ROLE OF NEP 2020 IN DEVELOPING TECHNOPRENEURIAL SKILLS AMONG MANAGEMENT STUDENTS: A SUSTAINABLE DEVELOPMENT PERSPECTIVE

Amarpali Ahiwale
Research Scholar
amrapaliahiwale@gmail.com

Dr. Nitin S.Bhand
AssociateProfessor,Amrutvahini Institute of Management and Business Administration, Sangamner
nit_bhand@rediffmail.com

Abstract
The National Education Policy (NEP) 2020 introduces a landmark shift in Indian higher education by prioritizing multidisciplinary study, digital fluency, and skill-centric learning to meet the demands of Industry 5.0 and global Sustainable Development Goals. This study employs a descriptive and analytical research design, utilizing primary data from MBA students to investigate how NEP 2020 components—such as experiential learning, incubation support, and digital skill enhancement—cultivate "technopreneurial" competencies like innovation, risk-taking, and sustainable business orientation. By evaluating these policy-driven reforms, the research aims to provide actionable insights for educational leaders and policymakers to strengthen a sustainable technopreneurial ecosystem that prepares students for a technology-driven global economy.

Keywords *: NEP 2020 ,Technopreneurship , Sustainable Development , Higher Education Reforms , Entrepreneurial Skills Development.*

Introduction

Academic institutions today are being redefined as the foundational architects of sustainable and resilient societies, moving well beyond their historical mandate of static knowledge dissemination. In the current epoch of Industry 5.0, the global industrial landscape is shifting from a purely efficiency-driven model to one that prioritizes the harmonious integration of human creativity, advanced digital systems, and environmental stewardship. This paradigm shift necessitates that universities evolve into sophisticated "innovation hubs" or "knowledge refineries" specifically designed to nurture future-ready technopreneurs. Technopreneurship is no longer a niche interest; it is a critical synthesis of technical mastery and entrepreneurial agency that serves as a primary driver for economic resilience. By fostering an ecosystem where scientific inquiry is balanced with market-oriented thinking, higher education institutions ensure that technological progress contributes directly to the long-term well-being of the global knowledge economy.

The National Education Policy (NEP) 2020 serves as a comprehensive and transformative blueprint for this systemic overhaul within the Indian higher education sector. It departs from the traditional, fragmented approach to learning by mandating a multidisciplinary framework that encourages the cross-pollination of ideas across science, humanities, and management. By placing a heavy emphasis on experiential pedagogy—such as "learning by doing," virtual laboratories, and industry-aligned vocational training—the policy aims to equip students with the cognitive flexibility required to navigate a volatile job market. Furthermore, the policy's focus on digital integration and institutional incubation support is designed to democratize access to innovation tools. This strategic alignment is intended to produce a new generation of creative thinkers who can design high-impact solutions for complex socio-economic and ecological challenges, thereby fulfilling the objectives of the United Nations' Sustainable Development Goals (SDGs).

Within this broader reformative context, management education carries a unique and profound responsibility to act as the bridge between technological invention and sustainable commercialization. It is tasked with the dual mission of cultivating a sophisticated technological mindset alongside a robust, ethically grounded entrepreneurial spirit. However, despite the visionary clarity of the NEP 2020 framework, a significant empirical "black box" remains regarding its actual translation into the modern classroom environment. While the policy advocates for high-level changes, there is currently a lack of rigorous, data-driven research exploring how effectively these reforms are being converted into measurable technopreneurial competencies, such as digital proficiency, risk-taking ability, and a sustainable business orientation. Identifying this gap is crucial for determining whether the policy is successfully modernizing student mindsets or if implementation is being hindered by legacy institutional structures.

Addressing these critical uncertainties, the present study is designed to critically evaluate the influence of NEP 2020 on the emergence of technopreneurial skills through the lens of sustainable development.

By scrutinizing specific policy-driven levers—including the depth of multidisciplinary curricula, the efficacy of AI-enabled digital skill-building, the impact of hands-on experiential projects, and the success of campus-based incubation centers—this research seeks to provide a diagnostic roadmap for educational stakeholders. The aim is to move beyond theoretical analysis and provide strategic insights that help institutions optimize their innovation ecosystems. Ultimately, this focus ensures that educational reforms lead to a tangible and lasting professional impact, empowering the next generation of business leaders to build enterprises that are not only technologically advanced but also socially inclusive and environmentally restorative.

Given the visionary changes introduced by NEP 2020 and its focus on fostering innovation, practical skills, and sustainable practices, there is a vital need to research how these reforms actually build technopreneurial abilities in management students. Consequently, this study has been established with the following primary goals:

Objectives of the Study :

1. To examine the level of awareness and understanding of NEP 2020 provisions among management students.
2. To analyze the impact of NEP 2020 components (multidisciplinary learning, skill-based curriculum, digital integration, and experiential learning) on the development of technopreneurial skills.
3. To assess the relationship between institutional support mechanisms (incubation centers, innovation labs, industry collaboration) and sustainable entrepreneurial orientation among students.
4. To propose strategic recommendations for strengthening technopreneurial ecosystems in higher education institutions in alignment with NEP 2020 and sustainable development goals.

Methodology

This research employs a descriptive and analytical framework based on secondary data to evaluate how NEP 2020 fosters technopreneurial competencies in management education through a sustainability lens. Information was gathered from authoritative government sources, including the official National Education Policy (2020) text and reports from the Ministry of Education, AICTE, UGC, and NITI Aayog. To maintain academic rigor and contemporary relevance, the study also incorporates peer-reviewed journals, conference papers, and institutional research published between 2020 and 2025.

The methodology utilized a systematic literature review, targeting specific themes such as technopreneurship, higher education reform, and digital transformation. By applying content and thematic analysis to the collected literature, the study identifies critical patterns in multidisciplinary learning, innovation ecosystems, and sustainable business orientations. Ultimately, the findings provide an interpretive analysis intended to offer conceptual depth and actionable policy recommendations for enhancing technopreneurial growth within higher education.

Literature Review

Shukla et al. (2021) , examines the various obstacles and facilitators—including mentorship, financial resources, and physical infrastructure—that impact the promotion of entrepreneurship within Indian higher education. The research specifically highlights the pedagogical shifts that occurred following the pandemic, providing empirical evidence for the necessity of institutional support systems like business incubators.

NITI Aayog (2022) emphasizes that India's transition to a high-growth economy is contingent upon the strength of its "Triple Helix" model—the strategic collaboration between academia, industry, and government. The report highlights that while India has made significant strides in startup rankings, higher education institutions (HEIs) must evolve beyond traditional teaching to become centers of **research commercialization**. By establishing Atal Incubation Centres (AICs) and strengthening Technology Transfer Offices (TTOs), universities are urged to bridge the "lab-to-market" gap. NITI Aayog advocates for a decentralized innovation approach, where regional institutions act as local catalysts, providing students with the funding access, mentorship, and infrastructure necessary to convert academic projects into scalable, sustainable technopreneurial ventures.

In 2021, the University Grants Commission (UGC) established a pivotal framework for the institutionalization of entrepreneurship by introducing formal guidelines for Innovation and Startup Policy within Higher Education Institutions (HEIs). This policy mandates that universities move beyond traditional pedagogy to create a robust innovation-led ecosystem through the establishment of dedicated incubation centers, innovation labs, and strategic industry partnerships. A core feature of these guidelines is the introduction of academic and professional flexibility, allowing students to earn credits for startup activities and providing faculty with incentives to engage in research commercialization. By streamlining intellectual property management and providing structured

mentorship, the UGC aims to bridge the gap between academic research and market-ready ventures, ensuring that the transformative vision of NEP 2020 is supported by the practical institutional mechanisms necessary for sustainable technopreneurial development.

Lukose (2023) ,provides an early analysis of NEP 2020 within the Indian context, documenting initial institutional efforts to launch vocational and skill-focused programs. The study explores the practical difficulties of policy implementation, directly connecting the specific provisions of the NEP to active skill-building initiatives on the ground**.**

World Bank (2023) highlights that the integration of technology-enabled learning is no longer optional but a central requirement for national economic resilience. The report underscores that digital transformation in universities does more than just modernize the classroom; it builds the essential digital skills, cognitive adaptability, and innovation capabilities that students need to lead in a knowledge-driven economy. By leveraging "digital public infrastructure" and hybrid learning models, institutions can effectively bridge the skills gap, empowering a new generation of entrepreneurs to use data, AI, and digital platforms to drive sustainable growth and solve complex global challenges**.**

Hashim (2024), discusses the strategic shifts required in higher education to meet the demands of Industry 5.0, emphasizing the importance of human-centric innovation and stronger R&D partnerships between universities and the private sector. The author argues that academic curricula must be intentionally designed to foster the specific technological and social skills central to modern industry.

Syed (2024), focuses on the role of digital entrepreneurship education, specifically investigating how tools like collaborative platforms and digital simulations enhance the way entrepreneurship is taught. The study provides concrete evidence on the effectiveness of digital interventions, which aligns with the digital integration goals outlined in the NEP 2020.

Anubhav (2024) ,applies big-data analytics in a technology-driven systematic review to synthesize current literature on entrepreneurship education. By highlighting gaps in how outcomes are measured and how pedagogy is designed, the study provides a strong methodological justification for using secondary data to define educational success**.**

IJHSSM special paper (2024), explores the specific opportunities and structural challenges presented by the NEP 2020 for entrepreneurial learning. The paper contends that the policy's flexible credit and curricular systems allow entrepreneurship to be integrated into various academic fields, providing a policy-level foundation for modernizing management education.

African Journal Sustainability paper (2024), analyzes how the digital revolution, involving technologies like AI and blockchain, empowers new business owners to adopt environmentally conscious models. This research helps bridge the conceptual gap between technical digital proficiency and a commitment to sustainable business practices.

Udeozor (2025) ,presents empirical findings on pedagogical designs in developing economies, suggesting that a blended approach—combining experiential projects with professional mentorship—significantly increases both entrepreneurial intentions and actual startup success. This supports the link between hands-on learning and successful technopreneurial outcomes.

Lopes (2025), investigates how individual personality and attitudes toward innovation influence digital entrepreneurship, identifying digital competence as the key factor that translates training into actual entrepreneurial behavior. This helps operationalize "digital competence" as a core component of the modern technopreneurial framework**.**

"Technopreneurial Emergence" Case Study, NIT Jamshedpur (2025), provides a real-world look at how an institution uses specialized labs and incubation centers to nurture new technopreneurs. This case study serves as a practical example of how high-level educational theories are converted into successful interventions and measurable student outcomes.

All Research (2025), offers a theoretical exploration of how NEP 2020 aligns academic institutions with national innovation and industry goals. The study highlights specific policy levers, such as the "Professors of Practice" initiative and flexible curricula, as essential tools for turning policy vision into a functional innovation ecosystem.

Udeozor (2025), the research highlights that while mandatory entrepreneurship courses often have a limited impact on their own, the integration of **experiential pedagogy** acts as a powerful catalyst for student success. The study identifies that out-of-class experiences, active mentorship, and project-based education significantly boost students' "intention to innovate" and their actual engagement with startups, particularly within the resource-constrained environments of developing economies. By bridging the gap between theory and practice through engaged faculty and hands-on

projects, these pedagogical designs enhance a student's perceived behavioural control, making the transition from student to technopreneur more attainable and sustainable.

Recent academic discourse from 2021 to 2025 confirms that NEP 2020 identifies multidisciplinary study, hands-on experiential learning, and the digital transformation of classrooms as the primary catalysts for building technological and entrepreneurial expertise. Existing research reinforces the idea that there is a strong, positive link between these policy-driven skill reforms, robust incubation resources, and a student's overall entrepreneurial mindset. Drawing upon these established theoretical frameworks and empirical data, the study proposes the following hypotheses to test these relationships:

1. Skill-based and multidisciplinary reforms under NEP 2020 positively influence the development of technopreneurial skills among management students.
2. Digital integration and technology-enabled learning significantly enhance students' innovation capability and digital competence.
3. Experiential learning practices (internships, live projects, incubation exposure) positively impact sustainable entrepreneurial orientation.
4. Institutional support mechanisms (innovation labs, incubation centers, industry collaboration) strengthen technopreneurial development in higher education institutions.

Findings and Discussion

A systematic evaluation of scholarly research spanning 2021 to 2025 demonstrates that NEP 2020 serves as an exhaustive policy blueprint designed to pivot higher education toward a multidisciplinary, vocationally-rich, and innovation-centric ecosystem. The prevailing literature suggests that the policy's mandate for curricular flexibility and the mainstreaming of vocational training directly amplifies students' creative problem-solving and analytical reasoning—attributes that form the bedrock of technopreneurial growth. Research consistently underscores that this multidisciplinary approach enables management students to synthesize technological advancements with commercial strategies, thereby significantly bolstering their overall capacity for innovation.

A secondary but equally vital theme identified in the literature is the profound impact of digital transformation within the academic sphere. Scholars emphasize that the adoption of AI-driven platforms, virtual laboratories, and hybrid pedagogical models significantly elevates digital literacy and technological resilience among the student body. Given that technopreneurship is fundamentally rooted in technological application, this digital fluency serves as an indispensable foundational skill. Empirical evidence suggests that students immersed in these digitally-rich environments exhibit a heightened sense of entrepreneurial intent, superior opportunity recognition, and a more pronounced inclination toward innovative thought processes.

Furthermore, the review highlights that experiential learning methodologies—including immersive internships, startup simulations, hackathons, and structured incubation programs—exert a direct and favorable influence on the evolution of an entrepreneurial mindset. Institutions that have successfully integrated formal incubation policies and professional mentorship report markedly higher levels of student participation in venture-related activities. This hands-on exposure is critical for bridging the pervasive divide between abstract theoretical concepts and the practical execution required for the creation of sustainable business ventures.

The literature also identifies institutional support structures as a decisive factor in the success of technopreneurial development. The presence of dedicated innovation labs, access to seed funding, and strategic alliances with industry leaders create a fertile environment for entrepreneurial success. Conversely, researchers point to significant systemic hurdles, such as the disproportionate distribution of resources, a deficit in specialized faculty training for innovation-led teaching, and infrastructural weaknesses in rural centers. These disparities pose a threat to the equitable achievement of the NEP 2020's broader objectives across the nation.

From the standpoint of environmental and social governance, the findings indicate that the alignment of NEP 2020 with the United Nations' Sustainable Development Goals (SDGs) is fostering a new wave of socially responsible entrepreneurship. There is a clear upward trend showing that students educated under sustainability-focused curricula exhibit a deeper ethical business orientation and heightened environmental consciousness. Consequently, the technopreneurial framework established by NEP 2020 is evolving beyond mere profit-seeking to prioritize sustainable and inclusive growth. Ultimately, while the conceptual strength of the policy is evident, the actual degree of its impact remains contingent upon rigorous institutional execution, the availability of necessary resources, and robust mechanisms for monitoring policy adherence.

Conclusion

This research underscores the pivotal role of the National Education Policy (NEP) 2020 as a comprehensive structural and conceptual framework for fostering technopreneurial expertise in management education. By championing multidisciplinary learning, digital fluency, and experiential pedagogy, the policy directly addresses the evolving requirements of an Industry 5.0-driven and sustainability-oriented global economy. The synthesis of recent literature (2021–2025) reveals that these reformative pillars—ranging from flexible credit systems to institutional incubation support—collectively cultivate the "technopreneurial" competencies of innovation, risk-taking, and digital mastery necessary for modern business leadership.

A primary finding of this review is that multidisciplinary and skill-centric reforms effectively bridge the gap between theoretical knowledge and practical application, thereby enhancing students' creative problem-solving and opportunity recognition. Digital transformation initiatives, including AI-enabled platforms and virtual laboratories, act as critical enablers of technological competence, while experiential mechanisms like startup simulations and industry-led mentorships significantly bolster entrepreneurial intent. Furthermore, the establishment of innovation hubs and accessible funding models provides the essential "safety net" and resource base required to translate student ideation into viable, sustainable ventures aligned with the United Nations' Sustainable Development Goals (SDGs).

Despite these advancements, the study identifies critical systemic hurdles that threaten the uniform realization of the NEP 2020 vision. Significant disparities in infrastructural readiness, a deficit in specialized faculty training for innovation-led teaching, and unequal resource distribution—particularly in rural and underfunded institutions—remain major bottlenecks. The consensus among scholars is that while the policy provides a progressive roadmap, its ultimate success is contingent upon the quality of institutional execution, robust capacity-building for educators, and a transparent monitoring system to ensure that these transformative provisions reach every learner.

In conclusion, NEP 2020 possesses the transformative potential to convert higher education institutions into dynamic innovation ecosystems that contribute to both national economic growth and global sustainability. For management education to fully harness this potential, a shift from rote learning to a culture of inquiry and hands-on venture creation is essential. If academic leaders and policymakers successfully operationalize these reforms through deep industry-academia collaboration and equitable infrastructure development, the policy will serve as a definitive catalyst for a new generation of sustainable technopreneurs who balance profit with social and ecological health.

References

1. Ministry of Education. (2020). *National Education Policy 2020*. Government of India. https://www.education.gov.in
2. University Grants Commission. (2021). *Guidelines on innovation and startup policy for higher education institutions*. Government of India.
3. Shukla, S., Mishra, P., & Singh, R. (2021). Promoting entrepreneurship in Indian higher education institutions: Opportunities and challenges. *IOSR Journal of Business and Management, 25*(8), 11–16.
4. NITI Aayog. (2022). *Innovation and entrepreneurship ecosystem in India: Policy perspectives*. Government of India.
5. Lukose, R. (2023). A study on the role of NEP 2020 in skill development of students in higher education. *Amity International Journal of Teacher Education, 9*(1), 85–94.
6. World Bank. (2023). *Digital transformation in higher education and skills development*. World Bank Publications.
7. Anubhav, A. (2024). Technology-enabled systematic review of entrepreneurship education research: Trends and future directions. *The International Journal of Management Education, 22*(1), 100845.
8. Hashim, M. A. (2024). Industry 5.0 and higher education transformation: Implications for innovation and human-centric development. *Sustainable Futures, 7*, 100203.
9. Syed, N. (2024). Digital entrepreneurship education and student innovation capability: Evidence from higher education institutions. *Cogent Education, 11*(1), 2409472.
10. Lopes, J., & Ferreira, M. (2025). Digital competence and entrepreneurial behavior in higher education: The mediating role of innovation attitude. *Journal of Innovation and Entrepreneurship, 14*(2), 45–60.
11. Udeozor, C. (2025). Pedagogical innovations in entrepreneurship education: Impact on entrepreneurial intention in developing economies. *Entrepreneurship Education, 8*(1), 1–18.