market Regulation in OECD Countries, 1998 to 2003", OECD Economics Department Working Paper, No 419.

Rapid Adopter nations
need to quickly reform
their product and
labor markets, as
well as to address the
sharply rising demands
from consumers and
businesses for enhanced
ICT infrastructures.

Over the period, they improved substantively in the development of legal, policy, social and cultural environments necessary to operate an advanced economy. They generally enjoy strong economies, but lag the most advanced in the personal and business uses of ICT, despite rapid rates of adoption of computing and telecommunications (particularly mobile phones) – a process that is continuing, even though it is now decelerating in some countries as deployment becomes saturated.

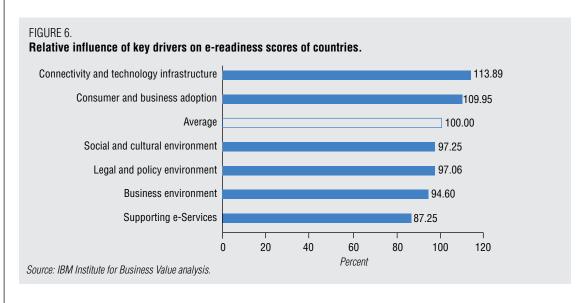
Our analysis of the actions of Rapid Adopter countries, when compared to those of the most aggressive users of ICT, illustrates that both are, and have been, focused on promoting connectivity of their populations to communications and the Internet. Further, they are stimulating the adoption of advanced uses of ICT by businesses and individuals, factors that seem to have the highest influence on a country's overall e-readiness (see Figure 6). Figure 6 shows the relative influence of the key drivers of change across many nations, suggesting areas of emphasis for any particular country.

So what should Rapid Adopter countries do next?

The challenge for Rapid Adopter countries is to reform their product and labor markets fast enough to compete against the leaders that have far more attractive business environments for new and existing firms. Second, Rapid Adopters are experiencing sharp increases in the demands of consumers and businesses to enhance existing ICT infrastructures.

In many nations, these networks are aging or unable to handle greater volumes of data, such as old dial-up telephone systems in parts of Europe not able to carry video streaming. These countries need speed of execution to make improvements within national borders and also in internal government operations.

To improve their political environments, governments should consider taking steps that can speed up the transformation of their economies along lines they have already deemed desirable:



- Establish a coherent and far-reaching government "e-strategy" that provides citizens with incentives to conduct government related transactions online.
- Reform market regulations to enhance local competitiveness in the global economy, not just to improve competition within the nation.
- Relax labor market legislation to make temporary and permanent employment contracting more flexible.
- Put public services online, such as filing tax returns, renewing car licenses and registering new businesses. This will also motivate vendors to use ICT as part of their core processes.
- Put government's own procurement processes online as well, to make access to governmental business national and competitive.

Today, much well-deserved attention is focused on economic development policies. Five fundamental strategies can enhance a government's ability to make its economy competitive on a global scale, specifically:

- Promote public/private approaches to the development and rollout of various ICT infrastructures, such as those for telecom, Internet, online services and Silicon Valleylike corridors (often known as clusters of economic development), much as Ireland did in the 1980s and 1990s.⁴
- Provide more affordable and varied financing options to new start-up businesses to foster innovation in products and services brought to market. This can involve a combination of private/public venture capital initiatives.
- Improve the flexibility of the local labor market to compete globally, an initiative already started by such countries as Spain, Italy, Greece and Portugal, although they too need to do further work to compete with the best.
- Reduce the lead time and simplify procedures for new business registrations.
- Consider nurturing emerging services sector industries through tax incentives or subsidies to help firms put their businesses online.

Taking ICT to the masses: Mexico

Mexico has moved around in the last six years of the annual E-readiness rankings, but the country managed to hold onto its tier berth (39th rank overall) in the 2006 rankings, despite the addition of several Central and Eastern European countries above it.

More focused government ICT policies have helped to propel Mexico's ICT environment. The government's "e-Mexico" project had already opened close to 3200 community centers with public Internet access kiosks throughout the country by the end of 2005. Eventually, the Mexican government hopes to have 10,000 free public Internet kiosks in rural areas to help bring government services to citizens, reducing what has been called the "digital divide" of the urban rich from the rural poor. A growing number of Internet cafés, broader access to bundled finance packages (PC plus Internet access) and aggressive prepaid Internet offerings from service providers have all served to improve connectivity.

Source: The 2001-2006 E-readiness Rankings, Economist Intelligence Unit.

Promoting small and medium enterprises: Taiwan

Taiwan started as a Tier 1 country on the E-readiness Rankings, but was subsequently overtaken by countries which progressed at a faster pace over the last half-dozen years. The country enjoys a strong ICT connectivity infrastructure and the government has continued to invest in the deployment of a national WiMAX network in the last few years.

While the adoption of ICT by consumer and business remains low compared to other Asia-Pacific countries like Singapore and Hong Kong, the government has been striving to offer help. Recently, subsidies were offered to 20,000 small and medium-sized businesses in 200 local industries to set up Internet databases and online trading systems. With these subsidies, the government hopes to prod companies from original equipment manufacturing into global marketing and logistics.

Source: 2001-2006 E-readiness Rankings, Economist Intelligence Unit.

A key focus area for Rapid Adopters concerns education, where the opportunity to link their educational systems to the needs of the local labor market is crucial to national success. Specifically, these governments are finding it essential to:

- Enhance technical training, so workers can meet emerging market demands
- Increase access to and improve the quality of all levels of general education
- Keep improving the nation's transportation and housing infrastructure to facilitate the movement of people and goods into and through the economy, and to attract qualified labor.

Finally, on the technology front, governments should give serious consideration to creating programs that give ICT access to citizens or enterprises in remote areas at affordable rates.

Additionally, however, officials can leverage other capabilities of their governments to promote effective ICT use, more specifically by:

- Making it easier for firms to innovate and experiment by lowering regulatory burdens, thereby stimulating faster technology diffusion and deployment.
- Improving the public's trust in online payment systems by using legislation to promote online trade. Key tactics can include using digital signatures and digital rights management – two approaches many nations still underutilize – to stimulate innovations in local trade practices.

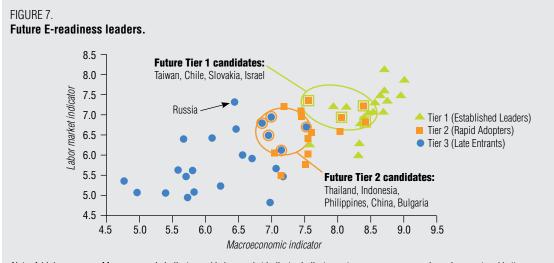
Each of these recommendations has the virtue of having been tried by one or more countries that found it to be effective in supporting the improvement of local economies.

To whom the future belongs

What rankings of nearly seventy nations for many years suggest is that countries with the advantage of a strong macroeconomic environment and a buoyant labor market should expect to make bigger strides toward a strong e-readiness environment in the coming years (see Figure 7). Estonia is a Tier 2 country that has taken several proactive steps in the area of e-government which have contributed significantly to creating a strong ICT environment (see Appendix 1 for details).

The Rapid Adopters are the fastest progressing economies and thus are prime candidates for significant gains on the E-readiness rankings, provided they continue to invest in ICT on an ongoing basis. Potential candidates to make significant improvements and possibly even join the ranks of Established Leaders include Taiwan, Chile, Slovakia, Israel and Estonia (Estonia not included in Figure 7 due to non-availability of data). This suggests that opportunities for economic growth exist all over the world and not just in one region or tier.

As the fastest-growing economies, Rapid Adopters are prime candidates for making significant e-readiness gains – but only if they continue to invest in ICT over time.



Note: A higher score on Macroeconomic indicator and Labor market indicator indicates a stronger macroeconomic environment and better developed labor market. 1 is the lowest score, 10 the highest.

Source: Annual E-readiness Rankings 2006, Economist Intelligence Unit.

For similar reasons, Late Entrants may evolve into Rapid Adopters. In this group, one can expect significant progress by Bulgaria, Thailand, Indonesia, Philippines, and of course, China. Russia could also rise in the rankings, if it is able to enhance its macroeconomic environment.

ICT telecom spending is expected to remain the primary area of investment for Late Entrant countries. Established Leaders and Rapid Adopters, however, are pushing ahead with the development of IT-based services in order to support an increasing number of e-government and private business transactions online and in a competitive manner.

Early reformer: Chile

Chile has been a consistent performer in the E-readiness Rankings of the last six years. While several countries in the middle tier slipped down the ranks, partly due to addition of new countries to the rankings during this period, Chile managed to hold onto its spot.

Chile has been at the forefront of economic liberalization in Latin America, first with trade and market reforms implemented in the 1970s, privatization of healthcare and pensions in the 1980s, and improved educational attainments up through university levels.

Chile has developed one of the most advanced ICT markets in Latin America, while the government has promoted and supported ICT access to the general public beginning in the 1990s. It also privatized its telecom sector in 1994. Its various actions led to robust macroeconomic performance over the past half-dozen years, along with stable inflation and low interest rates for capital. Chile enjoys a higher life expectancy at 77.9 years, as compared to an average of 77.7 years for the OECD countries. However, rigidities of labor legislation still require reform to develop a buoyant labor market and per capita income needs to rise to match the OECD countries.

Source: "Chile Development Policy Review." World Bank, Report No. 33501-CL. June 2006; The 2006 E-readiness Rankings, Economist Intelligence Unit.

We find that mobile penetration rates per head and Internet affordability had become the two specific areas of greatest interest to governments by 2006, although the other variables discussed in this paper have become important as well (see Figure 8).

The way forward

As national economies become more integrated into one global economy – due to ever-improving transportation, communications, and efficient financial and commercial infrastructures – every government we observed has committed to ICT investments of one form or another.

However, our findings suggest that progress should be made simultaneously on all the four fronts: political, economic, social and technological, not just along one dimension.

So, what is a public official in a Rapid Adopter nation to do to continue moving forward? Some questions of particular relevance to Rapid Adopters include:

- To what extent is my economy easy to work in – from the perspective of a local firm, an international company or as an entrepreneur – when compared to those of other nations?
- 2. How can I reduce firm start-up costs and make it easier for firms to operate in my economy by lowering regulatory burdens, and facilitating faster technology diffusion and deployment?
- 3. What can I do to make the employment regulation less restrictive and the labor market more flexible?
- 4. What reforms can I legislate and implement to make my economy competitive and leverage my national assets?

FIGURE 8.
Rankings of the most important criteria for ICT investment.

7.13 7.10 6.28 6.28
6.28
6.28
6.00
5.63
5.46
4.81
4.71
4.25
3.59
3.35
2.24

Source: IBM Institute for Business Value analysis.

Two primary improvements can contribute to raising Rapid Adopters' competitiveness in the world economy and their citizens' quality of life: more liberal, flexible labor policies and extending broadband access.

- 5. What improvements in our social policies would make my society a place that retains highly skilled labor within the country and attracts talent from other nations needed in our economy?
- 6. While continuing to provide communication services to an increasing percentage of the population, how do I push adoption of government services that have been made available online? In other words, how do I increase utilization of existing ICT infrastructure?
- 7. Recognizing that every nation is at different stages of economic and technological development, what kinds of ICT investments should our nation make?
- 8. How can I measure my nation's progress in its overall improvements?⁷

The evidence demonstrates clearly that every nation will have different answers to these questions, but what is very evident is that governments at all levels will have to play a central role in leading their citizens and institutions through this evolution.

Governments truly are moving quickly today to make improvements and their economies are also transforming rapidly. In short, there is an economic step change underway around the world, creating a sense of urgency for governments to exercise strong leadership. Each group of countries has much to teach others about how to make progress: first by identifying common characteristics, then by borrowing and sharing useful strategies.

In the case of ICT, rates of adoption of leading practices are increasing each year, requiring governments, leading companies and institutions to move expeditiously to keep up and excel. It is why IBM, the Economic Intelligence Unit, the United Nations, the European Union, and many international corporations are among the many organizations that are tracking and participating in this global process of transformation in public administration and economic innovation.

As a final message, there are two primary actions this collection of Rapid Adopter countries can do to enhance citizens' quality of life and competitiveness in the world economy. The first is to liberalize and make more flexible their labor practices; second is to make broadband accessible to all citizens, businesses and government agencies.

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For additional details on this report, please contact Susanne Dirks at The IBM Institute for Business Value's Center for Economic Development in Dublin, Ireland. She can be reached at susanne_dirks@ie.ibm.com.

Appendix 1: Case study - Estonia

Estonia^A is a relatively small Baltic state with approximately 1.4 million inhabitants with a strong macroeconomic environment. The GDP has grown at a healthy rate, with a per capita GDP of US\$17,500 (in 2005). The economy benefits from strong electronics and telecommunications sectors, and is greatly influenced by developments in Finland, Sweden and Germany, Estonia's three major trading partners.

The EIU annual E-readiness Rankings of 2006 showed Estonia leading the Central and Eastern European countries on most of the criteria used within the reference framework. Estonia's dominant position (27th overall) among Central and Eastern European countries in the E-readiness Rankings is attributable not only to its good connectivity performance, but also to extremely proactive e-government development. Initiatives such as its e-cabinet program, implemented in 2001 to streamline government decision-making at the highest level, have helped to improve administrative efficiency with a Web-based documentation system. Nearly 90 percent of the Estonian population aged between 15 and 74 now has a valid e-ID card. The wide dissemination of the identity card also gives providers of electronic services – from both the public and private sectors – the possibility to significantly increase the security level of e-Services. Estonian citizens filed more than half a million tax returns in 2006 and a staggering four-fifths of those were submitted online, making it a world leader in this area.

Source:

- A. United States Central Intelligence Agency. "The World Fact Book: Estonia." https://www.cia.gov/cia/publications/factbook/geos/en.html. Last accessed on January 4, 2007.
- B. Economist Intelligence Unit. "2005 E-readiness rankings."
- C. "EE: Estonian elD card passes 1 million threshold." European Commission. Interoperable Delivery of European eGovernment Services to public Administrations, Business and Citizens. October 23, 2006. http://ec.europa.eu/idabc/en/document/6216/591. Last accessed on January 4, 2007.
- D. Ibid.

Appendix 2: Countries in each tier and E-readiness Ranking

Established Leaders		Rapio	Rapid Adopters		Late Entrants	
Rank	Country	Rank	Country	Rank	Country	
1	Denmark	21	Japan	41	Brazil	
2	United States	22	Israel	42	Argentina	
3	Switzerland	23	Taiwan	43	Jamaica	
4	Sweden	24	Spain	44	Bulgaria	
5	United Kingdom	25	Italy	45	Turkey	
6	Netherlands	26	Portugal	46	Saudi Arabia	
7	Finland	27	Estonia	47	Thailand	
8	Australia	28	Slovenia	48	Venezuela	
9	Canada	29	Greece	49	Peru	
10	Hong Kong	30	UAE	50	Romania	
11	Norway	31	Chile	51	Colombia	
12	Germany	32	Czech Republic	52	Russia	
13	Singapore	33	Hungary	53	India	
14	New Zealand	34	Poland	54	Jordan	
15	Austria	35	South Africa	55	Egypt	
16	Ireland	36	Slovakia	56	Philippines	
17	Belgium	37	Malaysia	57	China	
18	Korea	38	Lithuania	58	Ecuador	
19	France	39	Latvia	59	Sri Lanka	
20	Bermuda	40	Mexico	60	Nigeria	
				61	Ukraine	
				62	Indonesia	
				63	Algeria	
				64	Kazakhstan	
				65	Iran	
				66	Vietnam	
				67	Pakistan	
				68	Azerbaijan	

Source: The 2006 E-readiness Rankings, Economist Intelligence Unit.

References

- 1 Cortada, James W. Ashish M. Gupta and Marc Le Noir. "How rapidly advancing nations thrive in the Information Age: Leveraging ICT for national economic development." IBM Institute for Business Value. January 2007.
- ² IBM Corporation, "Global Innovation Outlook 2.0." 2005. http://www.ibm.com/gio.
- ³ Each year the EIU publishes a global E-Readiness rankings. See for example, The 2006 E-readiness Rankings, Economist Intelligence Unit.
- ⁴ United Nations. "Human Development Indicator (HDI), Human Development Report 2003." http://hdr.undp.org/.
- MacSharry, Ray and Padraic White. The Making of the Celtic Tiger: The Inside Story of Ireland's Boom Economy. (Dublin: Mercier Press, 2000.)
- ⁶ United Nations. "Human Development Indicator (HDI), Human Development Report 2003." http://hdr.undp.org/.
- Dijkstra, Sietze and Marc le Noir. "The Big Lie About Transparency: How to Implement Performance Management in Government Successfully." IBM Institute for Business Value. October 2004. http://www-03.ibm. com/industries/government/doc/content/ resource/thought/1263011109.html.



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