

# Lessons from Global eReadiness Trends of National Economies

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**Abstract:** This paper examines the trends evident in overall E-readiness rankings between 2001 and 2008 in three specific groups of countries, Established Leaders, Rapid Adopters and Late Entrants. Between 2001 and 2008, the overall E-readiness performance of all countries has improved significantly, although the pace of development varied across the three tiers. The Established Leader countries have remained very similar for a number of years, reflecting the use of mature technologies employment of ICT at a national level. Rapid Adopters have begun to embrace the key prerequisites for being competitive in the modern global economy. While many Late Entrant nations are in the early stages of developing and coordinating plans for building technology-equipped societies, they are also struggling with how to implement laws covering the Internet and have poorly managed intellectual property laws. Each tier of countries is in various stages of transformation, some more dramatic than others. Established Leaders need to continue innovating in their use of technology and public policies to remain competitive. The large collection of emerging rivals, Rapid Adopters, also have much work to do and are learning many useful lessons from the Established Leaders' prior experiences. Some of the Late Entrant countries are displaying an appetite to modernize their economies – they are also borrowing from other nations' experiences. However, to be competitive, all nations will have to continue improving their E-readiness relative to each other; we set out a number of strategies that each cluster of countries can tailor to its specific needs.

**Keywords:** E-readiness, Government policy, ICT, Economic development

## 1. Introduction

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 citizens' lives, challenges to national success also exist. Effective implementations of national economic development policies that integrate economic, social and technological strategies are essential to compete effectively in the globalised 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 labour, 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. There has also been a significant up-tick in the adoption of such tools as the Internet, wireless communications, as well as "computing" that is embedded in all manner of goods and services.

More recently, governments have additionally had to establish protections and policies that promote Internet use. The majority of governments have concluded that Internet use is crucial to economic and social welfare. The U.S. government invested billions of dollars to provide Internet access to every classroom in the country. Across various European countries, the cost of Internet access was lowered. In Korea, the government promoted the extensive use of broadband connections and now Koreans are the most “wired” citizens in the world. Various studies from organizations like the Organisation for Economic Co-operation and Development (OECD) and the United Nations (UN), clearly show that both consumer and business adoption of all manner of ICT has been steadily increasing over the past fifteen years [1]. Along with rising availability and affordability of ICT, the quality and reliability of ICT has improved dramatically, particularly for communications around the world. For example, e-business activity rose from being non-existent to form nearly 10 percent of all sales in the U.S [2].

E-readiness is a measure of the quality of a country’s information and communications technology (ICT) infrastructure and the ability of its consumers, businesses and governments to use ICT to their benefit. When a country uses ICT to conduct more of their activities, its economy can become more transparent and efficient. The E-readiness rankings also allow governments to gauge the success of their ICT strategies against those of other countries, and provide companies wishing to invest overseas with an overview of the world’s most promising investment locations from the perspective of E-readiness.

The ways for a country to achieve and sustain e-readiness are varied and interrelated, and are shaped by factors in the economic, political and social environment, as well as by the breadth and quality of its ICT infrastructure and the digital services that are taken up. While E-readiness is progressing around the world, achieving it is growing more complex. Basic connectivity, for example, is no longer adequate to use the Internet efficiently; the connections must be fast, secure and affordable. Likewise, governments must demonstrate their commitment to digital development not only through broad policy, but also in practical ways, such as delivering public services to citizens and business via electronic channels. The goalposts of e-readiness, in other words, are shifting.

This paper examines the trends evident in overall E-readiness scores and rankings between 2001 and 2008 in three specific groups of countries. Our primary objective is to use this grouping as a basis to identify specific areas where each group could focus to contribute to improving their E-readiness performance, as well as the overall impact of ICT on economic development. Section 2 of the paper briefly discusses the methodology used to determine the three country groups, the key trends in overall E-readiness between 2001 and 2008, and some of the characteristics of each of these three groups. Section 3 sets out policy recommendation for each of these groups to focus on in order to improve their E-readiness. Section 4 of the paper concludes.

## **2. Key E-readiness trends**

In order to distinguish between the characteristics of the 70 countries that are included in the E-readiness rankings we divided the countries into three distinct groups. Examining the trends evident in these three groups allows us to see what the common characteristics of the groups are, as well as identifying what areas of policy each group needs to focus on in order to improve their E-readiness. We define the three groups as ‘Established Leaders’, ‘Rapid Adopter’, and ‘Late Entrants’. To establish what countries were in each group calculated the average E-readiness ranks of all 70 countries over the 2001-2008 period. Following this, countries were then ranked based on these averages. The ranking of countries for the entire period we believe highlights the true E-readiness leaders in each tier for the 2001-2008 period given that countries have moved around and occupied different spots in the annual E-readiness surveys. The three groups were defined as follows:

- Established Leaders (or Tier 1 countries)– Ranks 1-20
- Rapid Adopters (or Tier 2 countries) – Ranks 21-40
- Late Entrants (or Tier 3 countries) – Rank 41 or greater

Table 1 shows the individual countries included in each group.

*Table 1: Countries in each tier and E-readiness Ranking*

Established Leaders		Rapid Adopters		Late Entrants			
Rank	Country	Rank	Country	Rank	Country		
1	US	21	Taiwan	41	Brazil	61	Ecuador
2	Denmark	22	Japan	42	Argentina	62	Ukraine
3	Sweden	23	Italy	43	Lithuania	63	Nigeria
4	UK	24	Israel	44	Turkey	64	Indonesia
5	Netherlands	25	Malta	45	Bulgaria	65	Iran
6	Switzerland	26	Spain	46	Jamaica	66	Vietnam
7	Australia	27	Portugal	47	Venezuela	67	Algeria
8	Finland	28	Estonia	48	Colombia	68	Kazakhstan
9	Hong Kong	29	Greece	49	Thailand	69	Pakistan
10	Norway	30	Slovenia	50	Peru	70	Azerbaijan
11	Singapore	31	Czech Republic	51	Saudi Arabia		
12	Canada	32	Chile	52	Romania		
13	Germany	33	Hungary	53	India		
14	Austria	34	UAE	54	Trinidad & Tobago		
15	Ireland	35	South Africa	55	Philippines		
16	New Zealand	36	Malaysia	56	Russia		
17	Bermuda	37	Poland	57	Egypt		
18	South Korea	38	Slovakia	58	Sri Lanka		
19	Belgium	39	Mexico	59	Jordan		
20	France	40	Latvia	60	China		

*Source: IBV Analysis based on EIU E-Readiness Rankings 2001-2008*

Analysing the average score of each group for 2001 and 2008, as Figure 1 illustrates, since 2001 the overall E-readiness performance of all countries has improved significantly, although the pace of development varied across the three tiers. The most extensive and mature ICT users, Established Leaders, improved their E-readiness by almost 11 percent between 2001 and 2008. Rapid Adopters improved their E-readiness by over 17% 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 average rates of development for this Tier exceeding those of Rapid Adopters. In short, over the past half-decade, the almost 70 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. While Late Entrants have made the greatest progress, the E-readiness scores for this Tier indicate that they have experienced difficulty in embracing the practices of countries above them.

Measured by E-readiness scores, the Established Leader countries have remained very similar for a number of years, reflecting the use of mature technologies. Economically, per capita gross domestic product (GDP) tends to be high, in the range of US\$30,000 to US\$50,000 for most countries [3]. In these countries, new businesses can be registered very quickly, usually in 18 to 20 days [4]. Many of their social, legal and political infrastructures are well advanced. On average, citizens in these countries have 10 or more years of formal education and rank in the top 20 in the United Nations' Human Development (HDI) Index [5]. However, their populations are also aging faster than any other parts of the world. This will require extensive resources to address three particular areas: pensions, medical care and providing government services to those less ambulatory than younger populations. National governments could implement strategies to remediate these issues, including replacing older processes and uses of ICT with new ones better suited to this population [6]. Naturally, the private sector in these countries also faces the same problems and opportunities [7]. These countries have taken the lead in changing their legal and policy environments relating to ICT use – most specifically, the Internet – while

their business environments have remained generally stable and prosperous, supported by sound government policies. Membership in this elite group tends to be West European (12 of 20) and Japan has come and gone (possibly only momentarily) as a member, while Korea recently ranked high enough to join this tier. When compared to the other two clusters of nations, the evidence points to the fact that the Established Leaders, which were the earliest and most advanced users of ICT, are continuing to progress. They are extending their long-standing tradition of innovating both internal governmental operations, and externally with their national economies. As Figure 1 illustrates, however, many other nations are doing that too. In short, a footrace to maintain primacy of performance is well underway.

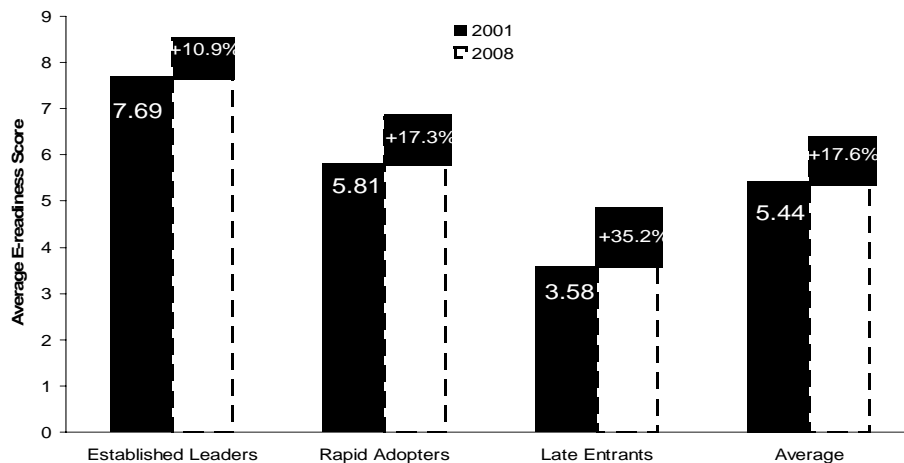


Figure 1 Average increase in E-readiness score 2001-2008

Source: IBV Analysis based on Annual E-readiness Rankings 2001-2008, Economist Intelligence Unit.

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. The middle tier or Rapid Adopter countries consist 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. The economic environment of these countries is rapidly improving, with per capita GDP in the range of US\$10,000 to US\$37,000 [3]. Procedures for registering new businesses take longer as compared to Established Leaders, ranging from 30 to 35 days on average [4], reflecting a slightly higher degree of bureaucracy and regulatory burdens. 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. Figure 8 shows the relative influence of the key drivers of change across many nations, suggesting areas of emphasis for any particular country.

Most Late Entrant countries in the third tier are handicapped by poor social infrastructures reflecting such problems as low educational attainment and extensive income variation, all of which are hampering uniform ICT deployment and use across

national populations. These countries function in weak macroeconomic environments, with per capita GDP, for example, ranging from US\$3000 to US\$8000 for over two thirds of these countries [3]. Procedures for registering new businesses are very long, averaging 55 to 60 days [4]. The political environment is often friendly to competition, with foreign participation allowed in certain sectors. Labour markets are less developed and there is growing recognition of the need to introduce more flexible employment contracting regulations. Most Late Entrant nations are in the early stages of developing and coordinating plans for building technology-equipped societies. Many, however, are also struggling with how to implement laws covering the Internet and have poorly managed intellectual property laws.

### 3. Policy recommendations

As increasing ICT penetration ceases to be a competitive advantage, countries in the leading tier will need to raise the bar by increasing the efficiency and use of their current ICT infrastructure. Established Leader nations will want to take action on political, economic, social and technological issues as they increase their societies' ability to compete in a rapidly evolving global economy. Governments should consider taking the actions set out in Table 2.

*Table 2: Policy recommendations for Established Leaders*

<ul style="list-style-type: none"> <li>• Reduce or maintain product and labour market regulations at low levels to facilitate sustained economic growth</li> <li>• Coordinate government e-strategy through a single point of entry for all government services online, a process already underway in North America, parts of Asia and Western Europe</li> <li>• Promote development of the next generation of infrastructure in the delivery of services to the nation, from further use of the Internet to open source software and widely accepted technical standards<sup>i</sup>.</li> <li>• Continue implementing market reforms that reduce the costs of new technologies to facilitate access for people who are currently excluded due to high costs.</li> </ul> <p>Economically, governments should focus on four essential strategies and policies:</p> <ul style="list-style-type: none"> <li>• Increase cross-sector and cross-community linkages through exchange of leading practices and sharing of technology infrastructure among entities. This would contribute toward increasing the overall effectiveness of ICT within an economy.</li> <li>• Make digital channels more convenient and more cost-effective for both governments and businesses, and to encourage higher adoption by consumers and citizens.</li> <li>• Strengthen governance for e-commerce and Internet security with local industries to promote online trade.</li> <li>• Gradually prepare for a declining public workforce, due to retirement, by transforming the way services are delivered and making them more IT-intensive than labour-intensive.</li> </ul> <p>Socially, much good work has been done, particularly with education, but will need to be enhanced in order not to be overtaken by advancing countries that are increasingly engaging effectively in the war for talent [8]. Specifically, governments can leverage solid experience in this area, for example:</p> <ul style="list-style-type: none"> <li>• Improve the quality of secondary and tertiary education while concentrating on reducing school drop-out rates. Also, train citizens for jobs in emerging growth areas, such as healthcare.</li> <li>• Improve access to education and job opportunities to those sectors of any population currently deprived due to geographical constraints, ethnic background or physical disability.</li> <li>• Reform social welfare systems to reflect the reality of aging populations, such as with incentives and other support, to allow people to work longer while facilitating easier immigration for critical professions [9].</li> <li>• Integrate and continue to automate systems that exchange and share demographic data across multiple government agencies, striving for "one-stop" service to citizens, particularly for the elderly and in support of young families and children.</li> </ul>
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Established Leaders must upgrade aging ICT infrastructures to compete with the newest ones being created by the Rapid Adopters and Late Entrants that are not burdened with massive investments in older ICT. Essential improvements in this area include:

- Develop and execute clearly articulated modern digital strategies and measure results against targets, such as the percent invested in specific types of ICT (for example, measuring broadband usage by citizens or government)<sup>ii</sup>.
- Coordinate in a formal manner government industry programs to enable efficient rollout of new technologies and their uses.
- Develop efficient technologies for commercialization and implement transfer rules to speed their diffusion into the local society and global market.

The challenge for Rapid Adopter countries is to reform their product and labour 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 are aging or unable to handle greater volume of data, such as old dial-up telephone networks 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. Detailed policy recommendations for Rapid Adopter countries are set out in Table 3.

*Table 3: Policy recommendations for Rapid Adopters*

- 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 labour 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
- 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; four 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 Valley like corridors, much as Ireland did in the 1980s and 1990s [10].
- Provide more affordable and varied financing options to new start-up businesses to foster innovation in products and services brought to market
- Reduce the lead time and simplify procedures for new business registrations
- Consider nurturing emerging services sector industries, or even providing tax incentives to help firms put their businesses online.

A key focus area for Rapid Adopters concerns education, where the opportunity to link their educational systems to the needs of the local labour 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 workers to where jobs are located.

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.

Often, the primary challenge for the Late Entrant countries is to enhance social infrastructures and increase aggregate incomes across society. In this way, a larger portion of Late Entrant economies can leverage ICT to improve their competitiveness in the global economy. On the political front, the rankings data confirms what economists have been suggesting for some time. Governments should create legislation that promotes international trade and business-friendly economies, while eliminating corruption. Market regulations can be modified to promote competition and relax labour laws to make it easier for employers to hire temporary and permanent employees. Reducing the complexity, cost, and time for new businesses to register offers a nation an opportunity to enhance local entrepreneurship, often seen as a major driver of economic prosperity. Officials in Late Entrant nations will have much to do in improving their economy's prowess. Policy recommendations for this group of countries is set out in Table 4.

*Table 4: Policy recommendations for Late Entrants*

- Develop efficient, secure logistics and transport infrastructures to facilitate quick, cost-effective movement of goods and people
- Solicit participation from industry in areas like electricity, healthcare and education
- Use innovative options like micro-financing to promote small-scale industry for self employment of low-skilled workforces
- Develop agricultural support programs for the collection and dissemination of data on farmers' activities, weather patterns and commodity prices
- Reduce significantly the lead time and complexity of registering new businesses.

Social policies are also important for the future of these nations. Improving the quality and amount of education – at the primary, secondary and tertiary levels – should be one of a Late Entrant nation's highest priorities and remain so for the foreseeable future.

- Educators will need to weave computer literacy into their curricula and training programs. They should also facilitate access to distance learning.
- Providing personal computers in public places in small and large communities also helps literate, low-income segments of society gain access to useful information. For example, in Brazil a government-industry alliance set up Internet kiosks in shops that gave low-income Brazilians free access to online services. Similar community access programs could be delivered through access at schools or with the aid of public help groups.

Finally, on the technology front, lessons from early adopters of ICT suggest five clear actions Late Entrant governments can take:

- Play a larger role in creating and sustaining a national ICT infrastructure to enable improved communications and connectivity to the Internet
- Enable more affordable access to ICT by fostering competition, particularly among telecom providers
- Encourage use of ICT in the management of public finances, and in creating and disseminating social services information
- Work with businesses to develop appropriate technology standards to verify compatibility and increased seamless integration of network technologies
- Develop local ICT industries through favourable laws, tax incentives and exemptions to stimulate national GDP growth.

## 4. Conclusions

This paper has examined the trends evident in three groups of countries in terms of their E-readiness rankings between 2001 and 2008. Our analysis showed that since 2001 the overall E-readiness performance of all countries has improved significantly, although the pace of development varied across the three tiers. The Established Leader countries have remained very similar for a number of years, reflecting the use of mature technologies and this group of countries is continuing to progress. However, many other nations are doing that too. In short, a footrace to maintain primacy of performance is well underway. Rapid Adopters - countries that 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. Most Late Entrant nations are in the early stages of developing and coordinating plans for building technology-equipped societies. Many, however, are also struggling with how to implement laws covering the Internet and have poorly managed intellectual property laws.

To be competitive in the future, all nations will have to continue improving their E-readiness relative to each other. We set out a number of strategies that each cluster of countries can tailor to its specific needs. Further empirical research is required in order to examine the impact of each category of policy, and the specific indicators therein, on overall E-readiness for each of the three groups. Such research would be helpful for governments by providing a robust basis for prioritising different types of policies to improve E-Readiness.

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<sup>i</sup> For examples, see DiMare, Jay. "Changing the Way Industries Work: The Impacts of Service-Oriented Architecture." IBM Institute for Business Value; DiMare, Jay. "Service-Oriented Architecture: A Practical Guide to Measuring Return On That Investment." IBM Institute for Business Value. 2006.

<sup>ii</sup> For recent examples of these kinds of activities, see Kamensky, John M. and Albert Morales (eds.). *Managing for Results 2005*. (Lanham, Md.: Rowman & Littlefield, 2005).