



DIGITAL GAP AND SUSTAINABLE DEVELOPMENT

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ABSTRACT

In the present era of information, Information and Communication Technology (ICT) plays a significant role in the development of the knowledge economy which is very necessary for sustainable development by facilitating the users to access, store, transmit and manipulate information. It is a key factor in accelerating the growth rate of the economy in both developed as well as in developing countries. ICT sector is one of the developing sectors in India with rising number of mobile and broadband services. Mobile phone and internet have made it possible to reap the benefits of ICT within the reach of the world's population. The primarily objective of the present paper will be to explore the digital gap at global level by examining the subscribers of mobile, fixed and internet subscribers as these services works as a socio-economic tool to empower the nation, to bridge the gap of digital divide and thereby contributing in attaining various Sustainable development goals. The study also examines the growing rural-urban telecom subscribers of India. It also identifies the relationship between Gross State Domestic Product (GSDP) and teledensity in the state of Jammu and Kashmir by using correlation method. Significant positive Correlation has been found between Teledensity and Gross State Domestic Product of J&K state in India and finally the strategies have been suggested in order to improve the access to use these services.

Keywords –*correlation, Digital Gap, Gross State Domestic Product, ICT, Sustainable Development goals.*

1. INTRODUCTION

Information and Communication Technology (ICT) sector has brought revolutionary changes in the knowledge economy with rapid technological advancements and growth in the productivity. India is one among the best destination of IT enabled services. In India, IT Industry has provided employment opportunities to 37 lakh people. It has generated revenue of Rs. 8.4 lakh crore [1]. Due to absence or lack of connectivity earlier, it was difficult to get information but ICT has made the availability of information in a cheap and easy manner. ICT helps in gaining inclusive economic growth [2]. Today ICT sector is one of the developing sectors with rising number of mobile and broadband services. Prices of mobile broadband came down by 50 percent on average over the last three years which supports the fact that half of the world population is online with availability of high speed data [2].

Telecom sector which is the subsector of ICT has helped to reap the benefits of ICT within the approach of world's population. The word telecommunication is composed of two words - tele and communicates where tele means far off and communicate means to share i.e. to share the information between far off people [3].



Application of telecom services have been widely used in order to cater the present technological needs and to face the international competition. It is not only useful for the purpose of emergency, health, administration, commerce and social services but it also acts as a stimulator in the economic growth and quality of life by creating effective network worldwide which will bring immense benefit [4]. According to the Director of the International Telecommunication Union (ITU), Telecommunication Development Bureau 70 percent Youth are online globally. It is expected that revenue from global telecom industry will move from U.S. \$ 2.2 Trillion in 2015 to U.S \$ 2.4 Trillion in 2019 according to Insight Research [5]. In this backdrop, focus of the study is to examine the digital gap at national and international level as telecom services helps to attain the goals of sustainable development.

2. REVIEW OF LITERATURE

The review of literature shows the highlights of various studies conducted by the different authors on Telecom industry in order to put the present study in proper and theoretical perspective. Seetharam & varadharajan (2006) in their paper have concluded that the telecom sector has helped to fill the gap that existed between the developed and developing economies [6]. Sudan (2009) in his paper has analyzed the growth performance of telecommunication Industry in India in recent years and the future opportunities having telecommunication Industry of India. It states that telecom sector has emerged as a winner today to bridge the gap of digital divide [7]. Sarin and Jain (2009) in their study namely effects of mobiles on socio-economic life on urban poor which was conducted in three metropolitan cities with 1774 respondents, founded that the majority of the respondents admitted an improvement in their economic life. Mobile phone work as a productive and effective tool for the workers who are self-employed by reducing search and transaction cost for business, intermediaries regarding search of work and enhancing their productivity. It also associates in framing stronger sociological relations by decreasing the gap of distant relatives and co-workers through its applications [8]. Jonas and Maryn (2010) in their paper assessed the impact of information and communication technology by stating the role of mobile phones i.e. one of the subsector of ICT on the behavior of market in developing countries .This study has also highlighted that use of mobile phone has helped in the reduction of search cost for collecting information & creating awareness among the consumers, moreover there is positive relationship between use of mobile phone technology and country's development at the macro level [9]. Sahoo et al. (2012) have assessed the role of infrastructure in economic growth in China. The study states that the heavy investment in infrastructure by China is supported to sustain the growth which in turn reduces the affects of global financial crisis. The study states that there exists positive relationship between the development of infrastructure and economic growth in China which in turn clarifies the reason that why china made a large spending in infrastructure development from a longer period [10].

Podesta (2013) examined that inclusive economic growth can be attained by raising connectivity which helps to extend the opportunities and decreases the level of vulnerability. It states that connectivity works as silver bullet to attain broad economic growth with great pace at equitable level that brings connectivity between every person either rich or poor [11]. Jollie N. Alson et al. (2016) in their study have explored the role of smart phone among



youths of Philippines and has revealed that the use of mobile phone from educational perspective has the highest priority, using social sites mostly for the socialization like face book, instagram, chat, phone call has got the 2nd preference, where checking emails is at the least preferences of all. Mobile phone is also used to acquire information through google, yahoo and to get updates regarding news and weather where sport updates are least preferred among all [12].

The review of various studies has shown the positive impact of telecom sector on economic development, to reduce poverty, gender equality, to access to education, enhance connectivity, and reduce vulnerability among different countries and of the different sectors of the economy. It has examined that how mobile phone has helped to fill the gap between the developed and developing countries. All the significance stated above revealed how telecommunication helps to attain the goals of sustainable development. In this backdrop an attempt has been made to explore the digital gap among different countries, the rural-urban teledensity of India and relationship between the GSDP and teledensity of J&K State.

3. OBJECTIVES & RESEARCH METHODOLOGY

The objectives of the present study are to explore the digital gap of different countries, to find out the rural-urban teledensity of India, to examine the relationship between teledensity and GSDP of J&K State. The present study is Secondary in the nature. The secondary data has been collected from the various published Journals, documents available from Websites of International Telecommunication Union (ITU), Telecom Regulatory Authority of India (TRAI), Central statistical organization (CSO), Cellular operators Association of India (COAI), Department of telecommunication (DOT) and other allied departments for the present study.

4. FINDINGS OF THE STUDY : DIGITAL GAP AT GLOBAL LEVEL

Telecommunication is the process that deals with the exchange of information through the application of technology. Telecommunication has positive and multiplier effect which makes the people to bring in connection in easy and approachable manner either in rural or urban areas. Telecommunication is one of the world's biggest machines that bind the society with its vast coverage of network and provision of various services. Services of telecommunication are fixed and wireless cellular services, internet connections, broadband connections and value added service which help the information accessible, storable, transmittable and manipulative for the service users. Telecom industry has brought a drastic change in the development and expansion of existing industries. It has provided the connectivity to the poor and vulnerable section of society and many more through telephony services. By raising connectivity, opportunities can be enhanced which also reduces the vulnerability. Thus the connectivity helps to attain the economic growth [11]. Telecom industry has made a phenomenal contribution to provide information to different corners and to different sections of society. Today, cellular telephony is one among the preferred modes of communication in India. Mobile banking transactions are also on pace with rise in the adoption of smart phone. By addressing the importance of the mobile services, following is the list of top ten countries with their absolute number of mobile subscriptions.



TABLE -1 MOBILE SUBSCRIBER AT GLOBAL LEVEL

Rank	Name of the Country	Mobile subscriber (in Absolute no.)
1.	China	1'364'934'000
2.	India	1'127'809'000
3.	United States	416'684'000
4.	Indonesia	385'573'398
5.	Brazil	244'066'759
6.	Russia	231'393'994
7.	Japan	164'265'142
8.	Nigeria	154'342'168
9.	Pakistan	136'489'014
10.	Bangladesh	126'391'269

Source: - compiled from the reports of International Telecommunication Union (ITU) [13].

Table-1 depicts the different countries with absolute number of mobile subscribers. China stands as at first rank with 136,49,34,000 (one hundred thirty six crore forty nine lac thirty four thousand). India rank second in terms of mobile subscribers after china. The growing demand for smart devices (smart phones/tablets/smart watches/smart monitoring Devices) along with access of broad band/ internet connections embeds the fabric of connectivity in a society at global level. It is a key factor in the growth of telecom sector.

TABLE -2 ICT INDICATORS AT GLOBAL LEVEL

Subscribers (in millions)	Year	Developed Countries	Developing Countries	Least Developed countries	World
Fixed telecom subscribers (per 100 inhabitants)	2005	47.2	12.7	0.9	19.1
	2011	43.4	11.5	1.0	17.2
	2016	38.1	8.5	0.9	13.6
Mobile cellular Subscribers (per 100 inhabitants)	2005	82.1	22.9	5.0	33.9
	2011	113.1	78.0	42.2	84.2
	2016	127.3	96.3	67.7	101.5
Internet Subscribers (per 100 inhabitants)	2005	51.3	7.7	0.8	15.8
	2011	67.7	23.4	4.8	31.3
	2016	79.6	39.0	15.6	45.9

Source- compiled from the reports of International Telecommunication Union (ITU) [13].

There is significant shrink in the gap of the digital divide at global level in the terms of fixed telecom subscribers, mobile telecom subscribers, internet subscribers from the last 15 years as stated by the International



Telecommunication Union (ITU) World Telecommunication Statistics. It has been observed that teledensity of fixed subscribers have decreased where as teledensity of mobile and internet subscribers have shown phenomenal growth over the years at global level even supported by the compiled reports of ITU statistics

At the global level, mobile subscribers have increased from 33.9 in 2005 to 84.2 in 2011 and to 101.5 in 2016 (per 100 inhabitants). Developed countries also experienced an increase in the mobile subscribers from 82.1 in 2005 to 113.1 in 2011 and finally to 127.3 (per 100 inhabitants) in 2016. Developing countries and least developed countries also experience the same.

Teledensity of internet subscribers has been increasing with the increase in pace of mobile subscribers. From the above data, it has been observed that 45.9 (per 100 inhabitants) have access to internet in 2016. Hence all the countries whether developed, developing and least developed have registered a gain in the growth of internet subscribers. From the table 1.2, it has been observed that no doubt overall teledensity has increased in case of all the countries but there is huge gap in the teledensity among these countries which needs to be bridged for accomplishing the objective of sustainability.

5. DIGITAL GAP IN INDIA:

Indian economy can move a step forward to attain the objectives of faster, sustainable and Inclusive growth with the utilization of available telecom services. With the liberalization of the economy, the Indian telecom Industry has shown sustained growth as a result of increased competitiveness, relaxed restrictions and the establishment of TRAI as an independent regulator. The telecom services of wire line and wireless in the Indian telecom industry is dominated by the public player and private players respectively with its market share in March, 2016 (TRAI) which is clearly indicated by the reports of TRAI that in the mobile sector 91.31 percent telecom subscribers were from the private sector and 8.69 percent of mobile subscribers were from public sector undertakings telecom companies. After that wire line sector is dominated by the public Telecom companies (72.42 percent) and rest of the subscribers were covered by the Private telecom companies (27.58 percent) in March, 2016 (TRAI). There were 449.17 million connections of telephone in rural India and 609.69 Million telecom connections in urban India in 2016 [14]. This has been supported by its customer base and has one of the lowest tariffs in the world because of the existing competitiveness in the world market. There were 149.75 million broadband subscribers as on March 2016 (TRAI). Telecom sector in India has created a number of employment opportunities for the people directly or indirectly. A study by Group Special Mobile Association (GSMA) states that the telecom sector is expected to create 4.1 million additional jobs by 2020.

TABLE -3 TELEDENSITY OF INDIA (MAIN LINES PER 100 INHABITANTS)

Year	Rural	Urban	Total Tele-density
March,1998	0.4	5.8	1.90
March,1999	0.5	6.9	2.30
March,2000	0.7	8.3	2.90



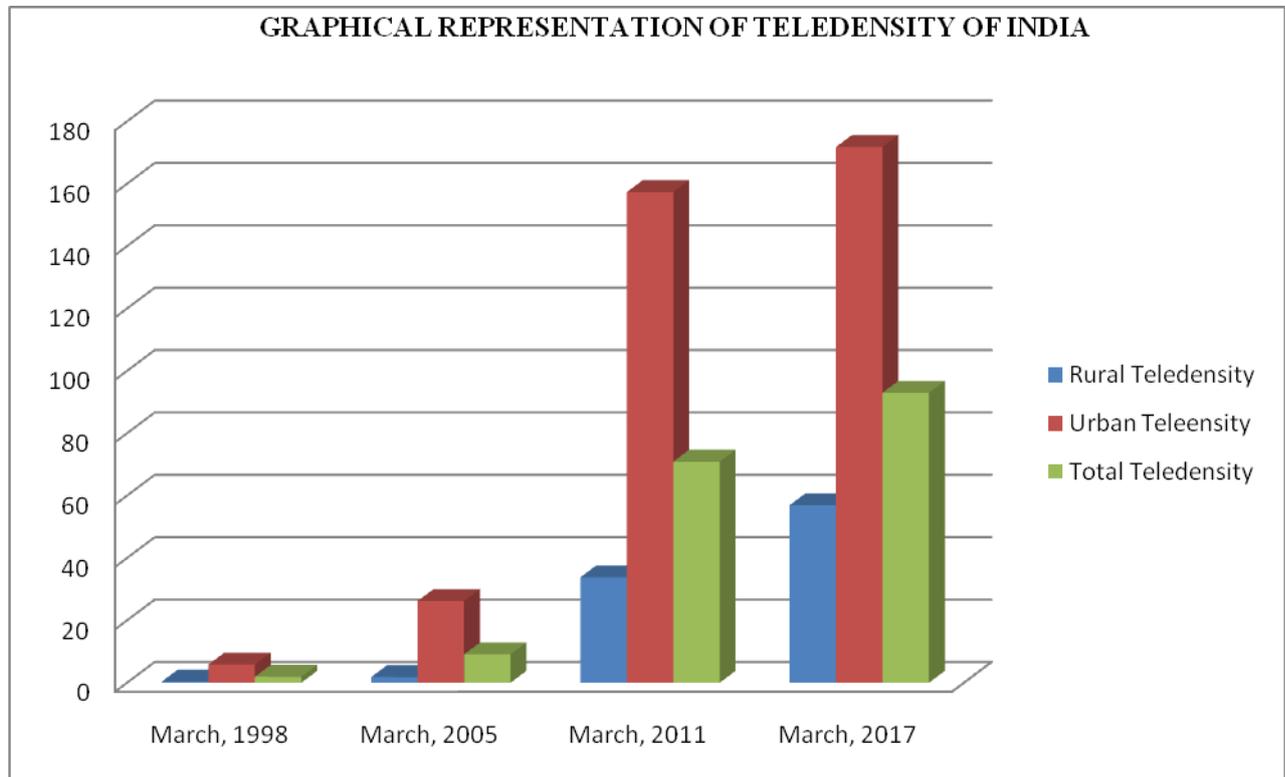
March,2001	0.9	10.4	3.60
March,2002	1.2	12.2	4.30
March,2003	1.5	14.3	5.10
March,2004	1.7	21.3	7.04
March,2005	1.8	26.2	9.08
March,2006	4	38.0	12.86
March,2007	5.8	47.3	18.23
March,2008	9.2	65.9	26.22
March,2009	-	-	36.98
March,2010	-	-	50.34
March,2011	33.79	157.32	70.89
March,2012	39.72	169.55	78.66
March,2013	41.02	146.96	73.32
March,2014	43.96	145.78	75.23
March,2015	48.37	148.61	79.38
March,2016	51.37	154.01	83.36
March,2017	56.91	171.80	92.98

Source: Compiled from the reports of Department of Telecommunications (DOT) and TRAI [14] [15] [16] [17] [18] [19].

From the table 1.3 it is clear that the overall teledensity has increased from 1.97percent in March1998 to 92.98 percent in 2017 (TRAI) but still the digital divide existing between the rural & urban areas is much higher which needs to be bridged for ensuring faster, inclusive& sustainable development in India.



GRAPH -1GRAPHICAL PRESENTATION OF RURAL, URBAN AND TOTAL TELEDENSITY OF INDIA



The above graph clearly depicts that no doubt teledensity has increased but government has to focus on improving the teledensity in rural area which is low. The growth potential of rural areas can better be exploited by further improving rural urban connectivity through telecom services.

6. JAMMU AND KASHMIR STATE

The state of Jammu & Kashmir has also experienced the growth of telecom services. The telecom services in the state of Jammu and Kashmir has brought revolution in communication with the provision of mobile, fixed, value added and various other services. Jammu and Kashmir Circle started providing the mobile services from the year 2003. The growth of the telecom services and Gross State Domestic Product in J&K has been shown with the help of the following table:



TABLE -4 GROWTH OF TELEDENSITY AND GROSS STATE DOMESTIC PRODUCT OF JAMMU AND KASHMIR STATE

S.No	Year	Gross State Domestic Product at factor cost (current prices) (Rs. in lakh)	Telephone Per 100 (Fixed & Mobile)
1.	2004-05	2730462	5.09
2.	2005-06	2991985	12.18
3.	2006-07	3323011	16.08
4.	2007-08	3709863	21.84
5.	2008-09	4231484	32.76
6.	2009-10	4838451	49.91
7.	2010-11	5807257	50.9
8.	2011-12	6818513	54.82
9.	2012-13	7691647	58.57
10.	2013-14	8756991	66.8
11.	2014-15	8792138	76.93
12.	2015-16	11838727	79.97

Source- compiled from the reports of Statistical yearbook 2016, CSO.

Table 4 has shown the relationship between two variables such as Gross State Domestic Product (GSDP) and Telephone per 100 in the state of Jammu and Kashmir from the period of 2004-05 to 2015-16. Both GSDP and Telephone per 100 have been increasing in the time period mentioned above.

In order to measure the relationship between these two variables (GSDP and Telephone per 100), correlation test has been used between GSDP and telephone per 100 of the state Jammu and Kashmir for the period of 12 years and the result is, that the correlation value of $r = 0.94$ has been found which implies that there is significant correlation between the two variables GSDP and Teledensity of Jammu and Kashmir state. As value of r closes to +1 indicates strong positive correlation between these two variables.

For exploring the potential of economic growth in rural areas there is a need to improve the telecom services. For improving the telecom services, in these areas thrust should be given on development of telecom infrastructure. Measures should be encouraged for strengthening the signal system of the mobile towers in higher ridges & in the backward regions. Moreover telecom companies should focus on the availability of telecom services without a hectic and waiting procedure. For meeting the manpower requirement of telecom services specific skills need to be imparted to tap the available opportunities of further growth in the rural and urban India.



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