

Management of Technology Business Incubators and Accelerators

Pranav Nerurkar

Department of Computer Engineering
Atharva College of Engineering University of Mumbai

Abstract— With the launch of Make in India, a new dawn was seen in the field of indigenous development of technology and import substitution. The success of such a movement depends on the quality of the research and development activities carried out in India. The need of the hour is strong institutional support to budding entrepreneurs for carrying out their research activities. Majority of research work is done in nationalized centers of excellence which are the IIT's and NIT's and the research institutes that are setup by the government like national physics lab, institute of science. These were setup to promote and nurture ventures. The entry of Business incubators is seen as an important step in this direction. A TBI is a ladder that is used by the entrepreneurs to rise. It provides all escort and support services to the entrepreneurs like IPR, Registration services, data services, infrastructure, mentoring and seed finance. Thus it helps them with all facilities to build a better product. The paper lists the tricky questions faced by institutions that are aiming to setup an incubator and provide solutions for them. The second aim is to give the basic groundwork that needs to be done while aiming to setup a business incubator.

Key words: Management of Technology, Business Incubators and Accelerators

I. INTRODUCTION

A business incubator in business speak is a company that helps new and startup companies to develop by providing services such as management training or office space. Business incubators differ from research and technology parks in their dedication to startup and early-stage companies. Research and technology parks, on the other hand, tend to be large-scale projects that house everything from corporate, government or university labs to very small companies. Most research and technology parks do not offer business assistance services, which are the hallmark of a business incubation program. However, many research and technology parks house incubation programs.

The economic rise and proven dominance in technology-related fields on a global scale, the country has consistently been plagued by disparity in the economic status among its people. One can fathom this from the fact that though there are four Indians in the global list of top ten richest people, there is a large population which lives below poverty line. While the brilliance of India's technical professionals have taken the country to the position of a global R & D hub, there is a large pool of semi skilled and unskilled workforce in various sectors. The attitude towards this product and have worked to create a good impression in the users mind.

Therefore, despite the obvious advantages of a young talent pool, there have been constraints while forming development policies. Indian policy makers are faced with the magnanimous task of balancing the aspirations of the skilled and talented with the basic needs of those at the bottom of the pyramid. One ray of hope towards the balancing act shined when liberalization dawned in the horizon in 1991, with the India economy being plugged in to the global network through a major policy shift. Globalization has created opportunities for both skilled and semi-skilled workforce, and since then India is making steady progress in moving up from merely being supplier of human entrepreneurial ventures.

The process of being a human resource supplier had started with the migration of unskilled and skilled workforce towards greener pastures, and through simple software development and BPO level operations. Then the trend shifted and moved to higher and more intensive knowledge domains within a very short span of time. Today, India has made commendable progress in terms of growth of a scientific and technological culture. It occupies a prominent place in the world map with regards to its contribution towards knowledge driven products and services, its emergence as a global R&D hub, and the quantity and quality of its professionals related to science and technology.

In order to sustain this growth in an ever-changing, ever-challenging global business environment, the speedy translation of innovative ideas into products, processes and services for the market is the need of the hour. Innovation can happen at two levels. First is through research and development initiated and nurtured by the large corporate sector, SMEs, R&D institutions, national laboratories and academic institutions. In India, through all these channels, and especially through institutes like the IITs, NITs, and universities, innovation is encouraged.

Second is through the vision, initiative and hard work of individual innovators who address local problems and find innovative and viable solutions. Innovation at the individual level is harder to sustain, because a well set support system to nurture their ideas and turn them into realities is hard to find. In India, while there are a good number of individual level innovations happening, the systems to productize them through commercial ventures are yet to be fully developed. This is aggravated by the absence of linkages of researchers and innovators with the market, and the social milieu that does not accept failure very kindly. Few examples of Non Resident Indians (NRIs) who have done well abroad in the high growth technology

ventures have helped to bridge this gap to some extent, yet the road is far less traveled due to the risks. Technology based new enterprises are typically characterized as high risk and high growth ventures, and as such, they require an enabling environment like TBIs to enhance the prospects of success.

The contribution of this paper is:

- To understand the working of Technology Business Incubators.
- Problems faced by TBI.
- Solutions to these problems.

II. RELATED RESEARCH

A. Sources of Social Capital within Technology Incubators [1]

There are currently three divergent views regarding the sources of beneficial social capital within collectivities or networks: historical ties, organizational facilitation, and trust-based shared pursuit of common goals. Technology incubators are newer organizational forms that are created to support and accelerate the development and success of affiliated technology-based ventures. However, it is unclear how social capital that benefits the technological development of affiliated ventures is created within technology incubators. Drawing from the social capital, technology, and organizational learning literature, this study seeks to understand how technology incubators can create social capital that enables accelerated technological learning of affiliated ventures. Based upon a survey of 43 technology-based ventures affiliated with U.S. and Finnish technology incubators, results of this study suggest that facilitated networking support of the technology incubator serves as the primary source of social capital that enables accelerated technological learning of affiliated technology-based ventures. However, results also suggest that less established or newer technology incubators enable accelerated technology learning better than more established incubators. This suggests that technology incubators are not able to maintain historical ties that benefit the technological learning of affiliated ventures.

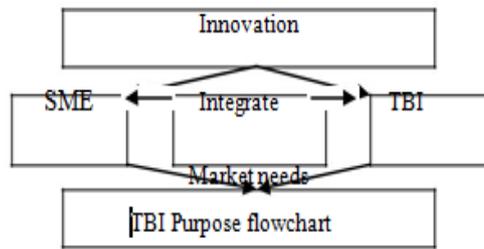


Fig. 1: TBI Purpose flowchart

B. Exploring the interaction amongst incubators [2]

The paper explores the interactions among incubators within a particular region, a concept that is rarely mentioned and analyzed in the previous literature. Three hypotheses regarding the causes of the competition and cooperation among the incubators were proposed as a result of the review of the previous literatures. The hypotheses were then tested through a case study discussed in this article that includes the three incubators, all of which specialize in technology, within the Hsinchu region. The case was investigated using data collection and interviews. As a result of the investigation, it was concluded that the interactions among the incubators have facilitated the development and complicated the management model of each incubator. The cooperation and competition that exist among the incubators have improved them significantly since their establishments. It is suggested that the policy makers should consider this type of interaction when developing incubators and utilizing the research results from this paper to manage incubators.

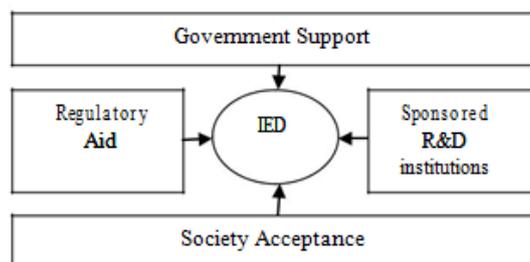


Fig. 2: Factors of a successful incubation center.

C. Research on Development of Core Service Capability of Technology Business Incubators [3]

Based on defining composition of core service capability of technology business incubators, this article makes an analysis of core service capability of incubators from four aspects, namely, financing service, technical service, information service and high-tech achievement transformation and transaction service. In response to existing problems, this article makes a proposal on how to develop core service capability of incubators from such aspects as change of governmental function, corporation operation of incubators, market-oriented financing of incubators, establishment of technical service sharing platforms and construction of information network.

The core services that are provided by a business incubation center are mentoring, seed finance and marketing and technology management assistance. The need for the host institution to provide these services is essential. Considering the

benefits for the host institute, in the form of increased institute – industry interaction, market based products, faculty development and attraction of quality students towards it, such services can be provided. Application of western ideas and processes to indigenous research centers is wasted as the needs and demands on the home market are different. This “Anti-Development Thesis” should be considered. The incubatees must be selected on the basis of the product that they develop for grass root individuals.

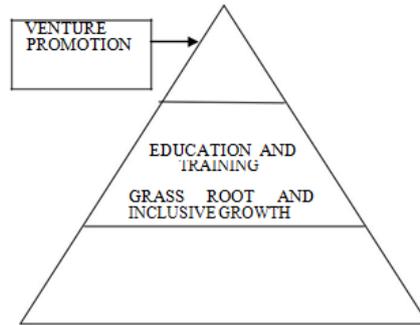


Fig. 3: Core Capabilities of TBI

D. Common Terms

1) Accelerators

Accelerators are institutions that “accelerate” the growth of new ventures. The prerequisite to enter an (usually time-limited) acceleration program is a working prototype and initial traction on the market. By providing specific services, resources and contacts, the accelerator enables the new venture to grow its business (i.e. increase its users/customer base, generate more profits) and to professionalize its organization in order to lay the foundation for scaling of his business.

2) Combinators

Combinators / idea factories are incubators in the sense that they are organizations setup to nurture small startup enterprises by providing them with different services they are too new, inexperienced, poor, or unconnected to acquire on their own.

3) Virtual Incubators

The virtual incubator allows a company to garner the advice of an incubator without actually being located at the incubator site. This new model suits those entrepreneurs who need the advice an incubator offers but still want to maintain their own offices, warehouses, etc. After the dot-com bubble burst in 2000 many of the old incubators switched to the virtual model to avoid excessive financial stress.

III. FUNCTIONAL ROLE OF TBI

A. Objectives of a Technology Business Incubator Hosted by an Academic Institution

An academic institutions main mission is to nurture a class of technocrats and researches that would take a lead in solving problems of the society. This is not in sync with the goals of normal business incubators set by private sector that focus on profit making. The business incubator setup should provide for achievement of the main objective of the academic institution as well as help it reach new heights in the field of academia and research. This is possible only when the host institution and the business incubator both act as open responsive and ecological systems that adjust their behavior based on the response they get from the mutual interaction. Consider an organization where the students are familiarized with the concept of innovation, encouraged to pursue their dreams and motivated to become job generators rather than job seekers. For such an institution an incubation center can provide a concrete medium of achieving its goal.

The services that an institution can provide to its own incubation center:

- 1) Data services. (Research journals, magazines)
- 2) Students who want to intern in these companies. They could be a cheap source of labor.
- 3) Teachers could be mentors or could connect them to people recognized for achievement in respective fields.
- 4) Colleges could setup a fund / society as a not for profit enterprise that provides seed money for incubatees.
- 5) Share infrastructure resources like Conference rooms, seminar rooms, meeting rooms, labs.
- 6) Ease procedures that provide relief to incubatees so that they have flexibility to fulfill their academic requirements by doing their research work.
- 7) Employ company secretaries, legal professionals, lawyers, HR consultants, market research professionals on a retainership basis.
- 8) Provide escort services to these incubatees in obtaining finances, regulatory clearances, government support etc.

These facilities would help in creation of a business incubation ecosystem. Incubation needs a favorable eco-system for nurturing and growth of technology based entrepreneurship. If Incubators aim at taking innovation to the market, then those who have the technology concepts, those who have the entrepreneurial capacity to implement these concepts in the market and those who have the funds to finance this exercise must come together under the roof of this system.

Therefore for the institution and the region where the business incubator is being hosted, the presence of the following ingredients is critical for building up a conducive business incubation environment:

- Institutional policy that promotes innovation, encourages entrepreneurial culture and facilitates venture creation
- Host Institution's commitment on infrastructure/ funding for Incubator

- Interest and awareness on technology commercialization and entrepreneurship within target region
- Private sector partnerships for mentoring and marketing
- Availability of venture funding through private and public sector institutions.
- Networking platforms for entrepreneurs

B. Problems that can be faced by Host institution and the Incubation center

Technology related startups are high risk and high returns businesses. Hence banks, private equity and venture capitalists don't encourage them. The high number of funding applications with various agencies is a proof that the demand has outpaced the supply. In such a scenario it is difficult for a not for profit entity like an academic institution to find funds for such activities. However there are solutions to these problems:

- 1) Government of India has launched under the operational control of the Min of MSME to provide seed funding for market oriented ideas of students. Assistance of up to 6.25 lakh per project can be provided to each student. A flexible equity and revenue sharing model has been made to ensure that the entrepreneur isn't put under stress during the earlier stages of the project. Reporting and auditing requirement are on the entrepreneur and he has to submit quarterly performance reports.
- 2) NSTEDB: DST launched a scheme to fund business incubation centers that are registered with it. The grant is to the host institution and through it to the entrepreneur. Here to the reporting requirements are quarterly. The student has to send his project for approval of the external committee and when the project idea is approved. The government sanctions a grant. In this scheme the grant is also made to the host institution for infrastructure improvement. Dedicated employees need to be present to ensure that the incubation center is autonomous from the host institution. Salary of dedicated staff shall come from the DST fund.
- 3) IEDC: The DST also sanctions funds for up to 5 ideas per institute for assistance in manufacturing projects. Such student ideas have to be approved by the institution and then an external review committee. Auditing and reporting requirement is present to ensure that funds are not diverted. The idea to be selected under IEDC must have sufficient research background and focus should be on grass root innovation. To be approved by the government the institution should have a sufficient track record of innovation and entrepreneurship.
- 4) NGO: A not for Profit Company or a society under the societies act can be setup as a scientific and industrial research institute. The money received by such an institution is considered as corporate social responsibility and under the new norms for companies act it is becoming mandatory for companies that have more than 5 crore net profit or turnover of 500 crore or net worth of 1000 crore to report the spending of 2 % of its net profit of three years as CSR.

IV. CONCLUSION

India is considered as a next global superpower. However till the time the human capital of India is not used properly this might remain a dream. Smaller neighbors have achieved more than us due to their focus on research and development. In this scenario the steps taken by institutions to build an ecosystem where entrepreneurial abilities of students shall be nourished and a direction be given to them where they could fulfill this dream is important. Academics have to be focused on industry and society and this is possible only when there is increased interaction between both these stakeholders. Technology business incubators or accelerators are a step in the right direction. Although the business model that is high revenue generating is not yet possible as it's a highly risky game with 9% success rate, there is no need for being apprehensive.

ACKNOWLEDGMENT

I take this opportunity to express my profound gratitude and deep regards to my guide Professor Ruhi Bajaj for her exemplary guidance, monitoring and constant encouragement throughout the course of this thesis. The blessing, help and guidance given by her time to time shall carry me a long way in the journey of life on which I am about to embark.

REFERENCES

- [1] Scillitoe, J.L.; Chakrabarti, A.K. "The sources of social capital in technological incubators". DOI:10.1109/PICMET.2005.1509721.
- [2] Exploring the interactions among incubators: A case study on incubators in the Hsinchu region Chan, W.; Harayama, Y. DOI: PICMET '2011.
- [3] H.K.Mittal, NSTEDB and Anita Gupta, NSTEDB. A delivery of wealth and biotech. Vol III No. 4 August 2008.
- [4] Conceptual document on technology incubation centers <http://www.nstedb.com/> [last accessed on 07-01-2016]
- [5] Anita Gupta and BK Jain, Technology business incubators: A challenge and Opportunity for India, APCTT Publication, August 2002.