INDIAN TELECOM SECTOR: AN OVERVIEW

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Abstract: *The past two decades have been considered as the golden period for the telecommunications industry in India with exponential growth and development in terms of technology, penetration, as well as policy. Currently, India is the world's second-largest telecommunications market with a subscriber base of 1.16 billion and has registered strong growth in the last decade. The liberal and reformist policies of the Government of India have been instrumental along with strong consumer demand in the rapid growth of the Indian telecom sector. However, limited spectrum availability, low broadband penetration, lack of Over-the-Top (OTT) regulation has limited the scope of telecom that needs to be scrutinized from a detached point of view and addressed holistically. In India, the total subscriber base stood at 1178.41 million in December 2021.Also, India is one of the biggest consumers of data worldwide. The telecom sector in India is expanding due to increasing end-user applications and growth in markets like IoT, cloud, data centers, and 5G. The country is also witnessing an increase in internet consumption. Market players are developing new internet plans to fulfill the growing demand for internet services and grab a more significant portion of the market. The government approved the sale of IMT/5G spectrum to deploy 5G services throughout the country to accelerate digital connectivity.*

Key Words: Telecommunications**,** Market, Subscriber, Internet and Consumption.

I.INTRODUCTION

Currently, India is the world's second-largest telecommunications market with a subscriber base of 1,170.75 million in January 2023 and has registered strong growth in the last decade. The Indian mobile economy is growing rapidly and will contribute substantially to India's Gross Domestic Product (GDP) according to a report prepared by GSM Association (GSMA) in collaboration with Boston Consulting Group (BCG). In 2019, India surpassed the US to become the second-largest market in terms of the number of app downloads. The liberal and reformist policies of the Government of India have been instrumental along with strong consumer demand in the rapid growth of the Indian telecom sector. The Government has enabled easy market access to telecom equipment and a fair and proactive regulatory framework, that has ensured the availability of telecom services to consumers at affordable prices. The deregulation of Foreign Direct Investment (FDI) norms have made the sector one of the fastest-growing and the top five employment opportunity generator in the country. The past two decades have been considered as the golden period for the telecommunications industry in India with exponential growth and development in terms of technology, penetration, as well as policy. Currently, India is the world's second-largest telecommunications market with a subscriber base of 1.16 billion and has registered strong growth in the last decade. The liberal and reformist policies of the Government of India have been instrumental along with strong consumer demand in the rapid growth of the Indian telecom sector. However, limited spectrum availability, low broadband penetration, lack of Over-the-Top (OTT) regulation has limited the scope of telecom that needs to be scrutinized from a detached point of view and addressed holistically. In India, the total subscriber base stood at 1178.41 million in December 2021.Also, India is one of the biggest consumers of data worldwide. As per TRAI, average wireless data usage per wireless data subscriber was 11 GB per month in FY20.By 2025, India will need about 22 million skilled workers in 5G-centric technologies such as Internet of Things (IoT), Artificial Intelligence (AI), robotics and cloud computing. The Union Cabinet approved Rs. 12,195 crores production-linked incentive (PLI) scheme for telecom & networking products under the Department of Telecom. Also, to drive the development of 6G technology,

the Department of Telecommunications (DoT) has developed a sixth generation (6G) innovation group. In Union Budget 2022-23 the Department of Telecommunications was allocated Rs. 84,587 crores.FDI inflow in the telecom sector stood at USD 39.02 billion between April 2000-September 2022.

MARKET SIZE:

India is the world's second-largest telecommunications market. The total subscriber base, wireless subscriptions as well as wired broadband subscriptions have grown consistently Tele-density stood at 84.51%, as of March 2023, total broadband subscriptions grew to 846.57 million until March 2023. Gross revenue stood at Rs. 88,166 crore (US$ 10.68 billion) in the third quarter of FY22.The aggregated data consumed as on 31st December 2022 was 14,024,519 GB. The total wireless data usage in India grew at a rate of 0.96% from 40,126 PB in September 2022 to 40,512 PB in December 2022. The contribution of 2G, 3G and 4G data usage to the total volume of wireless data usage was at 0.14%, 0.93% and 98.93%.The total number of internet subscribers reached 865.90 million in October-December 2022. The wireless segment accounted for 96.25% (i.e. 833.49 million) of the total telephone subscriptions In December 2022.Over the next five years, rise in mobile-phone penetration and decline in data costs will add 500 million new internet users in India, creating opportunities for new businesses. By 2025, India will need ~22 million skilled workers in 5G-centric technologies such as Internet of Things (IoT), Artificial Intelligence (AI), robotics and cloud computing.

MAJOR DEVELOPMENT:

With daily increasing subscriber base, there have been a lot of investment and development in the sector. FDI inflow in the telecom sector stood at US$ 39.02 billion between April 2000-December 2022. In May 2023, STT GDC invested US$ 242.33 million (Rs. 2,000 crore) in two more data centres in Pune. As of March 2023, the wireless subscriber base of Jio stood at 430.23 million, followed by Bharti Airtel (235.78 million), Vodafone Idea 124.82 million, BSNL 21.77 million and Intech Online Pvt. Ltd. 0.23 million. Total broadband subscriptions in the country grew from 149.75 million in FY16 to 846.57 million in FY23 (April-March). The number of wired broadband subscriptions stood at 33.49 million in FY23 (Until March 2023). Wireless broadband subscribers stood at 813.08 million in FY23. As of March 2023, the top 5 service providers (Reliance Jio Infocom Ltd stood at 438.56 million, followed by Bharti Airtel (241.90 million), Vodafone Idea (124.83 million), BSNL 25.37 million and Atria Convergence 2.14 million. As per TRAI, average wireless data usage per wireless data subscriber was 17.11 GB per month in December 2022 from 61.66 MB in March 2014.The aggregated data consumed as on 31st December 2022 was 14,024,519 GB. The total wireless data usage in India grew at a rate of 0.96% from 40,126 PB in September 2022 to 40,512 PB in December 2022. The contribution of 2G, 3G and 4G data usage to the total volume of wireless data usage was at 0.14%, 0.93% and 98.93%. In September 2022, Vodafone Idea has partnered with Indian Council for Research on International Economic Relations (ICRIER) called InViCT to set up a telecom Centre of Excellence. In Q1 FY22, Indian technology, media and telecom (TMT) sector lead the M&A market in India bagging deals worth US$ 11.5 billion. In February 2022, Bharti Airtel acquired 10% strategic stake in a Singapore-based start-up, Aqilliz. In January 2022, Google made a US$ 1 billion investment in Airtel through the India Digitization Fund. In October 2021, Vodafone Idea stated that it is in advanced talks to sell a minority stake to global private equity investors including Apollo Global Management and Carlyle to raise up to Rs. 7,540 crore (US$ 1 billion) over the next 2-3 months. In October 2021, British satellite operator Inmarsat Holdings Ltd. announced that it is the first foreign operator to get India's approval to sell high-speed broadband to planes and shipping vessels. Inmarsat will access the market via Bharat Sanchar Nigam Ltd. (BSNL) after BSNL received a license from the Department of Telecommunications. In October 2021, Dixon Technologies announced plans

to invest Rs. 200 crore (US$ 26.69 million) under the telecom PLI scheme; this investment will include the acquisition cost of Bharti Group's manufacturing unit. In September 2021, Bharti Airtel announced an investment of Rs. 50 billion (US$ 673 million) in expanding its data centre business to meet the customer demand in and around India. In August 2021, Tata Group company Nelco announced that the company is in talks with Canadian firm Telesat to sign a commercial pact for launching fast satellite broadband services in India under the latter's Lightspeed brand, a move which will pit the combined entity against Bharti Enterprises-backed OneWeb, Elon Musk's SpaceX and Amazon. In March 2021, Vodafone Idea Ltd. (VIL) announced that the acquired spectrum in five circles would help improve 4G coverage and bandwidth, allowing it to offer 'superior digital experience' to customers. In March 2021, Advanced Television Systems Committee (ATSC) and Telecommunications Standards Development Society, India (TSDSI) signed a deal to boost adoption of ATSC standards in India in order to make broadcast services available on mobile devices. This allows the TSDSI to follow ATSC standards, fostering global digital broadcasting standard harmonisation. In the first quarter of FY21, customer spending on telecom services increased 16.6% y-o-y, with over three-fourths spent on data services. This spike in consumer spending came despite of the COVID-19 disruption and lack of access of offline recharges for a few weeks. India had over 500 million active internet users (accessed Internet in the last one month) as of May 2020.

II.REVIEW OF LITERATURE

There have been various researches on different aspects of the initiative ranging from the economical to social and ethical dimensions. Some of these researches retrieved through internet searches have been reviewed here:

Agur (2018) Foreign investment and companies entered from outside have remarkable contributions to the Indian telecom sector to become the 2nd largest industry from a low-income colony with poor telephony. Indian government also tends to implement strategies to attract foreign investment. Therefore, if the government can manage to successfully support the limited number of telecom operators in India then it will explore the scope of business for new entrants as well as foreign investments, which will result in a prosperous growth and enhanced financial health of Indian telecom sector.

Gupta, Raghav and Dhakad (2019) The second largest telecom sector in India is most likely to become the centre of attention of foreign companies as the fastest growing sector. The current marketplace is certainly volatile and struggling with a number of issues and based on the analytics' point of view, Indian market is gradually becoming a monopoly, which will result in an unhealthy competition. Now, the government is taking a firm initiative to sustain competitiveness with extended network coverage, cost centric offerings that may contribute to a sustainable growth of the industry.

Sharma, (2019) That the telecom industry being at the peak of its, the government should decrease the outstanding debt. This led to postponing of financial reporting of the telecom companies due to the Supreme Court's order to telecom companies like Vodafone and Airtel to pay billions of dollars as revenue. Sengupta, (2019) in a newspaper article in the Economic Times has however pointed out that the telecom industry is finally going to be a profitable one. This can be only achieved if the usage and number of consumers is maximised with optimise data and service utility.

OBJECTIVES OF THE STUDY:

The main objectives of this paper is based on following headings:

- To analyze the present position of telecom sector in India.
- To examine the step taken by Govt. for development of telecom sector in India.

III.METHODOLOGY

The method used in this paper is descriptive-evaluative method. The study is mainly review based. It is purely supported by secondary source of data, i.e. books, journals, papers and articles and internet.

IV.DISCUSSION

GOVERNMENT INITIATIVES:

The Government has fast-tracked reforms in the telecom sector and continues to be proactive in providing room for growth for telecom companies. Some of the key initiatives taken by the Government are as follows:

- The Government of India intends to establish one hundred labs for creating applications using 5G services in engineering universities as part of the Union Budget 2023, in order to realize a new range of possibilities, business models, and job potential.
- As of March 2023, the PLI scheme for Large-Scale Electronics Manufacturing (LSEM) has attracted investment of US$ 726.77 million (Rs. 5,998 crore) and led to a total production of US$ 33.55 billion (Rs. 276,903 crore), including exports of US$ 15.61 billion (Rs. 1,28,886 crore).
- In Union Budget 2023-24, the Department of Telecommunications was allocated Rs. 97,579.05 crore (US$ 11.92 billion). Of this, US$ 48.88 million (Rs. 400 crore) is for Research and Development, US$ 611.1 million (Rs. 5,000 crore) is for Bharatnet.
- RailTel, a mini Ratna PSU launched Prime Minister Wi-Fi Access Network Interface (PM-WANI) to access its Public WiFi services across 100 railway stations having 2,384 WiFi hotspots in 22 states.
- Universal Service Obligation Fund (USOF) officially launched Telecom Technology Development Fund (TTDF) Scheme on October 01st, 2022.
- The government plans to update extant regulatory framework with the Indian Telecommunication Bill, 2022
- Up to July 2022, 5,84,747 km length of Open Fiber Control (OFC) is laid connecting 1, 87,245 Gram Panchayats. In 1,81,888 Gram Panchayats the service is ready on fiber and satellite.
- Prime Minister Mr. Narendra Modi launched 5G services on October 1, 2022.
- On December 2022, 42 companies have committed an investment US$ 502.95 million (Rs. 4,115 crore) comprising 28 MSMEs and 14 Non-MSMEs (eight domestic and seven global companies) have been approved under the Production-linked Incentive (PLI) Scheme.
- Dedicated government schemes BharatNet Project Scheme, Telecom Development Plan, Aspirational District Scheme, initiatives in North-Eastern Region through Comprehensive Telecom Development Plan (CTDP), etc. resulted in a 200% increase in rural internet subscriptions between 2015 to 2021
- To drive the development of 6G technology, the Department of Telecommunications (DoT) has developed a sixth generation (6G) innovation group.
- In October 2021, Telecom Secretary Mr. K. Rajaraman inaugurated the Quantum Communication Lab at the Centre for Development of Telematics (C-DOT), Delhi, and unveiled the indigenously developed Quantum Key Distribution (QKD) solution by C-DOT. QKD can support a distance of >100 kms on standard optical fibre.
- In August 2021, the Department of Telecommunications (DoT) initiated discussions with banks to address financial stress in the telecom sector, particularly Vodafone Idea Ltd. (VIL) that urgently requires fund infusion to stay afloat.
- FDI cap in the telecom sector has been increased to 100% from 74%; out of 100%. In October 2021, the government notified 100% foreign direct investment (FDI) via the

automatic route from previous 49% in the telecommunications sector. FDI of up to 100% is permitted for infrastructure providers offering dark fibre, electronic mail and voice mail.

- Following are the achievements of the Government in the past four years:
- Department of Telecommunication launched 'Tarang Sanchar' - a web portal sharing information on mobile towers and EMF Emission Compliances.
- Payments on unified payments interface (UPI) hit an all-time high of 3.65 billion (by volume), with transactions worth ~Rs. 6.54 trillion (US$ 87.11 billion) in September 2021.
- Over 75% increase in internet coverage—from 251 million users to 446 million.

Challenges Related to the Telecom Sector:

Right of Way Challenge: Due to variable and complex legal procedures across states, non- uniformity in levies, and approvals from the Forest Department, Railways, and National Highway Authority, the Right of Way has been a contentious issue for the Indian telecoms sector.

- The delay in this process has affected several tower and fiber planning and rollout processes across the country.

OTT-Telecom Conflict: Voice calls and SMS services are provided by OTT platforms like WhatsApp and Telegram using the network infrastructure of telecom providers like Airtel and Jio.

- Telecom Service Providers (TSPs) contend that these features adversely affect their sources of revenue (voice calls, SMS).

Insufficient Fixed-Line Penetration: The Indian network does not have very much fixed-line coverage, while most developed countries have a high penetration of fixed lines (telephone lines connected to a nationwide telephone network via metal wires or optical fibers).

- There are fewer than 25% of towers in India connected to fiber networks, compared to more than 70% in developed nations.
- 5G Networks require towers to be connected to very high-speed systems. These high speeds cannot be achieved by the current radio systems.

Lack of Efficient Disposal of E-waste: The telecom industry impacts the environment in multiple ways, including by generating e-waste.

- In India, more than 95% of e-waste is illegally disposed of.

Lack of Rural Connectivity: In India, adequate tele density has been achieved, but there is a large discrepancy between penetration in urban (55.42%) and rural (44.58%) areas.

- Getting into semi-rural and rural areas is challenging for service providers due to the huge initial fixed costs.

ROAD AHEAD:

Revenue from the telecom equipment sector is expected to grow to US$ 26.38 billion by 2020. The number of internet subscribers in the country is expected to double by 2021 to 829 million and overall IP traffic is expected to grow four-fold at a CAGR of 30% by 2021.According to a Zenith Media survey, India is expected to become the fastest-growing telecom advertisement market, with an annual growth rate of 11% between 2020 and 2023.The Indian Government is planning to develop 100 smart city projects, and IoT will play a vital role in developing these cities. The National Digital Communications Policy 2018 envisaged attracting investment worth US$ 100 billion in the telecommunications sector by 2022. App downloads in India is expected to increase to 18.11 billion in 2018F and 37.21 billion in 2022F. A major force behind meeting the telecom industry's present and future technological needs is the Atmanirbhar Bharat programme. There has been a push towards developing indigenous 5G technology to help India move towards 5G rapidly. India is also

planning for 6G in advance and has started investing in the development of 6G technology already.

V.CONCLUSION

The Indian telecom market is consolidated with key players, such as Reliance Jio Infocomm, Bharti Airtel, Vodafone Idea Limited, Vodafone Idea Limited, and Mahanagar Telephone Nigam Ltd. (MTNL) occupying the most market shares. These players focus on deploying the 5G network and increasing network capacity across the country to remain competitive in the market. The telecom sector in India is expanding due to increasing end-user applications and growth in markets like IoT, cloud, data centers, and 5G. The country is also witnessing an increase in internet consumption. Market players are developing new internet plans to fulfill the growing demand for internet services and grab a more significant portion of the market. The government approved the sale of IMT/5G spectrum to deploy 5G services throughout the country to accelerate digital connectivity. This auction was completed by July 2022, grossing USD 18.77 billion.

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