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Bridging Knowledge and Innovation: Strengthening Entrepreneurship Literacy for Sustainable Growth in India: A Roadmap for "Viksit Bharat 2047"

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Abstract

India stands at a pivotal juncture in its entrepreneurial journey, where a rapidly expanding startup ecosystem coexists with growing concerns around innovation stagnation, overrepresentation of service-sector ventures, and a lack of sustainability-driven, tech-based startups. Despite progressive initiatives like Startup India and the National Education Policy (NEP) 2020, a disconnect persists between policy ambitions and grassroots outcomes. At the core of this challenge lies limited entrepreneurship literacy, particularly among the youth, alongside fragmented support systems and underdeveloped academia-industry-government collaboration. These structural weaknesses threaten to derail India's goal of achieving inclusive and innovation-led development aligned with the vision of "Viksit Bharat 2047." The study highlights inadequate integration of sustainability and innovation in entrepreneurship education, poor curriculum design, weak institutional implementation of national policies, and limited outreach in rural and semi-urban regions. To investigate these issues, a mixed-methods approach is adopted including academic leaders, incubator coordinators, and policymakers, along with analysis of policy documents like NEP 2020, Government reports, and global models of innovation-driven education. The findings reveal that students have limited exposure to sustainability principles, lack access to entrepreneurial mentorship, and are rarely encouraged to pursue innovation-led ventures. Regional disparities and underutilization of institutional frameworks further hinder inclusive growth. To address these challenges, the study proposes a framework to national entrepreneurship curriculum rooted in NEP 2020, emphasizing digital literacy, vocational training, and entrepreneurial thinking. It highlights the need of revitalizing the triple-helix model by enhancing coordination among academia, industry, and government. Establishing regional innovation clusters, localized incubation hubs, and structured mentorship networks will ensure deeper ecosystem penetration. Ultimately, bridging the divide between knowledge and innovation through systemic entrepreneurship literacy and inclusive policy execution is essential to empower youth, foster sustainability, and realize the vision of a technologically advanced, innovation-driven "Viksit Bharat 2047."

Keywords: Viksit Bharat, Entrepreneurship, Education, Policies

1. Introduction

Over past decades, entrepreneurship in India has undergone a significant transformation from informal, family-based business practices to a dynamic startup ecosystem backed by digital infrastructure and government policy. India has witnessed a surge in startups, making it the third-largest startup ecosystem globally, after the US and China. However, despite this expansion, the entrepreneurial landscape remains urban-centric, with innovation stagnation and limited sustainability orientation in tech-based ventures. Though the entrepreneurship development is rising as compared to global level, but it's unable to support the existing demands in the Indian business environment, despite having a large sect of young minds. Nearly 90% of Indian startups are failing within the first five years, largely due to lack of awareness, inadequate skill training, weak institutional mentorship support, and urban-centric development models. While India has made notable policy strides through initiatives like Skill India Mission 2015, Startup India 2016, Atal Innovation Mission 2016, and the New Education Policy (NEP) 2020 etc., there remains a disconnect between policy intent and grassroots execution.

The Viksit Bharat 2047 is the contemporary vision of the government towards becoming a developed nation by transforming India into a self-reliant and prosperous economy by 2047. It places entrepreneurship at its core, emphasizing grassroots innovation, digital literacy, and inclusive economic participation with a straight focus on developmental goals include social empowerment, economic growth, infrastructure development, technological upgradation and sustainability. The power of a contemporary vision lies in its core, hence strengthening entrepreneurship landscape in India is a crucial step towards Viksit Bharat 2047. This paper tends to analyse the stagnation and key failures of entrepreneurial development in India with a critical focus on knowledge and innovation among the community. It highlights the urgent need to realign India's entrepreneurial ecosystem with the broader goals of inclusive, tech-driven, contemporary and sustainable development by integrating academia-industry-government linkages.

1.1 Current Landscape of Entrepreneurship in India

India's entrepreneurial landscape, while often celebrated for its tech prowess, is predominantly driven by service-based startups leveraging technology rather than deep innovation. Sectors like Fintech, Edtech, E-commerce, Health-tech, and Enterprise Tech collectively garnered over 77% of total startup funding in 2023, with Fintech alone attracting $3.8 billion. However, this focus on service aggregation, coupled with aggressive customer acquisition strategies and high burn rates, has contributed to an alarming startup failure rate, estimated at around 90%, with 20% failing within their first two years. High-profile struggles among former unicorns underscore a critical deficit in sustainable business models and robust corporate governance, prioritizing valuation over fundamental profitability. This trend suggests that while the volume of startups is impressive, their longevity and impact remain a significant challenge.

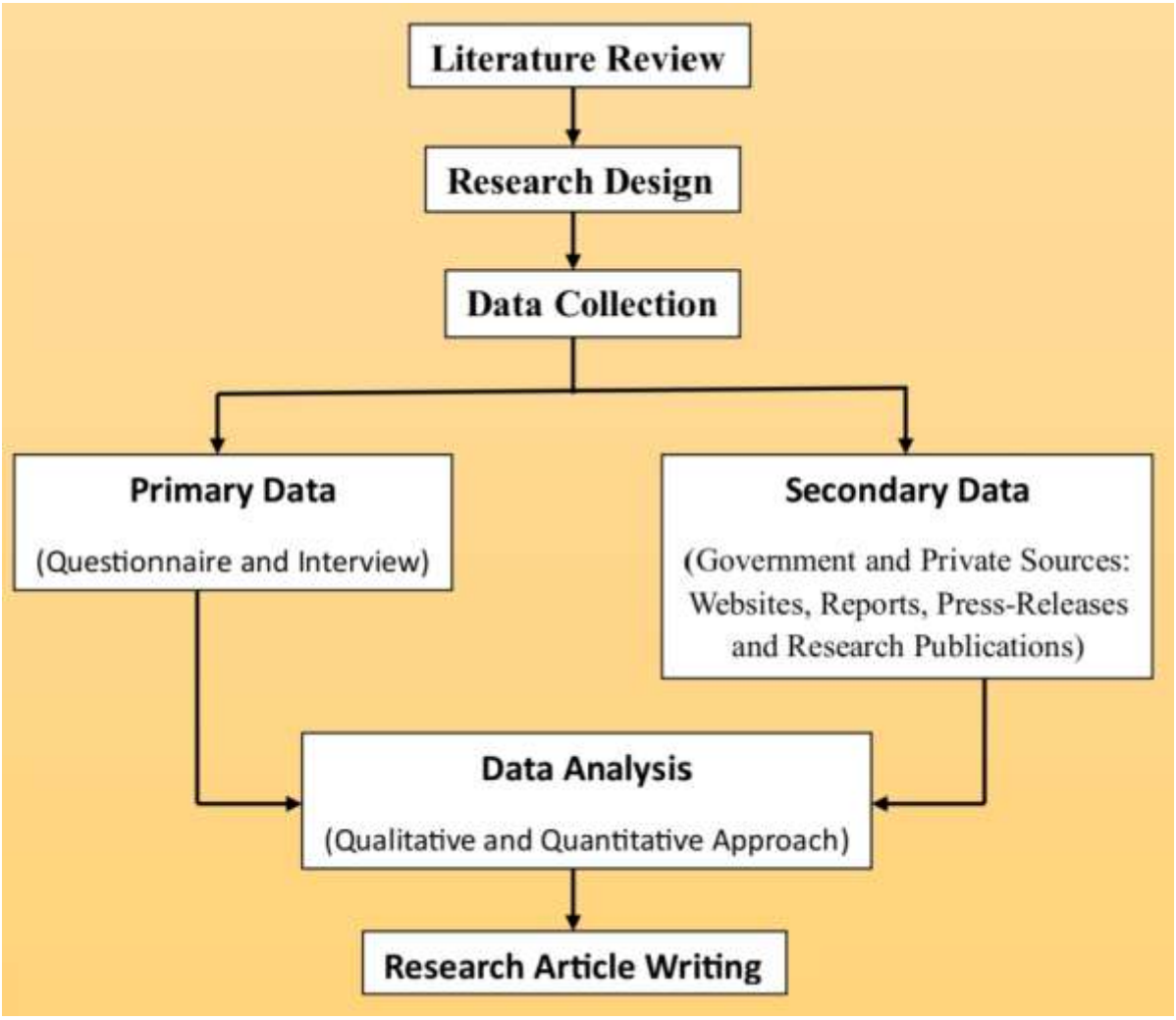
Despite a burgeoning startup ecosystem with over 159,157 DPIIT-recognized entities as of January 2025, a prevalent job-oriented and risk-averse mindset persists among a significant portion of the Indian populace. Traditional career paths in government or established corporations are still highly coveted due to perceived security. While 62% of Indian organizations are embracing risk, this doesn't always translate to individual entrepreneurial ventures. The fear of failure, limited access to financial safety nets, and insufficient business acumen deter many aspiring entrepreneurs, pushing them towards conventional employment. This highlights an essential gap in entrepreneurship development: a lack of focus on fostering a culture of calculated risk-taking and providing adequate support mechanisms, including mentorship and accessible capital, beyond metropolitan hubs. India critically needs a strategic shift

towards startups that address the fundamental challenges faced by the majority of its population. This includes neglected sectors such as agriculture (Agri-tech), manufacturing, logistics, affordable healthcare, education, and deep tech, which remain largely underserved. Key gaps include a misalignment between academic skills and industry demands, leading to a talent shortage, particularly in emerging technologies. Filling these voids requires targeted incubation programs, grassroot policy implementation, and public-private partnerships focused on skill development and localized problem-solving.

1.2 Methodology:

The methodology of the study deals with the systematic approach undertaken to address the challenges and gaps in entrepreneurship development in key areas like technology, sustainability and rural context. Through a deep literature review, potential gaps were analysed to prepare research question and objectives. This study has been drawn through qualitative and quantitative data analysis approach on primary and secondary data. After a simple random sampling, virtual primary survey has been conducted to acquire primary data. The secondary has been acquired from various government and private sources include websites, reports, press-releases and research publications. After a critical analysis and review the research findings, analysis results, and recommendations were compiled into this research article.

Figure-1: Methodological Chart



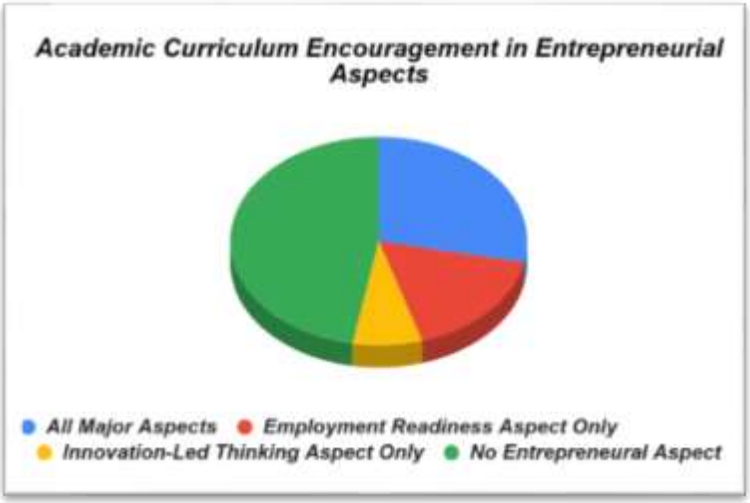
Source: Self Prepared

2. Stagnation in Tech-Based Entrepreneurship

India's startup ecosystem, once celebrated as a beacon of innovation, is now witnessing worrying signs of stagnation, particularly in the tech-based segment. While the country has seen a massive surge in the number of startups, most are service-oriented, especially in sectors like e-commerce, delivery services, and fintech. Very few tech startups are genuinely innovation-driven, aimed at solving complex community problems or offering disruptive solutions. The lack of breakthrough products in health-tech, agri-tech, clean energy, or AI-based systems underscores the growing innovation gap. About 10% of Indian startups survive beyond the early years, pointing to a systemic crisis rather than individual failure. This failure is more intensive in tech-based startups, stems from several interrelated challenges:

1. Limited Innovation Exposure: Most aspiring entrepreneurs lack exposure to advanced technologies and innovation frameworks. The curriculum remains theoretical, with minimal emphasis on hands-on application, innovation-led thinking, employment readiness, exposure and training with a critical linkage of the academic program with different entrepreneurship aspects (Figure-2).

Figure-2: Limited Innovation Exposure



Source: Primary Survey

2. Shortage of Skilled Human Capital: The acute shortage of skilled human capital is a significant bottleneck in the growth of tech-based entrepreneurship, particularly in India. Many aspiring startups struggle to find individuals with the specialized technical expertise and entrepreneurial acumen required to innovate and scale. This talent gap forces companies to either compromise on quality or spend excessively on recruitment and training, diverting crucial resources away from core product development. As a result, the pace of innovation slows, hindering the emergence of new ventures and the expansion of existing ones, ultimately contributing to stagnation in the tech ecosystem.

3. Inadequate Access to Infrastructure and Machinery: As a developing nation, India still struggles to provide startup-friendly infrastructure, especially in semi-urban and rural regions. Lack of funding for labs, machines, and incubation spaces acts as a major deterrent. This infrastructure deficit is particularly acute in Tier 2 and Tier 3 cities, which house over 51% of India's startups, yet often lack consistent high-speed internet, reliable power supply, and specialized hardware. Without these foundational elements, startups face significant hurdles in developing and testing products, hindering their ability to scale and

innovate. The absence of well-equipped incubation centres outside major metros further limits access to crucial resources and mentorship, exacerbating the challenges for aspiring tech entrepreneurs in these areas.

4. Overemphasis on the Service Economy: The Indian startup ecosystem rewards fast-scaling service models over innovation-led solutions. A cultural fear of failure and the burden of social expectations push entrepreneurs towards safer, more familiar sectors. This often leads to a disproportionate focus on building platform-based businesses and IT services, rather than "deep tech" products that require extensive R&D and longer gestation periods. While the service sector has driven significant growth, it inherently limits the development of groundbreaking, intellectual property-driven innovations that could create new industries. This preference for quick returns and lower-risk ventures stifles the emergence of deep tech startups, which are crucial for long-term technological leadership and economic diversification.

5. The Need for a Paradigm Shift: The stagnation of tech-based startups in India is not just a market anomaly but a structural and educational shortcoming. Most ventures either become commercial giants fixated on user acquisition or perish early due to weak foundations. For genuine transformation, the ecosystem must prioritize research-driven entrepreneurship**,** encourage interdisciplinary problem-solving**,** integrate financial and tech literacy into higher education**,** build robust R&D and incubation infrastructure and create a national entrepreneurship curriculum aligned with NEP 2020.

2.1 Service Based Startups Over Tech-Based

The stagnation of tech-based entrepreneurship in India is not only the result of present-day gaps but also deeply embedded in structural challenges and historical policy frameworks. As a developing country, India faces persistent pressures such as employment generation, consumer base regulation, and resource allocation, all of which impact how entrepreneurship is recognized and supported. One major bottleneck arises from the Government of India's recognition criteria for startups. To qualify for support, startups must meet specific benchmarks, often tied to revenue generation, innovation milestones, or scalability. However, tech-based startups inherently demand longer gestation periods, requiring years of research and development before producing market-ready solutions. As a result, many such ventures fail to meet early recognition thresholds and are excluded from startup schemes, funding, and incubation benefits, which are otherwise critical for survival and growth. Furthermore, policy implementation does not always differentiate between service-based and tech-based entrepreneurial models. While service startups such as food delivery, logistics, and e-commerce platforms scale rapidly and easily meet government benchmarks, technology-driven startups, particularly those in AI, robotics, clean energy, or agri-tech, often operate under high uncertainty and capital intensity. The lack of patient capital and limited institutional support leaves them vulnerable and underfunded.

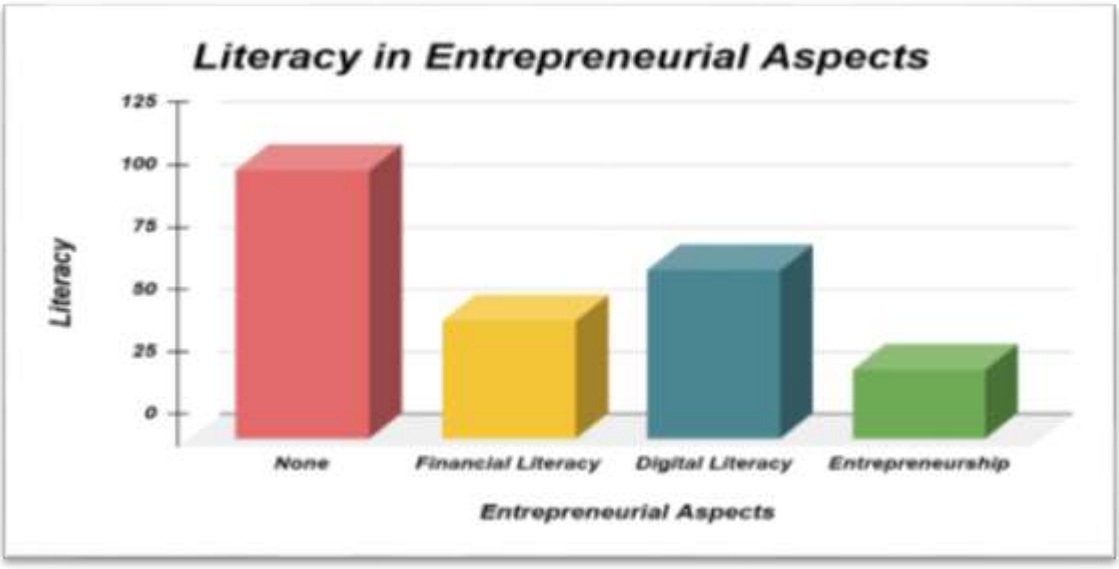
The current dominance of service-based entrepreneurship in India can be traced back to economic reforms initiated in the 1980s and consolidated through the LPG (Liberalization, Privatization, Globalization) model of 1991. The reform period was characterized by liberalization of markets, decontrol of industrial policy, deregulation of private sector activity, opening up of the economy to foreign investments. These reforms rapidly accelerated productivity, capital flow, and employment, especially in urban areas. However, a notable side-effect of these reforms was the emergence of a massive service-oriented economy. As global markets opened, the demand for English-speaking, tech-literate Indian workers surged, especially from outsourcing markets in the US and Europe. This led to the creation of BPOs, IT service hubs, and consulting firms, which offered high employment, quick revenue, and export potential.

Over time, this demand anchored India's entrepreneurial energies in the service sector, marginalizing innovation-driven tech ventures. While this shift created millions of jobs and enhanced GDP, it also created a structural imbalance, where tech-based R&D startups were seen as too slow, too costly, and too uncertain to be prioritized. This historical trajectory explains why India's startup ecosystem today is skewed towards service-based models, with very few government incentives designed specifically for deep-tech innovation. Without reorienting policies to reflect the longer gestation cycles and infrastructure needs of tech-based ventures, the current stagnation is likely to persist.

3. Entrepreneurship Literacy Among Youths

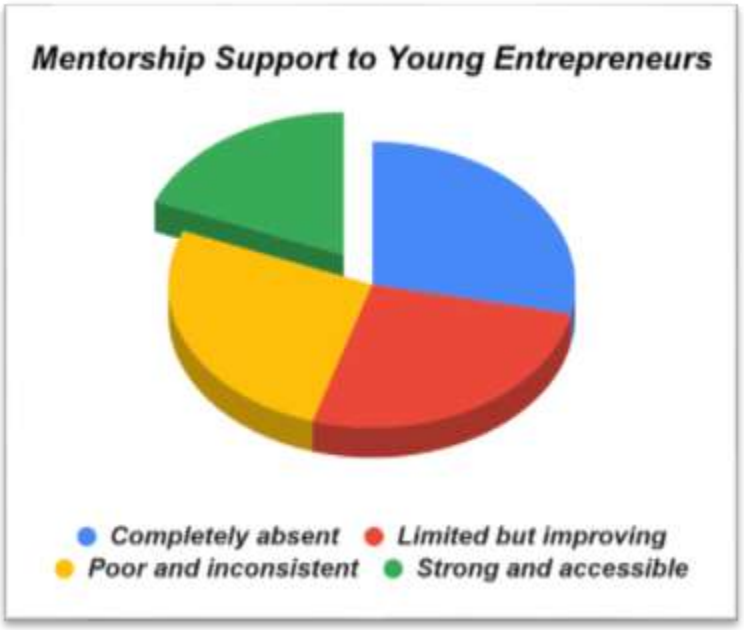
While a significant portion of India's large youth population shows a desire for self-employment, there is a notable gap in entrepreneurial literacy that hinders their success. Many young individuals, despite having the aptitude, lack crucial skills in areas like financial, digital, and business management. For instance, a considerable number of young people, though familiar with digital banking, often lack a basic understanding of financial concepts such as budgeting, saving, and investing. This lack of financial knowledge, coupled with limited access to capital and mentorship, contributes to a high rate of business failure among young entrepreneurs. Approximately 65% of young people are hesitant to start a business due to a fear of failure, highlighting the need for a more comprehensive educational ecosystem that integrates practical entrepreneurial skills into the curriculum, going beyond traditional academic and vocational training. Literacy in terms of entrepreneurial aspects is still absent among the youths. Though a large sect is acquiring and moving towards digital literacy followed by financial but without entrepreneurship and business management literacy, digital and financial skills can't contribute much to Viksit Bharat 2047 (Figure-3). Mentorship programs are also a vital component of enhancing literacy and innovation among youths with a perfect blend of motivation, determination, and leadership, but they are completely absent, poor, and limited in many regions, causing a significant disconnect between aspiring entrepreneurs and experienced professionals. This lack of guidance prevents young individuals from learning critical real-world skills, understanding industry nuances, and building the necessary networks to succeed, further stifling the growth of a robust and innovative startup ecosystem (Figure-4).

Figure-3: Literacy Among Youths in Entrepreneurial Aspects



Source: Primary Survey

Figure-4: Mentorship Support to Young Entrepreneurs



Source: Primary Survey

3.1 Low Entrepreneurship Literacy: A Significant Barrier to Sustainability-focused Tech Startups

Low entrepreneurship literacy among Indian youth creates a significant barrier to the development of sustainability-focused tech startups, thereby widening the nation's innovation gap. While there is a growing awareness of environmental and social issues, the lack of crucial entrepreneurial skills prevents many young innovators from translating their ideas into viable and scalable businesses. This deficiency in areas such as financial planning, market analysis, and digital business models means that promising eco-friendly or social impact solutions often fail to attract funding or achieve market traction. For example, while India's climate tech ecosystem is growing, with over 800 startups, only a small fraction of them have successfully raised capital, highlighting a major challenge in bridging the gap between innovative ideas and business execution. Some of the major causes of low entrepreneurship literacy as a barrier sustainability focused tech startups are listed below.

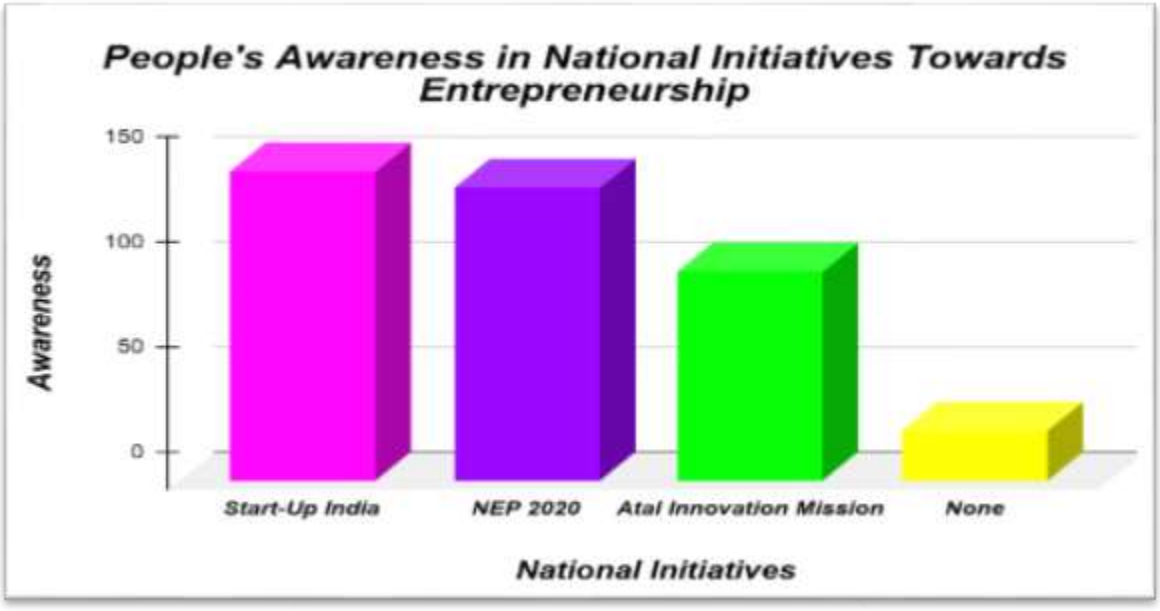
1. **Absence of Viable Business Models:** A key aspect of entrepreneurship literacy is the ability to create a sound business model. Without this, even the most innovative sustainability-focused ideas such as those in renewable energy, waste management, or green mobility struggle to prove their financial viability. Young entrepreneurs may focus solely on the technical solution without understanding the market dynamics, customer acquisition costs, or long-term revenue streams, making their ventures unattractive to investors.
2. **Limited Access to Green Finance:** Financial literacy is crucial for securing funding. Young entrepreneurs often lack the knowledge to navigate the complex world of green finance, which includes understanding specialized loans, grants, and impact investment criteria. This knowledge gap means they are unable to effectively pitch their startups to investors who specifically seek ventures with a clear path to both environmental impact and financial returns, thereby limiting the growth of sustainable startups.

3. **Innovation Gap in Key Sectors:** The innovation gap is particularly evident in sectors that require a blend of technical knowledge and entrepreneurial acumen. For instance, while India has a high concentration of climate tech startups in the transport and mobility sectors, a lack of broader entrepreneurial skills can hinder their ability to address fundamental challenges like scaling up manufacturing, building robust supply chains, or creating effective digital platforms. This results in a market with many small, localized solutions but few that achieve large-scale impact.
4. **Fear of Failure and Risk Aversion:** A lack of entrepreneurial education, which includes practical training in risk management and resilience, contributes to a widespread fear of failure. This is a significant deterrent for young people to pursue their own ventures. While Indian youth show high levels of innovation, a study revealed that nearly 65% do not pursue business ideas due to a fear of failure. This risk aversion is a major factor preventing them from exploring new, unproven business models in critical but challenging areas like sustainable technology.

4. Effectiveness of Current Entrepreneurship Programs and Policies

To evaluate the effectiveness of current programs and policies aimed at fostering entrepreneurship and innovation, public awareness serves as a critical indicator. Often, it is observed that while the government may roll out various initiatives, a large section of the population especially in rural areas remains unaware of them, limiting their overall impact. The rural demographic, which constitutes the core landscape of the Indian economy, needs to be adequately informed and engaged to truly benefit from and contribute to national developmental goals. Though the national initiatives towards entrepreneurship like Startup India, Atal Innovation Mission, NEP 2020 and Skill India are key supporters to Viksit Bharat 2047, their awareness remains inconsistent among the community (Figure-5). Being most recognized initiative among community, Startup India fails to connect and draw larger youth into entrepreneurship followed by Atal Innovation Mission, NEP 2020 etc. This indicates a disconnect between policy creation and policy communication, especially in semi-urban and rural areas where access to information remains limited.

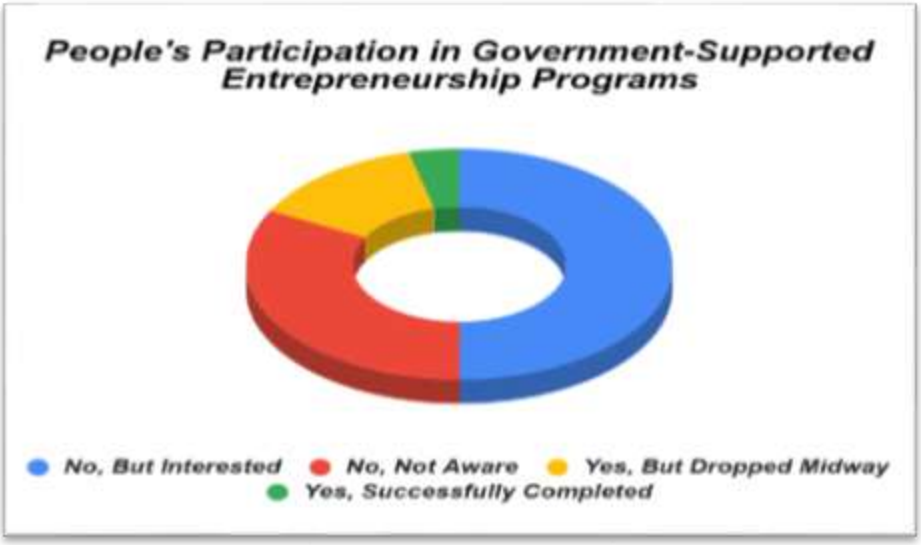
Figure-5: Community Awareness in National Initiatives towards Entrepreneurship



Source: Primary Survey

The participation of the community in government supported entrepreneurship programs is still low. A large sect of population is still unaware of such programs and remaining did not get sufficient support and chance of participation. Even, some left the programs in the midway, shows ineffectiveness of the running programs that are unable to draw the interest and sense of belonging of participants into entrepreneurship. Only a small sect of population left with the full program completion with distorted motivation because programs failed to support them further in further terms, limits the applicability of these programs (Figure-6). While many initiatives aim to foster entrepreneurial activity and economic growth, their impact can vary significantly depending on design, implementation, and the specific economic context. Generally, successful programs often focus on a multi-faceted approach, including skill development, access to finance, mentorship, and creating a supportive ecosystem. However, challenges persist, such as difficulty in accurately measuring causality, ensuring policies are adaptable to different contexts (developed vs. developing economies), and overcoming bureaucratic hurdles. There is a continuous need for robust evaluation and refinement to ensure these initiatives genuinely drive innovation, job creation, and sustainable economic development.

Figure-6: Participation in Government Supported Entrepreneurship Programs



Source: Primary Survey

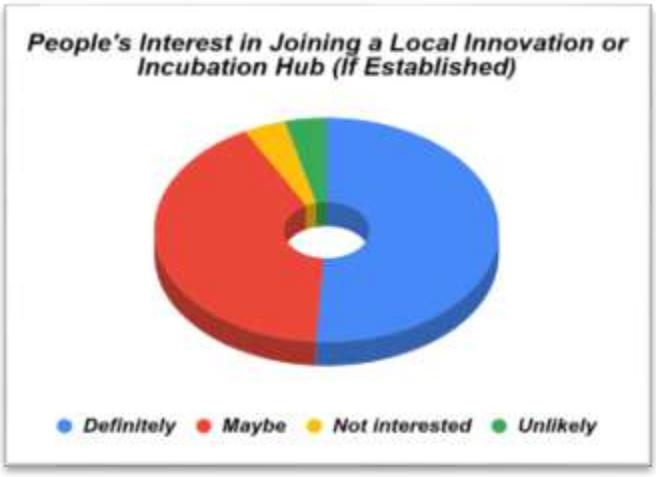
4.1 Strategies for Enhancement Entrepreneurship Programs and Policies

Enhancing entrepreneurship programs and policies requires a holistic and adaptive approach, focusing on creating a robust ecosystem that supports entrepreneurs at every stage. Below mentioned key steps that can enhance effectiveness of existing entrepreneurship programs and policies.

1. **Foster an Entrepreneurial Mindset and Culture:** It's crucial to embed entrepreneurial thinking from an early age by integrating it into educational curricula, from schools to universities. This involves teaching creativity, problem-solving, and a healthy approach to risk-taking. Public awareness campaigns can further cultivate this mindset by showcasing successful entrepreneurs and making entrepreneurship an attractive career path. Additionally, robust mentorship programs are vital for connecting aspiring and early-stage entrepreneurs with seasoned business leaders who can provide guidance and support.

2. **Improve Access to Diverse Funding Sources:** A significant challenge for entrepreneurs is securing capital. Policies should aim to facilitate access to a wide range of funding instruments, including angel investments, venture capital, government grants, micro-loans, and crowdfunding platforms. These options should be tailored to suit different stages of business development. Furthermore, creating incentives for private investment in nascent startups, such as tax breaks or co-investment schemes, can stimulate the flow of seed capital. Equally important is equipping entrepreneurs with essential financial literacy skills, covering budgeting, forecasting, and understanding various funding avenues.
3. **Streamline Regulatory Frameworks and Reduce Bureaucracy:** To ease the burden on new businesses, governments should simplify and digitize processes for business registration, licensing, and compliance. This includes implementing single-window clearance systems and developing comprehensive digital platforms. A supportive legal framework is also essential, encompassing clear guidelines for intellectual property rights, efficient contract enforcement, and simplified procedures for business dissolution, such as "fast track firm" designations for winding up operations. Moreover, policy coordination across different government levels is crucial to avoid conflicting regulations and unnecessary administrative hurdles.
4. **Enhance Skill Development and Experiential Learning:** Entrepreneurship programs should be designed to cater to the specific needs of various entrepreneurial groups, whether they are focused on short-term income generation, micro-enterprises, or high-growth ventures. The emphasis should be on practical, hands-on learning experiences, including simulations and "learning-by-doing" methodologies, rather than solely theoretical instruction. Providing training and resources for digital skills is also critical, enabling entrepreneurs to effectively utilize online tools and services for business growth. Beyond technical skills, developing soft skills like leadership, effective communication, resilience, adaptability, and negotiation is paramount for navigating the complexities of the entrepreneurial journey.
5. **Build a Strong Support Network and Ecosystem:** A thriving entrepreneurial ecosystem relies on strong partnerships between various stakeholders, including government agencies, private sector entities, universities, business incubators, accelerators, and industry associations. Regular networking events, industry-specific conferences, and innovation forums are essential for fostering connections among entrepreneurs, investors, and experts. Supporting the development and expansion of high-quality business incubators and accelerators is also key, as they provide vital resources, mentorship, and a conducive environment for startups to flourish. It is clearly evident that a large sect of population is ready to join local innovation and incubation hubs if established in their regions (Figure-7). Additionally, creating "one-stop shops" and online portals that offer easy access to relevant information, resources, and policy updates can significantly benefit entrepreneurs.

Figure-7: Community Interest Towards Innovation and Incubation Hubs



Source: Primary Survey

6. **Promote Innovation and Technology Adoption:** Governments should actively encourage innovation by investing in research and development initiatives and offering incentives for the commercialization of new technologies. Facilitating the transfer of technology from research institutions to the private sector can accelerate the adoption of cutting-edge solutions. Ensuring widespread access to reliable and high-speed internet connectivity and digital tools is also fundamental for fostering a technologically advanced entrepreneurial landscape.
7. **Implement Robust Monitoring and Evaluation:** To ensure the effectiveness of entrepreneurship programs and policies, it is crucial to establish strong monitoring and evaluation mechanisms. These systems should systematically assess the impact of various initiatives. The data and feedback gathered from these assessments should then be used to continuously refine and adapt programs and policies, maximizing their positive influence on the entrepreneurial ecosystem.

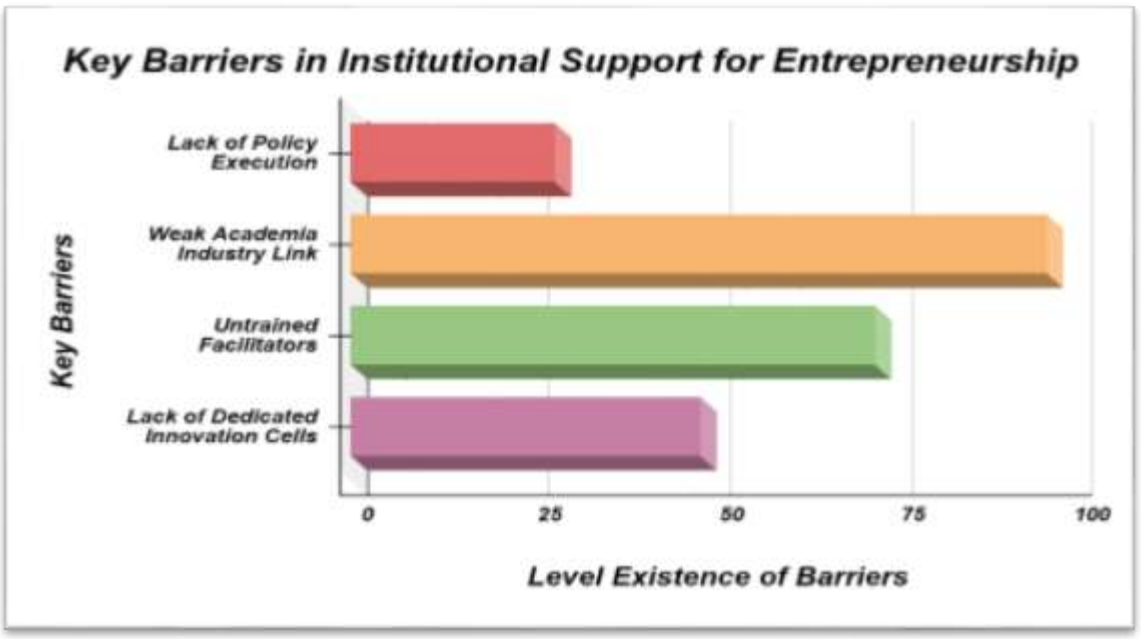
5. Tripple Helix Model (Academia-Industry-Government Linkages)

The Triple Helix Model emphasizing collaboration among academia, industry, and government, offers a strategic solution to India's startup stagnation. India's entrepreneurial potential is being stifled by policy incoherence and lack of institutional integration. The Triple Helix framework advocates the establishment of joint mentorship, training, and innovation centres that bridge academic learning with industry needs and government policy. Developed Countries' startup success is built on a synergy between government policy, corporate action, and university-based research, India however, lacks such integration. The existing curriculum is often theoretical and outdated, with minimal focus on skill development, innovation, or real-world problem-solving. India's entrepreneurial framework suffers especially due to weak academia, industrial engagements, poor technical training infrastructure, lack of institutional incentives for innovation and policy integration (Figure-9). This shows the failure of triple helix model i.e., academia-industry-government linkages in India.

Figure-8: Tripple Helix Model

Source: Self Prepared

Figure-9: Barriers in Tripple Helix Model



Source: Primary Survey

By aligning the distinct strengths of universities (knowledge creation), industries (commercialization and market insight), and government (policy and infrastructure), India can unlock its full entrepreneurial potential, leading to sustained economic growth, job creation, and societal advancements.

1. **Establish Sector-Specific Innovation Hubs with Trilateral Governance:** Instead of generic incubation centres, create specialized local innovation and incubation hubs focused on critical sectors like AI, advanced manufacturing, renewable energy, or biotech. These hubs should have a governing body comprising representatives from leading academic institutions, key industry players in that sector, and relevant government bodies (e.g., ministries, NITI Aayog). This trilateral governance ensures that research agendas are market-driven, industry gets access to cutting-edge talent and infrastructure, and government policies are informed by ground realities, leading to a truly systematic and focused approach to innovation and entrepreneurship.
2. **Implement Outcome-Oriented Research Funding Mechanisms:** Government funding for academic research should increasingly be tied to clear, measurable outcomes that have potential for commercialization or societal impact. This can involve co-funding models where industry partners contribute to research projects, ensuring direct relevance to market needs. Incentives could include grants for joint university-industry research projects, seed funding for spin-offs from academic research, and performance-based funding where successful commercialization or patenting leads to additional grants for the academic institution. This shifts the focus from purely theoretical research to applied innovation.
3. **Mandate and Incentivize Faculty and Student Entrepreneurship:** Encourage universities to create clear pathways and provide support for faculty and students to translate their research into startups. This involves establishing well-defined intellectual property (IP) policies that reward creators, offering entrepreneurial sabbaticals for faculty, and integrating entrepreneurship as a viable career option into academic programs. Universities should provide incubation facilities, legal and financial advisory services, and direct mentorship from successful entrepreneurs to help these ventures navigate the early stages. This would foster a culture where innovation is not just published but also commercialized.
4. **Create National Platforms for Industry-Academia-Government Linkages:** Develop centralized digital platforms or physical "innovation marketplaces" that facilitate connections between the three helices. These platforms can host databases of academic research expertise, industry challenges, government policy updates, and available funding opportunities. Regular structured events like industry-academia interaction summits, hackathons addressing real-world problems, and policy dialogue forums would provide avenues for collaborative problem-solving and knowledge exchange, ensuring continuous feedback loops and alignment of objectives.
5. **Develop a Robust Mentorship Ecosystem with Cross-Sectoral Participation:** Beyond traditional mentorship, establish a comprehensive national mentorship program where experienced professionals from industry, senior government officials with policy expertise, and seasoned academics from relevant fields commit to guiding budding entrepreneurs. This mentorship should be systematic, potentially involving a structured curriculum, regular check-ins, and clear milestones. Incentives for mentors could include recognition, networking opportunities, or even small honorariums. This would provide entrepreneurs with diverse perspectives and practical guidance across technology, business, and regulatory aspects.
6. **Standardize and Simplify Technology Transfer Mechanisms:** Often, the transfer of technology from academia to industry is hampered by complex legal and administrative procedures. India needs to standardize and simplify technology transfer agreements, intellectual property licensing, and collaboration frameworks between universities and industries. This could involve creating national guidelines or templates, providing dedicated legal support cells within universities, and establishing

dispute resolution mechanisms. Such simplification would reduce transaction costs and time, making it easier for research to move from labs to markets.

6. Entrepreneurship in Rural and Undeserved Regions

The exclusion of rural India from mainstream entrepreneurial frameworks is a critical factor contributing to the stagnation of tech-based startups in the country. Most government initiatives and private investments remain urban-centric, thereby neglecting rural innovation ecosystems. This disproportionate focus has led to the undermining of indigenous creativity, traditional industries, and agri-tech potential, which are vital for sustainable, inclusive development. The negligence of rural innovation often results in premature and unsustainable tech ventures. Many startups collapse due to the disconnect between high-tech solutions and ground realities, particularly when rural inclusion is missing. The Viksit Bharat 2047, vision towards becoming a developed nation will remain unfulfilled without addressing these geographic disparities in rural and urban regions.

6.1 Supporting Tech Driven Innovation in Rural India

Supporting tech-driven innovation in rural India is crucial for equitable growth and sustainable development, directly aligning with the vision of Viksit Bharat 2047. By leveraging technology, rural communities can overcome geographical barriers, access essential services, enhance productivity, and unlock new economic opportunities, ultimately transforming into self-reliant and prosperous units. This integration of technology, a cornerstone of the Viksit Bharat agenda, can revolutionize sectors like agriculture, healthcare, education, and finance, fostering self-reliance and improving the overall quality of life for millions. Empowering rural innovators with digital tools and infrastructure is key to transforming challenges into opportunities and building a more inclusive and developed India by its centenary of independence. Below are some key aspects of supporting tech-driven innovation in rural India, viewed through the lens of Viksit Bharat 2047.

1. **Bridging the Digital Divide:** Achieving universal digital literacy and high-speed internet access in remote areas is a fundamental goal of Viksit Bharat 2047. Initiatives like BharatNet, aiming to connect every Gram Panchayat with optical fiber, and the expansion of Common Service Centres (CSCs) are crucial for establishing the foundational digital infrastructure necessary for a developed rural India.
2. **Promoting Digital Literacy and Skilling:** This includes targeted programs to enhance digital skills among rural populations like farmers, women, and youth, ensuring they are equipped to adopt and utilize emerging technologies for economic and social empowerment.
3. **Fostering Agri-Tech Solutions for Food Security:** The vision of Viksit Bharat 2047 includes making India the "food basket of the world." This necessitates supporting innovations in precision agriculture (drones, IoT sensors, AI for crop management), digital market linkages (e-NAM), and efficient supply chain management to significantly boost agricultural productivity and farmer incomes, moving towards sustainable and high-value agriculture.
4. **Enhancing Rural Healthcare and Education through Technology:** To ensure high-quality, affordable, and comprehensive healthcare and 100% good quality school education across India by 2047, promoting telemedicine platforms, mobile health apps, and e-learning solutions is vital. These technologies can bridge the service delivery gap in remote regions, making quality services accessible to all.
5. **Enabling Rural Entrepreneurship and Financial Inclusion:** This requires promoting fintech solutions like mobile payments and digital banking for financial inclusion, and actively supporting

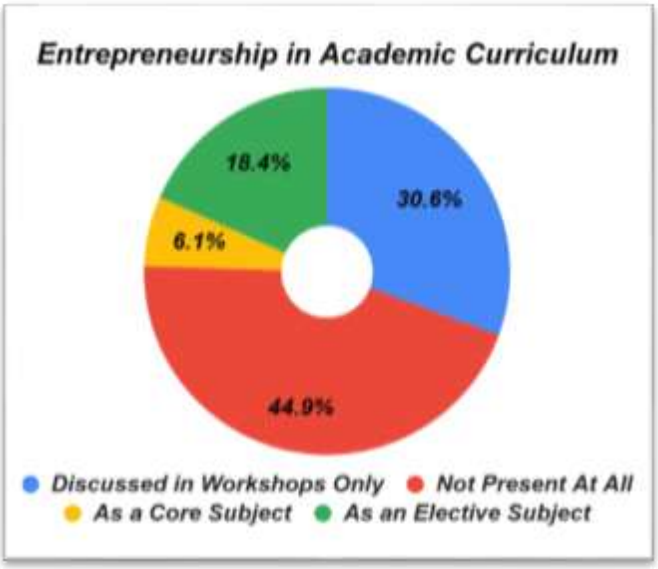
rural startups that leverage technology to address local challenges, creating employment and fostering local economic growth.

6. **Government Support, Policy Frameworks, and R&D:** The Viksit Bharat 2047 initiative calls for robust government schemes, funding mechanisms, and a supportive policy environment that incentivizes research, development, and deployment of rural-centric technologies. This includes initiatives like the Anusandhan National Research Foundation (ANRF) to strengthen India's R&D ecosystem and promote indigenous innovation, leading to technological self-reliance.

7. A Critical Analysis of NEP 2020 from the perspective of Entrepreneurship

One of the foundational issues contributing to the stagnation of tech-based entrepreneurship in India is the persistent gap in entrepreneurial literacy and curriculum planning. There is a visible disconnect between national policy goals and what is being imparted within higher education institutions. Startups often fail not merely due to funding or infrastructure deficiencies, but because youth lack core competencies such as market research, business modeling, strategic planning, and leadership skills. This educational gap represents a structural shortfall in preparing young individuals to build and sustain ventures that are both innovative and socially impactful. Several policy documents and academic studies have repeatedly stressed that entrepreneurship education must move beyond theoretical knowledge and embrace real-world problem-solving, project-based learning, and localized training. However, entrepreneurship is still treated as an optional or peripheral subject rather than a mainstream competency within academic curriculum. Though it's been five years after NEP 2020, but entrepreneurship is still absent in about 44% of academic curriculum. Effectiveness of NEP 2020 is still rising and drawing entrepreneurship into the curricula through the means of workshops followed by elective and core subjects. Entrepreneurship as an elective or a core subject is still less embedded in academics but on a rise at the same time (Figure-10).

Figure-10: Entrepreneurship in Academic Curriculum



Source: Primary Survey

This disconnect is particularly alarming because entrepreneurial literacy is not just a skill, it's a mindset. Embedding entrepreneurship principles at an early stage in education, through practical activities, market simulations, and peer learning can equip students with long-term adaptability and creative thinking. The

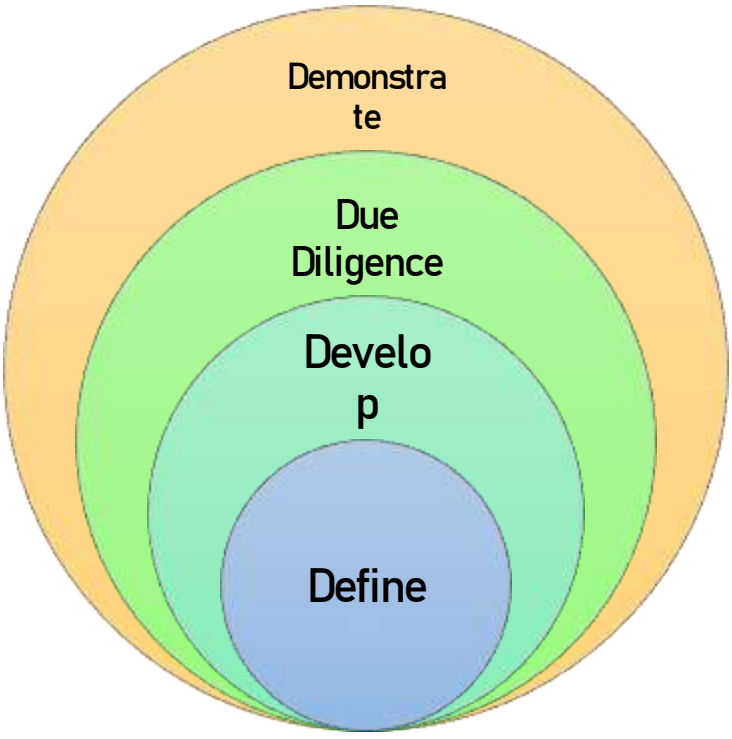
National Education Policy (NEP) 2020 does acknowledge this and lays emphasis on developing entrepreneurial competencies, yet implementation on the ground remains scattered and uneven.

7.1 4D Framework: Integrating Innovation-Friendly Curriculum

For integrating an innovation-friendly curriculum that includes both structured mentorship and exposure to real-life enterprise scenarios, one effective model is the 4D Framework. This framework aligns with a learner-cantered design model, emphasizing the development of creative potential and addressing the evolving needs of the 21st century. It is a holistic approach to designing learning experiences, encompassing four key dimensions: Define, Develop, Due Diligence and Demonstrate.

1. **Define**: Identify local challenges and needs that can be solved through entrepreneurial interventions.
2. **Develop**: Design innovative, community-rooted business models.
3. **Due Diligence**: Test the feasibility, sustainability, and ethical viability of these models.
4. **Demonstrate**: Present and iterate solutions in collaboration with industry experts and local stakeholders.

Figure-11: 4D Framework for Integrating Innovation-Friendly Curriculum



Source: Self Prepared

This 4D approach aligns seamlessly with the core objectives of NEP 2020, particularly in its focus on skill development, feedback loops, and localized, outcome-based education. Moreover, this framework promotes experiential learning, wherein students not only acquire knowledge but also apply, iterate, and demonstrate solutions within their own communities. If implemented effectively in curriculum, this framework can serve as the bedrock of a tech-entrepreneurship ecosystem that is both inclusive and sustainable empowering youth to become job creators, not just job seekers.

8. Conclusion

As India marches toward the ambitious vision of Viksit Bharat 2047, fostering a culture of entrepreneurship rooted in innovation, sustainability, and inclusivity becomes indispensable. This research identifies entrepreneurship literacy especially among youth as a foundational yet underdeveloped pillar in India's economic transformation. Despite a vibrant startup ecosystem and supportive policy frameworks, the lack of hands-on entrepreneurial education, weak academia-industry-government integration, and limited outreach in rural areas continue to stifle India's innovation potential.

Addressing this requires a strategic shift from urban-centric, service-based models to tech-driven, sustainability-focused ventures that are grounded in local realities. Embedding structured entrepreneurship education aligned with NEP 2020, revitalizing the Triple Helix Model, and building localized innovation clusters will be key to nurturing a new generation of resilient and socially conscious entrepreneurs.

Equally crucial is the empowerment of rural communities through digital access, skill development, and targeted incubation support to bridge regional disparities. By transforming entrepreneurial intent into actionable impact, and equipping young minds with the tools, networks, and mindsets necessary to innovate, India can not only elevate its startup landscape but also chart a course toward inclusive and equitable development. Ultimately, bridging knowledge with innovation is not merely an economic imperative, it is a national mission to unlock the creative potential of every citizen and ensure no one is left behind in India's journey to becoming a developed nation 'Viksit Bharat' by 2047.

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