## CHAPTER – VI

CONCLUSIONS AND SUGGESTIONS

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CHAPTER VI
CONCLUSIONS AND SUGGESTIONS

6.1 INTRODUCTION

This chapter gives the summary of analysis done in Chapter V, conclusions of the entire study and suggestions for Business Incubation Centers, Academic Institutions and the Government.

The conclusions based on the analysis of data relating to Business Incubation Centers and the conclusions based on survey analysis of Incubatee responses are given in paragraph 6.2 and 6.3

6.2 CONCLUSIONS BASED ON ANALYSIS OF DATA RELATING TO BUSINESS INCUBATION CENTERS

1. The Business Incubation Centers under study are those which are approved and supported by Department of Science and Technology. The main objective of all the Centers is to promote technology led and knowledge driven enterprises. All the Centers are thus technology based Business Incubation Centers called as Technology Business Incubators. Five such Centers, which have been in existence for at least 5 years, were found in Maharashtra. Four of these Centers are launched under Technology Business Incubators (TBIs) Programme and one of those, under Science and Technology Entrepreneurs Parks (STEPs) Programme of NSTEDB (DST), Government of India.

2. Business incubation was initiated in India in 1980’s. The analysis of age of the Centers in Maharashtra reveals that Business Incubation experience of all the Centers is more than five years. However it is not more than 11 years. It is evident that business incubation is Maharashtra is at a nascent stage.
3. The Maharashtra State has 36 districts but these technology based Business Incubation Centers in the state are concentrated only in three districts in the western part of the state and especially in Pune. This indicates the lack of adequate incubation facilities in the state.

4. Host institutions of the centers are different by nature, which include Academic Institutions (IIT (B), DKTE) Research Laboratory (NCL), Science and Technology Park under University (STEP under SPPU) and the Technical Consultancy Organisation (MITCON). Host Institute’s expertise and strength in their respective field is the vital part of the eco system of these Business Incubation Centers. The innovation and entrepreneurship eco system at the host institution demonstrates the strength in terms of expertise, support facilities, eco system partners, networking etc. and this justifies the potential for the selected thrust areas.

5. In all, there are 25 thrust areas in which the Centers under study are providing the incubation support. The thrust areas include product based ideas from various disciplines of science and engineering, any other ideas based on science and technology which include. Materials, chemicals, biological sciences, Bio Technology, Textile and Garments etc.

6. All the incubation Centers under study are operating on a Not-for-Profit motto. Four Centers are autonomous bodies having a separate legal status. Thus, they are exercising the functional autonomy.

7. The board of directors comprises of experts from diverse fields such as, technology experts, successful entrepreneurs, legal experts, research experts etc. However, no graduated company was found in this composition. In case of SINE IIT (B) there is no separate advisory board. At Growth lab, Vice Chancellor of Savitribai Phule Pune University is on the advisory board and in case of TBI DKTE,
Principal of the host Institution is on the advisory board Graduated companies are given representation on the advisory board of Growth lab and TBI DKTE.

8. The percentage of time spent by the business incubation managers on business incubation relating functions ranges from 50% to 100%. The business incubation managers were found to be overburdened with the responsibilities of sustainability of the programme and survival of the clients.

9. The Incubation area of the Centers ranges from 3000 Sq. Ft. to 10,000sq ft. The incubation capacity at the centers ranges from 10 Incubatees to 60 Incubatees. While Space constraint was observed at SINE IIT (B), it was observed at other centers that getting viable business proposal for incubation is the challenge. It was also observed that due to lack of awareness about the incubation facilities, the existing capacity is not fully utilized for incubation purpose.

10. It was observed that the incubation period differs with the center due to differences in thrust areas. It ranges from 1 year to 3 years. However this period may be extended according to requirement of particular product idea. It was observed that the majority of the Incubatees remain associated with the centers to get the funding support and to take the advantage of address, visibility and credibility associated with the centers or the host institutions.

11. The wide range of services are offered by all the Centers which include infrastructural facilities, development of business plan, funding, mentoring, networking etc. It was found that all the Centers provide infrastructural facilities, assistance for designing, developing the product and for modification in the product. However, Growth Lab does not have in house lab facilities and lack proximity to such facilities.
12. All the Centers provide access to seed capital and guidance on getting the funds. All the Centers extend direct help in preparing finance proposals. For obtaining venture capital, angel funds or obtaining bridge finance no direct assistance is provided.

13. Mentoring and networking opportunities are made available at all the Centers except for few services. Venture Centre helps to facilitate interaction between companies and research organisations via its mentoring efforts and through other formal programmes. SINE IIT (B), Venture Center and Growth Lab also help to develop the connect with entrepreneurs, researchers and venture capitalists from other parts of the world. Strong alumni network at national and international level is the advantage for SINE IIT (B) and TBI DKTE.

14. Intellectual Property Facilitation Center was found only at Venture Center. At all other centers the IPR Related facilities are provided through the consultants.

15. The time lag for arrangement of seed funds ranges from less than three months to more than 9 months. All other facilities are made available within three months by all the Centers except SINE IIT (B), where this assistance depends upon the availability.

16. The incubation revenue model at the Centers is mainly the combination of rent, service charge and the fees. The incubation revenue model of SINE IIT (B), is a combination of subsidized rent, equity and revenue share up to 6%. At Growth lab, interest is charged on soft loan and it holds an equity stake.

17. The Survival Rate of Incubatees at SINE IIT (B) is 81%, at NCL Venture Center it is more than 97%, at MITCON TBI it is 90%, at DKTE TBI it is 100% and .at Growth lab it is more than 98%.
18. Funds / Grants available under various schemes include the schemes under Department of Science and Technology, Technology Development Board, MSME Support for Entrepreneurial and Managerial Development of SMEs through Incubators, BIRAC-Biotech Ignition Grant (for biotechnology incubation).

19. For evaluation of the outcome and effectiveness of the programme, the feedback on services offered is obtained by all the Centers annually. The detailed evaluation of the outcome is done and published by NCL Venture Center through website.

6.3 CONCLUSIONS BASED ON SURVEY ANALYSIS OF INCUBATEE RESPONSES

1. All the Incubatee respondents are technology based ventures. The sample size is 35 Incubatees. The respondent Incubatees include 9 resident Incubatees, 3 associate Incubatees and 23 graduated Incubatees. 31 Incubatees have moved from idea stage to commercial product stage. 4 Incubatee respondents are in growth phase, who have attained steady income source and are getting the customers continuously.

2. The major challenges faced by the Incubatee respondents before joining the incubation programme were found to be lack of funds, lack of awareness about the schemes of finance available, Lack of knowledge about the preparation of business plan , lack of availability of affordable space and lack of business know how.

3. The support services of funding, networking and mentoring were found to be very Significant from the view point of challenges faced by the Incubatee respondents. 86% of the Incubatee respondents availed the service of financial assistance 94% availed the advantage of networking, and 82% availed the service of business plan development. Technology commercialization was very significant for 75% of the Incubatees. Cash flow management or business
management was considered as very insignificant by almost all the Incubatees.

4. 91% of the Incubatees who availed the financial assistance service were satisfied with the service, 9% were not satisfied. For 36% of the 22 Incubatees who availed the service of seed funding, it was highly satisfactory and 19% were not satisfied.

5. The research and development support in the form of technical expertise and lab space was found highly satisfactory by more than 80% of 18 Incubatees who availed this service. 75% of 20 Incubatees who availed the facility of infrastructural facilities provided for research and development, were highly satisfied.

6. 26% of the Incubatees had availed the service of legal assistance 53% of 17 Incubatees, who availed the help in incorporation of the company were highly satisfied.

7. 27 Incubatees had availed the mentoring support for development of business plan. 24 Incubatees had received this service for finance...21 Incubatees got the mentoring for commercialization of technology. Majority of the Incubatees who availed these services were satisfied with the service.

8. The most availed service of networking is either through scheduled meeting or meeting with the consultants, as per the need of Incubatee. This was found to be very effective by majority of the Incubatees, who availed this service

9. The average time required to get the seed capital is 9.92 months. On an average the time lag in getting the support in the form of infrastructure and office space was less than two months. The average time lag to get the Business development assistance is 3.36 months
10. It was found that average number of products launched per Incubatee respondent is more than two and employment generated per graduate Incubatee is more than four. It is notable that all the Incubatee respondents are located in the region of the centers.

11. The overall satisfaction level about the business incubation programme indicates that 31% of the Incubatee respondents were highly satisfied, 60% were satisfied and 9% were unsatisfied with the services availed. Center wise level of satisfaction reveals that 56% of the Incubatee respondents of MITCON TBI were satisfied, while 44% were unsatisfied. In case of other Centers, the Incubatees were satisfied with the services availed.

12. Key Strengths of the Centers:

The key strengths of the Centers as perceived by the Incubatees are given below:

1. **SINE IIT(B)**
   - Ecosystem of the host institution
   - National & International Level Visibility, Credibility
   - Reasonable Rent
   - Access to State of the Art Research & Development Labs
   - Resource pool at IIT (B)

2. **MITCON TBI**
   - Support for preliminary Project Report,
   - Support for preparation of Business Proposal and formation of the Company
   - Lab Assistance
   - Training opportunities available at Center

3. **NCL VENTURE CENTER**
   - Eco System at NCL Venture Center
   - Mentoring, Network at national and international level,
   - Patent Training
   - Access to Funding
   - Affordable Work Space and Equipment
4. **GROWTH LAB, Scitech Park**
   - Strong national and International Network
   - Credibility to get the Funds
   - Eagerness to help
   - Exposure for expansion & Growth

5. **TBI DKTE**
   - Technical Expertise available at DKTE
   - Honest Efforts, Timely Support
   - Continuous Technology up gradation
   - Networking with Suppliers & Manufacturers
   - Vicinity to Textile Cluster
   - Infrastructural support
   - Advantage for past students of DKTE

13. Key opinions of Incubatees regarding improvement in Business Incubation programme include the following:
   1. More funds are needed to Scale up
   2. Culture of Venture Capital investment needs to be strengthened
   3. Funds for social impact investment be mobilised to boost the Social Entrepreneurship
   4. Time lag in getting funds be reduced
   5. Prototype facility for hardware needs to be strengthened
   6. Entrepreneur’s Training of 10 to 15 days on every aspect of business is essential
   7. Industry Tie-ups need to be strengthened,
   8. Technology Transfer Assistance need to be improved
   9. Direct facility for regulatory compliances be provided,
   10. For Bio Start-ups, centralised facilitation Centers should be created
   11. There is a need of passionate & dedicated efforts to develop an Incubatee and not the number of Incubatees.
   12. Mentor should be assigned to each Incubatee
1. Majority of the Incubatee respondents experienced value addition during the startup phase. Differing levels of value addition were observed for five Business Incubation Centers. In case of TBI DKTE and SINE IIT (B) the consistency was found in observations relating to the value addition. In case of NCL Venture Centre, moderate consistency was found in observations relating to value addition.

2. Considering the value addition by incubation centers, TBI-DKTE and SINE-IITB were found in top performer group, NCL-Venture Centre in middle performer group, and Growth Lab and MITCON-TBI in low performer group. Compared to other Centers, the researcher concludes that there is a scope for improvement in the services of MITCON TBI and Growth Lab, Scitech Park.

3. The value addition through support services, the rate of survival, rate of graduation and employment generation indicate that the Business Incubation Centers significantly contribute to the survival and growth of the Incubatees, post incubation support.

4. The products developed and successfully launched by the Incubatees indicate that Technology Business Incubation Centers foster the growth of technology firms through support for technology commercialization.

5. The employment generation by successfully developed Incubatees clearly indicates that the Business Incubation Centers contribute to employment generation.
6.5 SUGGESTIONS

Based on the observations and conclusions drawn as above, some important suggestions for Business Incubation Centers, Universities/Academic Institutions and the Policy makers are given below:

6.5.1 SUGGESTIONS FOR BUSINESS INCUBATION CENTERS

1. The center should focus on particular technology or particular business sector and develop the configuration of the center accordingly. This would help to concentrate on specialized field of knowledge and skills and enable to provide specialized advice and support facilities.

2. Due consideration should be given to location specific factors and accordingly necessary programmes should be designed. Private sector should be involved to provide tailor made services to Incubatees.

3. A committed, knowledgeable and more importantly passionate incubation manager and dedicated staff are crucial for successful implementation of business incubation programme. The Business Incubation Manager should be able to take dedicated efforts and pay enough attention to the needs of the Incubatees. He should be assisted by the dedicated staff. The staff should be incentivized for the efforts taken.

4. The formal mechanism for follow up of progression of Incubatees and graduated companies is essential. The Business Incubation Center interacts with various actors in the ecosystem. If the challenges faced by current Incubatees during early stage of their business and those by graduated firms during growth stage are effectively communicated to the relevant stakeholder /actor in the ecosystem, the valuable feedback loop can be created. This can benefit the current Incubatees as well as the graduates and help the center to create more enabling
environment in future. The assessment of impact of incubation is possible only if information is obtained from client companies in a systematic manner. The feedback on the role played by an incubator in development of Incubatee would help to ensure that the right services are being provided.

5. There should be transparency in the incubation policies and practices followed. The policies, procedures and the outcome of the business incubation programme should be published on the websites of the incubation Centers. This will help to create the awareness about the incubation policies, procedures and its impact.

6. Websites of the Centers should be updated and online database relating to support facilities and various schemes of the Government should be created.

7. The assignment of mentor to each Incubatee is necessary in order to provide handholding support at every phase. The pool of mentors should be created.

8. Networking with graduate Incubatees should be given importance. This would help the Incubatees to get the guidance and develop mentoring relationships. The graduates should be encouraged to remain in the region. So that there would be long term benefit to the region.

9. The soft loans should be made available to support the Incubatee during key stages of the startup phase. Online Database of angel funders, venture capitalists should be created.

10. Training according to Incubatee specific needs should be provided to help understand the business basics, market needs, opportunities and threats and also various schemes supporting the technology startups.

11. Business Incubation Centers must have the clear visibility in the region, the potential innovative entrepreneurs must clearly know the role played by Business Incubation Centers in successful
development of Incubatees. Centers should create the awareness about the incubation facilities at the center through promotional campaigns.

12. Industry tie ups and tie ups with academic and research institutions at local, national and international level should be strengthened to facilitate the product specific support and sharing of know how. Under Corporate Social Responsibility, the help of established corporate houses can be taken to market the start up products.

6.5.2 SUGGESTIONS FOR ACADEMIC INSTITUTIONS

1. In order to develop the entrepreneurial capabilities, the teaching and learning systems need to be changed. They should be such, which foster the creativity, innovative and entrepreneurial abilities. This would stimulate inventions, innovations and entrepreneurship. The prospective client of the incubation center would then be capable of leveraging the resources available at incubation Centers.

2. There is a need to build and maintain the high quality research labs with necessary equipment.

3. The academic institutions should be able to attract the talented, visionary and dedicated faculty to guide and to focus on research funding, networking and strategic planning. This is required to transfer the technology from academic research lab to real world.

4. Cross departmental and collaborative projects should be encouraged to take the advantage of the know how available across various disciplines.

5. Incentives to take the research from Lab to market - The incentives should be provided to researchers and academicians to take the researches in the labs to market. Faculty members and students should be encouraged to evaluate the commercial potential of their technology innovations and form the start-up companies. Strong industry tie ups would help in undertaking the useful research.

6. Development of entrepreneurial eco system at University level must be given the priority. There must be sufficient linkage between
University, industry and the Government to augment the innovation and to bring it to marketplace. For building the strong innovation and entrepreneurial ecosystem with sustainable efforts at University level, the University level Entrepreneurship Network (UEN) should be developed. The activities under the Network should include the following:

i. Development of pool of Entrepreneurs, Investors, Mentors, Angel Funders, Venture Capitalists and Professional Experts

ii. Encouragement for Cross disciplinary collaboration in partnership with the entrepreneurial community, especially the alumni entrepreneurs of the University

iii. Promotion of ground-breaking research and education in entrepreneurship

iv. Development of courses on entrepreneurship and innovation as well as the experiential programmes and events

v. Scouting of Innovative ideas every year at University Level

vi. organisation of flagship events on the campus of colleges e.g. student start up showcase event at centrally located college

vii. Taking stock of the support facilities available in various colleges / Institutes under University and establishing the linkages for facilitation of support in the form of workspaces, laboratories, faculty expertise available for incubation support.

viii. Creation of online mentoring platform for budding student entrepreneurs

6.5.3 SUGGESTIONS FOR THE GOVERNMENT

1. The priority should be given for providing technical education and development of innovation and entrepreneurial capability among the students at academic institutions. After critical assessment of the innovation ecosystem at the academic institution, the incubation Centers should be sanctioned

2. In India and so in Maharashtra, the participation of the Local Government in business incubation process is absent. Local
Government should take initiative for strengthening the research and innovation environment and also to provide the infrastructural support necessary for fostering the innovation and entrepreneurship.

3. The timely availability of funds and infrastructural support (e.g. lab equipment) is the critical issue. The time lag in getting the assistance should be significantly reduced.

4. The existing capacity of the Centers needs to be increased. More efforts are required to scale up the present incubation capacity in Maharashtra. Incubation support under public private partnership should be encouraged.

5. The incubation Centers in the state are concentrated in western Maharashtra. In order to ensure the inclusivity and to serve the needs of innovators in all the regions of the state there is a need to establish more technology Business Incubation Centers in different parts of the state.

6. The efforts should be taken to develop Agro business training and incubation facilities under academic institutions in rural areas.

7. The regional economic development incubators should be promoted. This would help in developing the programme suitable to the Incubatees of the region and in achieving balanced regional development by utilizing the local resources.

8. Business Incubation Centers for Women entrepreneurs should be established in order to provide handholding support at every stage of business according to their specific needs.

6.6 **SCOPE FOR FURTHER RESEARCH**

A study on technology business incubation has a wide scope. In future, the study can be carried out in the following areas:

1. Research on cost effectiveness of the Business Incubation Centers

2. Effects of business incubation on regional development
3. Research to understand the appropriateness of business incubation models in different contexts.

6.7 CONCLUSION

The Business Incubation Centres are playing significant role in providing an enabling environment to translate the technology into commercially viable business venture. Their value added services are helping the Incubatees to enhance their abilities to survive and grow. The eco system of the incubation centre greatly influences the success of the Incubatees. In order to cater to different needs of the Incubatees and to accelerate the process of business incubation, there is a need to establish the strong linkages among academic & research institutions, industries and the Government. More focus is required on development of strong Innovation Eco System at Academic Institutions. This would help to tap the creative and entrepreneurial talent at early stage and to provide exposure at wider level. This would also help to create the strong foundation for upcoming Business Incubation Centers.