Connectivity Scorecard 2011

Korea

Korea
5.80

	Score	Weight
Consumer Infrastructure	0.95 (0.95)*	0.11
Consumer Usage and Skills	0.72 (0.79)*	0.11
Business Infrastructure	0.55 (0.86)*	0.45
Business Usage and Skills	0.41 (0.83)*	0.26
Public sector Infrastructure	0.31 (0.79)*	0.04
Public sector Usage and Skills	0.57 (0.79)*	0.02

*The score of the leading performer for this component

Table 1: Component Scores & Weights 2011

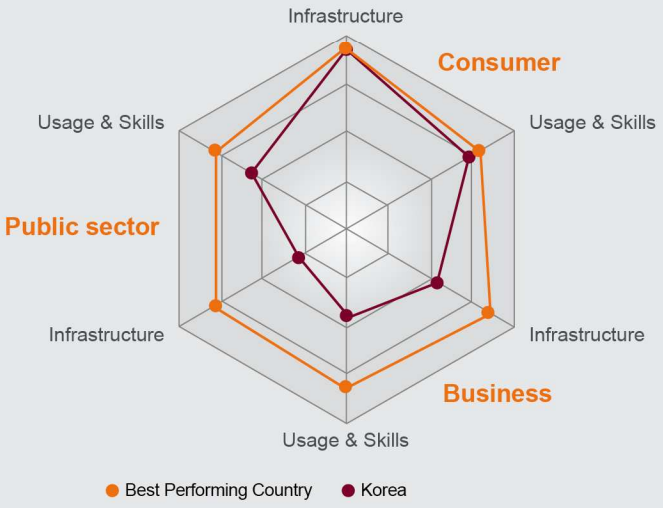


Fig 1: Component Scores 2011

Overall performance

With a score of 5.80, Korea falls five places to finish 18th amongst the Innovation-driven[1] economies on the Connectivity Scorecard 2011. As in previous years, outstanding performance on the consumer infrastructure component of the Scorecard was not matched by performance on the business-related components of the Scorecard. An extension to the "public sector" (formerly "government") components of the Scorecard also contributed to a decline in relative performance this year. As well, changes to the Consumer Infrastructure component helped other countries to whittle down some of Korea's lead in this respect, contributing further to an appreciable fall in its ranking.

Strengths and Weaknesses

Korea was the strongest performer of all countries in the Consumer Infrastructure component. Only Japan came close to matching its performance. Korea is a leader in 3G adoption and fibre-to-the-home adoption, and has the highest broadband speeds among the countries in our sample. However, there is a significant disconnect between the excellence of Korea's performance on Internet-related metrics, and the wider picture on ICT adoption in Korean enterprises. As in previous years, Korea registered moderate scores on business infrastructure and also on business usage and skills. Indeed, as we discuss later, this consistent trend in Korea's performance matches with available evidence regarding the role of ICT in the Korean economy, and its impact on overall productivity (relatively low labour productivity remains a major issue for Korea).

A very marked difference this year was in the "public sector" components of the Scorecard. Reported levels of spending on computers, hardware and software in the government, educational and healthcare sectors seem

[1] As defined by The World Economic Forum www.weforum.org

almost puzzlingly low in comparison to the U.S. and Northern Europe. Such data were used in the 2008 and 2009 Scorecards, but not in 2010. We re-introduced such data for reasons explained in the Connectivity Scorecard 2011 report[2]. Although the public sector components of the Scorecard only have a modest weight in the overall score of any country, their effect on Korea's performance is substantial enough to account for much of the difference in the score achieved by Korea this year compared to last year.

Detailed discussion

Consumer infrastructure

On this measure, Korea registers a score of 0.95. Korea's strong performance reflects very high levels of network coverage and network adoption, particularly 3G adoption. Furthermore, Korea's advanced broadband infrastructure (at least as supplied to households) is reflected in very high broadband speeds. On the other hand, Korea's very high score this year did not translate into quite the "rankings advantage" that it did in previous years. This was because of the use of two indicators which tend to equalize countries' performance relative to Korea's. These indicators are (a) fixed broadband coverage, and especially (b) 3G coverage. Especially with respect to the latter, most countries now have near-ubiquitous 3G coverage, and thus including coverage as an indicator of infrastructure quality reduces the effects of the lead that Korea and Japan have in 3G adoption. Korea continues to top the list in terms of achieved broadband speeds as reported by Akamai.

Consumer usage

Somewhat unlike Japan (with which it otherwise has some similarities), Korea performs very well on metrics of consumer usage. In particular, the country now eclipses many Western nations in terms of the proportion of the population that uses the Internet. Our estimates (based on correlations between this series and the other series) of frequent Internet use as well as use of services such as Internet banking suggests that Korea performs well on these metrics (our findings on the frequency or intensity of Internet use are corroborated by data on Internet usage levels published by sources such as Cisco Systems). Voice usage on mobile networks is lower than in some other countries, such as the United States. However, ITU data suggest that Korean consumers are heavy users of SMS. Estimates suggest that there are about 650 text messages per person per quarter in Korea. This puts Korea among the top few countries on SMS usage, which is unexpected given that a few years ago, SMS was relatively under-developed.

Rank [*]	Country	Connectivity Score
1 [1]	Sweden	7.84
2 [2]	United States	7.82
3 [4]	Denmark	7.47
4 [5]	Netherlands	7.45
5 [3]	Norway	7.09
6 [8]	United Kingdom	7.06
7 [7]	Australia	6.93
8 [9]	Canada	6.88
9 [6]	Finland	6.78
10 [11]	Singapore	6.40
11 [15]	Belgium	6.31
12 [n/a]	Austria	6.27
13 [17]	Germany	6.27
14 [12]	Ireland	6.08
15 [18]	France	6.06
16 [10]	Japan	5.89
17 [16]	New Zealand	5.84
18 [13]	Korea	5.80
19 [20]	Spain	5.09
20 [19]	Czech Republic	4.93
21 [21]	Portugal	4.80
22 [22]	Italy	4.79
23 [23]	Hungary	4.50
24 [24]	Poland	4.26
25 [25]	Greece	4.22

*last year's rank in parenthesis

Table 2: Connectivity Scorecard 2011 Results – Innovation-driven Economies

Business Infrastructure

Korea is at best an average performer on the business infrastructure component. In particular, Korea lags on the same indicators that is has always lagged on in previous years: the penetration rate of secure Internet servers is comparatively quite low, the levels of ICT investment per head of population are substantially lower than in the United States and other leading countries. The addition of new business infrastructure indicators did not materially impact Korean performance. This year, the average score for the business infrastructure component was 0.55, as against 0.57 last year. One area in which Korea has done well this year and last is the proportion of businesses that have broadband access.

[2] Available for download at www.connectivityscorecard.org

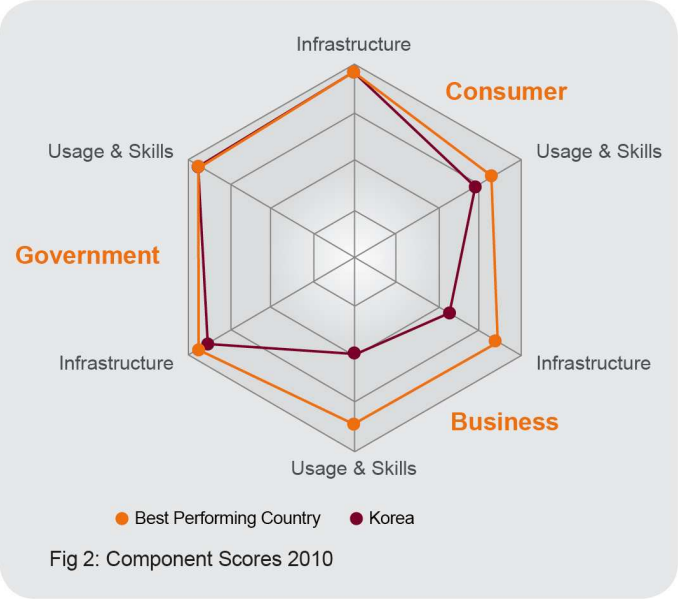


Fig 2: Component Scores 2010

Business usage and skills

Korea performs even less well on the business usage and skills component than it does on the business infrastructure component. Specifically, Korea has lower levels of corporate spending on data and IT services than many leading Western countries, Singapore or Japan; the proportion of businesses with websites is lower than in many countries, which is surprising given that the level of broadband adoption itself is very high. Further, and perhaps surprisingly for a country that has many leading electronics and manufacturing firms, neither the proportion of the workforce employed in science and technology occupations nor the production rate of doctorates in Science and Engineering is especially high in Korea.

Again, it is unclear whether some of these data—as they appear to be in the Japanese case—are simply measured differently in Korea than elsewhere. But this would appear to be less the case for Korea than for Japan. Particularly with respect to skills, it is well to remember that Korea has made a remarkable leap from impoverished status in the 1950s and 1960s to advanced status by the early 2000s. In some respects, however, it is still catching up in terms of labour force skills and quality with the established advanced nations.

Public Sector Metrics

Korea's performance on the public sector infrastructure spending and public sector usage is held back by another singularity of the data: Data from WITSA's Digital Planet dataset show that spending by Korean government, healthcare and educational sectors on IT hardware and software appears rather very low in comparison to many countries such as the USA or Sweden. Similarly spending on communications and IT services also seems low. Conversely, Korea's performance on metrics that we took from the United Nations' E-Government index calculations was exceptionally strong, as was estimated usage of E-Government services. These data are interesting for two reasons: on the one hand, low levels of spending by government, healthcare or education sectors seem consistent (although lower) with corresponding spending data pertaining to the private sector; on the other hand, the discrepancy between these spending data and Korea's high scores on the UN E-Government metrics suggests that at least on the public sector components of the Scorecard there are hard-to-identify factors at work that are manifested in seeming contradictions between Korea's performance on some measures (e.g., Internet infrastructure, Internet-facing initiatives) and others (general levels of ICT spending).

Comparison of 2011 and 2010 results

With a score of 5.80, Korea falls five places this year to finish 18th compared to last year when it finished in 13th place, with a score of 6.33. Two major factors drive the differences between 2010 and 2011 results for all countries this year. First, there is the effect of using new and updated weights for each of the sub-categories, and second, there is the effect of using new indicators. The effect of the weights on the Korean performance (and indeed on the performance and rankings of most other comparable economies) is more appreciable than for most countries. Had we used the same weights as we had used in 2010, Korea would have achieved a score of 5.22 but would still have finished 18th. The effect of the new weights and the weighting system on overall scores is described in more detail in the Connectivity Scorecard 2011 report[3].

The effect of new indicators, however, is also substantial, although perhaps less substantial for Korea than for Japan. The following factors are salient in explaining the (relatively small) differences between this year's Korean performance and last year's performance.

- Other countries improved their consumer infrastructure score relative to the top ranking countries (Japan and Korea), due to the addition of the "equalizing" metrics of fixed and wireless broadband coverage. However, other countries are also catching up in terms of 3G adoption rates;
- Korea's performance on "new" business indicators such as the penetration rate of enterprise mobile data lines and the like was in keeping with its very moderate performance on these indicators generally.

[3] Available for download at www.connectivityscorecard.org

Further, its performance on new "usage and skills" indicators such as the production rate of doctorates in science and engineering fields actually tended to slightly reduce its performance relative to last year;

- As discussed, the inclusion of additional metrics on "public sector" components of the Scorecard was very unfavourable to Korea;
- However, there are also some indications that there remain idiosyncratic problems that cloud our ability to compare Korea with other countries. However, our inclination is to think that these "idiosyncratic" factors are less pronounced for Korea than for Japan.

	2011 Score	2010 Score
Consumer Infrastructure	0.95	0.96
Consumer Usage and Skills	0.72	0.72
Business Infrastructure	0.55	0.57
Business Usage and Skills	0.41	0.47
Public Sector Infrastructure	0.31	0.88
Public Sector Usage and Skills	0.57	0.93

Table 3: Changes in Component Scores between 2010 and 2011

The Connectivity Scorecard is based on comparative scores between countries, and, therefore, each country's performance is measured in relation to the best performing nation in each component at a given point of time. As with other indices of relative rankings, it is therefore hard to interpret the Scorecard in terms of absolute "improvements" or "deteriorations" and to make comparisons of scores over time.

The Broader Context

Perspective on Korea's performance on the 2011 Scorecard

Although Korea's performance on the Scorecard this year might be construed as a poor result, in reality the country is better characterised as having put in a moderately good performance. Further, of all the countries among the 25 "innovation" economies, only Japan has more idiosyncratic characteristics.

There is another important point to make here, however: with a score of 5.80, Korea is clustered with Japan and New Zealand and not far off France. In fact, the absolute distance between Korea and 10th place Singapore is 0.60 (although it is admittedly hard to interpret this "distance" since it is essentially dimensionless or "unit-less") whereas the distance between 18th placed Korea and 19th place Spain is 0.71 points. Even given the difficulties of interpretation, it seems fairly clear that Korea's overall performance is competitive, whereas the performance of Spain and Southern and Eastern European countries generally is clearly separated from the performance of most other OECD economies.

The broader ICT context

With all the caveats above, there are some definite truths that are embodied in the Connectivity Scorecard, truths that are overlooked if one only looks at telecommunications performance, particularly consumer-facing telecommunications performance.

For instance, Korea's real level of investment per capita in GDP is much below that of the United States (only about 50%). While Korea (as with Japan) has many outstanding firms that produce ICT, it also has a relatively protected services sector that lags behind in overall competitiveness. The service sector accounts for 67% of employment and 58% of value-added in Korea. Yet the level of productivity in the services sector is only around 60% of that in the manufacturing sector. Overall, Korean productivity is only around 34% of that in the United States.[4] Manufacturing accounted for 90% of R&D activity in Korea, services for only around 7%, compared to the services sector accounting for 43% of R&D activity in the United States and 25% in the overall OECD area. Unlike the United States, where ICT-using services played a major role in reviving productivity growth in the late 1990s, in Korea ICT-using services made a much more modest contribution.[5] (Figure 1)

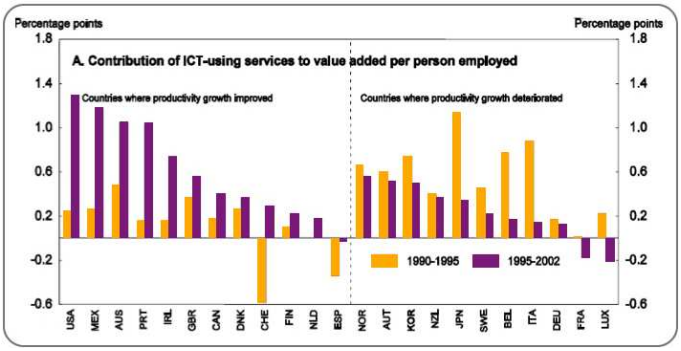
These findings are also reflected in another report on Japanese and Korean productivity which finds that:

Both economies have strong ICT-producing sectors but relatively weaker ICT-usage effects. Lower productivity in service industries due to excessive regulations and lack of competition in public service sectors seem to have worked against enhancing ICT-usage effects and finding renewed sustainable growth paths.[6]

Many factors are implicated in the weak performance of the Korean services sector. Most notably, bureaucracy and barriers to entrepreneurship, as well as difficulties in reallocating labour effectively, are frequently cited as

[4] Source: Randall S. Jones, "Boosting Productivity in Korea's Services Sector", OECD Economics Department Working Paper Number 673.
[5] Jones, supra.
[6] See Kyoji Fukao, Tsutumo Miyagawa, Hak K. Pyo and Keun Hee Rhee, "Estimates of Multifactor Productivity, ICT Contributions and Resource Reallocation Effects in Japan and Korea", RIETI Discussion Paper, 09-E-21.

reasons for Korea's suffering services productivity. To some extent, Korea's strategy of manufacturing and export-led growth diverted productive resources from services into manufacturing with adverse consequences for productivity in services. Korea is ranked as the fifth most restrictive country in the OECD in terms of product market regulation, and is also one of the more restrictive countries in terms of permitting international entry into the services sector. All these factors help explain why Korea's broadband network excellence may not yet be translating into big economic impacts. To do so would require complementary measures that loosen up restrictive practices in many other sectors of the economy, encourage entrepreneurship and encourage competition. Again, since the Connectivity Scorecard is an index that looks at technology and ICT broadly, not just telecoms, Korea's performance on the Scorecard is linked to wider economic factors that hamper its overall productivity.



Source: Jones (2008), op. Cit.

About Connectivity Scorecard

The Connectivity Scorecard is a global ICT index which, unlike other available research, is the first of its kind to rank countries in terms of "useful connectivity". That is, not only on the deployment of ICT infrastructure but also to measure the extent to which consumers, businesses and the public sector "make use" of connectivity technologies to enhance social and economic prosperity. This "useful connectivity" is defined as the bundle of infrastructure, complementary skills, software and informed usage that makes ICT the key driver of productivity and economic growth.

Commissioned by Nokia Siemens Networks, the study was created by Professor Leonard Waverman, Dean, Haskayne School of Business, University of Calgary, and Fellow, London Business School. The study was conducted by the consulting firms Berkeley Research Group and Communicea.

For more information on the Connectivity Scorecard, visit www.connectivityscorecard.org

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