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## Conference Paper

# Internet Access for Rural India

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# Internet Access for Rural India

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## Introduction

Access to the ICT has come to be regarded as an important measure of development. While measures of access show that rural areas are becoming connected there remains the matter of quality of connection, and here the digital divide remains a major characteristic that differentiates urban from rural areas (Akamai, 2016). There is also evidence that the cost of ICT militates against furthering access to more economically disadvantaged groups in poor countries, and as well as the socio-cultural factors, due to the lack of relevant content in local languages (ITU, 2015). The United Nations Committee (Economic and Financial) has indicated its concern about the obstacles faced by poor countries, and the negative consequences for communities in rural areas as they are fall further behind in race to access ICT.

The case of India provides an important case study, that shows how increased access to ICT can have very powerful impacts on improving economic opportunities, and also of the very inimical consequences for rural areas that are increasingly marginalised through exclusion from the internet. While India has been a prominent player in the export of software exports, the diffusion of ICT remains at 15 percent (ITU, 2015).

India has embraced the internet revolution quite recently. The Internet was first introduced in India by the government-owned agency, Videsh Sanchar Nigam Limited (VSNL), in August 1995. Internet services were initially largely a monopoly of the VSNL, and restricted to the four cities New Delhi, Mumbai, Chennai and Kolkata. In 1998, entrance of private players and widespread adoption by users following the introduction of a new ISP policy. By the year 2000, the number of Internet users had grown to 10 million. By the end of 2009, there were more than 60 million Internet users in India, predominantly accessed through PCs. Although data services on mobiles were introduced in 2000, the huge growth in the user base did not occur until the introduction of 3G services that provided a huge boost to mobile Internet access. By the end of 2010, almost 40 percent of the 100 million users were accessing the Internet through a tablet or a mobile device. The introduction of 4G services is likely to provide further impetus to mobile-based Internet [1].

There is clear indication that mobile telephony is much preferred than wired telephones among Indians. The recent TRAI report shows that as on May 2016, there are 1033.16 million wireless/mobile phone users as compared to the meager 24.87 million wired phone users. The urban Indian population has about 584.25 million mobile phone users. The mobile phone subscription rate seems to be saturated, hence there is negative growth rate in the average addition of new customers (-0.37%).

Rural India is enthusiastically joining the mobile telephony platform with a 448.90 million wireless/mobile phone users. Every month, an average of 0.24% increase in new customers is seen in rural India. Quite interestingly the presence of wired telephony subscribers is concentrated (20.73 million out of 24.87 million users) in the urban area, where infrastructure is better to make the necessary setup available. The meager presence of wired telephony subscribers (4.15 million) with a negative growth rate (-1.95%), is a clear indication that wireless/mobile telephony has bridged an important gap in the digital divide; rural India is

willingly and quickly adapting to the mobile telephony technology. The Urban teledensity is 147.12, whereas rural teledensity is 51.27 for mobile telephones as on May 2016. If we look at the subscriber percentage, urban India has 56.55% of overall subscribers and rural India is fast catching up with a strong 43.45% of total mobile subscriptions.

There is positive trend in the use of broadband the number of broadband subscribers increased from 151.09 Million at the end of April 2016 to 159.76 million at the end of May 2016 with a monthly growth rate of 5.74%. The number of users who access internet via mobile phones/dongles is the maximum with 142.06 million out of 159.76 million users as on end May 2016[2]] The strong base of customers of mobile telephony is a platform that opens up an array of opportunities. Agriculture, Healthcare, Financial inclusion are a few domains that could have great impact with using Information and Communication Technology (ICT).

### Exploiting ICT for empowering Rural India

ICT initiatives with a special focus for rural India, has been on the rise. This section presents some of the ICT initiatives that have left an impact in rural society, not only at an instant but for times to come. One of the successful initiatives is in ICT enabled outsourcing; with reduced cost and requiring minimal infrastructure facilities, rural BPOs have been set up, this has led to bringing in employment to rural areas rather than forcing rural workforce to migrate for employment (DesiCrew) to urban areas. Similarly, arts and handicrafts of a rural area has earned global recognition through ICT, RISTA, ROPE, VASTHA are some examples which have been doing good by bridging gap between rural art and its appreciators [3].

**Health:** Though India is seen as an emerging super-power, both in terms of economy and technology. It remains as one of two countries that contribute to one third of all maternal deaths globally. We have also made sufficient progress with respect to the millennium development goals, in reducing the mortality rate of children less than 5 years. South Asian region bears one third of global maternal and neonates death burden, with India bearing 22 percent of the burden [4]. Poor infrastructure, inability to afford healthcare, and lack of awareness are important reasons which make healthcare inaccessible to rural Indians. ICT has a tremendous scope in bridging this gap, by making quality health advice accessible even to remote areas. Successful demonstration of Mobile Phone Enabled Public Health Management System has also been done by IITM (MITUN, mTB) [3]. One of their current initiatives which is successfully piloted reaches Rural pregnant women and new mothers through their mobile phones (AIM). Experiments with ICT enabled telemedicine have been conducted in rural places with limited success though. nLogue-Arvind Hospital collaboration is one such example, where patients are counselled for eye treatments, with the doctors reaching patients who are remotely located and do not have proper healthcare facilities [5].

**Agriculture** continues to be the most important sector of Indian Economy. The total demand for food grains is projected to touch 280 million tons by the year 2020-21. Meeting his demand will necessitate a growth rate of nearly 2 per cent per annum in food grain production<sup>5</sup> and agriculture sector need to grow. Hence, there is an immediate need of innovative and user friendly approach to be implemented for agricultural extension in order to help the farmers' better[6]. ICTs can complement the traditional extension system for "Knowledge Resource" delivery to the millions of the farmers. Impact of ICT is Agriculture sector has been demonstrated well through a number of initiatives. Some examples are AGMARKNET, eChoupal, Mahindra KisanMitra, Village Knowledge Centres (VKCs)-M.S. Swaminathan Research Foundation (MSSRF), Indian Space Research Organisation (ISRO), Farmers Call Centre (Kissan Call Centre), Mobile Advisory Services by

KrishiVigyanKendras (KVKs) of Indian Council of Agricultural Research (ICAR), e-Sagu, Digital Green etc[7].

**Financial inclusion** is absolutely necessary for the development of rural India; the term financial inclusion can be defined as deliver of financial services at affordable costs to sections of disadvantaged and low income groups. Banks find it hard to reach the rural community. Thus only 58.3% of the population are availing formal financial sector facilities. To overcome this inequality, we need to make these facilities available to the rural groups. ICT interventions could have a major role to play here. Several initiatives by RBI and Govt of India such as Micro ATM where even a local shop keeper with a mobile phone to act as a micro ATM, where one can deposit, withdraw cash [8]. Smart cards that combine ICT and banking details to offer safe transaction have been experimented [9].

### Survey on Internet Access in Rural India

A short survey among rural young Indians was conducted with the aim to understand, how much internet connectivity has reached these areas. The study also assesses the type of devices used to access internet and usage pattern. Key indicators such as hours of usage and money spent were are explored. Other aspects such as network provider, and what information they access was also studied.

#### Methodology followed for survey

Survey of Internet Access in Rural India study uses data, from two primary surveys of rural youth in the age group of 18-35 conducted in early 2015 and early 2016 respectively, on the perception of the relevance, quality and affordability of MBIA. The sample selection for the study is based on differentiating between areas of medium and poor connectivity to permit differentiation by internet geographies. In Tamil Nadu, the study was conducted in three districts, with 100 participants. Simple random sampling method was used to collect the data from the field. A questionnaire was developed and finalized through pilot test. Data has been computerized, analyzed and interpreted. The research design is exploratory in nature. This exploratory research comprised of a structured survey across rural part of Indian state Tamil Nadu (TN) to better understand this need and how it can be bridged. The main technique used in this study was to collect first hand data that is primary data using the standard questionnaire containing both open ended and close ended questionnaire. Verbal consent was sought from the participants. It took about 15 minutes to complete each questionnaire.

#### *Sampling:*

Study areas were Vellore, Madurai, Pudukkottai districts in Tamil Nadu. Respondents were from rural areas in these districts. Study areas were divided into two categories, **areas with moderate internet connectivity and network challenged areas.**

**Areas with moderate internet connectivity:** Area with medium internet connectivity (based on signal strength). Here both 2G services and 3G services are available to a certain extent. Also, in these areas, almost all networks can be accessed

**Network challenged areas:** Areas that face network challenges fall under the Network challenged area category. Here, 2G services are accessible, but 3G services are usually unavailable. Also, in these areas only

few networks can be accessed. (Users would have to go out of their houses for good network coverage). Table 1 below, shows the details of sampling.

Table 1: Geographic breakup of sampling.

District	Areas with moderate internet connectivity		Network challenged areas	
	Village	No of respondents	Village	No of respondents
Vellore	Kathalempet	4	NA	NA
	Kizharasanpettai	7		
	Sozhavaram	1		
Madurai	Nagamalai-	26	Vadapalanji	11
	Puthukottai		Kilakudikoilvilaku	7
	Vadivelkarai	1	Melakudikoilvelaku	1
			Thenpalanji	1
			Kilaneri sambakudi	4
Puthukottai	Valathrakottai	19	Poovarasakudi	11
	Periyanayaki puram		Thiruvudayar Patti	1
		2	Thuruvankatta Patti	1
			Thavalikuppam	1

### Results and Discussion:

The results of the analysis provide some micro evidence about the strategies of rural households to use MBIA.

#### Mobile devices are primary medium to access internet:

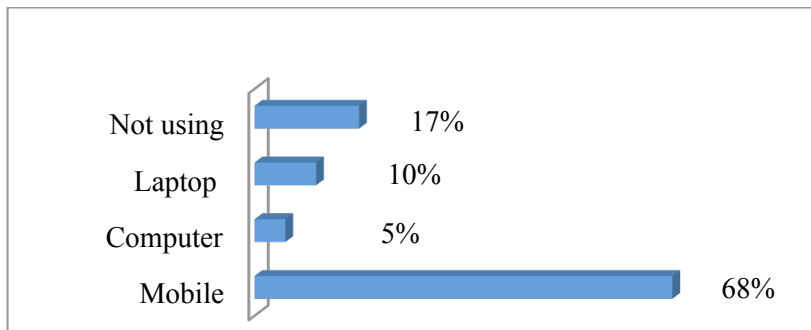


Fig 1: Device used to access internet

Out of 100, 68 of the respondents use mobile device to access internet. This correlates very much with the TRAI data analysis discussed earlier. Thus, rural youth tend to leverage the mobile phone boom to connect to the larger world. This could be largely due to ease of access of internet through this device. A SIM card with some data enabling plan would render them connected to the internet, as opposed to the infrastructures required for other devices, which is almost unavailable.

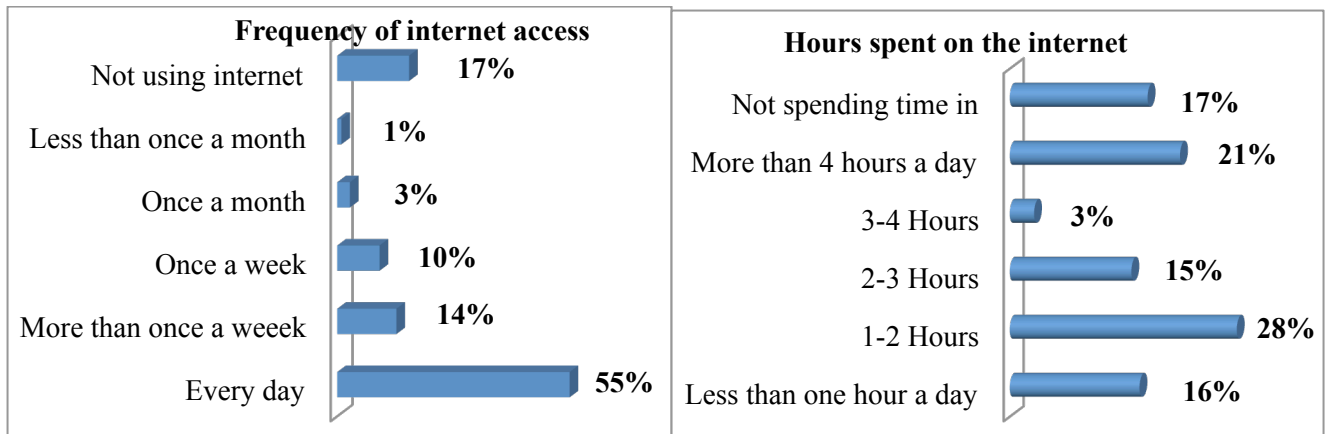


Fig 2 Frequency of internet access and hours spent on the internet

A significant number of respondents used the internet for 1-2 hours daily for various purposes. An everyday browsing habit is a clear indicator that youth populace in rural areas is willing to learn and acquire abilities to connect to the world though internet. 55% of the survey population access the internet everyday and most are comfortable to search and receive information in English, a language that is otherwise not used in their everyday lives (except school and college students, who learn English as a part of their curriculum).

**Internet usage pattern:**

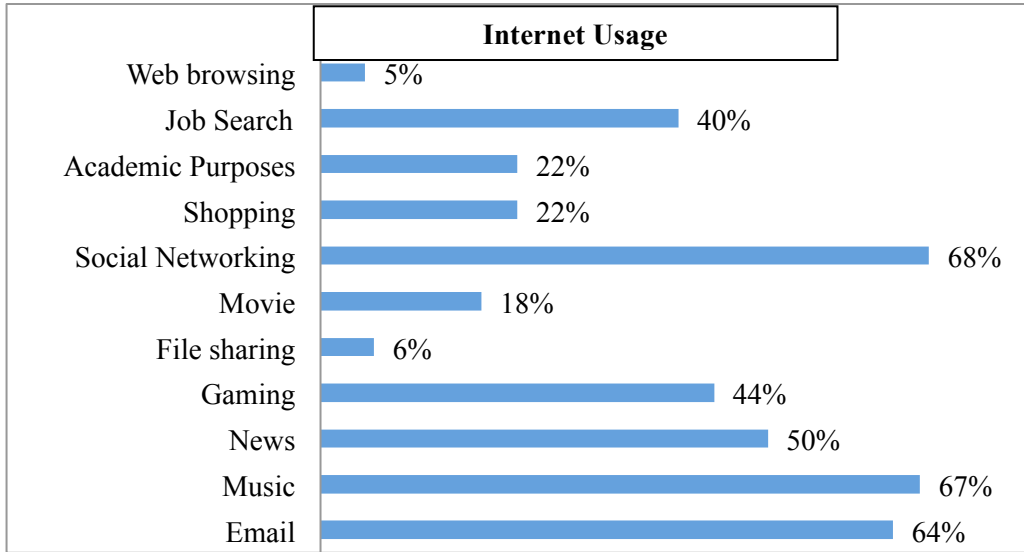


Fig 3: Internet usage pattern

If we look at what these users do on the internet, we find that Social networking dominated the internet usage time for most rural youth, with 68% of them accessing these networks. A reasonable number of people used the internet for e-commerce and academic related activities. Email and Music are also other popular activities on the internet. 40% of Users have indicated they use the internet for Job Search and related activities. This is an important indication because, most of the rural youth would have to travel far to find job opportunities. With internet, they could overcome this physical distance hurdle, and apply for jobs from their hometowns. .

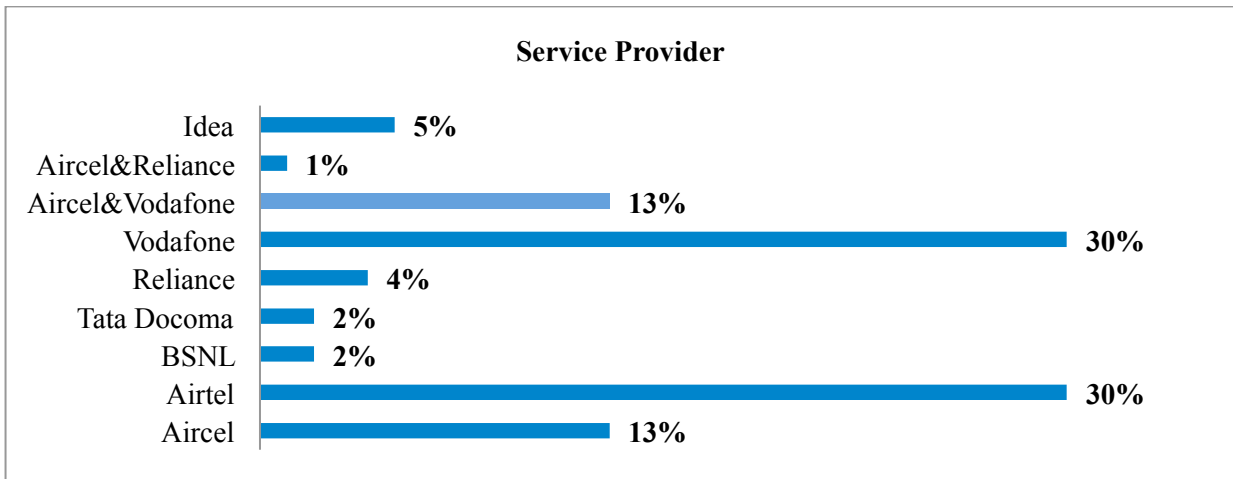


Fig 4: Service provider for internet access

State owned BSNL has only 2% of takers. While slightly more expensive private players such as Airtel, Vodafone and Aircel have many subscribers. This indicates the key gap in providing internet infrastructure to these rural areas. This also further indicates that rural Indians are willing to spend more for a better service rather than staying unconnected. Majority of the population have mobile phone users for more than 4 years and

are familiar with the medium and it is rapidly becoming the primary medium to access the internet across age groups. The Internet seemed to be helping people seek and apply for jobs outside of their villages. Projections show most people will get Smartphone's in the coming decade, but the cost of data remains much more expensive than the price of a Smartphone and this could mean limited connectivity for the financially constrained<sup>10</sup>. The figure below shows the amount subscribers are spending/ willing to spend for internet connection.

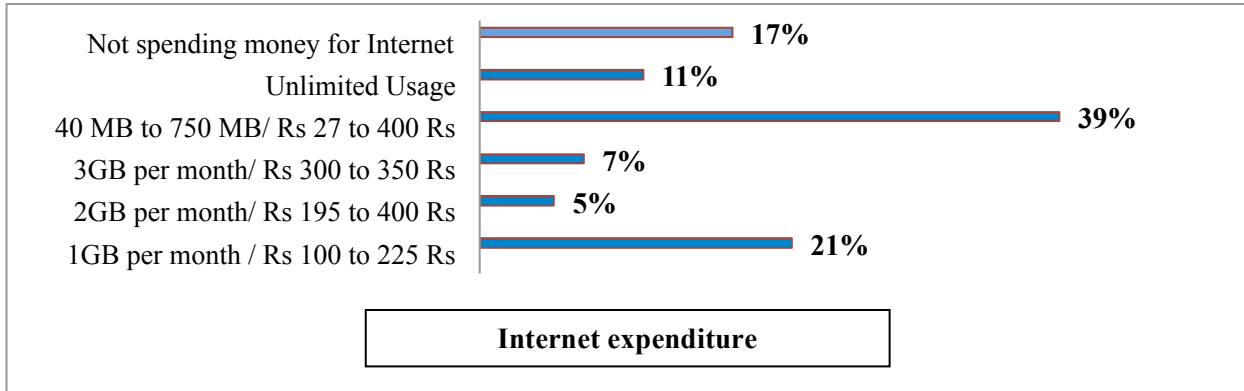


Fig 5: **Internet expenditure**

Connecting some of rural India's population could be a means for them to access essential services like e-mail, understand and seek out government schemes and benefits among others. To ensure an impact internet service connecting rural India should be one that allows access to the internet without vested interests of Phone Company or third party. The Government agencies would have to look at this digital divide and ensure that this gets filled. Else, the disparity would only get widened between the 'have's and 'have not's and rural India might fall behind in a super power nation.

**Conclusion**

The potential value of the ICT to improve the access to financial services, educational opportunities and finding gainful employment have been identified as key features that could improve the livelihood opportunities for rural youth. In countries, such as India, where there has been a demographic bulge in the under 35 age group. In those environments where rural youth do that the opportunity to go online there is significant possibility that there will be a severely detrimental consequence for the future chances of these important subgroups of the population.

The country has the third largest online community, behind China and the United States, yet there is the possibility that the rural youth population might fall further behind in their ability to access ICT services. It is important to directly address policymakers and telecommunication regulators to ensure that the infrastructure and content that encourages a more inclusive model of internet provision, so that India's youth population can rapidly benefit from a more relevant and knowledge intensive form of ICT service provision.

Keywords: Accessibility, connectivity, efficiency, information, services



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