Building the ecosystem for product innovation

- By Amitabh Kant

Innovation is the engine of economic development and global competitiveness, especially in a rapidly evolving technological landscape. India, with its growing pool of young, tech-savvy entrepreneurs, stands poised for an innovation revolution. However, to truly realize this potential, it is essential to address the current challenges while capitalizing on the abundant opportunities that lie ahead.

India's innovation ecosystem has experienced significant growth over the past decade, bolstered by increased investment in research and development (R&D), a burgeoning start-up culture, and the proliferation of digital technologies. The Global Innovation Index (GII) reflects this progress, with India climbing from the 81st position in 2015 to 40th in 2022. This improvement underscores the country's focused efforts to foster an environment conducive to innovation, supported by government policies, private sector initiatives, and academic collaborations. The recently announced Anusandhan National Research Fund, with a budget of ₹1 lakh crore, is designed to support basic research and prototype development. It also aims to create a system that encourages the private sector to drive research and innovation at a commercial level.

Sectors such as information technology, biotechnology, and renewable energy have led the charge, with Indian IT firms emerging as global leaders in software development and services. Government initiatives like Digital India and Startup India have laid a robust foundation, encouraging entrepreneurship and providing a platform for young innovators to scale their ideas. Despite these advances, several critical challenges continue to hinder India's full innovation potential. The Knowledge Paper by Fraunhofer Institute India and Berlin and Mercedes Benz Research and Development India succinctly outlines challenges and opportunities for the innovation ecosystem in India.

One of the primary challenges is the underutilization of patents. While patent registrations in India have seen an uptick, the journey from patent publication to commercialization remains fraught with obstacles. In 2023, over one lakh patents were granted. This demonstrates awareness about the importance of filing patents and also the increase in speed of patent examination by the Patent office. However, the commercialisation of these patents leaves a lot to be desired. Transforming patents into products is not taking place. This disconnect results in a scenario where innovations remain confined to research institutions without making a tangible impact in the market. Additionally, the payment of royalties for patents India uses is far higher than the income generated from its own patents, highlighting a significant gap in the commercialization process.

In response to these challenges, India introduced the Patent Box Regime in 2016 to encourage indigenous research and development. This regime offers a 10% concessional tax rate on royalty income from patents developed and registered in India, aiming to incentivize the commercialization of Indian innovations. Additionally, the Income Tax Act also provides deductions to taxpayers for income from patent royalties, further encouraging individuals to patent their work and contribute to India's innovation landscape.

However, despite these incentives, the overall impact has been limited. The disparity in royalty payments—where Indian institutions and companies pay significantly more for

foreign patents than they earn from their own—remains a critical issue. The Fraunhofer report states, “In the past 10 years, the IPR payments tripled from 4.8 billion US$ in 2014 to 14.3 billion US$ in 2024. However, the IPR receipts only doubled from 0.7 billion to 1.5 billion. So while India recovered 14% in receipts (compared to payments) in 2014, it could only manage to recover 11% in 2023. Clearly, India is paying much more in IPR royalties than what it is getting in return.” This imbalance not only strains domestic financial resources but also highlights the need for more effective policies and stronger support systems to fully leverage India's intellectual property.

Investment in R&D also remains suboptimal, with India’s expenditure on R&D as a percentage of GDP standing at a mere 0.65%, significantly lagging behind countries like South Korea, Israel, and the United States. This underinvestment is a major roadblock to the development of cutting-edge technologies and limits the country’s global competitiveness.

Another challenge is the lack of effective linkage between research institutions and academia. Many research institutions in India operate independently, without strong ties to universities. This separation limits opportunities for collaboration and innovation. In contrast, regions where research institutions are closely linked with universities tend to foster a vibrant ecosystem of innovation, where professors and students work together to develop and commercialize new technologies.

There is an urgent need to address the gap in patent commercialization. Encouraging private sector involvement in the commercialization of patents through incentives, better IP management, and robust industry-academia linkages can unlock the potential of numerous innovations currently languishing within research institutions.

The ₹1 lakh crore research fund offers a unique opportunity to transform India's innovation landscape. This fund should be strategically deployed to support applied research, particularly in sectors where India has the potential to lead globally. Moreover, adopting a grant challenge model akin to DARPA in the USA can spur high-risk, high-reward innovations. Such a model would encourage researchers to pursue bold ideas with the potential for significant breakthroughs, driving both scientific progress and economic growth.

Strengthening the collaboration between research institutions and academia is another critical opportunity. By integrating research institutions more closely with universities, India can create a more cohesive innovation ecosystem. This integration would facilitate the transfer of knowledge and technology from the lab to the market, involving students and professors in the innovation process and fostering a culture of entrepreneurship.

To establish India as a global destination for product innovation, it is essential to focus on building an infrastructure that supports the entire innovation lifecycle—from research and development to commercialization. This requires not only financial investment but also the creation of industrial-scale manufacturing and testing facilities within research institutions and industrial clusters. Such facilities will enable the translation of academic research into market-ready products, thereby enhancing India's competitiveness on the global stage.

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