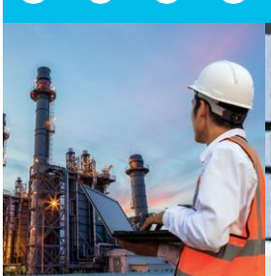
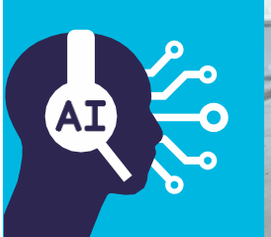
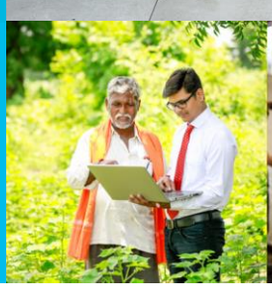
Confederation of Indian Industry

CII Report

Performance Parameters for Academic Linked Technology Business Incubators







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FOREWORD

Mr. Kris Gopalakrishnan
Chairman
CII National Startup Council

The unprecedented pandemic has triggered a continuous demand for novel technology solutions and has also revealed that going forward, disruptive business solutions will be the key for a resilient future.

India has taken the global lead by providing such disruptive and innovative solutions useful for the global community. The country has witnessed launch of more than 55,000 startups to date with more than 3,200 startups raising $63 Bn in funding in the last five and half years alone. It has also the third largest startup ecosystem in the world; expected to witness YoY growth of a consistent annual growth of 12-15%.

Given the role of academia linked Technology Business Incubators (TBIs) for entrepreneurship and its growth, CII has come up with a report to benchmark key performance indicators expected of such TBIs, and also to develop a framework with relevant key performance indicators to measure performance of academic Linked TBI's in India.

To validate the performance parameters proposed in this report, a survey was conducted seeking details from Academic Linked Incubators. The respondent incubators are from varied domains such as Engineering, Management, Life sciences, Pharmaceutical, Agritech, and Rural technology, with age profiles ranging from 1 to 15 years. The proposed parameters for the TBIs, shall provide a overview of the impact of innovations and entrepreneurial initiatives in academia.

I am confident that the report will greatly contribute to TBI's and other stakeholders in understanding their role in building strong positives for the growth of country's entrepreneurial ecosystem and its sustenance.

Report on performance of incubators

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Objective and Scope

Post the economic liberalization in 1991, India has witnessed a sharp growth in entrepreneurship as the erstwhile shackling forces of licensing, permits and controls were gradually replaced by market forces. Another driving factor was the emergence of the tertiary sector as a significant contributor to the economy by way of new services such as information technology, financial services, outsourcing, healthcare, tourism and travel, television, and entertainment. Since 2010, India's startup landscape changed significantly with an impressive growth of technology based innovative ventures. The country ranks in third position globally after the US and China in terms of number of start-ups. There has been significant growth in the number of incubators and accelerators supporting the startups. Government of India's initiatives such as 'Startup India', 'Digital India', and 'Make in India' have given an impetus to India's startup ecosystem launching it in a sustained growth path. The concept of entrepreneurship as an alternative career option has been accepted by many youngsters, and in some sections of society, almost become mainstream. Various state governments' start-up initiatives are further supporting this growth phase of start-ups in India. Department for Promotion of Industry and Internal Trade (DPIIT), Ministry of Commerce and Industry (MOCI), Government of India (GoI) specifically emphasised focus on startups in its Industrial policies. As per DPIIT sources, as on December 15, 2020, there were more than 1,17,000 entrepreneurs registered on the Startup India portal, out of which over 40,000 are recognised startups as per DPIIT's definition of startups. The number of science and technology (S&T) based startups is growing significantly year on year with increasing focus on indigenisation under the 'Atmanirbhar Bharat' mission of the Government of India.

Most government departments have their own startups programs, many of them are being implemented through Technology Business Incubators (TBIs), which predominantly operate in academic sectors. It all began in the mid-eighties when the Department of Science and Technology (DST), Government of India (GoI) set up Science and Technology Entrepreneurship Parks (STEPs) in various

academic institutes, specially in technology and engineering institutes. The main objective of the STEPs was “to forge linkages among academic and R&D institutes on one side and the industry on the other side, and also promote innovative enterprise through S&T persons”[1]. STEPs were mandated with promoting entrepreneurship among Science and Technology persons, many of whom were otherwise seeking jobs soon after their graduation, to provide R&D support to the small-scale industry mostly through interaction with research institutions, and thus to promote innovation based enterprises in academia. As the STEPs were also expected to provide technology intervention for Medium and Small Enterprises (MSMEs), they largely invested in workshops and machinery oriented physical infrastructure. By the turn of the millenium, 16-17 STEPs had been set up under this scheme.

With the evolution of technologies, the need for new formats of enablers arose to quickly turn them around into commercially viable solutions with physical and other value added supports such as market survey, marketing assistance, business planning and training, funding, and promoting new products. Thus, GoI started setting up of the TBIs in academic and R&D centres. TBIs provide a host of support and services to new enterprises (and also to existing SMEs in the region) necessary for faster growth of startups. In addition, they also facilitate an atmosphere congenial for their survival and growth of the fledgling start-ups. The essential feature of a TBI is that the incubatees (tenant companies) will have to leave the incubator space within 2-3 years.

DST has been an early adopter of the concept of TBIs[2]. The TBI program commenced in the early 2000s in India, grew rapidly in numbers and by 2016, there were 75-80 DST supported TBIs in academic and R&D institutes. The fast growth has continued since then, and the number of TBIs doubled to over 150 by 2020. Over the years, other government ministries and departments such as Ministry of Electronics and Information Technology (MeitY), Ministry of Small and Medium Enterprises (MSME), Department of Biotechnology (DBT) promoted Biotechnology Industry Research Assistance Council (BIRAC), Ministry of Defence (MoD) have come out with their own startup programs. Niti

Aayog also initiated its own startup programs under Atal Innovation Mission. The Ministry of Human Resource Development (MHRD)'s MoE Innovation Cell (MIC) released the "National Innovation and Startup Policy 2019 for Students and Faculty"[3]. Under this policy, all institutions under MHRD are required to host innovation cells on their campus. The new National Education Policy 2020 (NEP)[4] emphasises on creating awareness for innovation and entrepreneurship amongst students from an early stage. Institutions have been directed to actively engage students, faculty and staff in innovation and entrepreneurship related programs. Most state governments now have their own startup programs. Kerala, Maharashtra, Karnataka, Telangana, Gujarat, Andhra Pradesh, Rajasthan, Chhattisgarh, Goa, and Meghalaya lead the way in promoting startup ecosystems with their policies and funding programs. Various governments and government departments deeply engage with TBIs in academia for implementation of their programs. There are now more than 250 business incubators in academia. Several of them are sector specific incubators while many are located in tier 2 and 3 cities.

The early set of TBIs in the country have an experience of about two decades, while a large number of them other incubators have come up only in the last 5-6 years. CII opines that It would be useful to benchmark their performance on select parameters so that the TBIs can improve their own status by comparison. Performance ranking of Academic Linked TBIs gains even more significance with the fact that the Ministry of Education, Govt. of India initiated a process, Atal Ranking of Institutions on Innovation Achievements (ARIIA), to systematically rank all major higher educational institutions and universities in India on indicators related to "Innovation and Entrepreneurship Development" amongst students and faculties.

The objective of this report is to:

- Identify benchmark of key performance indicators expected of Academic Linked Indian TBIs.
- Develop a framework with relevant key performance indicators to measure performance of Academic Linked TBI in India

The scope of this report is limited to assessing the performance of Indian Academic Linked TBIs to make them competitive by benchmarking them against these indicators.

Methodology

The main objective of the report is to identify a set of performance parameters for Academia linked TBIs in India. It does not focus on assessment of actual performance of the incubators.

To validate the performance parameters proposed in this report, a survey was conducted seeking details from Academic Linked Incubators. About 31 incubators participated in the survey. The respondent incubators are from varied domains such as Engineering, Management, Life sciences, Pharmaceutical, Agritech, and Rural technology, with age profiles ranging from 1 to 15 years. The data collected were mapped to the proposed matrices of the performance parameters. In addition, certain data from a variety of public sources were accessed and referred to for the contextual analysis. Interviews were also conducted with the officials of various Government departments and organisations that have TBI funding programs. References and acknowledgements are listed at the end of the report.

Conceptual background: Roles of Technology Business Incubators

Technology Business Incubators are one of the key enablers in the Indian startup ecosystem. In particular, Academia inked TBIs have a natural advantage of continuous availability of research and development, robust technical infrastructure, and access to young bright minds. For a founder in the early stage of his/her venture, it is critical to focus on building a strong value proposition. A study of IBM Institute for Business Value and Oxford Economics have shown that 90 percent Indian startups fail within the first five years.[5] Considering such scenarios, a TBI can add considerable value and reduce the probability of failure for a first time founder. Incubators provide a safe testing ground to entrepreneurs while nurturing them within a transparent ecosystem with peers while also lending infrastructure support. A typical life cycle of a startup comprises two stages, viz. the formation stage and the accelerator stage. Both the stages form the foundation pillars for potential medium to large scale companies in the company operating in a sustainable and profitable manner. TBIs typically engage with startups at a very early stage of the venture, say during the initial 3 years of its existence. A typical TBI support for core business activities would include providing plug-and-play office space, mentoring, and enabling access to technical and business networks. Essentially, TBIs are expected to offer services and support, create their own ecosystem, and engage with stakeholders that would help startups in de-risking their technical and business models. Studies also show that such mechanisms help not only in the growth of technology based new enterprises but also in improving their survival rate substantially. Different studies have shown different outcomes, however it is established that the startups participating in business incubators have higher success rates (in the range of 70% to 87%)[2&6].

Support and services

A comprehensive academic linked TBI support would include the provision of tangible and intangible benefits to ventures in the take off stage of their businesses. An ideal incubation support should include the following offerings with startups availing services that are needed depending on the sector, stage of evolution and specific needs.

Infrastructure

Office space, Labs,
Common facilities, Connectivity

Networking

Investors, Bankers, Industry,
Manufacturers, Mentors, Experts

IP, Talent

Technologies, IP management,
Faculty expertise, Students &
Research Scholars

Expert Advise

Legal, Accounting, IP,
Regulatory, Finance

Funding

Grants, Seed Funding,
soft loans

Visibility & Outreach

Demo days, Events,
Media, Investors

Soft skill development

Bootcamps, Coaching,
Workshops, Trainings

The life cycle of TBIs comprises three phases viz preparatory phase, development phase and mature phase. Early stage TBIs take some time to develop their own incubation model including focus areas, facilities, network etc. In addition to the regular services, sector specific incubators such as healthcare, biotech, social impact, agritech, fintech offer customised support to meet the needs of domain specific startups. For example, healthcare specific incubators would need to build early synergies with hospitals and regulators for proving early validation for healthcare products and solutions. Agritech incubators would need to add field trials and testing capabilities for their startups.

Engagement with Network and Stakeholders

Strengths of TBIs are derived from the stakeholders they engage with to add value for startups. Startups reach out to stakeholders for various aspects of growth that their ventures need from time to time. TBIs facilitate connections of startups who otherwise find it difficult to reach out to stakeholders on their own. Some examples of access that TBIs provide to start-ups in their care are as follows:

Academia:

Academia generates S&T research that is available for commercialisation. They also provide technical and management guidance to startups, enhancing their technological strengths and managerial skills.

Government:

Governments play a pivotal role by formulating policies to ensure a conducive environment for innovations to germinate into successful startups. They also provide initial capital for incubators and often for startups via grant and seed funding programs.

Industry:

Industry connect is the key for startups to create solutions with relevant market fit. Industry is one of the key growth drivers for startups, provides validation or be an early customer of the innovations and solutions by startups, creates avenues of collaboration and other strategic opportunities. Corporates from industry also channelise their CSR funds via TBIs to start-ups.

Investors:

Investors are another key growth driver of startups. Access to angel, seed and growth capital at the right time helps startups accelerate their pace of execution.

Service providers:

Startups, depending on the stage of their ventures, need various service providers such as Designers, Manufacturers, legal, financial advisors and Subject matter Experts.

Mentors:

Startups require mentors who act as a sounding board at every stage of business. These mentors offer both technical and business support.

Trade bodies:

Besides industries, trade bodies such as CII, TiE, NASCCOM etc are pro-actively working with the policy makers and the startup ecosystem. Relationships with trade bodies can be leveraged advantageously by startups.

International collaborators:

Mature incubators facilitate global reach of startups with the help of their international collaborators

Typical offerings of TBIs at different stages:

A comprehensive academic linked TBI support would include the provision of tangible and intangible benefits to ventures in the take off stage of their businesses. An ideal incubation support should include the following offerings with startups availing services that are needed depending on the sector, stage of evolution and specific needs.

Stage of TBIs	Service Elements
Early Stage TBIs(5-7 years of existence)	The strength of the host institute acts as a catalyst. Main services include office and lab infrastructure, access to IP & talents, soft skills, faculty mentoring. Primary network includes academia, government, service providers, early stage investors.
Mature Stage TBIs (>7 years of existence)	Develop their own strengths with value added services such as access to funding, extensive business network & mentoring, experts advisory, facilitation for visibility for startups, engagement with investors & industries, trade bodies, international collaborations and partnership programs.

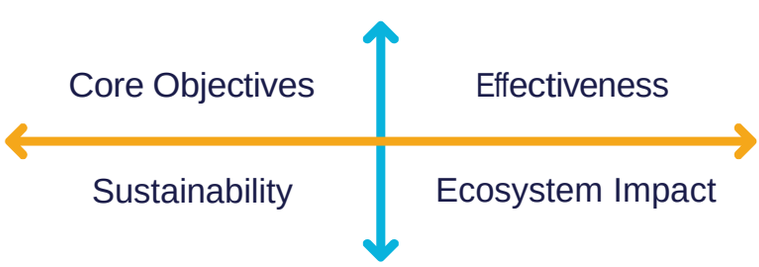
In addition, sector specific incubators offer special facilities and services needed for the specific sector.

Life-science/ Pharma / Defence etc.	Specialised equipment, animal trials facilities, specialised testing facilities, prototyping support, cleanrooms, regulatory and certification assistance, connections with doctors and hospitals, sector specific network

Performance indicators for Academic Linked TBIs: Recommendations

Studies, globally or locally in India, have emphasised the certain common aspects of performance of TBIs, namely, impact for startups, contribution towards economy and ecosystem, program attractiveness and sustainability. In India, more than 70% incubators are hosted in Academic and R&D institutes. Promoting entrepreneurship on academic campuses have been the Government's active intervention policies given that the macro level ecosystem in the country was not conducive for entrepreneurship until the early 2000s. The Central and State governments strategically invested in entrepreneurship centres closer to the knowledge centres. Effectiveness of Academia Linked TBIs largely depends on their vintage (i.e. how long have they been in existence), their profile and geographical location. Most Academia Linked TBIs in their initial years are more focussed on their core objectives of translating R&D into startup ventures or scouting for startups for incubation. They provide basic minimum support of office space or lab support and in-house mentoring by faculty experts. Their incubation ecosystem for other value added support to startups takes time to evolve. For incubators in Tier 2 and 3 cities, achieving the business scale may be a challenge, but they do make an impact by building an entrepreneurial environment and venture creation in their local geographies. Similarly, an agritech incubator in an agriculture university may not achieve success as quickly as a technology incubator in the same geography. Furthermore, startups also take 5-7 years to achieve economic success which in turn contributes to the success of the TBIs. Thus, performance parameters for Academia Linked TBIs have to be developed keeping in mind their age, local situation and heterogeneity of the TBIs. There are four fundamental aspects that all Academic Linked incubators have in common and their performance can be assessed comprehensively on those four segments:

Comprehensive Performance Evaluation of Academic Linked TBIs



These four segments makes a base for creating a framework of performance parameters for Academic Linked TBIs. The framework of parameters would also influence the Host Institutes' performance under ARIIA and NIRF rankings

Core Objectives

The life cycle of Academic Linked TBIs comprises three phases viz preparatory phase, development phase and mature phase. The foundation pillar of a TBI during initial stages requires a clear understanding of the purpose and vision, support of the host institution with requisite resources. The fuel for growth requires a dedicated and competent management and execution team, along with an enabling ecosystem from within and outside the academic community. Creating social and economic impact by exploiting technical and other resources of the academic institute form the core purpose of hosting TBIs academic and R&D institutes. TBIs require a fair amount of autonomy to operate in the startup ecosystem to ensure that their efforts result in desired impact both at the institution and national level. The “National Innovation and Startup Policy 2019” for Students and Faculty the increased prevalence of Faculty led / Faculty involved startups. Such policies once widely adopted by all Higher Education Institutes (HEIs), number of faculty involved startups are expected to go high with HEIs officially permit them to start their ventures. The success of an incubator with the direct/indirect support of the institution can be measured through the entrepreneurial culture and commitment of the host institute, organisational culture of an incubator and efficacy of different programs leading to setting up of startups, incremental growth of startups (student, faculty and alumni led), number of innovators and entrepreneurs supported, number of technologies commercialized. These parameters apply to all incubators including early stage, sector specific incubators or those set up in Tier 2 & 3 cities

Parameter	Factors for consideration
Host Institute’s Commitment	Financial Commitment from the Host Institute to TBI in initial years alongside other grants
	Governing Board: Representatives from Academia vs Practitioners. Active participation of Host Institute’s management, Numbers of practitioners should form the majority of the board members
	Autonomy for operations: Delegation of authority and decision making to TBI

	Professional Functional Team: Number of employees, technical and functional expertise
	Conducive policies/ openness of the Host Institute for supporting entrepreneurs: Specify (Access to the host institutes' labs, Policy for technology Transfer and commercialisation, Policy for faculty or students involvement in startups etc.)
	Availability of the Host Institute's facilities for startups
	Influence of TBI on host institute's policies: Representation of TBI members on the Host's committees (affecting entrepreneurship): Specify
Incubation Activities	– Programs: Number of programs to support innovations and startups at various stage: preincubation, incubation, acceleration – For TBIs <2 years: number of innovations completed by students as part of campus activities, faculty mentors
Startups	Across all programs – Total startups supported – New startups year on year basis – Number of startups from the Host institute with break up of Faculty led, Faculty Mentored, Students led, Alumni led and from Outside of the Host Institute – Number of entrepreneurs (Founders of startups supported) – Number of innovators (supported under innovation program)
Technology/ IP Spin o as startups	– Total Number of technology/ IP spun out as startups – Royalty generated by the Host Institute against technology/ IP spun out
Sector Speci c	Specific impact such as domains, Indigenisation, institutions or startups from the local region etc. Contribution of startups in strategically important sectors – Defence, Agriculture, Ocean Tech, Healthcare, infrastructure etc.

Host Institute's Commitment

Governing Board: Out of the 31 respondents to the survey, 24 incubators are having a governing board that comprises majority of their board members from outside the host organization. These members are having varied expertise relevant to the TBI profiles.

TBI's Influence on policy of the Host institute: SINE, the TBI at IIT Bombay worked with the institute in 2004 to form a policy for transfer of IP in favour of startups against equity. IIT Bombay was also the first instifute to formalise faculty association with startups as founders.

Effectiveness

The second aspect of the performance of an Academic Linked TBI can be measured through the lens of startups, which is effectiveness of the facilities and facilitations for startups. These would include resources and support the incubation offers by way of infrastructure and lab facilities to work on their innovations, technical and business guidance and support at any given point in time where in startup can seek validation and plan future course actions, trainings and mentorings for founders to understand the nuances of startups, and access to various funding supports the startups can access from the ideation stage to market stage. While it may not be feasible for a TBI to house all the resources and expertise needed to support startups, however, it is imperative that they create a network of experts and stakeholders for the benefit of startups. A good barometer to measure the effectiveness of the incubation is services offered, number of startups graduated and sustained for over a period of 1 to 5 years, revenue generation, jobs created by the startups and the total number of new IPs created. The valuation of the startup acts as a testimony to validate the impact the startup has on the economy. A few mature incubators may also look at considering IPOs raised by startups, and taxes paid to the exchequer (by the start-ups) as a measure of performance.
This effectiveness of TBIs can be assessed through 3 broad aspects:

- Incubation services: This could be judged in terms of quality of services, and coaching and preparing startups for team building, fund raising, go-to-market strategy etc.
- Business network of incubators: This could be judged in terms of transactional engagement of various stakeholders in the network with startups.

- Performance of startups: Performance of startups would be the final outcome of effectiveness of TBIs.

Both early and mature stage TBIs can be assessed evenly for quality of incubation services and to some extent their business ecosystem & network. In addition, mature stage TBIs also impact startups' success by offering quality services and access to the business ecosystem.

Parameter	Factors for consideration
Programs	– Incubation: Provide program details such as intake, selection process, duration – Accelerator: Provide program details such as intake, selection process, duration – Any other program with details

Incubation services	– Infrastructure (Area)
	– Specialised Infrastructure: Lab support (Electronics, Mechanical, Bio, Prototyping facilities, Metal work etc), tinkering lab
	– Incubation Funding and Seed support
	  – Number of companies supported
	  – Total amount seed fund. Specify source: from Govt & CSR.

	– Mentoring, Expert Advisory:
	  – Themes: business, legal, IP, Strategy, Technical
	  – Number of mentors: One on one, Need based
	  – Engagement model
	– Training & workshops:
	  – Periodicity
	  – Theme
	– Team Building support:
	  – Founders team: numbers of startups assisted
	  – Talent acquisition: numbers of hires
	– Showcasing:
	  – Total events
	  – Periodicity
	  – Target audience: investors, industry, internat-ional market access
	  – Outcome (funding, customers etc.)

	– Market access:
	  – Domestic and International
	  – Number startups having received customers through incubators initiatives
	  – Success stories
	– Media & Visibility for startups:
	  – Methods and approaches: Newsletters, PR, Media
	  – Periodicity
	– Domain specific support

Business Network	– Investors:
	  – Number of investors
	  – Investment transactions

	– Manufactures:
	  – Numbers of startups facilitated with manufacturing support
	  – Numbers of Domestic or international manufacturers
	– Market support:
	  – Market research
	  – Branding
	– Regulatory/ Certifications:
	  – Number of experts
	  – Domains
	  – Success stories
	– Industry:
	  – Number of industries
	  – Type of industries
	  – Type of engagement (For ex. adoption of solutions)

Startups' Performance	– Number of startups graduated – Number & percentage of startups survived after 5 years – Product/ solutions launched – Revenue of startups – Jobs created/ Livelihood created (for social startups)

	– External Funds raised (beyond incubator funding support)
	  – Number of startups having raised funds
	  – Total amount raised
	– Valuation of startups

	– Liquidation of TBI's equity in startups
	  – Number of startups giving equity exit
	  – Amount generated through liquidation
	– Initial Public Offerings (IPOs)
	– IP Created

Impact of a mature incubation ecosystem

Nocca Robotics Pvt. Ltd., a company which is making autonomous waterless solar cleaning robot was initially incubated by SIIC Kanpur under prototype grant program of DST-SETEDB. During the pandemic, the company repurposed its autonomous machine to manufacture ventilator. Using SIIC ecosystem, the company raised funds from multiple sources, including government grants, angle and institutional venture capital fund, CSR funds. IIT Kanpur provided technical mentoring and its alumni mentored the company by handholding them very closely. The company received a regulatory permission. In addition, and MoU with a large company was facilitated for augmenting manufacturing capabilities of the company. SIIC ecosystem was instrumental in accelerating operations of the company in a very short span.

FarEye, a company providing SaaS platform for a predictive logistics was provided support by KIIT-TBI, Bhubaneshwar. The company received jump starting funding for testing, validation and scaleup activities from the incubator, and further got plugged into its incubation ecosystem. The company later on raised series of institutional investments. The company has operations outside India across various continents. The company employs more than 400 employees.

Financial Sustainability

Technology Business Incubators themselves are quasi business ventures. In India, most Academic Linked TBIs are initially supported by the Host Institutes and various government programs. The government grant typically is for 5 years, after which the incubators are expected to be self sustaining. It is important that they also have their own economic model for the long term sustainability. Incubators are the first risk takers in the startup. Given the lower success rate of startups, the incubator's own financial stability is always under pressure given their clients are startups. Furthermore, depending on the domain, revenues and returns from the startups also are very uncertain. For example, life-science incubators would need a longer gestation period to stabilise as compared to any other sector. Incubators having focus on agritech or social impact, or incubators in Tier 2 and 3 cities would deal with clients with limited business scale. The long term sustainability of the incubator is the most challenging aspect for any incubator. It is important that the incubators also identify a feasible economic model which will help it sustain on its own. Achieving financial sustainability with an appropriate economic model with short term and long term revenue sources is an important performance indicator for business incubators specifically those who are at mature stage.

Parameter	Factors for consideration

Economic Model	– Rental:
	  – Office or per desk
	  – Monthly
	  – Per use
	– Revenue share
	– Sale of Equity shareholding
	– Others: Grants, Donations, Interest on loans, Consulting, Joint projects..

Annual Cost	– Non-recurring: specify – Recurring: specify

Annual Receipts	Grants Received from – Government – CSR – Any other sources: specify Annual revenue from – Incubation services: rent, revenue, equity exits – Other services: specify Other mode of fund raising: specify Proportion of Grants vs Income
Sustainability Reserves/ Corpus	Accumulated reserves created since inception

Ecosystem Impact

There are a few overarching parameters which bring maturity to a TBI. Though these parameters are not a direct outcome of startup success, they do contribute towards the vibrant ecosystem of a TBI, or in local geography, bring opportunities for startups for a larger exposure and enhance chances for their faster success. Mature ecosystems will also enhance the attractiveness of the incubators within their stakeholders. These would include the internal ecosystem of the TBIs, their host institutes, as also collaborations and the partnership programs. TBIs in tier 2 and tier 3 cities may also be judged from their regional impact.

Parameter	Factors for consideration

Local ecosystem of the Host Institute	– Academic programs for entrepreneurship: Minor, Major, UG, PG, PhD
	– Students activities: eCells, Events for Promotion of entrepreneurship (Idea Generation and Business Plan Challenges etc.)
	– Market linked faculty research
	  – Details
	– Applied research centres fostering innovations for end usage
	  – Details

Alumni	– Alumni engagement:
	  – Type of Engagement
	  – Number of alumni with Active engagement

Reach	– Geographical reach:
	  – Hub & spoke models
	  – Virtual incubation, Co-incubation

Regional Impact	– Collaborative engagement with local authorities & institutions – Employment generation in the region – Clinics, training and workshops conducted for regional innovators and entrepreneurs – Entrepreneurs supported in the region – Resources made available in local region for innovators and entrepreneurs – New initiatives in the region

Collaborations	– Domestic, International
	  – Corporates
	  – Academia
	  – Incubators
	  – Trade bodies

Partnership programs	– Domestic, International
	  – Co-incubation
	  – Soft landing support
	  – Bootcamps & Trainings
	  – Accelerator
	  – Discovery of Market
	  – Joint challenges

Achievements	Awards & Recognitions

Co laborations and Partnership programs

CIIE, IIM Ahmedabad runs Bharat Inclusion Initiative in partnership with Bill & Melinda Gates Foundation, J.P. Morgan, Michael & Susan Dell Foundation, Open Society Foundation and Omidyar Network.

SINE, IIT Bombay has been running for the past 6 years Indo-Swiss cross border program in partnership with Swissnex, an organization under the Consulate General of Switzerland. It also runs an accelerator program, Plugin in partnership with Intel India for past 4 years.

KLE-CTIE, KLE Technological University, Hubbali, has developed 'Global Entrepreneurship and Innovation' program for students in collaboration with University of Massachusetts, USA.

DERBI Foundation, Bangalore organizes an industry-driven initiative for med-tech solutions in partnership with India Electronics and Semiconductor Association (IESA). The Initiative is also supported by technology partners like Texas Instruments, MathWorks, Forus Health.

Depending on the policies of the host institution, objectives of the incubator, sector, age of the incubator weightages can be given to the above parameters.

Past Reports

While preparing this report, references have been made to similar studies conducted by various agencies in the past to create the matrices of the performance parameters for assessing the incubators. The National Science and Technology Entrepreneurship Development Board (NSTEDB), DST, GoI in its report Developing Ecosystem for Knowledge to Wealth Creation[7] had identified Partners, Value-added services, Network and Linkages, Outcome (tangibles), Impact (generation of wealth, job, taxes etc) as driving forces to commence incubator. These driving forces benchmarks for assessing the performance. The report also has suggested the Impact & Outreach, Effectiveness and Sustainability to measure the impact of incubators:

Parameter	Measures
Impact and Outreach	• Number and profile of enterprises created and graduated • Jobs generated in approximate 5 years
Effectiveness (economic impact)	• Taxes paid and returns to the Exchequer • Growth of incubatees in terms of net worth and sales in 5-7 years • Technologies commercialized • Seed/ venture funds mobilized by incubatees • Time to break-even • Scaling up of Incubator operations
Sustainability	• Revenue surplus (after 5 years). • Cash □ow towards financial self-sustainability.
Incubator Performance parameters	• Average capital investment cost per incubatee over five years • Average operating cost per annum per incubatee • % of revenue from government grants • Incubator space(sq. ft) • Number of incubatees • Incubator functions (offerings) • Incubator occupancy range(s) • Average Length of tenancy (months) • Number of Incubator staff • Survival rates of incubatee entrepreneur firms in 3 yrs • Average growth in incubatee turnover in five years • Average jobs per incubatee entrepreneur company • Annual jobs generated by graduated companies per incubator p.a.

DST-NSTEDB published another report “Catalysing innovation, entrepreneurship and incubation” released in September 2020[8]. The report surveyed the overall outcome of 153 Academic Linked TBIs supported by NSTEDB. According to the report, during the period 2014 to 2019, NSTEDB invested about ₹1000 Crore since 2016 under NIDHI umbrella to strengthen the Incubators through TBI program with the augmented funding, fabrication facilities, prototyping grants and fellowships. The report focused mainly on outcome in terms of the number of startups, employment generation, revenue, cumulative valuation and IPs □led. Since the launch of 2016, a total of 3681 startups were nurtured, 2889 startups graduated from these incubators generating direct employment to the tune of about 65864 and revenue to the tune of Rs 27262 crores during this period. The cumulative valuation of these companies are Rs 35208 crores. The total patents and IP □led as on March 31, 2020 is 1992.

Global Perspective

The World Economic Forum in its report Entrepreneurial Ecosystems Around the Globe and Company Growth Dynamics, in the year 2013 has identified 8 pillars contributing a robust entrepreneurial ecosystem based on a study conducted across 6 continents viz North America, Europe, Australia/New Zealand, Asia, Middle East/Africa, South America and Mexico[9]:

- Accessible Markets
- Human capital/workforce
- Funding and finance
- Support systems, mentors
- Government and regulatory framework
- Education and training
- Major universities as catalysts
- Cultural Support

The study indicated out of the above, three areas as of pivotal importance namely, accessibility to markets, human capital/workforce and funding & finance are of pivotal importance. The macro indicators are equally important for TBIs who must strive to build a micro ecosystem at TBI level on the similar line.

The World bank benchmark Report 17/18- Impact of performance of university-linked business incubators and accelerators conducted a survey in the 6 continents viz Africa, Asiapacific, Europe, Latin America, Middle east, North Africa, North America based on the following parameters[10].

Value for Ecosystem	Value for client startups	Value for incubation program
Economy enhancement – Jobs created – Sales revenue(startups past & current) – Graduates (startups) – Self generated revenue	Competence development – Services offered – Coaching and mentoring hours	Program attractiveness – In state applications – Out of state applications – Sponsorship attraction
Talent Retention – Client startups accepted – Graduate retention	Access to funds – Total investment attracted – Average investment attracted – Seed funding attraction	Post incubation performance – 1 year survival – 5 year survival – High Growth enterprises – IPO
	Access to network – Partners – Events – Engaged alumni	

The above framework carried weightages and scores for every parameter based on the objective of the study.

Conclusion

The number of TBIs is increasing in academic and R&D centres with an objective to create an impact by way techno commercialisation activities in form of entrepreneurial ventures. Missions like 'Atmanirbhar Bharat' have enhanced expectations from TBIs in terms of their effectiveness, impact and sustainability. Hence, it becomes necessary to develop a framework for measuring effectiveness and performance of the TBIs supported under various government and other agency schemes. The ranking systems like National Institute Ranking Framework (NIRF) and ARIIA for academic institutions and universities also make a case for performance tracking of the TBIs in academic setups, as the performance of the host institutes are also measured through the innovation and entrepreneurial activities and their overall impact. However, the weightage for individual parameters and sub-parameters suggested in the framework would need to be considered in the context of the stage, sector-focus and the location of the incubator. As indicated earlier, efforts of a TBI in the initial stage would largely be toward the factors under the Core Objective quadrant and other factors would gradually evolve over a period of time and increasing activities.

Stage	Early Stage	Mature Stage
Parameters	Relative Weightage	
Core Objectives	High	High
Effectiveness	Medium	High
Sustainability	Low	High
Ecosystem	Medium	High

Further, the weightage area with regard to certain sectors may be considered higher after a certain years of their existence. For example, Healthcare startups would have a longer gestation period as compared to other technology startups, hence the performance factors with regard to Effectiveness would need to be factored in accordingly. TBIs with rural or agri sectors focus may be measured with high weightage towards impact in their target segment or region, and lower weightage may be assigned in their cases for returns from the startups.

The proposed framework for the TBIs, in addition to NIRF and ARIIA will provide a comprehensive assessment of impact of innovations and entrepreneurial initiatives in academia. However, the framework is more relevant for the present forms of TBIs. With the changes and evolutions of TBIs institutions, the framework will also evolve to suit newer forms of TBIs.

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Acknowledgements:

We acknowledge the contribution from the following respondent TBIs to the study. We also express our gratitude to the valuable insights and suggestions provided by officials of various state and central government departments supporting the incubator ecosystem.

List of the respondent incubators:

Name of TBI	Host Institution	Location
IIM Calcutta Innovation Park	IIM Calcutta	Kolkata
Society for Innovation & Entrepreneurship (SINE)	IIT Bombay	Mumbai
AIC-LMCP Foundation	L. M. College of Pharmacy	Ahmedabad
Startups Valley TBI	Amal Jyothi College of Engineering	Koovappally P. O, Kanjirappally
Symbiosis Centre for Entrepreneurship & Innovation	Symbiosis International (Deemed University)	Pune
Manipal Universal Technology Business Incubator	Manipal Academy of Higher Education	Manipal
MaDeIT Innovation Foundation	Indian Institute of Information Technology Design and Manufacturing	Chennai
IIT Mandi Catalyst	IIT Mandi	Mandi
DERBI Foundation	Dayananda Sagar College of Engineering	Bangalore
Society for Innovation and Development, IISc	Indian Institute of Science	Bengaluru
Centre for Incubation and Business Acceleration CIBA	Fr. C. Rodrigues Institute of Technology	Navi Mumbai
Sonali Roy	Sonali Roy	Guwahati

COEP's Bhau Institute of Innovation, Entrepreneurship & Leadership	College of Engineering Pune (COEP)	Pune
PSG-STEP	PSG College of Technology	Coimbatore
Science and Technology Park, Pune	Savitribai Phule Pune University	Pune
STEP TBI GNDEC	Guru Nanak Dev Engineering College	Ludhiana
Forum for Innovation Incubation Research & Entrepreneurship	Don Bosco College of Engineering, Fatorda, Margao, Goa	Margao
Atal Incubation Centre - Centre for Cellular and Molecular Biology	CSIR-Centre for Cellular and Molecular Biology	Hyderabad
TIDES Business Incubator	IIT Roorkee	Roorkee
SIDBI Innovation and Incubation Centre (SIIC)	Indian Institute of Technology, Kanpur	Kanpur Nagar
Foundation of AIC-AAU Incubator (North East Agriculture Technology Entrepreneurs Hub - NEATEHUB)	Assam Agricultural University	Jorhat
Crescent Innovation and Incubation Council	B S Abdur Rahman Institute of Science and Technology	Chennai
KLE-CTIE	KLE Technological University	Hubli
VIT-Technology Business Incubator (VITTBI)	Vellore Institute of Technology, Vellore	Vellore
TREC STEP	DST GoI & Govt of TN	Tiruchirappalli
AIC-SMU Technology Business Incubator (SMUTBI)	Sikkim Manipal University	Rangpo

JSS Business Incubator, NOIDA	JSS ATE NOIDA	Noida
AIC - C V Raman College of Engineering Foundation	C V Raman Global University	Bhubaneswar
Atal Incubation Centre-BIMTECH	Birla Institute of Management Technology	Greater Noida
Shri Mata Vaishno Devi University Technology Business Incubation Center	Shri Mata Vaishno Devi University	Reasi
AIC-SKU Confederation	Sri krishnadevaraya university	Anantapur

Government and Academia representatives:

1. Mr. R. Ramanan, Mission Director Atal Innovation Mission, Additional Secretary at NITI Aayog
2. Dr. Anita Gupta, Head-NEB, Department of Science & Technology, Govt of India
3. Dr. Ajay Garg, Scientist-F & Sr. Director at Ministry of Electronics & Information Technology
4. Dr. Manish Diwan, Head Strategic Partnerships & Entrepreneurship Development, BIRAC
5. Ms. Aasthaa Grover, Head- Startup India, Department of Promotions for Industry and Internal Trade
6. Mr. Mithun John, Joint CEO Maharashtra State Innovation Society (MSInS)
7. Dr. Anil Wali, Managing Director, Foundation for Innovation and Technology Transfer (FITT), IIT Delhi

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