

## Information and Communication Technology: A Comparison of Pakistan and Sri-Lanka

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**Abstract:** The objective of the paper is to examine the information and communication technology sector in Pakistan and Sri-Lanka because they are among top five countries in ICT in the South Asian region. The research is helpful for decision makers to channel ICT related resources where they are required the most. ICT oriented data have been collected by International Telecommunication Union but no comparison exists between the countries included in the research. Therefore, the sources of data are ITU who has identified twenty three parameters individually; they have been rearranged under three subjects: ICT infrastructure, usage and economic impact on the economies of the countries concerned. It is found that the infrastructure of Sri-Lanka is better than Pakistan while both countries are using their resources equally. However, the economic impacts are less visible in Pakistan than its counterpart. Overall the ICT score of Sri Lanka is better than Pakistan. It suggests that policy makers in both nations have to rethink to deploy their resources to take maximum benefit as par to the international standards.

**Keywords:** ICT; case studies; Pakistan; Sri Lanka

**JEL Classification:** G14; L15

### 1. Introduction

ICT has the potential to improve individual productivity, profitably and work process (Kijisanayotin et. al., 2009). Direct gains are offered in productivity while indirect emerged from “trade and facilitation through lower cost, increased range of offerings and improved availability and access of information. Employment in ICT and ICT-enabled reforms and structural changes are visible. ICT offers flexibility in working hours, location, and work practices for business organizations. In addition, new business models and opportunities have been created e.g. many services are delivered from anywhere in the world to anywhere in the world.” (ITU, 2010) Technology shapes knowledge, speed of change and global reach (Drori, 2010). So, it is worthwhile to look into the ICT capabilities at country level

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so that the respective countries can assess their strengths and identify their weakness to take benefit of this emerging sector in their economic endeavours. There is lot of work done on the individual countries and data are available but no comparative analysis has been made between the countries involved. Therefore, the paper is an attempt to compare the ICT capabilities of Pakistan and Sri-Lanka; it is useful for policy makers and managers to redirect their resources in order to improve their productivity. Objective is to consolidate the scattered data to make it useful for the relevant stakeholders, governments and businesses. Since the input data changes continuously that can be measured on annual basis yet future research may be conducted as soon as the new evidence is available.

The rest of the paper has been divided into five sections: literature review, ICT infrastructure of both countries involved, usage, economic impacts on the respective economies and discussion and conclusion.

## **2. Literature Review**

The importance of information took place with the classic work of Porter and Miller in 1985; they claim that information give competitive advantage. This was the time when IBM embarked on mass production of personal computer which boosts the information possessing power of people and new field of study emerged on the horizon of the world i.e. the information technology (IT). IT offers gains in individual productivity at personal level (ITU, 2010). Kijsanayotin et al. (2009) believe improved work process and profitability at organization level. And improvements in GDP at national level (ITU, 2010). Mobile telephony enables developing countries to save investment in installing expensive infrastructure (Drori, 2010). Broadband technology is “an enabling technology in increasing investment payoffs in other sectors, transforming research and development (R&D), facilitating trade in services and globalization, and improving public services to enhance national business environments and competitiveness”. (Qiang et al, 2010).

However, the potential has not been realized in South Asia despite of the fact that the region is the home of the major IT industry in the world. In addition, “The South Asia (SA) is the home of 22% of the world population but 44% of the poor; they wait for the miracles of technology to eliminate or minimize the dysfunctional impacts on their day-to-day lives” (Gunasena, 2003). It necessitates looking into the phenomenon so that its significance maybe highlighted to take appropriate measures for better application of IT for the socio-economic development of the countries involved.

### 3. Infrastructure

There are seven items in the infrastructure; however, data is not available for personal computers (per 100 people) for Pakistan and households with a T.V. sets (% of population) for Sri-Lanka. Therefore, they are not included in the comparison. Percentage of personal computers in Sri-Lanka is 3.7 against 3.3% of the regional average and households with TV sets percentage in Pakistan is 56% against regional average of 46%. Both countries are scoring higher in their respective areas than the regional average.

Telephone lines percentage of both the countries is less than the regional average; however, Pakistan is better than Sri-Lanka. More telephone lines have been laid down in Pakistan than its counterpart. Coverage of mobile phone networks are almost similar in both countries, nevertheless, Sri Lanka is slightly higher than Pakistan. Sri-Lanka has an edge in International Internet Bandwidth with high score of 190 against 43 in Pakistan while Pakistan is better off than other regional countries with 12 points (39%) i.e. higher bandwidth means it has bigger capacity to transmit data. Both countries score equally in e-government web-measure index. However, the regional average is lower than their ranking. Finally, Sri-Lanka is much better in Secure Internet Servers than Pakistan and the regional average. Five parameters have been compared under infrastructure; Sri-Lanka leads Pakistan in three parameters while Pakistan leads in one parameter to its counterpart. The score of one factor is equal for both nations. Therefore, it suggests that the infrastructure of Sri-Lanka is better than Pakistan (See Table 1).

**Table 1. Infrastructure of Pakistan and Sri Lanka**

Factor	Pakistan	Sri Lanka
Telephone lines (per 100 people)	2.7	2.5
Households with TV sets (%)	56	Data not available
Population covered by mobile phone network (%)	90	95
International Internet bandwidth	43	190
E-government web measure index	0.40	0.40
Secure Internet Servers (per 1 million people, 2009)	0.60	3.50

### 4. Usage of Resources

There are six factors that make up the usage of ICT resources. Mobile telephone usage is higher in Pakistan than Sri-Lanka more than double in size but both countries are still below regional average (363). The highest is in India (440) followed by Bangladesh (264) and Nepal's score is 103. The second element is the internet users where Pakistan leads both Sri-Lanka and the regional average (4.7). Nevertheless, Sri-Lanka is above the regional average. According to the recent figures Pakistan has extended the lead to 16% in 2012 (The Internet Stat, 2012).

Sri-Lanka leads Pakistan in fixed broadband subscription with a huge margin and its score is also higher than the regional average (33.1). Similarly, Sri-Lanka has a higher score (55) in mobile cellular subscription than Pakistan (53). Nevertheless, both nations lead the regional average (32.6); recent statistics is different from the above, for example, mobile subscription in Pakistan reached to about 70% in 2012 (PTA, 2012). Pakistan also leads both Lanka and the regional average in fixed Internet subscription while the score of Sri Lanka is below than the regional average. Finally, Sri Lanka got higher score than Pakistan in international voice traffic where the regional average is not available.

**Table 2 Usage of resources**

<b>Factor</b>	<b>Pakistan</b>	<b>Sri Lanka</b>
Internet voice traffic (minutes/user/month)	0.10	2.9
Mobile telephone usage (minutes/user/month)	164	69
Internet users (per 100 people)	11	5.8
Fixed broadband subscription (% of total Internet subscription)	4.5	41
Mobile cellular subscription (per 100 people)	53	55
Fixed Internet subscription (per 100 people)	2.2	1.2

## 5. Economic Impacts

The economic impacts have been derived from seven factors; (Table 3), Sri Lanka leads Pakistan in ICT goods export with 2% of total goods export to 0.5%. The country scores high in the regional average (1.2%). Sri-Lanka also imports minus goods (4.6% of total imports) against 5.7% of Pakistan. It shows less dependence upon others; however, more imports can be an advantage in that they enhance the existing ICT infrastructure such as number of computers, broadband devices etc. in this regard Pakistan has an edge over Sri-Lanka but for the purpose of this paper the benefits goes to the one who imports less ICT goods. Sri-Lanka is even importing less than the regional average (5.1% of total imports). Sri Lanka's net import is also lower than Pakistan that is 2.6% (4.6% - 2%); while Pakistan's net imports are 5.2% (5.7%-0.5%). Pakistan is behind in ICT services exports, 6.7% of total services exports against 16% of Sri-Lanka. Nevertheless, the regional average is much higher than Sri-Lanka that is 47.3%. it is because India's share is 50% of its total services exports, the largest in the region. Pakistan is slightly better off than Lanka in ICT expenditures, 4.49% of its GDP against 4.3% of Sri-Lanka. The regional average is however, higher than both of them i.e. 4.7%. ICT expenditure signifies the investment on the sector which boosts economic activity at national and sector levels. Pakistan also leads Sri-Lanka in telecom revenue (% of GDP);

received 2.7% while Sri-Lanka's are 1.8% (4.3%-2.5). It suggests that Sri-Lanka is spending more on ICT than Pakistan; it rapidly increases the infrastructure which enhances the contribution of the sector.

Sri-Lanka is also leading Pakistan in five factors against two where Pakistan leads its counterpart. It suggests that economic impacts are more visible in Sri-Lanka than in Pakistan. It also implies that the farmer is using its ICT resources more efficiently than the later. It may be worthwhile here to remind that Sri-Lanka's infrastructure is better than Pakistan where Sri Lanka leads in three parameters while Pakistan leads in one factor only. However, both countries are equal in usage parameters; each scores high in three parameters than the other. Let us put it together; Sri-Lanka leads in eleven factors and Pakistan in six. Thus, the ICT sector is better than Pakistan in Sri-Lanka; it corroborates that Sri-Lanka is leading seven nations of South Asia i.e. Afghanistan, Bangladesh, Bhutan, India, Nepal, Pakistan and Sri-Lanka. (Iqbal, 2011)

**Table 3. Economic impacts**

Factor	Pakistan	Sri Lanka
ICT goods export (% of total goods export)	0.50	2
ICT goods import (% of total goods import)	5.7	4.6
ICT services export (% of total services export)	6.7	16
ICT expenditures (% total of GDP)	4.4	4.3
Telecom revenue (% total of GDP)	2.7	2.5
Mobile and fixed line subscription per employee	50	919
Telecom investment (% of revenue)	1.7	12

## 6. Ranking

Although we have shown the individual and group based performance of the countries but an overall measurement is required to decide which of the countries is better and why. Iqbal (2011) has ranked the South Asian countries on the basis of regional average; a score of 2 has been awarded to those parameters which are above the regional average while a score of 1 has been awarded to those values that are below the regional average. However, the method ignores the amount of strength a certain parameter owns or the intensity of weakness a given parameter suffers from. It can be addressed through measuring the performance of a parameter by performance of a country in a certain area to the regional average. It supports the value on either of the sides i.e. strong and weak. And it provides the amount of strength or weakness in a given factor. If a country is very good in an area, its goodness is measured as such whereas in the method used previously shows strong or weak no matter how much strong or how much weak. Table 4 shows the individual and total scores of both the countries.

**Table 4. Comparative figures of Pakistan and Sri Lanka**

Factor	Score of Pakistan	Score of Sri Lanka
Telephone lines (per 100 people)	0.87	0.81
Population covered by mobile phone network (%)	1.48	1.56
International Internet Bandwidth	1.38	6.12
E-government web measure index	1.08	1.08
Secure Internet Servers (per 1 million people, 2009)	0.46	2.69
Mobile telephone usage (minutes/user/month)	0.45	0.19
Internet users (per 100 people)	2.34	1.23
Fixed broadband subscription (% of total Internet subscription)	0.14	1.26
Mobile cellular subscription (per 100 people)	1.63	1.69
Fixed Internet subscription (per 100 people)	1.69	0.92
ICT goods export (% of total goods export)	0.45	1.67
ICT goods import (% of total goods import)	1.12	0.90
ICT services export (% of total services export)	0.14	0.34
ICT expenditures (% total of GDP)	0.94	0.92
Telecom revenue (% total of GDP)	1.29	1.19
Mobile and fixed line subscription per employee	0.09	1.63
Total	15.55	24.2

The total figure suggests that the position of Sri Lanka is better than Pakistan. However, the calculations can be augmented by including the population of the respective countries to determine permillion contributions. For example, the population of Sri Lanka is 21.5 million (CIA World Fact book, 2012) and the total score is 24.2; it gives us a ratio of 1.12; population of Pakistan is 190 million (CIA World Fact book, 2012) and the ICT score is 15.5 which give a quotient 0.08. It suggests that Sri Lanka is much better in ICT score per million than Pakistan.

## 7. Discussion and Conclusion

The above analysis provides useful set of information for policy and decision makers. For example, economists and planners can look at the infrastructure; compare it with other countries and regional trends in order to direct the flow of investment where it is needed. The research also points out the weak areas where improvement is required. For instance, mobile and cellular phone coverage, internet bandwidth and telephone lines network. The analysis also high lights the application of ICT resources; Pakistani users are using their mobile phones almost half of the regional average. It is an indicator for the respective government to increase the usage by introducing user friendly policies. Sri-Lankan public is using only 19% of the regional average; it is concern for the policy maker to think about the ways by which usage can be increased. Sri-Lanka owns one of the best

infrastructures in the region, e.g. 95% geographical area is covered with mobile phone network but the usage is relatively poor. Similarly, the Internet users are also low in Sri-Lanka compare to Pakistan. The Internet is a springboard for innovation and e-commerce, economic impacts show the contribution of it in the economy; both countries can evaluate the investment and return on it. If one of them is not performing well in a certain aspect than he can learn from the experience of other; the low performer can also identify the reasons for not doing well in order to improve it. On the bases of above discussion and overall analysis it may be concluded that the infrastructure of Sri-Lanka is better than Pakistan; usage is similar but the economic benefits are not visible in Pakistan. However, other socio-economic factors are contributing in demonstration of economic outcome. For instance, telecom investment is more than seven times higher in Sri-Lanka than Pakistan.

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