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RESEARCH ARTICLE

Networked Readiness Index (NRI) 2013 Rankings for Developing Countries of Asia and Evaluation of NRI Indicators Rankings of Pakistan

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Abstract

This paper presents Networked Readiness Index (NRI) 2013 Rankings for Developing Countries of Asia. Networked Readiness Index (NRI) is an assessment of a country's preparedness and capacity to make use of and benefit from Information and Communication Technologies (ICTs). The Networked Readiness Index, calculated by the World Economic Forum, and INSEAD, ranks 144 economies based on their capacity to exploit the opportunities offered by the digital age. The NRI provides a comprehensive assessment of network readiness in individual countries through 54 indicators, which are organized under ten pillars and subsequently categorized into four main indices: Environment Sub index, Readiness Sub index, Usage Sub index and Impact Sub index. Pakistan's performance has also been assessed. Networked Readiness Index 2013 shows a dismal state of ICT in Pakistan and Pakistan continues to lag behind in the rankings. Pakistan's ranking in Information and Communication Technology (ICT) has dropped from 102nd position in 2012 to 105th slot in 2013. Some of the areas where Pakistan lost its ICT competitiveness are government's procurement of advance technologies, which ranked 109th this year as compared to 91st in 2012. Although Pakistan has improved the fixed broadband Internet tariff substantially by making Pakistan the 68th most competitive broadband provider in the world, individuals using Internet, which depicts affordability of Internet for citizens is shrinking. Pakistan lost 22 points in 2013 and is ranked at 120th on individuals using Internet.

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Introduction

The Networked Readiness Index (NRI) aims to measure the ability of countries to leverage information and communication technologies (ICTs) for improved competitiveness and well being. This ability depends on multiple factors, as detailed in this chapter and reflected in the comprehensive framework underpinning the NRI. The NRI results confirm the presence of the digital divide between advanced economies on the one hand and emerging and developing economies on the other. Looking in greater detail, Figure A reveals that the digital divide is present across the 10 pillars of the NRI, even though the average scores necessarily conceal vast differences within the two groups. A traditional conception of the digital divide tends to focus on differences in terms of infrastructure and technological adoption. Despite rapid growth, the divide in these two areas remains high. Of the 10 pillars, infrastructure and digital content and individual usage are the two where the score differentials between advanced economies and the rest of the world are the biggest (2.7). Although mobile telephony is becoming ubiquitous almost everywhere, figures for Internet usage and broadband access, let alone mobile broadband access and PC ownership, remain low in most parts of the world. As of 2011, there were 81 mobile telephony subscriptions per 100 population in the developing economies under review, not too far from the 111 subscriptions per 100 population of advanced economies. However, when it comes to Internet access, the ratios are much more skewed. Seventy seven percent of individuals in advanced economies use the Internet, about three times as many as in developing countries (25

percent). The figures for PC ownership yield a similar ratio of 3.5 to 1 higher. In terms of mobile broadband subscriptions, the ratio is 7.3 to 1 in favor of advanced economies. Mobile telephony alone will not allow developing countries to bridge the digital divide. One must hope that the same degree of innovation, competition, and attention that contributed to making mobile telephony affordable, useful, and ubiquitous will spread to other technologies.

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 makers with a useful conceptual framework to evaluate the impact of information and communication technologies (ICTs) at a global level, and to benchmark the ICT readiness and the usage of their economies. 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. For more than a decade, the NRI has included aspects of the ways 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 for 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. 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.

Methodology & Computation

Networked Readiness Index (NRI) comprises four sub indexes. Each sub index is in turn divided into a number of pillars, for a total of 10. The 54 individual indicators used in the computation of the NRI are distributed among the 10 pillars. The computation of the NRI is based on successive aggregations of scores, from the indicator level (i.e., the most disaggregated level) to the overall NRI score (i.e., the highest level). An arithmetic mean is used to aggregate individual indicators within each pillar and also for higher aggregation levels (i.e., pillars and sub indexes). Thus, NRI score is an average of its four "Sub index" scores. Each Sub index score is a simple average of its composing pillars whose value is derived by taking an average of the value of its variables.

The maximum possible score for each sub-index is 7, and for each country (or economy) the four sub-indices are averaged to determine its NRI.

Definition of Networked Readiness Index (NRI)

The Networked Readiness Index (NRI) is defined as the "degree of preparation of a nation or community to participate in and benefit from ICT developments". The World Economic Forum's Networked Readiness Index (NRI) measures the propensity for countries to exploit the opportunities offered by information and communications technology. The NRI seeks to better comprehend the impact of ICT on the competitiveness of nations.

Elements of the Networked Readiness Index

The networked readiness framework translates into the NRI, comprising four sub indexes that measure the environment for ICTs; the readiness of a society to use ICTs; the actual usage of all main stakeholders; and, finally, the impacts that ICTs generate in the economy and in society. The three first sub indexes can be regarded as the drivers that establish the conditions for the results of the fourth sub index, ICT impacts. These four sub indexes are divided into 10 pillars composed of 54 individual indicators in total. The final NRI score is a simple average of the four composing sub index scores, while each sub index's score is a simple average of those of the composing pillars.

Environment Sub index

The environment sub index gauges the friendliness of a country's market and regulatory framework in supporting high levels of ICT uptake and the emergence of entrepreneurship and innovation-prone conditions. A supportive environment is necessary to maximize the potential impacts of ICTs in boosting competitiveness and well-being. It includes a total of 18 variables distributed into two pillars: The political and regulatory environment pillar (composed of nine variables) assesses the extent to which the national legal framework facilitates ICT penetration and the safe development of business activities, taking into account general features of the regulatory environment (including the protection afforded to property rights, the independence of the judiciary, and the efficiency of the law-making process) as well as more ICT-specific dimensions (the passing of laws related to ICTs and software piracy rates). The business and innovation environment pillar (nine variables) gauges the quality of the business framework conditions to boost entrepreneurship, taking into account dimensions related to the ease of doing business (including the presence of red tape and excessive fiscal charges). This pillar also measures the presence of conditions that allow innovation to flourish by including variables on the overall availability of technology, the demand conditions for innovative products (as proxied by the development of government procurement of advanced technology products), the availability of venture capital for financing innovation-related projects, and the presence of a skilled labor force.

Readiness Sub index

The readiness sub index, with a total of 12 variables, measures the degree to which a society is prepared to make good use of an affordable ICT infrastructure and digital content. The infrastructure and digital content pillar (five variables) captures the development of ICT infrastructure (including mobile network coverage, international Internet bandwidth, secure Internet servers, and electricity production) as well as the accessibility of digital content. The affordability pillar (three variables) assesses the cost of accessing ICTs, either via mobile telephony or fixed broadband Internet, as well as the level of competition in the Internet and telephony sectors that determine this cost. The skills pillar (four variables) gauges the ability of a society to make effective use of ICTs thanks to the existence of basic educational skills captured by the quality of the educational system, the level of adult literacy, and the rate of secondary education enrollment.

Usage Sub index

The usage sub index assesses the individual 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 in their day-to-day activities with other agents. It includes 16 variables. The individual usage pillar (seven variables) measures ICT penetration and diffusion at the individual level, using indicators such as the number of mobile phone subscriptions, individuals using the Internet, households with a personal computer (PC), households with Internet access, both fixed and mobile broadband subscriptions, and the use of social networks. The business usage pillar (six variables) captures the extent of business Internet use as well as the efforts of the firms in an economy to integrate ICTs into an internal, technology-savvy, innovation-conducive environment that generates productivity gains. Consequently, this pillar measures the firm's technology absorption capacity as well as its overall capacity to innovate and the production of technology novelties measured by the number of Patent Cooperation Treaty (PCT) patent applications. It also measures the extent of staff training available, which indicates the extent to which management and employees are more capable of identifying and developing business innovations. New this year, we have split the e-commerce variable from previous editions to distinguish the business-to-business dimension from the business-to-consumer one, as some noticeable differences between the two dimensions exist in several countries. The government usage pillar (three variables) provides insights into the importance that governments place on carrying out ICT policies for competitiveness and to enhance the well-being of their citizens, the efforts they make to implement their visions for ICT development, and the number of government services they provide online.

Impact Sub index

The impact sub index gauges the broad economic and social impacts accruing from ICTs to boost competitiveness and well-being and that reflect the transformations toward an ICT- and technology-savvy economy and society. It includes a total of eight variables. The economic impacts pillar (four variables) measures the effect of ICTs on competitiveness thanks to the generation of technological and non-technological innovations in the shape of patents, new products or processes, and organizational practices. In addition, it also measures the overall shift of an economy toward more knowledge-intensive activities. The social impacts pillar (four variables) aims at assessing the ICT-driven improvements in well-being thanks to their impacts on the environment, education, energy consumption, health progress, or more-active civil participation. At the moment, because of data limitations, this pillar focuses on measuring the extent to which governments are becoming more efficient in the use of ICTs and providing increasing

online services to their citizens, and thus improving their e-participation. It also assess the extent to which ICTs are present in education, as a proxy for the potential benefits that are associated with the use of ICTs in education.

Networked Readiness Index Rankings for Developing Countries of Asia

Networked Readiness Index (NRI) measures the capacity and preparedness of each country to exploit the opportunities offered by ICT. This year 144 economies have been subject to the ICT rankings where ranks are recorded on a scale of 1 to 7 (with 7 being the highest). Despite losing one rank, Malaysia (30th) remains the best-ranked economy in Developing Asia. Trying to emulate the success of Korea and other Asian Tigers, the Malaysian government has been pursuing achieving high-income status by the end of the decade, with ICTs playing a critical role. Most government related indicators reflect this commitment, and Malaysia places 7th in the government usage pillar. Businesses are quite aggressive at adopting technology and are increasingly innovative. The government-led efforts seem to be starting to have a transformational impact on the economy (29th) and the society at large (25th). Areas of weaker performance include infrastructure (73rd) and individual usage (46th), owing to the relatively low rates of adoption of the latest technologies. China posts a fall of seven places in the rankings this year, and occupies the 58th position overall. To better leverage ICTs, China faces important challenges across the board. Its institutional framework (56th), and especially its business environment (105th), present serious shortcomings that stifle entrepreneurship and innovation, including excessive red tape, high taxes (127th), and questionable intellectual property protection—for instance, almost 80 percent of installed software in China is estimated to be pirated. Our study also points to the limited or delayed availability of new technologies (107th) despite the presence of pockets of technological excellence in certain sectors and regions of the country. In terms of readiness, the country ranks a low 83rd in the infrastructure and digital content pillar, mainly because of its underdeveloped Internet infrastructure, especially in certain rural areas that do not benefit from the rapid development experienced in urban centers. China gets high marks in the affordability and skills categories, placing 40th and 53rd, respectively. Looking at actual ICT usage (58th), penetration rates remain quite low in absolute terms but should be considered in the light of the sheer size of the country and the large rural population. A mere 40 percent of individuals use the Internet on a regular basis. There are 12 fixed broadband Internet subscriptions for every 100 population; mobile broadband Internet is nearly as widespread, with 10 subscriptions per 100 populations. By contrast, ICT usage among businesses is extensive (35th). China is becoming more and more innovative, and this in turn encourages further and quicker adoption of technologies. The government is placing great hopes in ICTs to boost productivity and, ultimately, growth. Its efforts in promoting and using ICTs are reflected in China's strong showing in the government usage pillar (38th). With a performance essentially unchanged from the previous edition, India progresses one rank to 68th. India's performance remains very mixed. The most worrisome aspects are the mediocre quality of the political, regulatory, and business environment (85th), as well as its lack of digital infrastructure (111th). Extensive red tape stands in the way of businesses, and corporate tax at 62 percent of profit is among the highest in the world. Other variables within the environment sub index are better assessed, including the availability of new technologies (47th), the availability of venture capital (26th), the intensity of local competition (34th), and the quality of management schools (33rd). A critical determinant of a country's readiness, India's literacy rate is among the lowest in the sample at 63 percent (121st). On the other hand, intense competitions in the sector and innovations for the "bottom of the pyramid" have made India the leader in the affordability pillar, thus providing a significant boost to its readiness. Partly owing to the weaknesses noted above, adoption of ICTs remains dismally low in India, as reflected in its 121st rank in the individual usage pillar. Although mobile telephony is becoming ubiquitous, only one person in ten uses the Internet regularly. Accessing it at broadband speed remains the privilege of a very few, with a single fixed broadband Internet subscription for every 100 population. Mobile broadband access has already become more widespread, with two subscriptions per 100 populations.

Table 1 Networked Readiness Index 2013 Ranking for Developing Countries of Asia

Index	Networked Readiness Index			Environment Sub index		Readiness Sub index		Usage Sub index		Impact Sub index	
Country	Rank 2013	Score	Rank 2012	Rank 2013	Score	Rank 2013	Score	Rank 2013	Score	Rank 2013	Score
Malaysia	30	4.8	29	18	5.1	57	4.9	29	4.8	27	4.5
Brunei	57	4.1	54	57	4.1	94	4.1	41	4.2	39	4.1
China	58	4.0	51	71	3.9	66	4.8	58	3.8	55	3.7
India	68	3.9	69	85	3.8	68	4.7	81	3.4	56	3.7
Sri Lanka	69	3.9	71	63	4.0	64	4.8	90	3.3	70	3.5
Thailand	74	3.9	77	60	4.0	63	4.8	83	3.4	88	3.3

Indonesia	76	3.8	80	78	3.8	71	4.7	70	3.6	86	3.3
Vietnam	84	3.7	83	97	3.6	79	4.4	73	3.5	75	3.4
Philippines	86	3.7	86	100	3.6	85	4.4	76	3.5	68	3.5
Pakistan	105	3.3	102	116	3.4	93	4.1	118	2.9	106	3.0
Cambodia	106	3.3	108	79	3.8	111	3.5	104	3.1	107	2.9
Bangladesh	114	3.2	113	128	3.2	91	4.1	121	2.8	126	2.7
Nepal	126	2.9	128	122	3.3	112	3.3	134	2.5	129	2.5
Timor- Leste	134	2.7	132	131	3.2	134	2.7	136	2.5	131	2.5

By contrast, businesses are early and assiduous adopters of new technologies (40th). And the government is placing a lot of emphasis on ICTs as a way to address some of the country's most pressing issues, including job creation, corruption and red tape, and education. Whether this vision will translate into a transformation of the economy and society remains to be seen. But already ICTs are having a—albeit small— transformational impact on the economy, which is partly reflected in India's performance in the economic impacts pillar (43rd).

Thanks to a two-place improvement, Sri Lanka (69th) now trails its neighbor by just one rank, even though the country fails to improve its score. Sri Lanka and India are ranked higher than the 100th mark. Thailand (74th) leads a group of four members that do not leverage ICTs to their full potential. Trailing by more than 70 and 40 places behind Singapore and Malaysia, respectively, Thailand exhibits a number of weaknesses across the board. The highlights of its performance are the relative affordability of ICTs (45th), in particular mobile telephony, and the quality of its business and innovation environment (52nd). However, in this latter category as elsewhere, Thailand alternates good and poor assessments. Aside from mobile telephony, other technologies remain relatively scant, translating to a middling 88th rank in the individual usage pillar. Also the institutional environment does not seem to be particularly conducive (81st) and the government does not appear to be particularly ardent at pushing the digital agenda nationwide (86th). In this dimension, the satisfactory ranks obtained in both the Government Online Service Index (64th) and E-Participation Index (46th) conceal relatively low marks (0.51 and 0.32, respectively, on a 0-to-1 scale).

Table 2 Networked Readiness Pillars Ranking for Developing Countries of Asia

Index	Environment Sub index		Readiness Sub index			Usage Sub index			Impact Sub index	
Country	Political and regulatory environment	Business and innovation environment	Infrastructure and digital content	Affordability	Skills	Individual usage	Business usage	Government usage	Economic impact	Social impact
Malaysia	24	16	73	50	43	46	26	7	29	25
Brunei	45	77	50	135	31	49	59	33	48	35
China	56	105	83	40	53	83	35	38	83	42
India	75	99	111	1	95	121	45	40	43	73
Sri Lanka	68	67	101	29	38	110	57	57	62	77
Thailand	81	52	71	45	76	88	63	86	108	67
Indonesia	82	73	89	39	63	92	40	58	101	72
Vietnam	85	108	114	38	79	78	88	62	89	64
Philippines	98	100	84	82	73	95	47	67	56	76
Pakistan	123	102	104	21	129	123	91	110	99	113
Cambodia	65	91	87	112	109	112	70	103	124	101
Bangladesh	137	111	109	13	128	128	132	68	128	118
Nepal	119	117	140	69	131	137	127	124	135	125
Timor-Leste	125	130	122	123	133	124	139	129	132	128

Indonesia advances by four ranks and climbed to 76th place. The affordability pillar is where Indonesia ranks the highest (39th). Elsewhere, its most positive features are found in the usage sub index, where Indonesia improves by no less than 15 places to reach 70th position. In particular, the country ranks an impressive 40th for business usage. Companies are quick at absorbing the latest technologies and are becoming increasingly innovative. Mobile

telephony is already ubiquitous, but other technologies exhibit spectacular growth rates, though from a very low base (92nd in individual usage pillar, up 11). For instance, mobile broadband technology increased more than tenfold between 2010 and 2011, reaching 22 subscriptions per 100 populations (48th). Finally, a 17-place jump in the government usage also contributes to the positive trend. Unfortunately, these positive results do not—yet—translate into similar progress in the various measures of ICT impact, earning Indonesia a low 86th rank in this sub index, unchanged from a year ago. With a performance essentially unchanged from the previous year, Vietnam loses one rank to place 84th. The affordability pillar constitutes the best aspect of Vietnam's performance (38th). For the rest, many shortcomings are present in all dimensions of the NRI. Perhaps the most worrisome aspect is the poor overall quality of the political, regulatory, and business environments. As a result, Vietnam ranks a disappointing 97th in the environment sub index. Such lack of conduciveness is not only detrimental to ICT development, but also seriously undermines the country's competitiveness in general. Philippines remain in 86th position despite a significant improvement in its overall score. The country manages to boost its marks where it is the most desperately needed, namely the environment sub index. Up 11 spots year to year, the Philippines still ranks a dismal 100th in this dimension. In particular, the extent of red tape remains alarming despite some progress, and the Philippines is among the worst worldwide in several related indicators. On a much more positive note, the country ranks 68th in terms of ICT impacts (up 16). The role of ICTs in creating new products and services (43rd) and organization models (33rd) is not negligible and contributes to this encouraging result. Twenty places behind the Philippines. Pakistan (105th, down three). Cambodia (106th) improves its showing by two ranks. The country ranks beyond the 100th mark in six of the ten pillars of the NRI. Amid this mostly gloomy picture, the fact that it shows progress on approximately two-thirds of the indicators is encouraging. Bangladesh is at 114th, down one, and Nepal 126th.

Evaluation of NRI Indicators Rankings for Pakistan

Governments in Western Europe and North America were quick to realize the potential of Information & Communication Technologies (ICTs) in fueling economic growth, creating high-value-added jobs, and making efficiency gains in business sectors. However, this lax view that ICTs are about just communication and correspondence is still prevalent among many developing economies, including Pakistan. Networked Readiness Index (NRI) framework gives a detailed analysis of ICT readiness in 144 economies (over 98 pc of world GDP). The NRI framework gauges the conduciveness of regulatory framework for ICT uptake, prevalence of affordable ICT infrastructure, and respective ICT usage capacities of individuals, business, and governments. Networked Readiness Index 2013 shows a dismal state of ICT in Pakistan by placing it at 105 among 144 countries. The 2013 NRI would make for an insightful read for Pakistan's policymakers, businesses and academia, for it contains Pakistan's detailed ICT profile on 10 distinct pillars comprising 54 ICT indicators. In the South Asia region, India leads the rankings by occupying the 68th spot, closely followed by Sri Lanka at 69 - but Pakistan ranks a distant 105, ahead of Bangladesh at 114. An ICT-wise lackluster 2012 has translated into rankings downfall for Pakistan, which lost three spots over its 2012 rank in the NRI 2013. The country profile shows that Pakistan's ranking slipped in six out of ten ICT pillars.

Table 3 Pakistan's Networked Readiness Index 2013

	Rank 2013	Score	Rank 2012	Score
Pakistan	105	3.3	102	3.4
A. Environment Sub index	116	3.4	112	3.4
1st pillar: Political and regulatory environment	123	3.0	110	3.1
2nd pillar: Business and innovation environment	102	3.8	96	3.8
B. Readiness Sub index	93	4.1	97	4.0
3rd pillar: Infrastructure and digital content	104	3.0	108	3.0
4th pillar: Affordability	21	6.1	26	5.9
5th pillar: Skills	129	3.2	129	3.1
C. Usage Sub index	118	2.9	107	3.0
6th pillar: Individual usage	123	1.8	104	2.3
7th pillar: Business usage	91	3.3	96	3.3
8th pillar: Government usage	110	3.6	103	3.4
D. Impact Sub index	106	3.0	94	3.1
9th pillar: Economic impact	99	2.9	94	3.0
10th pillar: Social impact	113	3.1	99	3.3

A. Environment Sub index

The NRI frameworks pillar of political and regulatory environment, on which Pakistan slipped down 13 positions to reach 123 in the 2013 rankings. The policymakers have significant work cut out for them in the areas of formulating or updating segment-wise ICT policies, implementing laws on intellectual property protection, dispute resolutions, and contract enforcement. The business and innovation environment pillar also sank six spots to come down to 102. Specific areas that are dragging down Pakistan's ranking here include the IT start-up woes, low government procurement of advanced technology, and low tertiary education enrollment rate. Governments own ICT usage also has to pick pace, which can only happen when all government tiers issue binding instructions to its ministries and divisions. Under the regulatory and political environment, the effectiveness of law-making bodies in making ICT policies and catering to ICT's facilitation and protection remains limited. The most prevalent issue is the software piracy ranked at 97 which largely goes unchecked because of a weak Intellectual Property (IP) system; ranked at 106 (3.0). The IP system in Pakistan is still not supported with an electronic database which is critical for protecting inventions on a global scale. As of date, any invention from Pakistan needs to be registered in every other country for protection. This discourages creating inventions and filing for its protection under patents, evident from the low rank of patent applications at 115. On the other hand, the Business and Innovation environment has shown some improvement where the availability of latest technologies has gone up to 83 (value 4.7), venture capital availability ranks 55 (value 2.8) and tax rate ranks 63. However the tertiary education gross enrollment rate is at a low 117, even though the quality of management schools has improved with 71. Some of the areas where Pakistan lost its ICT competitiveness are; government's procurement of advance technologies, which ranked 109 this year as compared to 91 in 2012

On the overall political and regulatory environment, the efficiency of legal system in challenging regulations has also deteriorated, where Pakistan is ranked 97 as compared to 79 in 2013 and 2012 respectively. Intellectual property protection has also been neglected and Pakistan lost 13 points by securing 106 on the network readiness index. Some of the areas where Pakistan has shown improvements are on the business and innovation environment pillar, where the business sector has ensured the availability of latest technologies for ICT competitiveness by improving 10 points and securing 83 rank among 144 countries.

B. Readiness Sub index

The existing infrastructure and digital content in Pakistan is not much helpful. Our electricity production, which is the lifeline for IT, remains at a low rank of 112. The demand for mobile network coverage has increased with globalization where everyone needs access to internet anywhere everywhere. Its current rank is 99. Pakistan is still behind in the internet accessibility evident from the fact that it still does not have a 3G network at a time when the world has moved long past third-generation technology. The secure internet remains low at 124. Under affordability, there has been a tremendous improvement in the fixed broadband internet tariff taking Pakistan's rank to 68 as a broadband provider. Mobile cellular tariffs are ranked at 12. The skills pillar has shown mixed progress compared to the previous year where the quality of educational system has improved to be ranked 75, quality of science and math education going up to 88. However, the secondary education gross enrollment has remained extremely low at 132 and so is the adult literacy rate standing at 131.

C. Usage Sub index

The biggest slump came in the individual usage of ICT services, as the country slid from 104th spot in 2012 to 123rd in the 2013 rankings. That could be attributed to multiple factors, including a slowdown in broadband subscriptions growth, the country's inability to migrate towards third-generation mobile networks, and blockade of YouTube services since September 2012. The rank for internet users has gone down to 120 even though the household internet access standing at 98. There has been positive development on business end with firm-level technology standing at a reasonable rank of 85 with high capacity of innovation (60). However, the extent of staff training remains low at 112. What is particularly striking and has contributed in stunted growth of ICT is the reduced importance given to ICTs in our government's vision (117). The government's online service index remained towards bottom at 0.37(rank 97). Although Pakistan has improved the fixed broadband Internet tariff substantially by making Pakistan the 68th most competitive broadband provider in the world, individuals using Internet, which depicts affordability of Internet for citizens is shrinking. Pakistan lost 22 points in 2013 and ranks at 120 on individuals using Internet. The NRI highlights that the gains in broadband affordability are being achieved by cannibalizing the individual Internet users. Pakistan lost 22 points in 2013 and ranks at 120 on individuals using internet. The NRI highlights that the gains in broadband affordability are being achieved by channelizing the individual internet users. The importance of ICTs to government's vision has deteriorated from 92 to 117 in 2012 and 2013 respectively, making ICT one of the least priority areas for the government of Pakistan

D. Impacts Sub index

The ICTs economic impact ranking declined for Pakistan by five places over previous year. The data shows that currently, the impact of ICTs on new products and services, as well as organizational models is unsatisfactory, apart from low scale of business-to-business and business-to-consumer internet usage. On the economic impact pillar, Pakistan failed to show progress on creating impact of ICTs on new organizational models by losing 10 points (91) – keeping businesses in mostly traditional areas and connecting Pakistan with the global knowledge economies. The impact of ICTs on news and services gone down to 106 and the knowledge intensive jobs stand at 74. On the social impact pillar, Pakistan lost 14 places to come down to 113 among the 144 countries. Pakistan is ranked amongst bottom 25 countries in terms of impact of ICTs on provision of basic services as well as governance efficiency, getting the least scores among its regional peers. However, the country fares better than Bangladesh and Sri Lanka in terms of internet access in schools, though it lags behind India on this count. The government failed to create value through ICT use and improving efficiency, where Pakistan lost an alarming 16 points (121 among 144 countries). Pakistan also lost 15 points on the E-participation index, where government engages citizens through online services and grievance mechanism, thus resulting in stronger red-tapism slower economic progress.

Conclusion

The Networked Readiness Index, calculated by the World Economic Forum, and INSEAD, ranks 144 economies based on their capacity to exploit the opportunities offered by the digital age. This capacity is determined by the quality of the regulatory, business and innovation environments, the degree of preparedness, the actual usage of ICTs, as well as the societal and economic impacts of ICTs. The assessment is based on a broad range of indicators from Internet access and adult literacy to mobile phone subscriptions and the availability of venture capital. In addition, indicators such as patent applications and e-government services gauge the social and economic impact of digitization.

Despite efforts in the past decade to improve information and communications technologies (ICT) infrastructure in developing economies, there remains a new digital divide in how countries harness ICT to deliver competitiveness and well-being. National policies in some developing economies are failing to translate ICT investment into tangible benefits in terms of competitiveness, development and employment. This is in addition to the profound digital divide that already exists between advanced and developing economies in access to digital infrastructure and content. Pakistan achieved significant gains in the last decade, when it embraced the mobile technologies and led the region by providing human resources capital and technical knowhow to the global pool of mobile communication providers. However, this gain has greatly diminished due to lack of advancements and inconsistency in decision-making to adopt new technologies at the right time. Pakistan continues to lag behind in the rankings. Pakistan's ranking in Information and Communication Technology (ICT) got downgraded from 102nd in 2012 to 105th in 2013.

Some of the areas where Pakistan lost its ICT competitiveness are; government's procurement of advance technologies, which ranked 109 this year as compared to 91 in 2012. Although Pakistan has improved the fixed broadband Internet tariff substantially by making Pakistan the 68th most competitive broadband provider in the world, individuals using Internet, which depicts affordability of Internet for citizens is shrinking. Pakistan lost 22 points in 2013 and ranks at 120 on individuals using Internet. The NRI highlights that the gains in broadband affordability are being achieved by channelizing the individual Internet users. The Importance of ICTs to government's vision has deteriorated from 92 to 117 in 2012 and 2013 respectively, making ICT as one of the least priority areas for the government in Pakistan. On the economic impact pillar, Pakistan failed to show progress on creating impact of ICTs on new organizational models by losing 10 points. Keeping businesses in mostly traditional areas and connecting Pakistan with the global knowledge economies. Similarly, government's failure to create social impact through ICT also showcases its poor understanding of innovation ecosystem and value creation for the citizens in the digital age. The government failed to create value through ICT use and improving efficiency, where Pakistan lost an alarming 16 points (121 among 144 countries). Not being able to improve any regulations on venture capital availability has also created a bottleneck for an innovation economy in the country. This signifies Pakistan's lack of correlation between innovation and competitiveness with finance, thus further isolating Pakistan from moving towards a knowledge-based economy.

Pakistan also lost 15 points on the E-participation index, where government engages citizens through online services and grievance mechanism, thus resulting in stronger red-tapism slower economic progress. On the overall political and regulatory environment, the efficiency of legal system in challenging regulations has also deteriorated, where Pakistan is ranked 97 as compared to 79 in 2013 and 2012 respectively. Intellectual property protection has also been neglected and Pakistan lost 13 points by securing 103 on the network readiness index. Some of the areas where Pakistan has shown improvements are on the business and innovation environment pillar, where the business sector

has ensured the availability of latest technologies for ICT competitiveness by improving 10 points and securing 83 rank among 144 countries. Not being able to improve any regulations on venture capital availability has also created a bottleneck for an innovation economy in the country. This signifies Pakistan's lack of correlation between innovation and competitiveness with finance, thus further isolating Pakistan from moving towards a knowledge-based economy.

The big challenge for the government in Pakistan would be to put more emphasize on ICT environment and regulatory framework. The role of ICT for a sustained economic growth and job creation is crucial to improve Pakistan's competitiveness. ICT has revolutionized the way businesses are done and the country has not being able to capitalize on this. The NRI breakdown of issues plaguing the Pakistani ICT pinpoints areas for future policy action. It is about time that Pakistan's policymakers realize the socioeconomic potential of the ICTs and become proactive facilitators in what the NRI calls a digital market making activity.

Reference

The Global Information Technology Report 2013