

## **Benchmarking of Technology Park/Incubator: the new paradigm for SMEs**

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### **Abstract**

The introduction of new or improved processes, products or services based on new scientific/technical knowledge and/or organizational know-how, is a powerful and fundamental determinant of firm competitiveness of enterprises in fast growing high-tech sectors<sup>1</sup>.

The Incubator is often the first building block for a future technology park. Both Park and Incubator are workplaces, which share some features – both typically require initial subsidy and a good business environment. But they are quite different in significant respects – the park is essentially a major real estate development for existing research and technology related organizations, while the incubator is for start-up and early-stage ventures that still needs concept proof and require nurturing. Both are evolving to meet the challenges of commercializing of technology and supporting enterprise creation, within the framework of the technological revolution and the liberalizing global markets.

Benchmarking is a dynamic process of identifying good outcomes in Technology Park/Incubator, which could be attributable to their successful practices, and adapting these to another group's operations. Technology Business Incubator is a mechanism to provide life-line support, training and information services, management & marketing skills, mentoring, linkages to research & development facilities including access to capital, under one stop shop thereby greatly enhancing the chances of success of the early stage technopreneur. It is a cost-effective instrument for technology transfer and the development of knowledge-based and high-tech enterprises.

**Keywords:** SMEs ---- Small and Medium Enterprises, ITES – Information Technology Enabled Service

### **1. Introduction**

The recent World Bank's review on Small Business activity establishes the commitment of World Bank Group to the development of the Small and Medium Enterprises (SMEs) sector as a vital element in its strategy to foster economic growth, employment and poverty alleviation. The Indian SMEs of the IT industry demonstrates the tremendous growth/value that the Indian IT industry provides to its customer/development effort which encourage existing SMEs to do more business. The technology incubator has played vital role in success/ growth of IT & ITES industry and has fuelled of SMEs segment in a significant manner.

The Indian IT & ITES industry market continue to enhance momentum, with offshore/outsourcing becoming a mainstream phenomenon. A growth of about 28 percent by the Software and Services industry places this sector among the highest performers within the Indian market<sup>2</sup>. The Indian IT industry generally covers SMEs which accounts for 78 % of the total Industry. The SMEs contribute around 26% of the total national export in the IT and ITES industry.

This paper introduces about the benchmarking of the Technology Incubators as the key success to the SMEs and the need to focus on the facility provision in the technology incubator. It enables researchers to compare the extent of growth SME activity of a specific country with that of other countries in the

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<sup>1</sup> Hallberg, Kristin (2001) : A Market –oriented Strategy for Small and Medium- Scale Enterprises discussion paper on SMEs – techno incubator

same geographical region or the countries with similar level of expertise/facilitation in incubator and the impact in the income level. It also provides statistics on the contribution of the SME sector to the formal economy as well as the share of the economy<sup>3</sup>.

The ability of most SMEs to survive, grow and generate new high quality jobs increasingly depends on their capacity to put innovation at the core of their business strategy in order to harness benefits from technological change and the globalization of markets for products and resources. In turn, small innovative firms, especially young ones (startups), play a vital role in ensuring the vitality of regional and national innovation systems, and thus enhancing significantly the growth potential in all economies. The Knowledge Based Economy is presenting new challenges as well as opportunities to SMEs.

However, many SMEs have not yet developed a culture of innovation and those that do invest in innovation may still face obstacles in pursuing this strategy. Here lies a huge potential source of technology growth, quality job creation and social well-being that can be met through technology incubators<sup>4</sup>.

## **2. Key model for Incubator:**

*The **Incubator** is often the first building block for a future technology park. Both Park and Incubator are workplaces, which share some features – both typically require initial subsidy and a good business environment. But they are quite different in significant respects – the park is essentially a major real estate development for existing research and technology related organizations, while the incubator is for start-up and early-stage ventures that still needs concept proof and require nurturing. Both are evolving to meet the challenges of commercializing of technology and supporting enterprise creation, within the framework of the technological revolution and the liberalizing global markets.*

*There is the potential for synergy between a technology incubator and a technology park. It could be advantageous to start with the small investment and time requirement of an incubator, making provision of space for a future technology park. The graduating clients can be re-located in the park.*

This potential can however best be realized if their goals are broadly similar and the management and operations are meticulously planned from the start for such integration. Real estate to large companies could be used to cross-subsidize the early-stage groups in the incubator. Further, park and incubator can cooperate to compete.

***Technology Business Incubator (TBI)** is a mechanism to provide technology, advisory, training and information services, management and marketing support, linkages to research faculty and facilities, access to capital, thereby greatly enhancing the chances of success of the early stage technopreneur). It is a cost-effective instrument for technology transfer and the development of knowledge-based and high-tech enterprises.*

***The main objective of Technology Business Incubators is to facilitate the seeding stage technological development and to compete in the global market place.***

*However, the technology incubators are commonly known to include the concepts of Technology Business Incubator (TBI) and innovation centers. The goal of technology incubators is also to promote technology-based firms, and to address regional and local developmental issues through Science and technology. TBIs are located in or near technical academic/R&D institutions and are characterized by institutional links to knowledge sources including technology transfer agencies, research centers, national laboratories and skilled R&D personnel. TBIs promote technology transfer and diffusion while encouraging Entrepreneurship among researchers and academics.*

*A TBI is a managed workspace with low cost office facilities (workplace) and business and professional services necessary for nurturing and supporting early stage growth of technologies and technology based enterprises. The services may include modern communication and information services, and access to the R&D, testing, design and engineering etc., facilities and services including mentoring. The objective is to cover some of the risks involved in the early stages of incubation of technologies and technopreneurs particularly in the area of high-end technologies. In addition to workspace, the services provided by incubators can include various forms of business planning and*

*managerial advice, office facilities, finance and accounting access to business networks, and legal services besides utilities.*

**TBIs essentially assume:**

- Strong R&D and technological capabilities in academic institutions and R&D organizations, thereby associating R&D results with commercial potential and encouraging potential Entrepreneurship among students and faculty.
- Potential technopreneurs including researchers, who are willing to translate their ideas/high technology into products and services, are available.
- Strong linkages with academic and financial institutions.

**Some of the major objectives of establishing TBIs are:**

- **Technology Commercialization:** Most universities, R&D institutions and technical institutions such as IITs have technologies, which needs to be commercialized. These institutions are indeed a critical element in the supply of future business know-how for industry.
- **Economic Development:** TBIs are a tool for promoting new business. A main underlying goal of support for new business formation is economic development through job generation.
- **Intellectual Property Venture:** TBIs create lucrative Intellectual property based venture.
- **Entrepreneurship Development:** Promoting Entrepreneurship through incubators is another objective of public support. One of the main goals of technology incubators in developing countries and economies in transition has been the development of an entrepreneurial culture and the creation of SMEs. Incubators in the university premises can act as a training ground for entrepreneurs, especially the techno-entrepreneurs.
- **R&D for Industry:** Creating awareness among academic institutions about the requirements of industry and reorient their research and development programs to suit the need of industry both in the short run as well as in long run.
- **Problem Solving:** Act as a problem-solving agency not only in the areas of technology but also in other related areas of business development.

**3. Key success factors - for Technology Incubators: Benchmarking**

The determinant factors that contribute to the ultimate economic, social and political success of a new business incubator and tech-park evolve with the stages through which the facility develops from the initial design to sustained operation. Experience indicates that in industrializing countries, without patient and continuing support from the state and community over the whole program cycle, developing sustainable performance and having positive impact on economic development will become difficult.

Benchmarking is a dynamic process of identifying good outcomes in Technology Park/incubator, which could be attributable to their successful practices, and adapting these to another group's operations (in the current paper we have taken the real case study of the impact of technology park in terms of benchmark). It is a continuous learning and self-correcting process with quantitative comparisons of performance at participating Technology Park. It is best undertaken within a region, preferably one which has an association or focal body to help mobilize a consensus among participating incubators, implement the program, compile and circulate relevant statistics, anonymously if necessary. Poland had pioneered an incubator-benchmarking program in 1994, with a group of 11 incubators. The paper is based on more than 50 international Technology Park across the world and how it impacts to the global economy.

A benchmarking program is intended to assist management's to progressively up-grade their performance, attribute by attribute, in the interests of their sponsors, their tenants, and the incubation industry. The purpose is NOT to find persons to blame or excuses to cover incompetence, but to take prompt, fair actions to remedy the causes of failure and to enhance the effectiveness of performance. Overall, it should help an incubator in the needed transition from the first generation mode (essentially subsidized space and shared facilities), towards a more dynamic operating model (intensive, for-profit services and networking).

Key indicators in Europe and the United States: Over the last decade, universities, consultants and regional development agencies have undertaken a variety of studies on best practices at US incubators. Currently few countries are preparing a benchmarking study on technology incubators. The objectives are to assess their performance as well as to identify effective practices, outcomes and operational environments. A self-evaluation tool is also being developed to assist the boards and managers of established incubators assess their internal procedures and address weaknesses in their operations.

As the EU study suggests, there is much to be potentially learnt from sharing experiences between the U.S and European incubation industry. Further, much can be gained through direct contacts between the incubators themselves.

Based on the study/work, some essential measures emerge for incubators. Incubators perform poorly for some of the same reasons that their clients do poorly. The lessons are generally straightforward, but are not being applied due to a variety of reasons, such as: local policies, inadequate financial resources, infrastructure, poor team-work and little sharing of experiences.

***The key suggested actions come out from the study be summarised below for enhancing incubator performances also apply broadly to technology parks.***

- Initiate the first essential steps of assessing feasibility, technology assessment and preparing the business plan.
- Rigorous market assessments of the profiles and needs of potential clients by experts familiar with local conditions
- Stable policy, economic and regulatory regimes, providing a sound business infrastructure, initial funds (seed money), to facilitate venture creation despite the inherent risks
- Competitiveness strategy which has analyzed and identified the sub-sectors of advantage, selected the change agents and markets
- Human resources development that helps build the full range of specializations needed, from trainer to technician, innovator to manager.
- Potential technopreneurs may have to be 'pre-incubated', to revive repressed entrepreneurial skills -- { startup can start from the college level}
- Select the type of incubator most suited to the local market, skills, resources, conditions and culture. While most incubators in many countries are technology-focused only
- Arrangements to enable graduate students to work, at small remuneration and/or credits at incubation firms, as well as the faculty to augment their incomes through consultant services.
- Well developed networks of professional friends and alumni, who can contribute an annual subscription to a "donors club", provide mentoring to individual tenants, sub-contracting opportunities.
- For the initial business growth synergistic system of alliances need to be argument to provide the financial, banking, technology, marketing and business support, to mutual advantage. **{Seed venture}**
- Like the venture capitalist, the incubator is looking for the 3 Ms — Management, Market, and Money, all in short supply in a emerging economy.
- Tenants can be enabled to do a great deal of intra-incubator business among themselves.

***“The incubation concept is analogous to a symphony orchestra. Just as good instruments and an acoustically perfect hall are desirable, the role of talented musicians and a world-class conductor can be critical to the success of the performance.”***

#### **4. Adaptation of good practices**

Many of the good (not best) practices in the US and Europe can be adapted and applied to other regions, giving full consideration to differences in context, culture and conditions.

From a theoretical viewpoint, entrepreneurs all over the world share similar visions, commitments and beliefs and therefore are motivated by the same psychological, social and economic factors. In addition, three-quarters of incubators in developing countries are technology incubators, and we would expect many similar aspects and common success factors in technological Entrepreneurship. From a practical viewpoint, a number of incubators and parks in developing countries have been assisted by experts from western countries, and their managers and staff were trained there.

New venture creation at managed workspaces is based on three fundamental principles summarized below:

***Focus the energy and resources of the support facility on developing the businesses within it and enable them to learn from each other.***

New jobs and economic growth are created by the resident companies, not by the workspace itself. Further, small enterprises can be their own most effective service providers. In some countries the tendency is to spend much effort on preparing perfect plans rather than on developing the human resources and providing real services for enhancing firm-level productivity.

***Manage the Incubator/Park as an entrepreneurial business operation, while developing networks of state, university and community support as well as a ‘champion’.***

The management’s of service centers supporting the constituents have to be entrepreneurial with business experience, which can network with local supporters in creative ways and mentor the client-businesses.

Government involvement is necessary to create the business infrastructure, and to provide initial funding. But corporate sponsors, regional and city agencies, associations and universities have to get involved, to move towards sustainability.

***An outward looking, export-oriented incubator/park is forced by the competition to become more dynamic, more efficient.***

The skills and structures for marketing are generally the most critical. Changing markets require continuous innovation, and this comes best from an environment, which encourages risk-taking.

Operations in both industrial and industrializing countries can now benefit from linkages between them, both south-south and south-north. The international development agencies have a role to play.

#### **5. Indian Incubation Provider by Govt. Agency :**

**SOFTWARE TECHNOLOGY PARKS OF INDIA:: Technology Incubators: “Single Window” one stop shop for Computer Software industry.**

The factors for competitiveness comprise supportive state policies, technical infrastructure, stable economy, financial services, technical human resources, and a national strategy, which targets products and markets of advantage. Among developing countries, India had an early start on building small business support, Entrepreneurship and scientific research capabilities.

Today 130 of the Fortune-500 companies outsource their software requirements to India. Currently India’s software industry employs 15,00,000 people and produced over US\$ 17.8 billion in 2004-05. Exports are growing at 35% a year, mostly to the U.S. and mainly as end-user application products and services.

**A significant initiative of the Department of Information Technology is the *Software Technology Parks of India (STPI)*, to help strengthen the "India - Software Advantage". For out-sourcing software, these advantages include:**

- Large, English-speaking personnel pool, with technical & management skills;
- State-of -the-art technologies and equipment, significantly lower development costs;
- Quality assurance levels, ISO 9001 certification, SEI level 4 &5 and copyright protection;
- High-speed data Communication links and time advantage, for 24-hour development.

STPI is an autonomous society for promoting the establishment of software centers by private or public or 100% owned foreign agencies. Through "single-point contact" for all regulatory functions, the sponsor can get custom duty-free imports of equipment, custom-bonded warehouses for materials, income-tax exemptions for five years, full repatriation of know-how fees and royalties, and other facilities, in order to develop and export software, (domestic sale only 50 % of software exported). STPI has set up Parks at 45 locations with prime centers at Bangalore, Pune, Bhubaneshwar, Hyderabad, National Capital Region (Noida, Delhi & Gurgaon), Gandhinagar and Trivandrum, etc. Besides these, state governments have their own plan & program to attract the investment in their region.

Also few of Private Parks also establish in the recent years were ITPL at Bangalore, Hitech city at Hyderabad, Tidel Park at Chennai etc. who are providing good facility to Software Companies with ready to move office/work places with state of the art facilities/common utilities.

## **6. Conclusion :**

This paper introduces a new and unique set of in-country indicators of the Technology Incubator the concept and the growth for SMEs industry, which indicates the growth in the employment and wealth creation. Countries with a higher level of GDP per capita have a larger SME sector in terms of their contribution to total employment and GDP.

This paper also suggests that varieties of variables are needed to be implemented for the growth of the technology incubation concept, which are of relative importance of SME segment in IT & ITES industry. Though the benchmark programs, the technology park/incubator also come to know, the needed transition from the first generation mode (essentially subsidized space and shared facilities), to a more dynamic operating model (intensive, for-profit services and networking) and helps in creating win- win synergy between incubator and service provide.

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## **Endnotes**

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<sup>2</sup> NASSCOM STRATEGY 2005

<sup>3</sup> Djankov, S La porta (2003) SMEs - the regulation entries

<sup>4</sup> Schneider, F (2000) the size and the development of shadow economics and shadow economy Labour force of Asian and 21 OECD counties ::