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Mismatch in Fiber based New Age Digital Opportunities amidst affordable 4G:

Critical Success Factor to bridge gap

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ABSTRACT

Internet is no more being looked at as a mode to do fringe works or just for checking emails. The aspiration with the use of internet and technological advancements is much more. Like mobile phones only have increasingly assumed an important role in medical world e.g. the treatment of mental disorders in high-income countries, creative industries, surveillance, inter alia. The paper is to delve into the challenges and solution in marketing and proliferation of fiber based services. We found that new age digital world opportunities in India that has capability of connecting millions of devices require knowledge oriented population to adopt quickly and significant capital outlay.

Keywords*: *Digital, FTTH, Fiber broadband, GDP, Telecom,

INTRODUCTION

This is now more often being quoted that “Data is the new Oil”. However, the reference here is “internet data” which has become a valuable commodity. The technological advancements in mobile telephony and the competitive scenario in Indian telecom has made data cheaper than ever.

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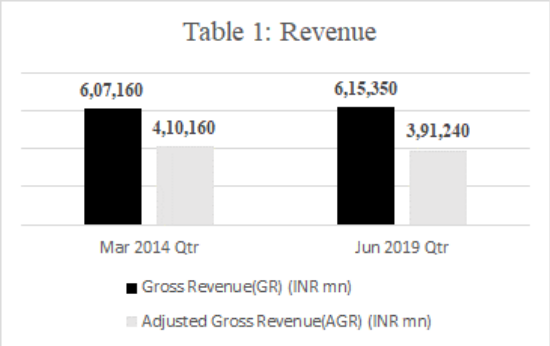
India is aspiring for a 5 trillion USD economy and "internet" can be one of the most vital levers to help reach that level as an enabler. However, the value chain of internet is yet to be accepted in entirety. There is substantial gap between wired and wireless internet adoption in India. With this gap, platforms like 'Fiber to the Home' or FTTH which offer myriad of services e.g. smart TV services, home networking wherein many devices get interconnected to allow accessibility, surveillance facilities for ensuring security etc.

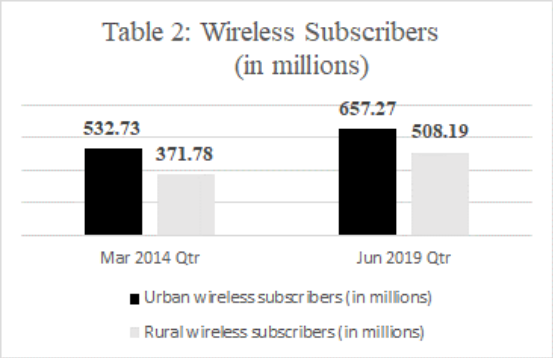
The correlation of ICT (Information and Communication Technologies) will be discussed in the literature review later.

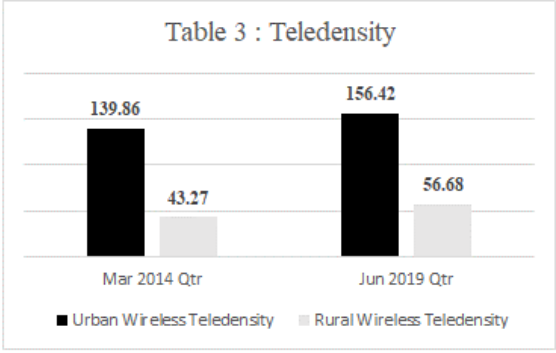
Indian telecom industry has been putting efforts to make this a reality. The tables below reflects the movements in Indian telephony.



***Source**: TRAI Quarterly Performance indicators (Mar 2014 and Jun 2019)*

Though gross revenue has improved marginally during last 5 years (ref Table 1), the adjusted gross revenue which is the revenue on which telcos pay license fee to the Govt has declined due to the competitive scenario during this period.





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Similar numbers of wireless subscriptions have got added during last five years, however, rural teledensity is way behind against rural teledensity.

Table 4: Wireless Internet Subscribers (in millions)

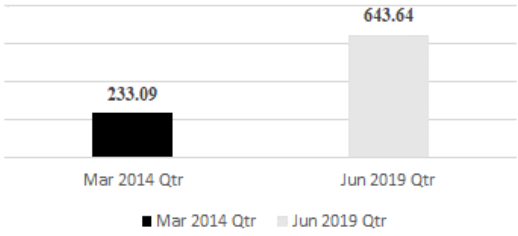
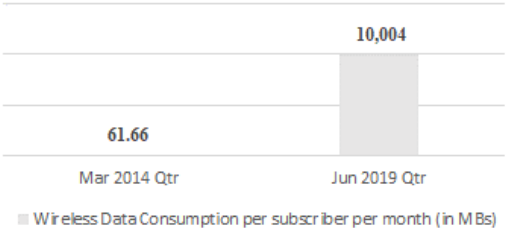


Table 5: Wireless Data Consumption per Subscriber per month (in MBs)



***Source**: TRAI Quarterly Performance indicators (Mar 2014 and Jun 2019)*

Wireless internet subscribers have grown almost three-fold from ~233mn to ~644mn during last five years (ref Table 4), however, data consumption per subscriber grew exorbitantly by more than 160 times during the period (ref Table 5). This was due to the emergence of affordable mobile internet initiated by Reliance Jio wherein incumbents had to come to similar levels in price offerings. One GB of data used to cost around Rs200-300 earlier and now around INR 10 only.

LITERATURE REVIEW

There are scarce literatures available in FTTH business and pricing or consumption arena, still some guidance from the literatures discussed below were found worthy to take note of.

More than a decade back, Venkata Praveen Tanguturi, Fotios C. Harmantzis (2007) in their paper titled “Broadband in India: Strategic investment opportunities” had mentioned Government agencies have invested in developing markets and have improved infrastructure and accessibility, however, all of this was done in urban areas only and also argued that only infrastructure improvement will not solve the problem. It emphasised on development of knowledge-based content to drive the acceptance of broadband services. It also mentioned, that despite such development, there were challenges outside the telecommunications sector: power failure, lack of Internet services (whether dial-up, broadband, or cable), and disparity between demand and supply. People need to make smart choices while buying items such as PCs and related items and their buying decision would be better or quicker if they know

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about it and believed that creating awareness was essential for social as well as overall economic growth.

Ashutosh Jha and Debashis Saha (2019) in their paper titled 'Techno-commercial feasibility analysis of 4G mobile services in India', had come out with an ARPU of INR145 per month to meet the total cost of ownership for telecom operators. However, post entry of Reliance Jio in the Indian telecom sphere, there has been consistent pressure on average revenue per user. We can infer here it is difficult that 4G expenses itself gets taken careof by current low ARPUs in Indian telecom.

A paper 'Broadband and the creative industries in rural Scotland' by Leanne Townsend *et al* (2016), delved on to the impact of broadband in rural Scotland and the found out that broadband accessibility of at least 2 mbps download speed, was critical for the people in creative sector. It also noted that a lack of this can move such rural communities in migrating to digitally better connected areas. Here we can infer that there are multifaceted use of proliferating high speed internet.

Neil Krishan Aggarwal (2011) had represented in his paper titled 'Applying mobile technologies to mental health service delivery in South Asia' that use of phones have the capability to improve communication, interaction and treatment of psychiatric patients. The study was pertaining to South Asian patients. By this we correlate the width of impact of mobile and internet usage.

Ajay Kumar *et al* (2014) had concluded in their paper "Analyzing customer preference and measuring relative efficiency in telecom sector: A hybrid fuzzy AHP/DEA study" that launching newer services can promote favourable business environment and competition between secondary and leading telecom service providers which in-turn shall lead to wider telecom market and concurrently improving customer satisfaction.

Yasutomo Takanoa and Yuya Kajikawaa (2018), in their paper 'Extracting commercialization opportunities of the Internet of Things: Measuring text similarity between papers and patents' as the name suggests pointed on monetising the probable uses of IoT

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(Internet of Things) and has cited a 2016 McKinsey report that estimates probable economic impact of USD3.9 – 11.1 trillion. IoT is daily use activities in sensing, networking, processing merged along with internet.

M.Temraz (2010) in the study titled "Viable Strategies for Innovation in Telecom Industry in Tough Times" had mentioned about studies which say that businesses with innovation as a core help in continuity even during difficult times and prosperity. So telecom cannot remain oblivious to this.
The pricing and marketing strategies of telcos get easily replicated, hence, innovation across processes and services can provide the edge.

Addisu A. *et al* (2019) in a paper "Mobile phones for financial inclusion: What explains the diffusion of mobile money innovations" which was a study on M-Pesa success in Kenya. They also cited James, 2009; Aron, 2017 that emphasised on ICT can be enabler in developing countries to advancement and efficacy. Growing mobile phone access support platforms like mobile money and in turn have the capability to contribute to economic development and it can be more so where there is supportive regulatory environment.

Ayse Cobana *et al* in their paper "Macroeconomic facts for Telecom Industry in MINT Countries" presented that there is significant correlation between telecom investments and GDP for each of the countries, though varies amongst countries.

The references above substantiate the benefits of broadband, fiber and telecom contribution to GDP and ease of living.

RESEARCH METHOD

- Secondary Research

  Data points from TRAI has been sourced to provide a leading view pertaining to the Indian telecom space. Survey data from website like statista.com has also been referred to place a view on the income distribution of households in India.

- Experts' Interview

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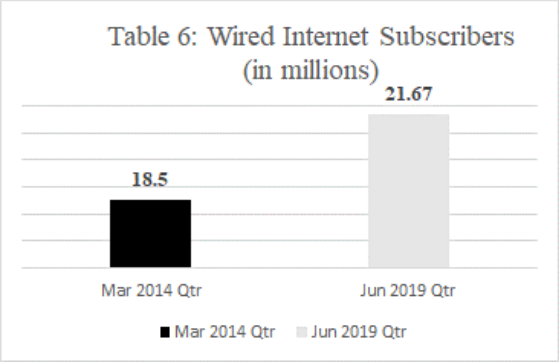
Industry people with relevant experience on fields were interviewed and their expert opinion has been incorporated herewith.

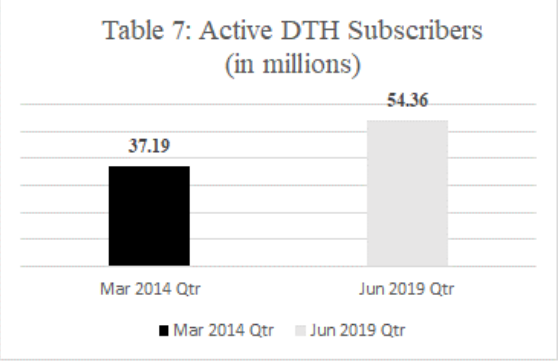
RESEARCH FINDINGS

The recent directives from the apex court of India on the AGR calculation (adjusted gross revenue) asks telecom operators to clear the dues within three months (economictimes.indiatimes.com, accessed, 26th Oct 2019)**.** The amount against the large operators may be around INR1000 billion and with the sector reeling under pressure of INR7000 billion this can be another deterrent in the ICT sector growth and investments.

Referring an extract from a survey done by statista.com across Indian states on average monthly income of households during Apr-Dec 2015, only 2% households were there with the head of households having more than INR 50,000 income per month. If we convert this percentage of the sample survey to India's households then it comes to around 5mn such households.

The above information can be referred while we discuss the propensity of converged services of broadband internet, related IoT, television services etc.





***Source**: TRAI Quarterly Performance indicators (Mar 2014 and Jun 2019)*

Wired internet subscribers grew by 17% and DTH subscribers by 46% during last five years (ref Table 6 and Table 7 respectively). India has ~250mn households as per census 2011 with only ~22mn wired internet subscribers (~18mn broadband). As this data points towards the available ample opportunity to gain from an internet based value chain, at the same time there are peculiar challenges as well as discussed below.

Govt funding and support in countries like USA, China had been sizeable ('Broadband

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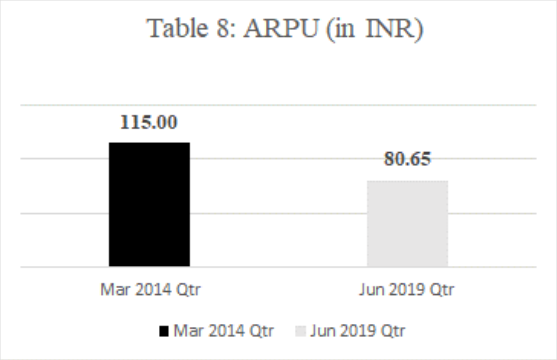
Infrastructure for Transforming India', deloitte.com, 2016). The report mentions China spending around USD320bn over 5year period till 2020 and USA having CAF II (Connect America Fund II) with yearly ~USD75bn outlay to develop broadband infrastructure as well as drive adoption.

Proliferation in mobile internet at decent speeds these days seems to have somewhat limited the growth in value based wired internet connections or say fiber to the home business (FTTH). Smart phones themselves have plethora of applications (Apps) to cater to entertainment needs pertaining to television or movies. This couple with a fair enough speed in 4G ecosystem also helps many internet based monetary transactions on the go on mobile and running laptops with hotspot facility.

Cellular telecom companies had been fraying into the broadband business, however, industry is currently dealing with squeezing ARPU levels that has fallen below INR100 now.



***Source**: TRAI Quarterly Performance indicators (Mar 2014 and Jun 2019)*

This decline in telecom ARPU is creating pressure on the cash flows and hence affecting further new technology investment outlay decisions.

The wireline broadband penetration in India is around 7% of the households (~18mn of ~250mn), whereas, the same is much higher in countries like Brazil (44%) and 99% in France (telecom.economictimes.indiatimes.com; accessed 28 Oct 2019)

Comparision of leading players

In the FTTH arena Jio Fiber and BSNL Bharat Fibre are the major operators, however, Airtel V-Fiber/Xstream has off late become aggressive in home broadband as well as content. Services are available in limited cities only.

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Though the presence is scarcely felt in the market, BSNL in FTTH boasts of having services like comprehensive solution for the IP leased line, internet, Closed User Group (CUG), MPLS-VPN, VoIP, video conferencing, video calls etc (bsnl.co.in, 1 Nov 2019).

Table 9: Broadband /FTTH Pricing

Base Plan	Airtel Xstream Fiber (Home BB Service)	Jio Fiber
Price	INR 799	INR 699
Data	150 GB	100 GB + 50 GB extra
Speed	up to 100 mbps	up to 100 mbps
Other Benefits	"Airtel Thanks" benefit, Unlimited Local/STD calls, AirtelXstream	TV Video Calling, Voice calling within India free, Gaming, Home Networking, 5 Devices Norton Security, 3 months JioCinema, JioSaavan

High-end Plan	Airtel Xstream Fiber (Home Broadband Service)	Jio Fiber FTTH	Jio Fiber FTTH
Price	INR 3999	INR 3999	INR 8499
Data	Unlimited Internet *	Unlimited (2500 GB)	Unlimited (5000 GB)
Speed	up to 1 Gbps	up to 1 Gbps	up to 1 Gbps
Other Benefits	"Airtel Thanks" benefit, Unlimited Local/STD calls, Amazon Prime*, Netflix subscriptions*, Zee5 Premium, AirtelXStream	TV Video Calling, Voice calling within India free, Gaming, Home Networking, 5 Devices Norton Security, Theatre-like personal experience on VR Headset, First Day First Show Movie, Special Sports Content, Annual subscription OTT contents	TV Video Calling, Voice calling within India free, Gaming, Home Networking, 5 Devices Norton Security, Theatre-like personal experience on VR Headset, First Day First Show Movie, Special Sports Content, Annual subscription OTT contents

Source: airtel.in and jio.com;

**FUP in Airtel Xstream Fiber not mentioned in the website, however, an article in telecomtalk.info mentioned 3.3 TB as FUP*

Pricing competition seems to have started, however, both the leading players have certain variations to carve out an edge in the market. Where Airtel seems to have offers that meet current requirement of the market, Jio seems to be looking for future tech based allied services like security and surveillance, cloud based services etc.

Industry experts when asked on the probable success of FTTH services, are the of the view that it would take time for the mass to get educated and used to the new tech usages like IoT apart from wired broadband as prices also play the part. For the investors or operators, getting aerial as well as underground right of way (RoW) have been painful in terms of cost and quick processing of permissions.

Now if we compare the ARPU that is ~Rs800-850 in the base of Airtel Xstream fiber, Jio fiber or the broadband operator ACT, against the households spread across income bands as mentioned in the Table 10, only ~12.8% fall in the income band of greater than INR 20000.

Table 10: Household Income

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Households (Census 2011)	24,95,01,663	
Avearge Monthly Income Band	Income Spread	Derived Households (million)
<INR 5000	22.10%	55.1
INR 5001-7500	25.40%	63.4
INR 7500-10000	20.10%	50.1
INR 10000-20000	19.60%	48.9
INR 20000-50000	10.80%	26.9
INR 50000-100000	1.80%	4.5
>INR 100000	0.20%	0.5
	100.00%	**249.5**

Source: statista.com

CONCLUSION

The wired broadband subscriptions grew by 17% only in 5 years (2014-19) whereas wireless internet subscribers became three-fold during the same period. During prior 5 years (2009-14) the wireless internet subscribers had become just less than double (from ~127mn to ~233mn, TRAI quarterly reports Jun 2009, Mar 2014). The internet service during 2009-2014 were costlier (~INR 250 per GB against INR10 per GB now).

This reflects that *Indian consumers would have to be tasted the new age services at highly discounted rates to witness success in the hi-tech ecosystem*. Indian consumers at the moment use most of the content (movies, TV, games, video calling) on mobile and one time monthly outgo is below INR 150 against the fiber /wired broadband connection cost of INR800-850 per month.

There has to be high level price competition for proliferating FTTH (despite being a premium service product) and for this operators would need huge funds to be deployed to reach the mass households. To bring services at acceptable household telecom and home entertainment monthly expenses within the reach of the INR20000-50000 monthly income households (~27mn houses), the investments cost has to be low.

Cost sharing of the fiber along with RoW (costly underground Right of Way permissions) play a huge role. Disruption in FTTH tends to create a financial risk going on fiber based services. Bharatnet projects by the Indian Govt shall help however, matching the huge outlay

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by Govts in US, China seems a tough task and hence the quick monetization in FTTH business may not be easy task.

FUTURE RESEARCH

The findings of this study provide an insights in order to design suitable framework to proliferate the use of fiber broadband adoption. In addition, it also provides an opportunity to academicians and researchers to use the framework of this study for further research

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