Commercial Analysis of Incubation and Innovation Centers in Indian Universities under NEP 2020 for 'Viksit Bharat 2047'

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Abstract

The Government of India has set an ambitious goal of transforming India into a developed nation by 2047. Accelerating economic growth requires not only expansion of conventional sectors but also a stronger innovation- and knowledge-based economy. The National Education Policy (NEP) 2020 provides an important policy framework for strengthening research, innovation, entrepreneurship, technology transfer, and university-industry collaboration. This paper examines the commercial and economic role of incubation and innovation centers in Indian universities in the context of NEP 2020 and the vision of 'Viksit Bharat 2047'. The study uses descriptive and analytical methods based on secondary data and official publications. The analysis focuses on startup development, incubation infrastructure, employment generation, patents, technology transfer, investment mobilization, research commercialization, and university-industry collaboration. The findings indicate an expansion of India's startup and university innovation ecosystem and suggest that university-based incubation can contribute to employment, investment attraction, knowledge commercialization, and regional economic activity. The paper also identifies challenges relating to seed funding, institutional decision-making, commercialization capabilities, industry-academia coordination, intellectual property management, and market competition. The study argues that stronger financial, managerial, and industry linkages within university incubation systems can improve their contribution to the objectives of NEP 2020 and 'Viksit Bharat 2047'.

Keywords: Viksit Bharat, National Education Policy, Incubation Center, Commercial Analysis, Intellectual Property, Start-up India.

1. Introduction

In the traditional Indian education system, education and entrepreneurship were often viewed as distinct domains. However, universities in several developed innovation ecosystems have become important contributors to entrepreneurship, technology development, and economic growth. Under the vision of 'Viksit Bharat 2047', India seeks sustained economic transformation, and an innovation-based economy is an important component of that transformation. The National Education Policy (NEP) 2020 recognizes this need and encourages research, innovation, entrepreneurship, and incubation in higher education institutions (Government of India, 2020).

NEP 2020 represents a significant step towards transformative changes in the education system. It promotes new skills, research, technology, entrepreneurship, and innovative ideas and encourages higher education institutions to become multidisciplinary, research-intensive, and industry-oriented. The policy emphasizes the development of a culture of innovation and entrepreneurship and encourages structures such as incubation centers, innovation centers, research parks, and industry-academia partnerships within universities (Government of India, 2020).

Incubation centers help transform innovative ideas developed by students and researchers into viable businesses. Their functions may include providing infrastructure, mentoring, market guidance, access to finance, legal support, technical facilities, and connections with investors and industry. Innovation centers strengthen the broader ecosystem for creative thinking, research, technology development, and collaboration. Together, these mechanisms can support the commercialization of university-generated knowledge.

The contribution of startup activity to India's economic development has increased substantially. The Startup India initiative, administered by the Department for Promotion of Industry and Internal Trade (DPIIT), has supported the development of a large national startup ecosystem. University-based incubation centers form an important part of this ecosystem by connecting students, researchers, technology, investors, and industry (DPIIT, 2023).

The national vision of 'Viksit Bharat 2047' places emphasis on self-reliance, technological capability, global

competitiveness, digital development, and sustainable economic growth. In this context, universities have a role extending beyond knowledge dissemination towards knowledge creation, innovation, entrepreneurship, and commercialization.

University incubation and innovation centers can facilitate the industrial application of research, support employment opportunities, attract investment, and strengthen local economic activity. From a commercial perspective, their activities are connected with value creation, intellectual property, return on investment, competitive advantage, market expansion, licensing, consultancy, and startup development.

However, this process faces challenges such as inadequate financial resources, insufficient coordination between industry and academia, shortages of business and technical capabilities, complexities in intellectual property commercialization, and market competition. These issues make it necessary to examine the commercial, financial, and economic dimensions of university incubation and innovation ecosystems.

2. Review of Related Literature

Porter's (1998) work on clusters explains how geographical proximity among firms, universities, skilled labor, and supporting institutions can facilitate knowledge exchange, productivity, and competitiveness.

Etzkowitz and Leydesdorff (2000) The Triple Helix framework emphasizes collaboration among university, industry, and government as a foundation for innovation and economic development.

Hackett and Dilts (2004) developed a theory of business incubation outcomes and emphasized the role of incubation in reducing uncertainty and supporting the development of new ventures.

Moretti (2012) highlighted the local employment multiplier associated with high-skill and high-technology employment. University-based startups can therefore create both direct employment and wider local economic effects.

Bruneel et al. (2012) examined the evolution of business incubators and highlighted the role of incubation in providing resources, networks, and support that can improve startup development and market credibility.

The National Education Policy (NEP) 2020 provides a policy framework for transforming higher education institutions into research-intensive, multidisciplinary, innovation- and entrepreneurship-oriented institutions. It emphasizes collaboration between academia and industry, research commercialization, technology transfer, and the development of innovation ecosystems (Government of India, 2020).

UGC (2021) guidelines encourage higher education institutions to develop incubation mechanisms that can support entrepreneurship and innovation. University incubation centers can provide infrastructure, mentoring, networks, and access to institutional resources for emerging ventures.

The World Bank (2021) and OECD (2022) emphasize the importance of innovation-oriented higher education systems, stronger research-industry linkages, and entrepreneurship support in improving productivity and innovation capacity.

DPIIT (2023) documents the continuing expansion of India's recognized startup ecosystem and the role of Startup India in strengthening entrepreneurial activity. These developments provide a national context for examining university-linked incubation and commercialization.

Chaudhary et al. (2024) examined the relationship between entrepreneurial ecosystems and innovation and highlighted the important role of universities within entrepreneurial ecosystems. Their study identified university involvement, sustainability, digitalization, and ecosystem structure as important themes in contemporary entrepreneurship research. The study indicates that stronger connections among ecosystem actors can enhance innovative capacity and provides a useful conceptual basis for examining university-based incubation and innovation systems.

Rai (2025) empirically examined incubation support for academia-based entrepreneurship in India and found that the support capabilities of academic business incubators are important for mitigating market risks and improving startup sustainability and performance. This evidence reinforces the importance of resources, networks, and institutional support in university incubation.

Kambanou, Hajoary, and Lindfors (2025) examined university-led incubators in India and found that incubators provide a range of support functions but that specialized support can remain limited in emerging areas such as circular-economy entrepreneurship. The study highlights the need for tailored incubation support, stronger competencies, and closer collaboration between incubators and university faculty.

3. Research Gap

These studies indicate that university incubators should be evaluated not only by the number of startups created but

also by their capacity to provide resources, reduce market risks, support sustainability, and connect innovation with commercial opportunities. However, comparatively limited attention has been given to the broader commercial and financial dimensions of university incubation in India, including investment mobilization, intellectual property commercialization, consultancy income, equity value creation, and economic value generation. The present study addresses this gap by examining the commercial and economic role of university-based incubation and innovation centers in the context of NEP 2020 and 'Viksit Bharat 2047'.

4. Research Objectives

1. To conduct a commercial analysis of the operational mechanisms of incubation and innovation centers and to elucidate their connection to the national goal of 'Viksit Bharat 2047'.
2. To highlight the necessity of effectively implementing incubation and innovation structures within Indian higher education institutions to achieve the goals of 'Viksit Bharat 2047'.
3. To conduct a commercial analysis of the economic impact—on income, investment, and employment—of startups developed through incubation centers.
4. To study the nature of university-industry collaboration and its contribution to economic development.

5. Research Methodology

The present study adopts a descriptive and analytical research design. It is based entirely on secondary data and published documentary evidence. Information has been drawn from government reports, official publications, policy documents, institutional reports, and relevant academic literature. The principal institutional sources include the Department for Promotion of Industry and Internal Trade (DPIIT), University Grants Commission (UGC), Ministry of Education, Office of the Controller General of Patents, Designs and Trademarks (CGPDTM), NITI Aayog, and Atal Innovation Mission, subject to the availability of relevant data.

The quantitative analysis uses available annual information for the period 2018–2023 for indicators reported in Table 1. These indicators include registered startups, university incubation centers, incubated startups, employment generated by university-affiliated startups, patent applications, and technology-transfer agreements. Because reporting definitions and institutional coverage can differ across sources, the figures are interpreted as trend indicators rather than as a perfectly comparable national financial dataset.

The study further examines the commercial mechanisms through which incubation centers can create value, including investment mobilization, equity participation, intellectual property commercialization, technology licensing, consultancy, startup development, employment generation, and university-industry collaboration. No primary survey, interview, or econometric model is undertaken in the present study.

6. National Education Policy 2020 and the Role of Incubation

In accordance with the National Education Policy 2020, the National Research Foundation (NRF) was established in 2023 to foster a culture of science and research in India and to provide financial support for the same. Previously, the majority of financial aid for research was directed solely toward premier institutions such as the Indian Institutes of Technology (IITs) and the Indian Institute of Science (IISc). The National Research Foundation is now encouraging research activities in state-level universities and colleges as well.

Coordination is being established between educational institutions and industries to ensure the practical application of university-based research. The National Research Foundation will provide financial support for research not only in the sciences but also in the fields of arts, humanities, and social sciences. A provision of ₹50,000 crore has been made for research over a five-year period (2023–2028). Of this amount, ₹14,000 crore will be provided by the government, while the remaining ₹36,000 crore is expected to be sourced from the private sector. India currently spends only 0.65 percent of its Gross Domestic Product (GDP) on research, whereas the United States spends 2.8 percent, China 2.1 percent, and Israel 4.3 percent. The National Research Foundation will assist in increasing this ratio, thereby leading to a rise in the number of patents and novel inventions in India. The National Research Foundation will work to take Indian research out of laboratories and bring it to actual industry, markets, and society.

7. The Contribution of Incubation Centers: Economic Impact and the Vision of a Developed India

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According to the Global Innovation Index 2025 report published annually by the World Intellectual Property Organization (WIPO), India ranks 38th globally. In 2015, India held the 81st position. India has consistently improved its standing over the past few years, reaching the 38th spot. India ranks first among lower-middle-income countries and also leads the Central and South Asian region. The startup ecosystem, achievements in knowledge and technology, and government policies like 'Digital India' have played a pivotal role in this success. If Indian universities commercialize their patents, India could transform from a technology importer into a technology exporter.

Global venture capital investors are individuals or entities that make large-scale investments in highly innovative, fast-growing new companies worldwide. These investors are keen to invest in universities where innovative research is conducted. The majority of India's more than 115 unicorn companies received support from government or academic incubation centers during their early stages. The ecosystem fostered by these incubation centers has made India the world's third-largest startup ecosystem, generating billions of dollars in foreign exchange annually.

Currently, there are over 100 unicorn companies in India. Indian academic institutions and universities have emerged as key hubs of the country's startup ecosystem. Estimates suggest that more than 15,000 student-led startups are launched annually from various academic incubation centers and universities. In 2025, a total of 44,000 new startups were registered in India, a significant portion of which are directly linked to university-level research. Currently, there are over 1,000 incubation and acceleration centers in India providing support to startups within university campuses. Schools and colleges are also receiving substantial support through Atal Tinkering Labs and incubation centers. Seed capital required for the early stages is now becoming available directly at the university level. The Indian Institute of Technology incubation ecosystem to connect innovation with financial resources.

(IIT) Madras filed 417 patents in the year 2024-25. These research initiatives are being transformed into startups. Following the effective implementation of the National Education Policy (NEP) 2020, thousands of startups will emerge from universities annually, thereby accelerating the rate of wealth creation.

8. Commercial Analysis of Incubation Centers

Incubation centers are not merely facilities for assisting students; they can also function as institutional mechanisms for supporting business formation and knowledge commercialization. They provide office space, laboratories, internet facilities, meeting rooms, mentoring, business guidance, marketing support, and access to professional networks. Such services reduce some of the initial barriers faced by new entrepreneurs.

At the early stage, startups may require seed funding and connections to government schemes, investors, and business networks. Incubation centers can facilitate these connections and help entrepreneurs prepare business plans, validate markets, protect intellectual property, and develop commercially viable products.

Where institutional policy permits equity participation, universities or their incubation entities may receive a small equity interest in supported startups in return for incubation services. The commercial value of such participation depends on startup growth and eventual valuation. Other potential sources of institutional commercial value include royalties, technology licensing, consultancy, sponsored research, and intellectual property commercialization.

Establishing innovation centers can also stimulate economic activity in the surrounding region. Startups may create direct high-skilled employment and generate indirect demand for professional services, logistics, suppliers, construction, and other supporting activities.

9. Financial Indicators for Commercial Analysis

9.1 Investment Mobilization

The amount of seed funding, venture capital, government support, and private investment attracted by incubated startups is an important indicator of the ability of an

9.2 Revenue and Income Generation

Incubation centers and universities may generate commercial income through consultancy, technology licensing, intellectual property commercialization, sponsored research, and other industry-linked activities.

9.3 Equity Value Creation

Where universities or incubation entities hold equity in incubated ventures, the potential increase in the value of such equity provides a measure of long-term commercial value creation.

9.4 Intellectual Property and Technology-Transfer Income

Patent licensing, technology-transfer agreements, royalties, and commercialization arrangements indicate the extent to which research outputs are converted into economic value.

9.5 Consultancy Income

Consultancy services provided by university experts to industry can generate income while strengthening practical university-industry linkages.

9.6 Employment and Economic Multiplier Effects

Employment created by incubated startups represents an important economic outcome. Additional indirect effects may arise through suppliers and local service providers.

9.7 Cost Effectiveness and Return Measures

Where reliable institution-level financial data are available, measures such as return on investment, revenue per incubated startup, investment mobilized per unit of incubation expenditure, and commercialization income can be used to evaluate financial effectiveness. Such calculations are not undertaken here because comparable expenditure and revenue data are not consistently available across Indian university incubators.

10. Data and Table

Table 1. Progress of startups, university incubation, and research commercialization in India in the context of NEP 2020

Year	Registered Startups (Number)	Annual Growth (%)	Incubation Centers in Universities	Incubated Startups	Job Creation by University-Affiliated Startups	Patent Applications	Technology Transfer Agreements
2018	8,900	—	110	1,200	85,000	—	—
2019	11,500	29%	—	—	—	45,000	320
2020	18,000	56%	220	3,500	1,80,000	56,000	410
2021	61,000	238%	—	—	—	—	—
2022	84,000	37%	350	7,800	6,50,000	66,000	650
2023	99,000+	18%	420+	10,500+	9,00,000+	72,000+	820+

Source: Compiled from the secondary-data sources identified in the methodology, including DPIIT/Startup India, UGC, Ministry of Education, and CGPDTM/IP India Annual publications.

11. Discussion: Link between NEP 2020 and the Findings

The findings can be linked to the major objectives of NEP 2020, particularly its emphasis on research, innovation, entrepreneurship, technology transfer, and university-industry collaboration. The observed expansion of university incubation infrastructure and incubated startups is consistent with the policy direction of creating higher education institutions that support innovation and entrepreneurship (Government of India, 2020).

The increases reported in startups, employment, patent activity, and technology-transfer agreements indicate the potential for universities to contribute to economic value creation beyond conventional teaching functions. Patent and technology-transfer activity is especially relevant because it represents a pathway through which university research can move towards industrial application and commercialization.

The findings also demonstrate the importance of university-industry collaboration. Industry linkages can provide market knowledge, funding opportunities, mentoring, technology validation, and pathways to commercialization. These mechanisms are consistent with the broader NEP 2020 objective of reducing the separation between academic knowledge and practical economic activity.

Nevertheless, the study does not establish a definitive causal effect of NEP 2020 on the observed statistics. The policy was introduced in 2020, while many elements of India's startup and innovation ecosystem predate the policy. The findings should therefore be interpreted as evidence of alignment and emerging trends rather than as a causal impact evaluation.

12. Challenges Faced by University Incubation Centers

12.1 Limited Seed Funding and Financial Resources

Early-stage ventures face high uncertainty and often require funding for product development, testing, market validation, and commercialization. Although government schemes such as the Startup India Seed Fund Scheme provide support, university incubation centers may still have limited resources to finance all promising ventures.

12.2 Slow Institutional Decision-Making

Startup activity requires timely decisions concerning funding, infrastructure, procurement, intellectual property, collaboration, and external partnerships. Lengthy administrative procedures can reduce the ability of university incubators and startups to respond quickly to market opportunities.

12.3 Lack of Business and Commercialization Skills

Faculty members and researchers may possess strong technical or academic expertise but may have limited experience in business development, marketing, financial management, intellectual property commercialization, and scaling. This can create a gap between research excellence and market success.

12.4 Weak Industry-Academia Coordination

Commercialization requires continuing interaction with industry. Weak or irregular industry engagement can make it difficult to identify market needs, validate technologies, obtain commercial feedback, and develop appropriate products and services.

12.5 Intellectual Property and Technology Commercialization

Patent protection, licensing, technology valuation, negotiations, and transfer agreements can be complex. Universities require clear institutional processes and professional support to convert intellectual property into sustainable commercial opportunities.

12.6 Market Competition and Startup Sustainability

Innovative ideas do not automatically produce sustainable businesses. Incubated startups must understand customers, competition, pricing, financing, regulation, and scaling. Market pressure can therefore affect the survival and long-term performance of university-linked ventures.

12.7 Need for Stronger Commercial Orientation

Incubation success should not be measured only by the number of startups created. Attention should also be given to startup survival, investment mobilization, revenue, intellectual property, technology transfer, employment, and the economic value created by supported ventures.

13. Limitations and Future Research Scope

13.1 Limitations of the Study

The present study is based primarily on secondary data obtained from government reports, official publications, and published literature. Therefore, the analysis depends on the availability, consistency, and comparability of information reported by different institutions. The study does not include primary data collected directly from university incubation centers, startups, entrepreneurs, faculty members, or industry representatives. Variations in institutional structures, funding models, reporting practices, and definitions may also limit direct comparison of incubation centers.

13.2 Future Research Scope

Future research may undertake primary empirical studies covering university incubation and innovation centers across different regions of India. Such studies could examine investment mobilization, revenue generation, technology-licensing income, consultancy income, startup survival, intellectual property commercialization, and return on incubation investment. Comparative research across states, universities, and types of higher education institutions could identify differences in incubation models. Longitudinal studies could further examine the relationship between incubation, research commercialization, employment, and the objectives of NEP 2020 and 'Viksit Bharat 2047'.

14. Conclusion

NEP 2020 has provided an important policy direction for transforming higher education into a more research-driven, innovation-oriented, skill-focused, and entrepreneurship-supportive system. University incubation and innovation centers are important institutional mechanisms for implementing this direction because they connect knowledge creation with entrepreneurship, industry, investment, and markets.

The analysis indicates that the expansion of India's startup and university innovation ecosystem has been accompanied by increased attention to incubation, employment, patents, technology transfer, and commercialization. These developments have the potential to strengthen India's knowledge-based economy and contribute to productivity, competitiveness, and economic value creation.

At the same time, the commercial effectiveness of university incubation depends on adequate seed funding, efficient institutional processes, business and commercialization capabilities, intellectual property support, strong industry relationships, and market orientation. Incubation centers should therefore be assessed through both entrepreneurial and financial indicators, including investment mobilization, revenue generation, intellectual property commercialization, employment, startup sustainability, and value creation.

To realize the vision of 'Viksit Bharat 2047', Indian universities need to evolve beyond the role of knowledge providers towards becoming active participants in knowledge commercialization and wealth creation. Effective implementation of NEP 2020, supported by stronger incubation systems and university-industry partnerships, can help universities contribute more substantially to innovation-led and sustainable economic development.

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