A STUDY ON IMPACT OF STARTUP ECOSYSTEM ON STUDENT INNOVATIONS

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Abstract

Indian economy is moving from developing to fastest developing economy. Start-ups in India are the new contributing factor in the growth of development. India is a developing south Asian country. It is a most populous and 7th largest country by area. Large population implies a large prospective market in India and puts more pressure for employment in the country. In the present decade, India is undertaking an essential shift towards start-up welcoming policies and a business friendly environment. India is a populated country having increasing demand which is putting a competitive environment forcing to create innovative systems. One of these systems is a start-up ecosystem. This paper is aimed at about the growth and prospects of start-up systems in India.

Keywords: *startups, innovation, technological business incubator, India.*

Indian Economy is considered to be the sixth largest economy in the world in terms of measurement of nominal gross domestic production(GDP) and third largest by purchasing power parity(PPP) .There are number of variables which contribute into the growth process of the economy. Precisely this paper throws light on one of the most important variable for development, that is, education, and its impact on the developmental acceleration of the economy.

The paper briefly reports the reasons behind a very conducive setup, proposal of economic development via educational reforms in the state becoming a role model for various other states in the economy. As it is evident that Indian population also stands second highest in the world after China. But as compared to China, India has younger population, which in turn means more of working population. Therefore the long term expansion potential of the Indian economy is positive due to its younger population. There have been various, fundamental educational developmental issues, some of them are being not only addressed but also worked upon to improvise. Our economy has registered an impressive literacy growth rate, which is being consistently showing an upward trend. The government, planning and efforts to provide free basic education from 6-14 years of age, has played a vital role. Although access to primary education is just the first step, the fact that our system still needs to work on tertiary education, for long term goals.

Innovation Ecosystems

The term 'innovation ecosystems' has become popular in industry, academia, and government. It is used in corporate, national, or regional contexts, in idiosyncratic ways. It implies a faulty analogy to natural ecosystems, and is therefore a poor basis for the needed multi-disciplinary research and policies addressing emerging concepts of innovation.

Frenkel and Maital (2016) find an early use of "innovation ecosystem" in a New York Times op-ed by William Kennard, a former Chairman of the US Federal Communications Commission.

Other earlier comparisons of business environments to ecological systems include Carroll (2010), Hannan and Freeman(2011), Moore (2013), and Schot (2011). (All owe intellectual debt to Nelson and winter (2012), though the latter's work on evolution of technology did not imply there is ecology of innovation.)

However, these researchers may not have been aware that other social scientists had already left the questionable ecosystem analogy behind; see specially Haynes (2011).

Jackson (2011) defines an innovation ecosystem as "the complex relationships that are formed between actors or entities whose functional goal is to enable technology development and innovation." (A supplementary file, giving more background on innovation systems and their relation to technology based economic development, accompanies this article.) He continues, The actors include the material resources (funds, equipment, facilities, etc.) and the human capital (students, faculty, staff, industry researchers, industry representatives, etc.) that make up the institutional entities participating in the ecosystem (e.g. the universities ,colleges of engineering, business schools, business firms, venture capitalists, industry-university research institutes, federal or industrial supported centres of excellence,

and state and/or local economic development and business assistance organizations, funding agencies, policy makers, etc.).

The innovation ecosystem comprises two distinct, but largely separated economies, the research economy, which is driven by fundamental research, and the commercial economy, which is driven by the marketplace.

Review of Literature

Reviewing the literature of innovation environments, Durst and Poutanen (2016) found very few scholarly articles that called those environments "innovation ecosystems." Those papers they did find, they note, paid little attention to the dialog with multiple constituencies, which (as Jackson's definition implies) the topic seems to call for. Likewise Niosi (2017) addressed national and regional innovation systems (NIS and RIS) without using the prefix "eco-."

Frenkel and Maital's introduction to their 2016 book Mapping National Innovation Ecosystems considers biological ecosystems only as a loose metaphor. Despite the book's title, neither the ecosystem term nor the metaphor appears anywhere else in the volume. Speakers at the 2016 World Technopolis Association Workshop and UNESCO-Daejeon Global Innovation Forum used "innovation support systems" (Chen, 2017) and "innovation support platforms" (Seo, 2017) as satisfactory equivalents to "innovation ecosystems." Thus, 'innovation ecosystem' is identical to 'innovation system,' at present.

Research Methodology

Research Design - The present research is descriptive in its nature.

The population of the study - The survey population is confined to only 34 business incubation centres and their incubatees in Gujarat State.

Sample Size-The survey sample consists of 10 business incubation centres and 42 incubatees.

Universe of the Study - The universe of the study is confined to 37 business incubation centres and their incubatees existing in Gujarat State during the year 2018.

Data Collection and Data Sources - Among the various methods, which can be used to collect the primary data, the researcher has adopted two methods which are Personal Interview method and Questionnaire method. The researcher has prepared

questionnaires, which contained multiple choice questions. The respondent's opinions are collected with regard to the problem with the help of the questionnaires.

Objectives

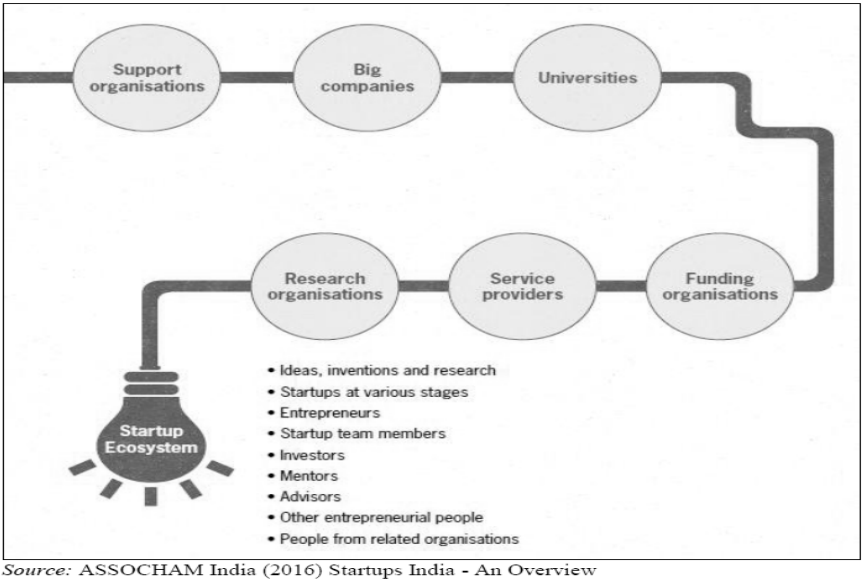
To examine the role of Business Incubation Centres in promoting entrepreneurship and to identify the gaps, if any, between perceived and actual services rendered; To analyze the gap between the practices followed by business incubation centres to promote entrepreneurship; To examine the growth and prospects of start-up systems in India.

What is a Startup

Currently a clear definition of a 'Startup' does not exist in the Indian context due to the subjectivity and complexity involved. Considering various parameters pertaining to any business such as the stage of their lifecycle, the amount and level of funding achieved, the amount of revenue generated, the area of operations, etc., some conceptual definitions are available in the public domain. The Department of Industrial Policy and Promotion (DIPP) is also working around a clear definition for startups and is expected to make it public in due course.

A startup is a young company that is beginning to develop and grow, is in the first stages of operation, and is usually financed by an individual or small group of individuals; A startup is a young company that searches for an unknown business model in order to disrupt existing markets or create new ones; A startup is a young, dynamic company built on technology and innovation wherein the founders attempt to capitalize on developing a product or service for which they believe there is a demand.

Origin of Startups ecosystem



Source: ASSOCHAM India (2016) Startups India - An Overview

Call for Startup ecosystems in India

In the present decade, India is undertaking an essential shift towards startup welcoming policies and a business friendly environment. India is a populated country having increasing demand which is putting a competitive environment forcing to create innovative systems. These startup ecosystems works on a continuum from basic research to the transfer into developed companies or entrepreneurs.

To corroborate this process, the most of the works are using the record number of patents as a proxy, given the difficulty of measuring new products, services and process for the market.

Initiatives Undertaken by IIM's, IIT's & other Premier Educational Institutes to Enable Start-Ups Ecosystem

Five of the country's leading B-schools — IIM Bangalore, Indian School of Business (ISB), IIM Kozhikode, IIM Ahmedabad and IIM Calcutta — have spawned more than 400 entrepreneurs in the last five years. This is testimony to the growing clout of India's B-schools as breeding grounds of start-ups. Fittingly enough, it's IIM Bangalore, located in India's very own Silicon Valley that leads the pack with over 150 entrepreneurs among those who have graduated in the last five years. ISB comes in at second place with around 124 entrepreneurs from its flagship programme, while IIM Kozhikode, IIM Ahmedabad and IIM Calcutta have around 58, 50 and 20 entrepreneurs respectively in the last five years. "It's remarkable that so many graduates from marquee institutes, who had the option of highflying corporate careers, have moved into

IIM Calcutta Innovation Park: The incubator at the Indian Institute of Management Calcutta – IIM Calcutta Innovation Park – focuses on healthcare, education, cleantech, lifestyle, analytics, Internet of Things. There is a special focus on social enterprises. There is a big need, to promote social enterprises in India, as it impacts those at the bottom of the pyramid, and there are not many business incubators that focus on this area.

The IIMCIP conducts seminars, roundtables and a business plan contest to promote social entrepreneurship. This is done in partnership with the Tata group under the Tata Social Enterprise Challenge. IIMCIP is spread over 10,000 sq ft and it is a not-for-profit company established in 2014, run by an independent board and has on its governing body a good mix of faculty and alumni, who are also either serial entrepreneurs or involved with the venture capital ecosystem.

IIMCIP takes a small percentage of equity, typically up to 5 per cent, as a consideration for the incubation support. IIMCIP sells its stake when the venture raises the next level of funding. Formal incubation through IIMCIP as a separate Entity started in September 2014. Prior to this, IIMC offer incubation support through its Centre for Entrepreneurship and Innovation. One of the success stories of four students from IIMC who started Zostel in 2014. Zostel is a backpacker hostel and affordable hotel chain that is present in 35 cities. It has just announced opening a hostel in Vietnam. Zostel recently raised another round of funding and had previously raised $1 million.

On the start-up scene, the success stories of internet businesses have created a buzz. Now more and more students and young professionals are opting out of jobs and starting their own ventures.

National Institute of Design, Ahmedabad: The National Design Business Incubator (NDBI) at the National Institute of Design, Ahmedabad, is meant to encourage entrepreneurs focused on design. It aims to foster a culture of entrepreneurship in young designers so that they come up with products and services that will find a good response in the market.

The objective is to create a new class of entrepreneurs – Designpreneurs – something that India needs in plenty. Spread over 4,000 sq ft at the NID, the premier institute for design in the country, the NDBI was established in 2004 and is run as an independent legal entity.

At NDBI, about 10 ventures are at the incubator at any given time and it admits about six new ventures every year. Though it admits any venture that is focused on design, the NDBI concentrates on those in the health, sanitation and renewable energy sectors. The incubator is open to any venture and need not have any NID connection, as long as it into designing products. Innovation, market potential and business plan are the criteria that the ventures need to satisfy for gaining admission to the incubator. The ventures are allowed to be in the incubator for three years. The NDBI picks up about a 5 per cent stake in the ventures, from the grants available to it, the incubator provides air-conditioned work space with computers, IPR registration, help in forming the company, legal and accounting services, seed capital, facilitating angel/ VC funding, networking with other incubators, product development and marketing.

According to information available on NDBI's website, various funding options are available, including a Technopreneur Promotion Programme, run by the Department of Scientific and Industrial Research, through grants. Besides, the Department of Industrial Policy and Promotion has set up a ₹10-crore Venture Ready Fund (VRF) at NDBI to support young designers aspiring to become entrepreneurs. This money will be disbursed over four years through loan, equity or a mix of both.

Some of the start-ups incubated at NDBI and that have made it big are Sangaru Design Objects Pvt Ltd, Robots Alive Pvt Ltd, Yuga Design Pvt Ltd and Dhama Innovations Pvt Ltd.

Indian institute of Information Technology (IIT-Hyderabad campus): T-Hub Incubator of Incubators: T-Hub is a Public Private partnership (PPP) model between the Government of Telangana, IIIT-H, Indian school of Business, and NALSAR (National academy of research and legal studies), they are expected to be catalysts for promoting innovation similar to the roles played by the Stanford University and University of California in the success of Silicon Valley. T-Hub is not just about 800 people to work on innovative technology driven products and solutions, but an integral part of a larger ecosystem the state government is keen on is keen on creating. Initially 50 start-ups will occupy the space and thereafter 50 more will get in, compared to private incubators, T-hub is an Industry-government partnership that seeks to provide entrepreneurship an edge in tune with the state's industrial Policy-Innovate, Incubate and Incorporate.

The government may have spent Rs 40 crore on the T-Hub building, but the best part of T-Hub will be minimal interference from the government. The government has said that government will not be involved in the day to day affairs in areas like which start-up to select, how long an enterprise should continue there and who will get

funding. All he professional decision would be taken by people involved in the management and guided by 10-member empowered board in which the lone government representative will be the IT secretary.

The IIT-Madras start-up incubator: In early 2013, two IIT-Madras batch mates, Tarun Mehta and Swap nil Jain, quit their jobs and went back to their alma mater. Their intention was not further studies. They wanted to make a battery -one that could be used in electric two wheelers, and which would be far superior in performance than the available ones.

The IIT-Madras start-up incubator welcomed them and even provided Rs 5 lakh in funds. That was the start of Ather Energy, which expects to commercialize a high performance electric scooter in the coming months at a little less than Rs 1 lakh, a price which they say is no more than for an equivalent petrol scooter. For the two friends, the objective was simple. They wanted to make an electric scooter that feels like a petrol one -much like what Tesla Motors in the US did with cars.

The idea has attracted many, and Ather's funders now include the Central government, Tiger Global, Flipkart founders Sachin Bansal and Binny Bansal, and Silicon Valley-based big data firm Aerospike's co-founder V Srinivasan. The scooters will have a top-speed of 72 km per hour and a remarkable 90% battery charge in an hour. The vehicle produces 7 bhp powers, only marginally less than the current petrol-based scooters. It will come with a smart dashboard that will enable users to create personalized profiles and choose riding modes, and it will have onboard diagnostics capabilities.

Results & Discussion

For testing the first objective of this investigation pertaining to the role of Business Incubation Centres in promoting entrepreneurship, mean scores of sampled organizations were taken on the basis of 25 items included in the second part of the questionnaires. Furthermore, a t-test was also performed to analyze the gaps between perceived and actual services rendered by the business incubation centres. The level of significance was set at a conventional level of 5 per cent. Table 1 presents the 109 results of the statistical analysis expressed in terms of the mean values of perceived effectiveness.

TABLE 1: Role of Business Incubation Centres in Promoting Entrepreneurship - Factor Wise Analysis

Factors		Business Incubation Centres			Incubatees			
	N	Mean Scores	Std. Deviation	Std. Error Mean	N	Mean Scores	Std. Deviation	Std. Error Mean
Physical Infrastructure	10	4.2750	.57070	.18047	42	3.4762	.60185	.09287
Business Assistance	10	3.9444	.38222	.12087	42	2.9153	.50817	.07841
Management Guidance & Consulting	10	4.3500	.57975	.18333	42	3.1190	.74334	.11470
Enabling Environment	10	4.0500	.38222	.12087	42	3.3363	.50817	.07841
Total Mean Score		**16.6194**				**12.8468**		
Average Mean Score		**4.15485**				**3.2117**		

Analysis of gaps between perceived and actual services rendered by business incubation centres

A thorough understanding of the perception of incubates in respect of various business incubation services is critical for the success of the business incubation centres. This information serves as a feedback to enhance their utility and effectiveness by making suitable changes in the level and type of services rendered. Incubator resources are scarce and should be utilized for providing only those services that benefit the incubates most. For an analysis of the gaps between perceived and actual services rendered by the business incubation centres, a t-test and ANOVA was performed. The level of significance was set at a conventional level of 5 per cent.

t - test for equality of mean scores of business incubation centres and incubatees regarding various business incubation services

TABLE : t- test for Equality of Mean Scores

Independent Samples Test

Equal Variance Assumed

	t-test for Equality of Means						
	t	df	Sig (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
						Lower	Upper
Physical Infrastructure	-3.807	50	.000	-.7988	.20984	1.22029	-.37733
Business Assistance	-5.994	50	.000	-1.0291	.17168	1.37393	-.68427
Management Guidance and Consulting	-4.882	50	.000	-1.2310	.25217	1.73744	-.72446
Enabling Environment	-5.994	50	.000	-1.0291	.17168	1.37393	-.68427

The statistical results of the t-test reveal vital gaps between perceived and actual services rendered by the business incubation centres as denoted by the critical negative mean difference and significance value of less than 0.05 across all categories namely: Physical Infrastructure services (-.7988), Management Guidance and Consulting services (-1.2310), Enabling Environment services (-1.0291), and Business Assistance services (-1.0291). It is important to note that although the first three categories of services have statistically significant gaps, they are acknowledged to be provided by the incubates since their mean scores are above 3.00. The analysis, therefore, reveals that the incubates' expectation of the degree of effectiveness in provision of these services is higher than its current level. However, in case of Business Assistance services, the mean value is below 3.0 suggesting that the incubates did not discern them to be provided.

Analysis of Variance

TABLE : ANOVA between Incubatees and Business Incubation Centres

	Sum of Squares	df	Mean Square	F	Sig.
Physical Infrastructure					
4. Your Incubation Centre provides work space to tenant companies at below market rate rent.	.007	1	.007	.011	.918
5. Your Incubation Centre provides communication facilities like Phone, Fax, to tenant companies.	1.517	1	1.517	1.983	.165
7. Your Incubation Centre provides library facilities to tenant companies.	20.800	1	20.800	12.423	***.001***
15. Your Incubation Centre provides laboratory facilities to tenant companies.	11.355	1	11.355	6.346	***.015***
Business Assistance					
6. Your Incubation Centre provides secretarial services to tenant companies.	17.374	1	17.374	21.223	***.000***
8. Your Incubation Centre provides technical assistance to tenant companies.	26.866	1	26.866	23.743	***.000***
9. Your Incubation Centre provides marketing assistance to tenant companies.	15.403	1	15.403	10.711	***.002***
10. Your Incubation Centre provides legal services to tenant companies.	3.641	1	3.641	2.710	.106
11.Your Incubation Centre provides networking support to tenant companies (e.g. with suppliers/customers etc)	16.484	1	16.484	14.908	***.000***
12. Your Incubation Centre provides human resource management services to tenant companies.	.251	1	.251	.410	.525
13.Your Incubation Centre assists tenant companies in obtaining statutory approvals	2.682	1	2.682	3.091	.085
14. Your Incubation Centre assists the tenant companies in product development activities.	3.958	1	3.958	2.353	.131
16. Your Incubation Centre helps tenant companies in securing capital.	8.704	1	8.704	5.048	***.029***
Management Guidance and Consulting					
1. Your Incubation Centre disseminates information on business ideas. (Product/service ideas)	1.386	1	1.386	2.122	.151
2. Your Incubation Centre helps the tenant companies in conducting feasibility studies.	17.601	1	17.601	8.113	***.006***
3. Your Incubation Centre helps the tenant companies in developing business plans.	9.773	1	9.773	9.993	***.003***
17. Your Incubation Centre provides business counseling to tenant companies.	30.190	1	30.190	17.205	***.000***
Enabling Environment					
18. Your Incubation Centre has created an environment where tenant companies learn from one another.	2.954	1	2.954	4.970	***.030***
19. Your Incubation Centre has reduced the time required to develop marketable products/services.	12.476	1	12.476	9.741	***.003***
20. Your Incubation Centre has reduced early stage operational costs helping tenant companies start the business with lower initial investment.	.124	1	.124	.135	.715
21. Your Incubation Centre has accelerated the development of new firms by tenant companies.	1.003	1	1.003	.941	.337
22. Your Incubation Centre has minimized the chances of failure of tenant companies.	19.584	1	19.584	14.562	***.000***
23. Your Incubation Centre has helped the tenant companies to establish credibility.	8.000	1	8.000	4.847	***.032***
24.Your Incubation Centre takes periodic feedback about tenant companies satisfaction with incubator services	9.190	1	9.190	10.272	***.002***
25. Your Incubation Centre has a formal procedure for handling tenant companies grievances.	.440	1	.440	.682	.413

In terms of physical infrastructure services, the ANOVA table indicates that the significance value of library facilities (.001) and laboratory facilities (.015) is less than 0.05 indicating vital gaps in the perception of business incubation centres and their incubates regarding provision of these two services.

The results of the ANOVA for business assistance services reveal a significance value of less than 0.05 for secretarial services (.000), technical assistance (.000), marketing assistance (.002), networking support (.000) and assistance in securing capital (.029) implying critical differences in the conception of business incubation centres and their incubates regarding provision of these five services. It is, however, worth noting that in case of networking support and assistance in securing capital, the results indicate that although the incubates figure out these services to be provided in general, the degree of efficacy is perceived to be less in comparison to that of business incubation centres.

In case of management guidance and consulting services, the significance value of assistance in conducting feasibility studies (.006), assistance in writing business plans (.003) and business counselling (.000) is less than 0.05, suggesting significant gaps in perception of business incubation centres and incubates regarding provision of these services. The business plan writing assistance service though provided requires considerable improvement.

With regards to the enabling environment services, the ANOVA table reveals that the significance value of synergistic environment (.030), reduced time to develop marketable products/services (.003), minimized chances of failure (.000), establishing credibility (.032), and periodic feedback (.002) is less than 0.05, implying significant differences in perception of business incubation centres and incubates regarding provision of these services.

Conclusion

There is no doubt that start-ups play an important role in boosting innovation, entrepreneurship and creating new jobs. The country's premier engineering and Management like IIT'S and IIM'S have taken significant steps in enabling start-up ecosystem by establishing Incubators, Accelerators and research park and even the placement are seeing a fresh surge in hiring from start-ups.

The culture and practices of IIM' and IIT'S related to start-ups should also be percolated to other B-schools and engineering institutes located in TIER-II and Tier-III cities, where majority of the student's study. To begin with the ministry of HRD should provide the funds to set up incubators, Accelerators and research parks in Universities having the status of potential of excellence and thereafter to other universities and affiliated colleges looking into the success of the Programme. Even the corporate can be invited for funding start-ups through their corporate social responsibility activities.

For building an entrepreneurial environment, the government, big corporate, educational institutions should come forward to provide a culture for start-ups in India. Mentor programmes, innovative essay competitions, workshops, seminars should be organized by the government and universities. From an overall viewing, India had a very high scope for growth of start-up ecosystems. India offers the largest pie of venture prospect that the world is eyeing.

There are lots of issues relating to provide venture capital to these start-ups. "We need innovations that solve Indian consumers' problems, with a grassroots level movement. Foreign venture capital firms tend to have a bias towards replicating business models proven in developed countries.

Let's hope that new policy would address the problems of start-ups in General and educational institutes particular to foster innovation and entrepreneurship.

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