

Entrepreneurship and Start-Up Activities at Indian Higher Education Institutions



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E-mail: fi@fi.dk
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Abstract

This ICDK Analysis provides a longitudinal snapshot of the entrepreneurship and start-up activities of Indian higher education institutions. The aim of the analysis is to inspire Danish higher education institutions and companies to take an interest in the opportunities that India offers in this field. The analysis hopes to provide a quick overview of the institutional landscape as well as easy access to follow up on inspiration from the reading.

The analysis is made up of three parts:

- First, an introduction to entrepreneurship and start-up activities at Indian higher education institutions and the ecosystem available for such activities in India, establishing the state of the art in India.
- Second, a presentation of institutions that have been identified to be particularly relevant either because of their outreach, their practices of working with entrepreneurship and start-ups or their business focus.
- Third, a series of interviews with key informants from institutions that have been selected on the basis of the initial scoping of institutions.

The analysis concludes that entrepreneurship and start-up activities in India have not only grown in numbers and geographic spread, but also in terms of creating a dynamic support system to foster entrepreneurship, enhanced levels of innovation and employment creation. According to Indian informants interviewed for this analysis, there exist, however, a number of threats to the continuing development of the Indian start-up ecosystem because of prevailing social conventions regarding education and career choices and the relative difficulty of doing business in India. Still, there is general consensus among informants that India has much potential and increasingly also the know-how to become a more innovation-driven economy than is the case today.

1. Introduction

India is witnessing a tremendous rise in the start-up creation and business incubation, driven by an extremely diverse, inclusive entrepreneurial landscape and easy access to capital. It all started with the National Science and Technology Entrepreneurship Development Board (NSTEDB). NSTEDB launched the Science and Technology Entrepreneurs Parks (STEP) in the early 1980's and the Technology Business Incubators (TBI) in early 2000.¹ A number of academic and non-academic institutes have now joined the forces.

With over 3100+ start-ups and a steep projection to reach 10000+ by 2020 India is building its very own Silicon Valley. India is the 3rd largest start up location globally with over 800 start-ups created each year and over USD 2.9 Billion in funding received since 2010.² With a strong venture capital and private equity backbone of over 70+ active players in just 2014, 550+ angel investors and over 80+ incubators and accelerators, the youth in India are being groomed to succeed with new and innovative ideas.³

1.1 The Role of Higher Education Institutions in Fostering Entrepreneurship

The most important trend to notice is that educational institutions in India are beginning to play a vital role in developing entrepreneurial competencies and include entrepreneurship as a core course in business education. Greater emphasis has been laid down in the recent past on benefits of entrepreneurial-focused education at the universities, instilling the confidence in students to turn ideas into reality. These could be in the form of structured mentorship programs, short courses or other forms of training. Incubators are also cropping up in India with more and more number of universities and autonomous organizations undertaking to set-up these within and outside the campus as well. In terms of reach, most of the institutes have incubation facilities which are open to external applications and at minimal expenses.

Most of the top business schools and technical schools offer entrepreneurship education in the form of short and long term programs. The NS Raghavan centre for Entrepreneurial Learning in Indian Institute of Management (IIM) Bangalore has a management program designed for entrepreneurs and family businesses. The Indian School of Business in Hyderabad offers executive management and post graduate programs in entrepreneurship education. IIM-Bangalore is in the process of making entrepreneurship a compulsory course in the years to come. The Indian Institute of Technology (IIT) Madras incubation cell consists of alumni dedicated to providing funding along with the technical and business mentorship needed for a start-up to succeed and thrive. iCreate is an autonomous centre to facilitate a wide range of "Next Generation Entrepreneurship" in order to create a vibrant entrepreneurial ecosystem. S.P. Jain Institute of Management and Research has set-up a Centre for Entrepreneurship development with a view to promote student interest in entrepreneurship, facilitate new venture creation and commercialize grass-root inventions.

1.2 Faculty-Student Collaboration and Government Support of Entrepreneurship

The start-up ecosystem growth has also brought together faculty members and students at universities and institutions to join in with their own ventures. Many faculty members across universities in India are now working with start-ups either independently or collaboratively with students and co-faculty members. Faculty members of IITs from across India, including Bombay, Delhi, Madras, Kharagpur and Hyderabad, are leading the trend of joint start-up collaboration. IIT Madras has so far incubated 19 companies where faculty is involved. 30 of the 89 tech start-ups spawned at IIT Madras have faculty members as founders or minority shareholders. About 40% of the incubated companies at Society for Innovation and Entrepreneurship (SINE), IIT Bombay are student-faculty projects. IIT Hyderabad has two successful start-ups which are joint ventures between students and faculty.⁴

The Government of India has also been contributing significantly in order to promote entrepreneurial spirit within the students by way of risk funding. In order to push start-ups and SMEs, the Government of India has launched two new investment and loan programs with a combined budget allocation of INR 12,000 crore*. ⁵ The Finance Ministry of India has launched a new program "fund of funds" in order to invest in various venture capitalists funds for meeting the equity requirement of start-ups. The Ministry has also launched "India Aspiration fund" with an initial corpus of INR 200 crore in order to boost the entrepreneurial ecosystem within the country.⁶ The charts below give a snapshot of the enormously expanding start-up ecosystem and volume of funding raised in India.

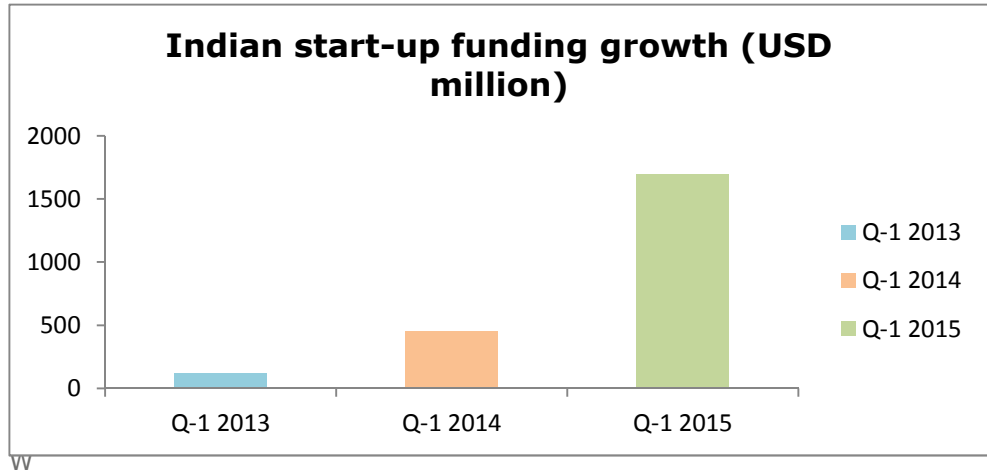
SNAPSHOT

- Approximately, 3100 start-ups present in India, 3rd largest base in the world.
- 800+ start-ups setting up annually.
- By 2020 there would be roughly 11500 start-ups, employing over 250k employees.
- Approximately 300 VC/PE & 225 angel investment deals worth over USD 2 billion.
- Over 20 M&As worth USD 1 billion in last 3 years.

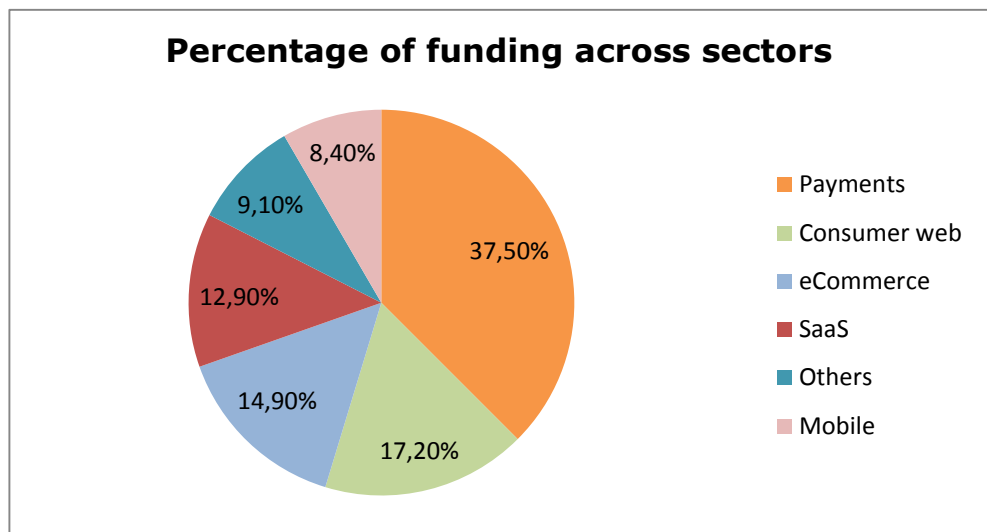
* One crore is 10,000,000 INR, or approximately 1.050.000 DKK.

1.3 Growth and Business Areas of Indian Start-ups

According to a recent report, start-ups in India have seen a 300% growth in the amount raised in the first quarter of 2015 as compared to \$450 million in the consecutive quarter of 2014.⁷



Within this picture, **payments** and **consumer web** sectors have attracted more than half of the funding amount followed by mobile, eCommerce and SaaS (Software as a Service) companies.⁷



2. A Landscape of Institutions

In order to combine formal institutional data with informal, contextual commentary, a **combination of desk research and site visits** has been employed to collect the required data. The process involved conducting an electronic search using key terms associated with start-up and business incubation. After collecting relevant information on the existing landscape, contacts were established with the incubation centres from respective institutions for on-site interviews. A total of 20 institutions were identified for this study and out of those, 11 were shortlisted for on-site interviews. In the interview process five major cities of India, viz. New Delhi, Bangalore, Mumbai, Ahmedabad and Chennai, have been covered. The institutions identified are listed below.

<p><i>Society for Innovation & Development (SID)</i></p> <p>Indian Institute of Science (IISc)</p>	Bangalore
<p><i>NS Raghavan Centre for Entrepreneurial Learning (NSRCEL)</i></p> <p>Indian Institute of Management (IIM)</p>	Bangalore
<p><i>Innovation Centre</i></p> <p>International Institute of Information Technology (IIIT)</p>	Bangalore
<p><i>Xavier Institute of Management & Entrepreneurship</i></p>	Bangalore
<p><i>Society for Innovation & Entrepreneurship (SINE)</i></p> <p>Indian Institute of Technology (IIT)</p>	Mumbai
<p><i>Centre for Entrepreneurship Development (CED)</i></p> <p>S.P. Jain Institute of Management & Research</p>	Mumbai

<p>National Design Business Incubator (NDBI)</p> <p>National Institute of Design (NID)</p>	Ahmedabad
<p>Incubation Cell</p> <p>Indian Institute of Technology (IIT)</p>	Madras
<p>Technology Business Incubator (TBI)</p> <p>Indian Institute of Technology (IIT)</p>	New Delhi
<p>Amity Innovation Incubator</p> <p>Amity University</p>	Noida
<p>The International Centre for Entrepreneurship & Technology (iCreate)</p>	Ahmedabad
<p>SIDBI Innovation & Incubation Centre (SIIC)</p> <p>Indian Institute of Technology (IIT)</p>	Kanpur
<p>Centre for Innovation, Incubation and Entrepreneurship (CIIE)</p> <p>Indian Institute of Management (IIM)</p>	Ahmedabad
<p>Design Business Incubator</p> <p>Mudra Institute of Communications (MICA)</p>	Ahmedabad
<p>Technology Business Incubator (TBI)</p> <p>Birla Institute of Technology & Science</p>	Pilani-Hyderabad
<p>Trichirapalli Regional Engineering College-STEP</p> <p>National Institute of Technology (NIT)</p>	Trichy
<p>AgriBusiness and Innovation Platform (AIP)</p> <p>The International Crops Research Institute for the Semi-Arid Tropics (ICRISAT)</p>	Hyderabad

<p>Science & technology Entrepreneurs Park (STEP)</p> <p>Indian Institute of Technology (IIT)</p>	Kharagpur
<p>Technology Business Incubator (TBI)</p> <p>Vellore Institute of Technology (VIT)</p>	Vellore
<p>Science & Technology Entrepreneurs Park (STEP)</p> <p>JSS Academy of Technology Education</p>	Noida

As mentioned, 11 institutions were selected for personal interviews with the management at the entrepreneurship and incubation cells. The selection was made based on certain parameters discussed in the next section. The contact details for these institutions are available towards the end of subsequent section.

This analysis consists of information on the incubation facilities and specific courses in entrepreneurship, offered by some of the reputed undergraduate and postgraduate institutions in India. The analysis elaborates on the start-up ecosystem within these institutions where students can develop the essential business management skills and systems that enable them to grow. During the process of the research, it was found that the number of institutions focusing on technology driven ventures are higher in number than any other sector/business area. Hence, in order to present the broad range of entrepreneurship and start-up activities at Indian higher education institutions, this analysis further seeks to include information on the start-up and incubation culture of quite diverse institution types such as, for example, the National Design Business Incubator and non-academic institutions like iCreate, established with a similar vision to create a vibrant entrepreneurial ecosystem in India.

Most of the institutions studied during the research offer incubation facilities. However, there are a couple of institutions that focus only on providing entrepreneurship teaching and training at various levels. All of these institutions have also developed a strong mentor network over the course of time. The institutions run a structured mentoring programme for the aspiring students and provide regular mentoring to them. In the process, the mentors first try and analyse the novelty and relevance of the idea and then guide students to think through the challenges and come up with a refined idea. The Indian Government has also been supporting these institutions to a great extent by providing regular funds for venture creation. Some of these institutions also run labs that are exclusively sponsored by the Government. These labs provide an even better platform to students for practical implementation of their ideas. The functioning also remains common between institutions where start-ups have to pay consideration for incubation which is a combination of subsidized rent, small equity and in some cases revenue share as well. For instance, most of the private institutes charge an incubation fee that ranges between 3000 to 7000 INR (approximately DKK 300-700) per person per seat. At the same time, Government institutions like Indian Institute of Management charge an incubation fee which is even less.

The following section below gives a brief overview of the institutions identified for the analysis. It gives a snapshot of the vision, sector focus and contact details of the respective institutions.

2.1 Overview of Institutions Identified for the Analysis

In this section, institutions identified to be included in the analysis are briefly presented in order to facilitate an overview and easy access to contact information. The vision and thrust areas of each institution are given for quick reference. Institutions are listed in random order.

Society for Innovation & Development



Established: 1991

Vision: To enable Innovations in science and technology by providing access to the intellectual and infrastructural resources of IISc.

Thrust areas: Bioinformatics, Image processing and Recognition, Materials, Microelectromechanical Systems (MEMS), Organic Electronics, Early detection of diseases, Drug design, Mobility, Renewable Energy and more.

Website: <http://sid.iisc.ernet.in/>

Contact details: Prof. Gurumoorthy
+91 80 23442779
irc@admin.iisc.ernet.in

NS Raghavan Centre for Entrepreneurial Learning



Established: 2002

Vision: NSRCEL helps entrepreneurs channelize their energy and talent towards transforming their ideas into successful companies by providing mentorship and incubation support

Thrust areas: ICT, Clean technology & Embedded systems and design sectors, Others

Website: <http://www.nsrcele.org/>

Contact details: Prof. Suresh Bhagavatula
+91 80 26993704
sureshbh@iimb.ernet.in

Innovation Centre, International Institute of Information Technology



Established: 2009

Vision: To foster innovation, support entrepreneurship and build robust connects with the industry.

Thrust areas: Information Technology

Website: <http://www.iiitb.ac.in/innovation>

Contact details: Mr. Sumukh Rao
+91 80 4140 7777/ 2852 7627
sumukh.rao@iiitb.ac.in

Xavier Institute of Management & Entrepreneurship



Established: 1991

Vision: To promote entrepreneurship through an array of entrepreneurship and leadership development programs.

Thrust areas: Sector agnostic

Website: <http://www.xime.org/industry-interface.php>

Contact details: Prof. Mukesh M.Hegde
+91 80 28528597
Mukesh@xime.org

S.P Jain Institute of Management & Research



Established: 2007

Vision: Centre for Entrepreneurship Development was set-up at The S.P. Jain Institute to promote student interest in entrepreneurship, facilitate new venture creation and commercialize grass-root inventions.

Thrust areas: Sector agnostic

Website: http://www.spjimr.org/discover_spjimr/centers/ced

Contact details: Prof. M. Suresh Rao
+91 22 61460317
msrao@spjimr.org

Society for Innovation & Entrepreneurship

Established: 2004

Vision: SINE extends role of IIT Bombay by facilitating conversion of R&D into entrepreneurial ventures.

Thrust area: Technology Entrepreneurship

Website: <http://sineiitb.org/sine/home/>

Contact person: Prof. Milind Atrey
+91 22 2576 7072/7016
milind.atrey@iitb.ac.in



National Design Business Incubator

Established: 2005

Vision: NDBI provides a platform to the designers to turn their ideas and concepts into successful competitive businesses. It provides an environment where they can develop the essential business management skills and systems that enable them to grow.

Thrust areas: Sector agnostic

Website: <http://www.ndbiindia.org/>

Contact details: Mr. Vikram Singh Parmar
+91 - 79 - 2662 3692
vikram_p@nid.edu



Incubation cell, IIT Madras

Established: 2013

Vision: IIT Madras incubation cell is primarily responsible for nurturing new companies, as well as for identifying promising pre-company opportunities.

Thrust areas: Technology and Knowledge based ventures

Website: <http://www.incubation.iitm.ac.in/>

Contact details: Dr. Tamaswati Ghosh
+91 44 6646 9869
office@incubation.iitm.ac.in



Technology Business Incubator, IIT Delhi



Established: 2000

Vision: To promote partnership with new technology entrepreneurs and start-up companies.

Thrust areas: Technology Entrepreneurship

Website: <http://www.fitt-iitd.org/tbiu.aspx>

Contact details: Mr. K.K. Roy
+91 11 26851169
kiritykumar@gmail.com

Amity Innovation Incubator



Established: 2008

Vision: To encourage and incubate technology based new enterprises with innovative products and services.

Thrust areas: Technology Entrepreneurship

Website: <http://amity.edu/aai/>

Contact details: Mr. Ojasvi Babber
+91 120 4659153
obabber@aai.amity.edu

iCreate



Established: 2000

Vision: To promote next generation entrepreneurship by creating a vibrant entrepreneurial ecosystem.

Thrust areas: Information technology, Electronics, biotechnology, nanotechnology, Robotics, non-conventional energy, bio-medical equipment and Agro & food processing.

Website: <http://icreate.org.in/>

Contact details: Mr. K. Thyagrajan
+91 79 2791 2803
tyagi@icreate.org.in

CIIE, IIM Ahmedabad

Established: 2002



**Centre for
Innovation
Incubation and
Entrepreneurship**

Vision: An autonomous not-for-profit company set-up under the aegis of IIM Ahmedabad to carry out incubation and ecosystem development to help budding entrepreneurs.

Thrust areas: Agriculture, Cleantech, Healthcare, ICT

Website: <http://www.ciie.co/>

Contact person: Neeraj Jain
+91 79 66324201
ciie@iimahd.ernet.in

SIDBI Incubation Centre, IIT Kanpur

Established: 2000



Vision: Set up in collaboration with Small Industries Development Bank of India (SIDBI) to foster innovation, research and entrepreneurial activities in technology related areas.

Thrust areas: Technology Engineering & All interdisciplinary areas

Website: <http://www.iitk.ac.in/siic/d/tags/sidbi>

Contact details: Dr. Sameer Khandekar
+91 - 512 - 2596646
samkhan@iitk.ac.in

Design Incubator, MICA

Established: 2009



Vision: An incubation centre specifically for the Strategic Marketing and Communication sector to commercialise and nurture ideas and innovations.

Thrust areas: IT software incl. Mobile applications, Speciality sectors (Nano-tech / Design)

Website: <http://www.mica.ac.in/edc/micaincubator>

Contact details: comcubator@micamail.in

Technology Business Incubator, BITS Pilani



Established: 2004

Vision: TBI promotes entrepreneurial leadership across all disciplines, facilitates entrepreneurial activity amongst students, and invites entrepreneurs to use TBI services so as to develop end products for commercialization.

Thrust areas: IT software incl. Mobile applications, Hardware /Electronics / Embedded systems, Manufacturing (Engineering), Healthcare (Product- based), Energy / Clean technology, Biotechnology (Food / Agri), Rural / Social Sector, Speciality Sectors (Nano-tech)

Website: <http://www.bits-pilani.ac.in/pilani/technologybusiness/TechnologyBusinessIncubator>

Contact details: Prof. Arya Kumar
+91-1596-51-5257
aryakumar@pilani.bits-pilani.ac.in

TREC-STEP, NIT Trichy



Established: 1986

Vision: A science and technology entrepreneurship park promoted to nurture technology innovations and knowledge based enterprises.

Thrust areas: Hardware / Electronics / Embedded systems, Manufacturing (Engineering, Energy / Clean Technology, Biotechnology (Food / Agri / Agri-Business), Speciality Sectors (Nano-tech)

Website: <http://www.trecstep.com/>

Contact details: R.M.P. Jawahar
+91-431-2500085
jawa_ts@yahoo.com

AIP, ICRISAT



Established: 2003

Vision: To support poor farmers of the semi-arid tropics through business incubation approach.

Thrust areas: Agri-Business (Agri-Products)

Website: <http://www.aipicrisat.org/>

Contact details: SM Karuppanchetty
+91-40-3071-3414,
karuppanchetty@cgiar.org

STEP, IIT Kharagpur

Established: 1986

Vision: To promote entrepreneurship by providing a conducive environment of nurturing and mentoring to the prospective entrepreneurs.

Thrust areas: IT software incl. Mobile applications, Hardware /Electronics / Embedded Systems, Manufacturing (Engineering), Healthcare (Product-based), Energy / Clean technology, Biotechnology (Food / Agri), Agri-Business (Agri-Products), Rural / Social Sector, Speciality Sectors (Nanotech)

Website: <http://www.step-iit.org/index.html>

Contact details: Prof. Satyahari Dey
+91-3222-281091
mdstep@hijli.iitkgp.ernet.in



Technology Business Incubator, VIT

Established: 2003

Vision: VIT-TBI supports creation of knowledge-based start-ups by being a focal point of various interventions and a catalyst for the promotion of Entrepreneurship.

Thrust areas: IT software incl. Mobile applications, Manufacturing (Engineering), Biotechnology (Food / Agri / Pharma)

Website: www.vittbi.com



STEP, JSSATE

Established: 2000

Vision: To nurture and develop techno-entrepreneurship in the region and to extend support to enable the growth of SME in the region.

Thrust areas: IT software incl. Mobile applications, Hardware /Electronics / Embedded systems, Manufacturing (Engineering)

Website: <http://jssstepnoida.org/>

Contact details: Ms. Ritu Dubey
+91 120-2401514/16
ritu@jssstepnoida.org



3. Interviews with Institutions

This chapter focuses on summarizing the interviews conducted for this study. The four main sections in this chapter include:

- Selection process
- Methodology
- List of interviewees.
- Summary of the interviews.

3.1 Selection Process

The final selection process to shortlist institutions for personal interviews is based on following parameters.

- Stature of the institution
- Form of ownership, Public or Private
- Focus on student-faculty start-ups
- Non-academic institution to present the range of start-up culture in India
- Reference by key management from other shortlisted institutions

This study employed a simple validation process to determine whether each individual business incubation centre qualified on inclusion based on the parameters listed above. Given this, the sample is confined to only 20 institutions across some of the bigger cities like New Delhi, Mumbai, Ahmedabad, Madras, Bangalore and others. Some of the institutions in our list have centres in different parts of the country. For instance, there are a total number of 16 IITs and 19 IIMs in India. The study, however, included personal interviews at IITs and IIMs from few tier 1 cities only, assuming them to be representative of the incubation facility at the centres in other cities.

3.2 Methodology

The findings of this report rely on a combination of primary and secondary research methodology. On the primary front, 10 interviews were conducted with the management at the incubation centres of various institutions. The secondary research involved consolidation of various lists of incubation facilities to get a relatively exhaustive sense of ecosystem participants.

The research involved travel to each of the cities where these 10 institutions are based. The study adopted a semi-structured interview process in order to facilitate free discussion of the issues most relevant for the analysis.

3.3 List of interviewees

The following representatives of institutions were interviewed for this analysis:

- Mr. D V Jagadish, Chief Executive Officer, Outreach and Innovation Centre, International Institute of Information Technology (IIIT) Bangalore.
- Prof. Mukesh M.Hegde, Dean (Entrepreneurship Development), Xavier Institute of Management & Entrepreneurship, Bangalore.
- Prof. Suresh Bhagavatula, Assistant Professor (Entrepreneurship), Indian Institute of Management, Bangalore.
- Prof. Gurumoorthy, Chief Executive (Society for Innovation & Development), Indian Institute of Science, Bangalore.
- Mr. Ojasvi Babber, Deputy General Manager, Amity Innovation Incubator, Noida.
- Mr. Shaurya Gupta, Team Member (Entrepreneurship-cell), IIT-Delhi.
- Prof. Milind Atrey, Member (Society for Innovation & Entrepreneurship, SINE), Indian Institute of Technology, Bombay.
- Ms. Poyni Bhatt, Chief Operating Officer (Society for Innovation & Entrepreneurship, SINE), Indian Institute of Technology, Bombay.
- Prof. M Suresh Rao, Chairperson - Centre for Entrepreneurship, S.P. Jain institute of Management & Research, Mumbai.
- Mr. Vikram Singh Parmar, CEO-National Design Business Incubator (NDBI), National Institute of Design, Ahmedabad.
- Mr. K. Thyagrajan, Founding Team Member, International Centre for Entrepreneurship & Technology (iCreate).

3.4 Summary of interviews

3.4.1 Society for Innovation & Development (SID), Indian Institute of Science (IISc) Bangalore

SID was set up in close collaboration with The Indian Institute of Science (IISc). Its main objective has been to facilitate interaction between the students and the industry, working on licensing technologies developed inside the campus and incubate IP based start-ups that commercialize science and technology for societal benefit. SID strives to bring the leading intellectuals of IISc and the fruits of their research and development efforts closer to industries and business establishments

SID undertakes research and development projects based on individual or joint proposals from the faculty and scientists of IISc in collaboration with industries, business establishments, and national and international organizations. It is currently incubating 8 companies and is witnessing a robust pipeline for start-ups. The society also receives grants from Ministry of Information Technology to fund start-ups from the IISc. Department of Management Studies of IISc offers two courses on managing Intellectual Property and Entrepreneurship. It also engages in close collaborations with the other universities offering specialized courses on entrepreneurship. The alumni are actively involved with taking regular courses on promoting entrepreneurship spirit within the students.

Key Achievements

- *The society has come a long way to generate approximately Rs. 800 million worth of research projects until March'2006.*
- *As many as 389 projects initiated by July'2006*
- *As many as 142 projects completed successfully by March'2006*
- *Helped IISc to procure around Rs. 140 million worth of assets*
- *Several patents have been filed from the work arising out of SID projects*
- *Promoting Kishore Vaigyanik Protsahan Yojana (KVPY), a unique programme of Govt of India for encouraging talented young students*

3.4.2 NSRCEL - Indian Institute of Management, Bangalore

The N S Raghavan Centre for Entrepreneurial Learning (NSRCEL) at IIM Bangalore aims to facilitate business growth through seeding, nurturing and promoting entrepreneurship with emphasis on start-ups and existing organisations with high growth potential. It does so by training entrepreneurs and by providing an incubation facility for the start-ups. The Centre draws upon both the IIMB faculty and industry experts to provide mentoring support.

NSRCEL is one of the few entrepreneurship centres which has its own faculty focused exclusively on teaching and research related to entrepreneurship.

NSRCEL is an open incubator meaning that the entrepreneurs or the companies need not be affiliated with IIMB to qualify for incubation. The centre is also sector agnostic. More than 35 companies have graduated from NSRCEL so far and it continues to attract talented youngsters eager to start new ventures. The enterprises have to fulfill the "3 I" criteria of being *innovative*, *impact making* and *implementable* for being a part of the incubation facility at NSRCEL. ⁸

The incubation process at NSRCEL is similar to the process followed at other universities. It begins with entrepreneurs submitting their business plans for review. Once the documents are received, they are reviewed and the incubation facility is offered to the most suitable candidates. During the period of incubation, there are a number of review meetings with the NSRCEL team to monitor the progress the company makes while incubating at the center. NSRCEL also provides seed money support to some of the incubatee companies. The funding is primarily through government grants and its disbursement is in accordance with the guidelines that have been laid down by the primary funding agency.

The institution also runs a number of entrepreneurship related courses in addition to the one or two year regular MBA programs. Students also get to participate in the 30 or more events that NSRCEL organizes every year, resulting into useful networking opportunities at times.

IIM B at present is focusing a lot on internalization and is currently associated with countries like Singapore, Hong Kong, Japan, Korea and Dubai. A very successful program was a launch of a week long summer school in entrepreneurship meant to provide a quick overview of entrepreneurship in India wherein 36 students from 17 universities participated from across the globe.

3.4.3 Innovation Centre: International Institute of Information Technology Bangalore

IIIT was set up with support from The Ministry of Information Technology, Government of India in order to promote innovation and encourage entrepreneurship. The Innovation Centre offers **Cube**, **Axle** and **Nova** programs with an aim to provide end-to-end incubation services to aspiring entrepreneurs and inspiring ventures.

Cube: It is a medium term program of 18-24 months that involves regular mentoring by both institute faculty and external experts on entrepreneurship skills and education, formulating a business plan and access to physical infrastructure. Incubation facility is provided for a period of two years that may be extended by a year for which a combination of equity and cash is charged.

Axle: It is a relatively short term 100-day structured program helping entrepreneurs in achieving the problem-solution fit, market-product fit and business-model fit.

Nova: It is a 10 month entrepreneurship program that provides students an opportunity to understand the need gaps of the customers and design an appropriate solution.

The Centre also helps connect the entrepreneurs with consultants in domains of finance, strategy, marketing, legal compliance, etc., and introduces them to angel investors and other investment avenues. IIITB Innovation Centre incubates ideas only in the area of information technology and is open to start-ups and companies outside the Institute as well. It is currently incubating 20 firms. The Institute is well positioned within the state Government and receives regular grants from the Government for financing start-ups.

IIT-B Innovation Centre is an open incubator and is currently incubating 20 firms. The vision of the incubator is to foster innovation and a spirit of entrepreneurship through IP creation. Support to incubators includes workspace with connectivity and access to other infrastructure facilities like labs at the Institute. The main focus of the Institute is Information technology related start-ups satisfying 3 criteria below:

- **Novel:** There must be some originality in the proposed idea
- **Non-Trivial:** The idea, when executed well, must be able to create an entry barrier for competition
- **Useful:** Within 18-24 months, the idea should be capable of getting translated into a commercial offering and start earning revenue

An interesting initiative by the Institute is the launch of ***I-MACX Nova*** program that focuses on civic and social related entrepreneurship and innovations. It is a vision of the Government of Karnataka that aims to jumpstart the mobility focused entrepreneurial ecosystem within the state. I-MACX aims to create an ecosystem that encourages responsible start-ups who would make a lasting impact on the technology adoption by government and society, at large.

3.4.4 Xavier's Institute of Management & Entrepreneurship (XIME)

XIME is a leading Business School and its mission is to provide value-based management and entrepreneurial education of truly international standards, not only to those seeking careers in the corporate sector, but also to entrepreneurs, small scale industrialists and those working in public sector industry and services.

Entrepreneurship has been a core course at XIME for several years now. This has led to a substantial number of 2500 strong alumni community transitioning to entrepreneurship after they graduated from the portals of the institute.

XIME regularly conducts training programs in Entrepreneurship Development with the support of industry focusing on entrepreneurship competencies, business opportunity identification, development of detailed project report and mentor programs. This has impacted a wide spectrum of entrepreneurs. These programs are backed by XIME's considerable wealth of experience in the teaching of Entrepreneurship over the years by some of XIME's faculty and also consultants to SMEs.

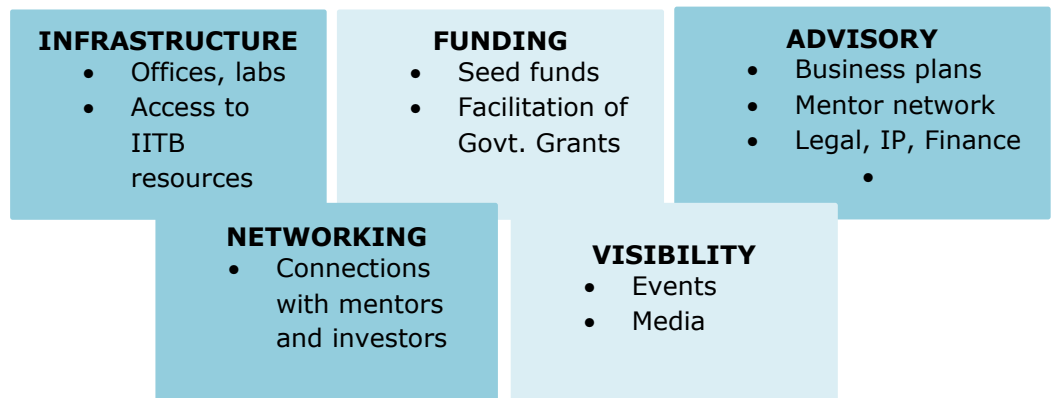
As next steps, XIME is working on modifying their curriculum to allow students take up entrepreneurship while they complete their PGDBM program. They are also restructuring the EDP curriculum to help entrepreneurs work on their idea while they also learn about entrepreneurship. XIME is working with alumni, industry mentors, and the investor community to further strengthen the

entrepreneurial ecosystem within XIME. What envisaged this vision at XIME is the increased incidence of entrepreneurship and start-up successes in India. The institute now looks forward to supporting the start-ups by way of providing infrastructure with an access to expert mentoring committee and investor collaboration.

3.4.5 SINE, IIT Bombay

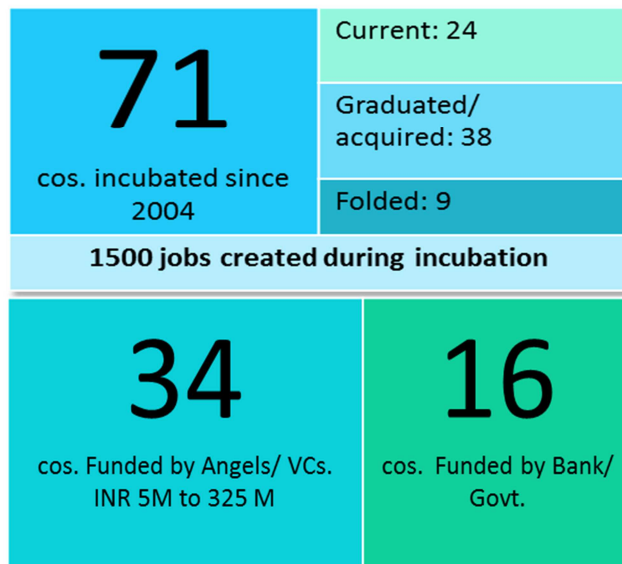
SINE is a non-profit entity set up in 2004 and has been amongst the early adaptors of business incubators in India, hosted by the Indian Institute of Technology, Bombay. SINE runs a business incubator and provides support for technology based entrepreneurship founded by IIT Bombay community or are based on IIT Bombay technologies.

Facilities offered by SINE:



SINE offers three forms of incubation: Pre Incubation, Regular Incubation and Virtual Incubation. It is, however, a closed incubator primarily because of limited access to resources. An incubatee company can stay in the incubator for a maximum of three years. The Society provides initial incubation support for only 18 months and based on the future prospects of the start-up, extend the facility to 3 years. Companies have to pay consideration for incubation which is combination of subsidized rent, small equity and revenue share.

Current Incubation set-up at SINE



IITB IP commercialized	22
Faculty involved startups	20
Companies with social innovation	05

As seen in the table, IIT Bombay has 20 student-faculty start-ups. In such set-ups, the Intellectual Property is usually co-developed by both. The Institute transfers the IP to the company at a later stage and takes equity for that.

SINE's presence at the campus has also enabled a substantial rise in the entrepreneurial activities at IIT Bombay. The Institute has come up with a Centre for Entrepreneurship, motivating pre-entrepreneurial activity within the campus. The institute has also kicked off a new program in entrepreneurship leading to a minor degree. This initiative is largely driven by the IITB alumni, serving as fantastic role models for the students and start-ups. The institute possesses a very strong alumni connect and has noteworthy examples of faculty turning out to be the best mentors at SINE. It is moreover, a fully residential college which adds significantly to improved bonding and effective networking between the faculty and the students at any time of the day.

3.4.6 S.P Jain Institute of Management and Entrepreneurship

S.P. Jain Institute of Management and Research (SPJIMR) is one of the premier business schools in the country. SPJIMR's growth is based on the commitment to diversify into socially relevant segments and activities that are not adequately addressed at societal level, and accordingly impart the requisite management education.

Centre for Entrepreneurship Development was set up by SPJIMR and offers various programs to promote student interest in entrepreneurship, facilitate new venture creation and commercialize grass-root inventions.

The Entrepreneurial Manager (TEM)

The course aims to teach the approach entrepreneurs use in identifying opportunity and creating new ventures; the analytic skills that are needed to practice this approach; and the background knowledge and managerial skills that are necessary for dealing with the recurring issues involved in starting, growing, and harnessing the value of new ventures.

Managing New Business Initiatives (MNBI)

Managing New Business Initiatives (MNBI) is an elective course that brings student teams in close proximity with entrepreneurs, working for their enterprises. Project MNBI provides the student the opportunity to observe first-hand, the entrepreneur operating in early stage / growth modes

Start Your Business (SYB)

The Start Your Business (SYB) Program is business neutral - be it fast food, garments, software or janitorial services - as long as the business idea results in a profitable and scalable enterprise that generates wealth and employment.

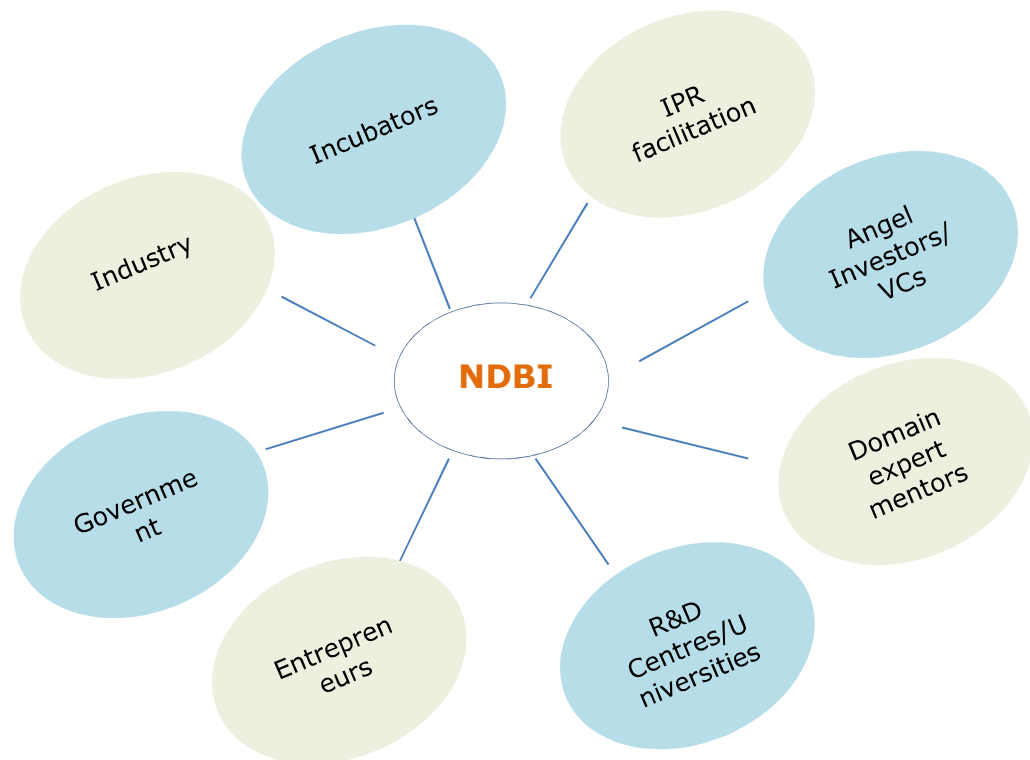
Grow Your Business (GYB)

The Grow Your Business program provides the knowledge, skills and attitude required for entrepreneurs to encash the enormous opportunities available in today's business environment.

The Institution offers plug n play offices for students and looks forward to going online now. It also runs a special business program called "Doing business in India" that gives an exposure to overall Indian market scenario to students from abroad. The Institution also has international collaborations with the top business schools in Germany, Netherlands, United States and more.

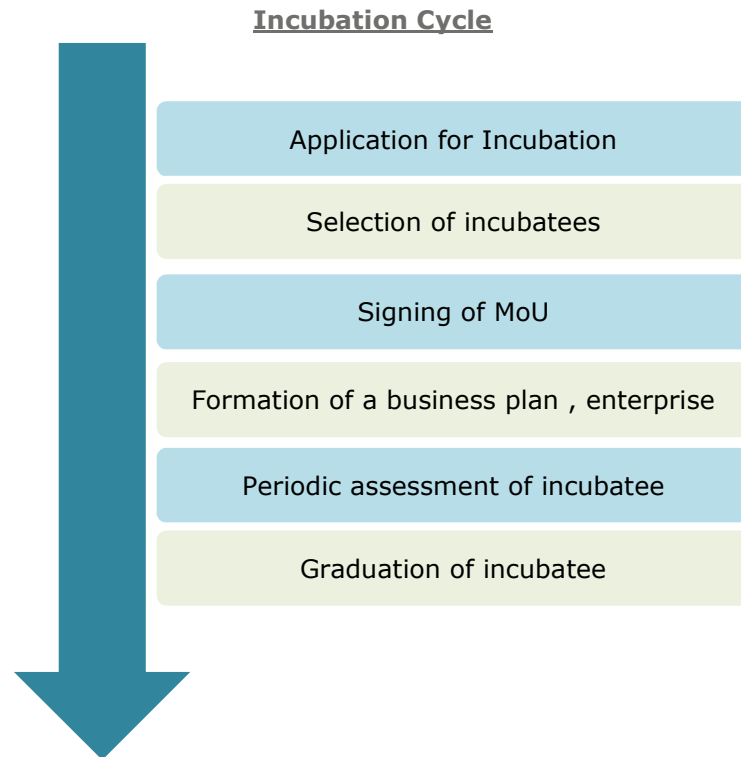
3.4.7 National Design Business Incubator

NDBI is an initiative of the National Institute of Design (NID), Ahmedabad set up with the support of Department of Science and Technology, Govt. of India. NDBI strives to promote a culture of entrepreneurship in the creative minds of young designers and enabling "Mind to market" transformation. It also facilitates a strong mentor support and state-of-the-art design support infrastructure.



Incubation at NDBI

Incubation is available both in physical and virtual forms and is an *open* incubator. Physical Incubation period in NDBI is 24 months which can be extended further by 6 months or more.



NDBI helps the entrepreneurs incubated through grants, venture funds to the start-ups or raising venture finance for them. Some of the funds that NDBI leverages include funds from the Department of Industrial Policy and Promotion, (DIPP) through venture ready scheme and funding from Angel investors and venture capitalists.

3.4.8 Technology Business Incubator (TBI) and The Entrepreneurship Development Cell (EDC), IIT-Delhi

The Technology Business Incubator at The Indian Institute of Technology, Delhi was established in the year 2000 with an objective to promote partnership with new technology entrepreneurs and start-up companies. The incubation is open to academic staff, students, alumni or a faculty-student led company and the R&D division of existing small and medium enterprises (SMEs). The Standing Screening Committee in the Institute reviews each incubation proposal and the business plan based on a pre-defined criteria. Start-ups are generally expected to meet the fund requirements from own sources, except the incubator nursery programmes where fund shortages during incubation progress are considered by the Committee to be met as loan or seed funding.

The Entrepreneurship Development Cell, IIT Delhi aims to create a sustainable and diverse entrepreneurial ecosystem in India by creating an easily accessible and exhaustive set of resources for the entrepreneurs, through various fun-filled yet educating sessions such as Start-up Showcases, competitions, eTalks and so on and so forth. The EDC is specific to college students and organizes regular events for promoting entrepreneurship which has also resulted in immediate fund raising for start-ups during the event itself.

IIT Delhi seeks to promote innovation through short term courses and report writing assignments. The institution does not focus on providing specific courses on entrepreneurship. However, there are some optional courses on business management within the full time management studies course. IIT Delhi also plans to come up with a 6 month semester long internship for students, moving away from the regular 2 month summer internship practice at other institutions. The institution also runs a Deferred Placement Program: DPP allows students not to sit for their placements in the last year of their course and provides an opportunity to start something on their own. If they fail, they can sit for placements within a period of maximum 2 years from the completion of their course.

Overall, the institution along with student participation has come a long way in bringing industry and academia together and they strive to focus even more on enhancing the entrepreneurial culture within the economy.

3.4.9 Amity Innovation Incubator, Noida

Amity Innovation Incubator was set up to support entrepreneurs in accelerating the development of their ideas through a range of incubator services, business advisory, mentoring and financial services through its network of contacts. More than 100 companies have incubated at Amity with around 20 of them performing well on stand-alone basis. The university has an incubation network across 5 physical and 17 virtual locations. Amity students have established 42 companies and approximately 440 patents have been filed by Incubator for entrepreneurs, faculty and researchers. On collaboration front, Amity has strategic collaborations with incubators in USA, Europe, Middle East and Asia and more than 250 international delegations have visited the Amity Innovation Incubator. The incubation service at the university is open to external applications and around 50 percent of the incubators are external incubators.

Amity Innovation Incubator offers a range of incubation services such as:

• Business planning	• State-of-the art infrastructure
• Company formation	• Venture capital funding
• Legal & IPR Assistance	• Networking
• Managerial support	• Collaborations & Alliances
• Technology support	• Mentors
• Board Members & Advisors	• Training & Team Development

The Equity percentage and the Rentals depends upon the growth potential, stage of the start-up, risk involved and is subject to mutual discussions between the start-up and the Incubator's management. For financial advisory

and investment support, Amity Innovation Incubator has strategically tied up with Amity Capital Ventures. Amity Capital Ventures as an entity raises and invests funds into start-ups and entrepreneurs and also co-invests along with various partners PEs and VCs. In terms of individual investment, Amity Innovation Incubator, through its unique model of investment, also encourages investment in its incubatee and partner start-ups via Amity Innovation Fund. The University also has a Centre for Private Equity & venture capital which is a dedicated resource centre for information and screened interaction between the different stakeholders in the Entrepreneurial and investment ecosystem.

3.4.10 International Centre for Entrepreneurship & Technology (iCreate), Ahmedabad

iCreate was established in 2012 as an initiative of Gujarat Foundation for Entrepreneurial Excellence and promoted as a joint venture by Gujarat Mineral Development Corporation Ltd. (GMDC) and Gujarat Entrepreneurship and Venture Promotion Foundation (GEVPF). iCreate is an ecosystem consisting of three interconnected initiatives:

- **Spark-up Idea Fund** which encourages student innovations. Applications are invited through social media and grants of up to 50,000 INR are awarded to students from all over India to develop their idea. Applications are invited every quarter. The success rate is approximately 10 %.
- **Grooming Program** for entrepreneurs who can apply for a 13 week program to develop their mindset, skillset and toolset in order to further improve the value proposition of their idea. The Grooming Program is intended to remedy the risk of the so-called "last mile hick-up" which often kills good ideas. The program also aims to instil a frugal attitude among the participants.
- **Incubation** of up to two years' duration. iCreate can fund incubates up to the equivalent of 1.6 million DKK to take ideas to the proof of concept stage. This includes field trials as well as external peer review of business plans. Interns from higher education institutions often assist at projects. iCreate takes out 10 % equity on incubated projects and receives royalty payments when an incubate reaches a 100 crore turnover (approximately 105 million DKK).

iCreate has so far managed to help 11 incubates go into commercial mode. This is a reasonably good result which iCreate contributes to the fact that the institution '...bets on individuals, focusing on competence rather than ideas alone.' The focus on human potential rather than initial business plans is thought by iCreate to better identify sustainable projects in the long run. In fact, iCreate is rather uneasy about the current hype of start-up'ism and entrepreneurship because the basic ease of doing business in India still needs some improvement to make a bet on entrepreneurship as a career a truly viable alternative to other career choices. Likewise, iCreate thinks that the collaboration between academic institutions and industry needs to be closer in order to create a nexus between higher education and business development.

4. Conclusion

The origin of incubation centres in India is a recent phenomenon. Despite that they have managed to contribute significantly in promoting the entrepreneurship culture within the country. On the other hand, the start-ups have also demonstrated the potential to create breakthrough technologies and fascinating service delivery mechanisms. The Indian Government is equally involved in promoting the start-up culture by way of risk funding and in designing effective policy framework. The major findings of this analysis are summarized below.

- Funding, in general, is not seen as a demotivating factor for growth of the start-ups. Almost every institution in our sample receives regular grants from the Government and sufficient inflow of funds from the private investors.
- Most of the institutions are open incubators and follow a similar revenue model which is a combination of rent, equity and revenue share.
- The process of incubation is essentially the same across all the institutions with the thrust areas being different for each of these.
- Alumni-Student Mentorship Program is considered an important development tool for the success of a venture.
- University students working as interns with the incubated start-ups constitute a key element in the entire process.
- The concept of deferred placement is slowly gaining momentum at the institutes. A lot of them are now following the deferred placement structure in order to encourage students to work on creating their own venture.
- Institutions also look forward at creating an enabling and inclusive ecosystem, enabling growth prospects for incubators working towards enterprises having a social impact.

The incubation centres in India have not only grown in numbers and geographic spread, but also in terms of creating a dynamic support system to foster entrepreneurship, enhanced levels of innovation and employment creation.

This being said, the interviews with Indian institutions also brought to the fore that the peer pressure for placement in secure jobs with predictable monthly incomes is still a social force preventing many Indians from pursuing the entrepreneur path. For Indian students, the concern of re-paying student loans is particularly pertinent and more often than not lead to conventional career choices in a job market which is challenged by increasing redundancy of jobs due to technological advances. The tolerance of failure is still low in Indian society. The interviews for this analysis often pointed to the need of introducing entrepreneurship and start-up at a much earlier stage in the education system to inculcate curiosity, creativity and innovation impetus in the students.

As for the financing of entrepreneurship, some interviewees voiced the opinion

that the business climate in India makes it very difficult to go beyond the demands for collateral prior to funding innovative projects. There is a need of soft money in the Indian start-up ecosystem which is still hampered by conventional thinking by both private investors and Government agencies, according to interviewees, who generally stated that the ease of doing business in India needs to be improved for more investment in innovative business areas to take place.

This analysis has sought to present an overview of the multi-faceted world of entrepreneurship and start-up ecosystem in Indian higher education institutions. It is hoped that it will work as an inspiration for Danish higher education institutions and companies who are interested in the possibilities of developing value propositions in the Indian context, either by seeking partners in India or by taking direct advantage of the possibilities illustrated in this analysis.

Abbreviations and Acronyms

AIP	AgriBusiness and Innovation Platform
BITS	Birla Institute of Technology & Science
CED	Centre for Entrepreneurship Development
CIIE	Centre for Innovation, Incubation and Entrepreneurship
DIPP	Department of Industrial Policy and Promotion
EDC	Entrepreneurship Development Cell
GYB	Grow your business
iCreate	The International Centre for Entrepreneurship & Technology
ICRISAT	The International Crops Research Institute for the Semi-Arid Tropics
ICT	Information and Communication Technology
IIIT	International Institute of Information Technology
IIM	Indian Institute of Management
IISc	Indian Institute of Science
IIT	Indian Institute of Technology
MICA	Mudra Institute of Communications
MNBI	Managing New Business Initiatives
MOU	Memorandum of Understanding
NDBI	National Design Business Incubator
NID	National Institute of Design
NIT	National Institute of Technology
NSRCEL	NS Raghavan Centre for Entrepreneurial Learning
NSTEDB	National Science and Technology Entrepreneurship Development Board
PE	Private Equity
SID	Society for Innovation & Development
SIDBI	Small Industries Development Bank of India
SIIC	SIDBI Innovation & Incubation Centre
SINE	Society for Innovation & Entrepreneurship
SME	Small and medium-sized enterprises
SPJIMR	S.P. Jain Institute of Management & Research
STEP	Science and Technology Entrepreneurs Park
SYB	Start your business
TBI	Technology Business Incubator
TEM	The Entrepreneurial Manager
TREC	Trichirapalli Regional Engineering College
VC	Venture capital
VIT	Vellore Institute of Technology
XIME	Xavier Institute of Management & Entrepreneurship

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7. National Institute of Design (NID), Ahmedabad
8. Indian Institute of Technology, Madras
9. Indian Institute of Technology, New Delhi
10. Amity University, Noida
11. Indian Institute of Technology, Kanpur
12. Indian Institute of Management, Ahmedabad
13. Mudra Institute of Communications, Ahmedabad
14. Birla Institute of Technology & Science, Pilani
15. National Institute of Technology, Trichy

16. The International Crops Research Institute for the Semi-Arid Tropics, Hyderabad
17. Indian Institute of Technology, Kharagpur
18. Vellore Institute of Technology, Vellore
19. JSS Academy of Technology Education, Noida

Interviews:

- Interview with Mr.Ojasvi Babber, Amity Innovation Incubator, Noida, September 28, 2015
- Interview with Mr. Shaurya Gupta, Entrepreneurship Cell, IIT Delhi, September 28, 2015
- Interview with Mr. D V Jagadish, Outreach and Innovation centre, IIIT Bangalore, September 29, 2015
- Interview with Professor Mukesh M.Hegde, Xavier Institute of Management and Entrepreneurship, Bangalore, September 29, 2015
- Interview with Professor Gurumoorthy, Society of Innovation and Development, Indian Institute of Science, Bangalore, September 30, 2015
- Interview with Professor Suresh Bhagavatula, Indian Institute of Management, Bangalore, September 30, 2015
- Interview with Professor Milind Atrey, Society for Innovation and Entrepreneurship, IIT Bombay, Mumbai, October 7, 2015
- Interview with Ms. Poyni Bhatt, Society for Innovation and Entrepreneurship, IIT Bombay, Mumbai, October 7, 2015
- Interview with Professor M. Suresh Rao, Centre for Entrepreneurship, S.P. Jain Institute of Management and Research, Mumbai, October 7, 2015
- Interview with Mr. Vikram Singh Parmar, National Design Business Incubator, National Institute of Design, Ahmedabad, October 8, 2015
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