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Converging 5g With FTTx Network: Drive CAPEX Reduction For Indian Telecommunication Service Provider

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ABSTRACT

Globally the race for 5G has begun and KT Telecom taken the first mover advantage with 5G technology. However, in India, Telecom Service Providers, need to address the issues around 5G infrastructure and deployment due to assorted landscape, unequal residents and monetary inequality, which prevents them to have equal investments across telecom circles. Also, the rising cost of air waves and the challenges involved in migrating to new technologies bring additional challenges which impacts the industry's key performance indicators such as network speed, coverage and customer experience compared to peer global service providers comes as an additional challenge. This This paper explores 5G readiness, 5G infrastructure barriers, and the value of converged Fiber and 5G cellular networks, which directly affect the cost of capital (CAPEX – Capital Expenditure).

Keywords: 5G Rollout; FTTx Network; Infrastructure Investment; Fiber Deployment; Network Convergence

INTRODUCTION

The communications industries around the world are shifting from traditional voice telephone services to new data services based on the latest technological advances. Globally the race for 5G has begun and KT Telecom taken the first mover advantage with 5G technology. Data penetration and growing awareness around latest technologies like Internet of Things (IoT), telecom operators will witness new business opportunities with 5G. However, operators in India need to fix the infrastructural as well as deployment issues on priority basis. Indian market will see multi-folded challenges compared to global market due to assorted landscape, unequal residents and monetary inequality are major challenges that are in front of the operators which prevents them to have equal investments across telecom circles. Uncertainty in fibre investments across different states are seen due to the rising cost of air waves and the challenges involved in migrating to new technologies bring additional challenges which impacts the industry's key performance indicators such as network speed, coverage and customer experience. On other side, fixed broadband market in India has seen sudden surge mainly due to adoption of better value bundled plans, the number of people working from home and e-learning during the Covid19 pandemic prompted telecom operators to expand fiber optic networks. This article explores 5G readiness, 5G infrastructure barriers, and the value of converged fiber and 5G cellular networks, which directly affect the cost of capital (CAPEX – Capital Expenditure).

Indian Telecom Market

India being the second-largest telecommunications market in the world holding a subscriber base of 1.2 billion has seen rapid growth in the recent years with increase in unique subscriber and overall market penetration. The total subscriber base as of January 2021 is 1,184 million and the gross revenue is US$ 9.35 billion in the third quarter of FY21. In the next 2-3 years, due to the reduction of data transmission costs, the data penetration rate in the Indian market will increase by adding more than 200 million new internet users

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in India by which creates new business opportunities with the latest technologies. Telecom equipment sector is expected to see revenue growth up to $ 35 million in next three years. By end of 2021, the number of internet subscriber's growth likely to be doubled and it is estimated that by 2021, IP traffic will quadruple, with a compound annual growth rate of more than 25%. It is expected that advertising in the Indian telecom market will grow faster, with a compound annual growth rate of 11% by end of 2023. Technologies like IOT will a vital role in the development of Smart Cities and Digital India initiatives. The National Digital Communications Policy 2018 estimates attracting investment worth US$ 100 billion by 2022. In India, application downloads likely to increase by two time and expected to touch 37 billion downloads by 2022. On the other hand, due to the high cost of 5G upgrades and upcoming spectrum upgrades, capital expenditures in the Indian telecom industry have surged and free cash flow has increased.

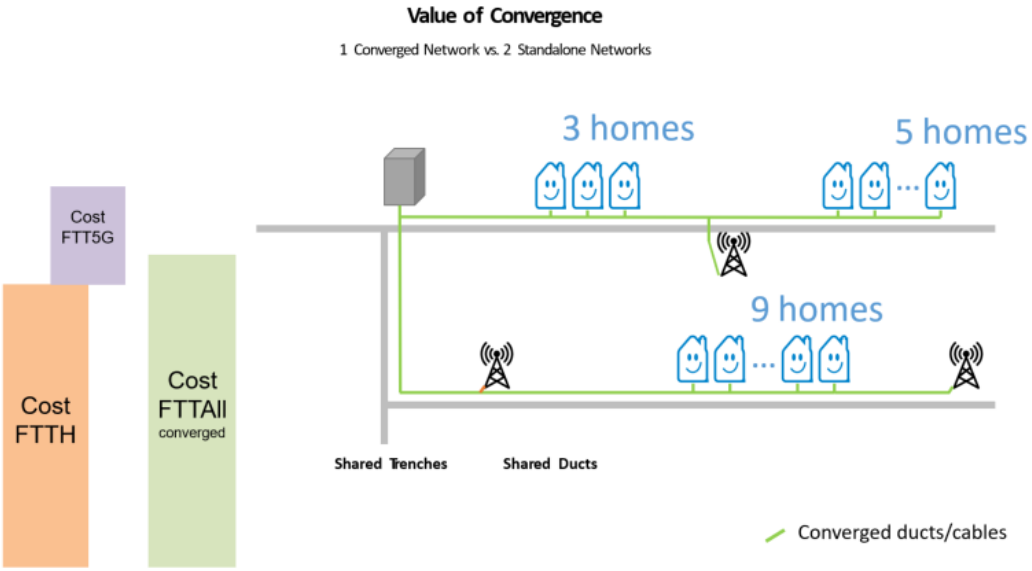
5G Technology Readiness

Globally, 5G technology is rapidly moving towards commercialization and countries like US, China, South Korea, Denmark had seen their commercial launch and started offering 5G services. India can see major societal transformation by deploying 5G technology which enables change to the current business dynamics of manufacturing, education, medicine, agriculture, finance and social affairs. This shift will embrace the opportunity by deploying 5G networks early, efficiently, and widely to emerge as a distinctive innovator and technology supplier globally. Today, Indian operators have made huge investment in their LTE networks like building a greenfield LTE network, coverage and capacity expansion to their LTE networks. All the operators might see comfortable and cost effective 5G migration as they have already deployed the most advanced versions of LTE network. Nevertheless, due to the heterogeneity, flexibility and automation of network design, 5G networks will be different from previous generations of networks. Factors that determine the cost dynamics of 5G networks will include Network flexibility and ownership along with the traditional factors such as capacity and coverage. Though some of these are already being addressed in 4G networks, but their impact on the cost of 5G network rollout and operations is unclear. Capital Expenditure (CAPEX) on 5G network is likely to be very heavy and early estimates reported by a leading financial services states low or mid band spectrum with pan-India coverage would be approximately Rs.1.75 lakh crore. It is expected that 5G network investment will be made in three important key components: spectrum, location and optical fiber. Assuming in India rollout starts in fiscal year 22-23 with a staggered deployment over the next 4-5 years in line with 4G trend will expose cost impact to a larger extent for Indian operators.

Use Optical Fiber to Launch 5G

In India, Fiber kilometer (fkm) per capita is way far behind compared to top performing telecom global market. But with Post COVID-19 pandemic surge in demand for OFC from IT & telecom sector, increasing number of mobile devices, raise in adoption of Fiber to the Home connections and expansion in number of data centres is projected that the Fiber market likely to grow CAGR of 17% by 2023. This market is expected to grow majorly by Indian government rising investments to increase data penetration across the country, to bring life to Smart Cities Vision and Digital India initiatives. Deploying FTTX should include enough spare capacity for future 5G applications.

Due rollout of 5G and the proliferation of IoT, there will be a rapid increase in network endpoints and for which architecture support can be leveraged by converging fixed mobile network. Mobile network can also interface with Fiber networks as like Wi-Fi networks. Next-generation digital applications will create an unquenchable thirst for bandwidth which can be solved only by converging the networks through densification of cells, which leads to have increased macro cell sites, small cells, as well as access points near to the consumer. Converging fiber and mobile networks will be an advantage to scaling economy, improved customer experience, and greater application opportunities.



Source*:* FTTH Council

The concept of network convergence is existing in the global market for quite some time, but with little implementation due to architectural and technological limitations. Telecommunications companies are now in a good position to implement a complete Fiber Mobility Convergence at a much lower cost than ever before with the support of existing fiber technologies and an end-to-end IPfication of the network. To have seamless convergence, the set of standards should exchange each other between mobile and wireline technologies. Integrating 5G all-IP fiber networks should be practices as it implies an IPfication of the mobile networks.

The early digital applications could very well be served by the macro cell sites of the 4G networks, from a financial standpoint, which means that operators have almost no economic incentives to implement network convergence, which will change with the development of next-generation digital applications. Augmented reality, self-driving cars, telemedicine, etc. are some examples that can be cited. By installing a converged optical fiber network, operators will be able to significantly reduce the cost of optical fiber associated with 5G. According to the study by the FTTH Council Europe, by rolling out an optimized and future-proof converged fiber network a telecom operator can eliminate fiber costs for 5G xHaul by 65% to 96%. On the other side, 1% to 7% extra investment needed to make an FTTH network 5G-ready. Uninitiated 5G xHaul is a dynamically configurable 5G transmission solution designed to integrate forward and backhaul networks. Also, the study shows significant cost savings in future could be achieved by incremental investments of less than 6% in fiber today.

CONCLUSION

5G has a huge potential for creating value in India as the pace of digitization is accelerating. The implementation of converged fiber and mobile network will witness the significant increase in data usage will increase the demand for higher data throughput resulting to improved penetration which enables operators to lower the tariffs, identify new revenue opportunities, increase the Average Revenue Per User (ARPU) and gradually the market will stabilize with the industry's key performance indicators such as high-speed network, seamless coverage and delighted customer experience.

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