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SEEDS OF STARTUPS SOWING INDIA'S TELECOM TRANSFORMATION

India's startups are redefining telecom with 5G and 6G innovation and cutting-edge tech, positioning the nation as a global leader in connectivity

Over the past decade, India has undergone a significant transformation driven by the government's vision of building a self-reliant Bharat. The country, once known as the global IT services hub, has transitioned into a key manufacturing destination. Investment opportunities have surged, spurred by the FDI flows and the supportive regulations. The telecom industry has been the focal point of this transition, emerging as the second largest in the world, with a total subscriber base of 1.2 billion as of August 2024.

This achievement has been made possible through robust digital infrastructure, supportive government policies, industry-wide collaboration, and, importantly, the rise of new-age companies—startups—creating solutions for a broader consumer base.

The start-up ecosystem, hailed as the backbone of India's economy, has elevated the country's prestige on the global front through astonishing innovations and contributions across sectors. Home to over 1.25 lakh DPIIT-recognised startups and 110 unicorns, India's startup ecosystem has been recognised globally as a dynamic and rapidly growing force. According to governmental data, these startups, with immense potential to drive innovation and economic growth, are solving problems in more than 56 diverse industrial sectors. Among these, over 13% are engaged in IT services.

TRENDS SHAPING THE TELECOM SECTOR

The introduction of 5G technologies in India has enhanced the quality of services and positioned the country as a global leader in technological innovation, with one of the fastest rollouts. India is also setting an example for other developing countries by contributing to the establishment of global technological standards and research patents in emerging technologies such as 6G. Startups and academia are also pivotal in this transformation, driving India's evolution into a digitally advanced nation.

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Developing cutting-edge technologies like blockchain, edge computing, Artificial Intelligence (AI), and the Internet of Things (IoT) enables significant advancements in network optimisation, customer experience, fraud detection, operational efficiency and data security. Major technology companies and startups are creating more personalised and reliable services for users by leveraging their capacity to analyse vast amounts of data, automating processes and ensuring transparency through decentralised ledgers.

EMERGING ROLE OF STARTUPS IN INDIA

The startup ecosystem in India has emerged as a powerhouse, driving innovation and contributing significantly to the country's GDP. With exponential growth in recent years, startups have created over 12.42 lakh direct jobs, as highlighted in the Economic Survey 2023-24. Beyond strengthening the country's economy, these startups are also transforming the telecom sector, playing a pivotal role in advancing technologies such as 5G and 6G.

As part of the Bharat 6G Alliance, startups are at the forefront of developing 6G technologies and contributing to India's target of owning 10% of global 6G patents within three years, with over 200 patents already secured. Simultaneously, companies like Mymo Wireless and VVDN are leading innovations in 5G and collaborating with telecom operators to deploy these networks nationwide.

Startups are also driving advancements in IoT, creating solutions for smart cities, homes, and industries. Companies such as IOTTIVE, Bluepixel Technologies, dotcom and Facilio offer innovative platforms to aggregate data from the facility, optimise performance and streamline operations. Alongside IoT, AI is revolutionising the telecom landscape. Startups like Helpshift are leveraging AI to improve customer communication, while firms like Techvantage Analytics and KeyPoint Technologies are enhancing network efficiency and reducing operational costs through AI and Machine Learning (ML).

Similarly, India's semiconductor ecosystem, backed by robust government initiatives, propels telecom innovation, while fabless chip startups like AGNIT Semiconductors and Saankhya Labs play a critical role. CleanTech companies like Gegadyne Energy and Lohum are addressing sustainability challenges by developing eco-friendly battery alternatives and recycling solutions.

There are, of course, challenges startups face in the telecom ecosystem. These include regulatory hurdles, policy uncertainties, access to funds, infrastructure and technology use, tale nt acquisition, and lack of testing environment. To address most of these challenges, the government needs to push through various initiatives like seed funding, promoting ease of doing business by removing regulatory hurdles, bringing policy level certainty, providing the facility of regulatory and technology sandbox, etc.

COLLABORATION FOR COLLECTIVE GROWTH

The Department of Telecommunications (DoT) encourages collaboration between global firms like Nokia, Ericsson, Cisco, and Qualcomm and academic institutions to develop home-grown telecom gear. Ericsson has signed a memorandum of understanding (MoU) with IIT-Kharagpur to conduct joint research in AI and develop 6G networks. Ericsson and Qualcomm are also driving the development of several intellectual property rights (IPRs) in the sector.

With a focus on homegrown Open Radio Access Network technologies, collaboration among multiple vendors also gains paramount importance. The government aims to achieve at least 3% of IPRs in the next-gen essential patents by 2027 and secure a 3% share in the global telecom equipment market. DoT has also set a target for India to achieve a 5% share in global research areas, including network technologies, wideband spectrum sensing, autonomous control and intelligent communication systems.

INITIATIVES AND SUPPORT FOR ROBUST GROWTH

Apart from the growing entrepreneurial spirit, another reason for the flourishing startup ecosystem in the country is supportive governmental policies and

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IN BRIEF

- India's startup ecosystem boasts 1.25 lakh DPIIT-recognised ventures and 110 unicorns, driving economic growth across 56 diverse sectors.
- Startups play a pivotal role in 5G and 6G advancements, securing 200+ patents under the Bharat 6G Alliance to achieve a 10% global share in 6G patents.
- Startups' innovations in IoT and AI enhance smart city solutions, network efficiency, customer experience, and operational cost reduction.
- Semiconductor startups and Cleantech firms address sustainability challenges with eco-friendly battery solutions and advanced chip technologies.
- Government initiatives like seed funding, policy certainty, and regulatory sandboxes are critical to overcoming startup challenges.
- Collaborative R&D among startups, academia, and global firms fosters cutting-edge technologies, boosting India's competitiveness in the telecom sector.

initiatives. Alongside programmes like 'Startup India' and the 'Startup Mission', the government has introduced targeted initiatives to foster the growth of startups in specific sectors.

The DoT proactively engages with startups and academic institutions to foster collaboration and develop intellectual IPRs for the sector. They target next-generation technologies, including quantum communications, AI, and ML. For example, the Centre of Excellence on Classical and Quantum Communications for 6G at IIT, Chennai, focuses on the development and deployment of 6G technology, promising unprecedented speeds, ultra-low latency, and enhanced connectivity.

Another notable example is the BuildForBharat IoT Startup Challenge, which seeks to inspire startups to ideate, design, and develop IoT solutions. Additionally, in July 2023, the government announced a grant of Rs 48 crore for 66 Startups and MSMEs under the Digital Communication Innovation Square. As part of this effort, the DoT recognised 75 innovators for their remarkable contributions to the field.

The telecom industry, as a whole, has ventured far and beyond providing traditional telecommunication services. In an era where telcos are evolving into high-end tech companies, startups operating at the intersection of telecom and technology are bound to thrive.

The combined efforts of startups, industry and the government underscore the transformative impact of startups in India's telecom sector. By leveraging cutting-edge technologies and addressing critical challenges such as connectivity gaps and environmental sustainability, startups are reshaping the industry and establishing India as a global leader in technological innovation.

The author is a decorated military veteran who retired as Signal Officer-in-Chief, the head of the Indian Army's ICT. He was also the first CEO of the Telecom Sector Skill Council (TSSC) and is the Director General of the Cellular Operators Association of India (COAI).

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