

## **SUCCESS FACTORS OF INCUBATEE STARTUPS AND THE INCUBATION ENVIRONMENT INFLUENCERS**

*Balachandran Arumugam\* and Sudharani Ravindran\*\**

*Abstract: Start-ups are the entrepreneurial venturing efforts of individuals or teams having an idea. The success rates of these start-up initiatives are very low owing to many factors. Business incubators provide several value added services to the start-ups through their incubation programs and thus mitigate some of the risks faced by them. This study focuses on identifying certain dominant factors in the incubation offerings that not only reduce risks but also facilitate the success of start-up ventures under incubation.*

### **INTRODUCTION**

The American National Business Incubation Association (NBIA, 2014) defines a 'Business Incubator' as "an economic development tool designed to accelerate the growth and success of entrepreneurial companies through an array of business support resources and services". Business incubators offer several value added services apart from the space provided to the start-ups under incubation (incubatees). The services offered by the business incubators enable the incubatees to have access to infrastructure, mentoring, funding, talent, markets and legal support thereby mitigating risks faced by them. Eventually, successful outcome of venturing effort of the incubatee firms are affected by these value added services and hence are the deterministic factors attributing to the success of incubatees. The aim of the study is to discover what these deterministic factors are and to find the dominant ones among them.

### **Business Incubation in India**

National Science and Technology Entrepreneurship Development Board (NSTEDB) of the Department of Science and Technology (DST) of Government of India has been promoting business incubators in India since 1986. As in July 2014, 62 business incubators were listed in the website [www.nstedb.com](http://www.nstedb.com). Most of these

---

\* General Manager, VIT-Technology Business Incubator, VIT University, Vellore-632014, E-mail: [balac68@gmail.com](mailto:balac68@gmail.com)

\*\* Professor, PSG Institute of Management, PSG College of Technology, Peelamedu, Coimbatore-641004, E-mail: [sudharani@psgim.ac.in](mailto:sudharani@psgim.ac.in)

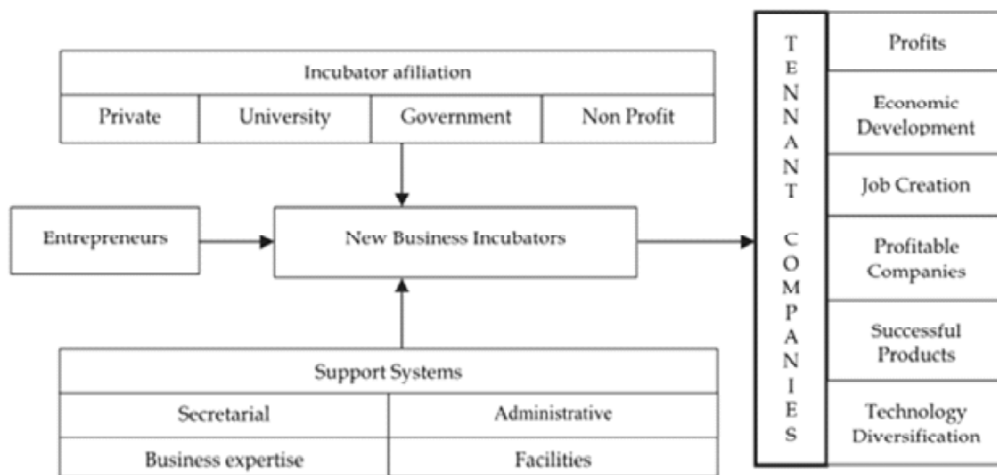
incubators are hosted by academic institutions and are supported by DST through capital equipment grant and operational grant for first five years. DST also provides opportunities for capacity development of incubation managers and incubatees. Each of these incubators focuses on certain technological areas and have created specialised infrastructure in these areas.

### Defining Success of an Incubatee Venture

Smilor’s Incubation model depicted below (Fig. 1) presents a comprehensive view of the business incubation program, its stakeholders, its services and the outcomes (success metrics) connected to incubatee firms (Smilor, 1987). As start-ups are vulnerable to risks and failure, the mortality rate during the venture formation stage is very high. Business incubators provide crucial support to the start-ups and help them to mitigate risks. In order to measure the successful outcome of an incubation exercise, there have been several qualifiers identified by researchers and business incubation experts. The success in the market place (acceptance of products and ability to generate revenue), financial success (ability to raise investments) of the venture and recording consistent growth are some of factors seem to be dominant among all the factors.

Based on the context, the jobs generated or impact (solving a societal problem), product milestones (if it’s a venture focusing on innovative technology) are also other parameters used to measure the success of incubatee venture. Sales turnover,

**Smilor's incubation model (1987)**



Business Incubation Blog, <http://worldbusinessincubation.wordpress.com/>, Ryzhonkov Vasily

**Figure 1: Business Incubation Model**

profitability, growth of enterprise and graduation to independent trading are stated as hard measures to define success of business incubation (Voisey, P, Gornall, L, Jones, J, Thomas, B, 2006).

Market and product are the most important factors for the survival and development of incubatees (Sun, H, Wenbin, N, Joseph, L, 2007).

A study on evaluating a start-up venture (Cusumano, M, A, 2013) mentions the following as the key elements to look for in a start-up

- (a) Strong management team,
- (b) An attractive market,
- (c) A compelling new product or service,
- (d) Strong evidence of customer interest,
- (e) Overcoming the credibility gap,
- (f) Demonstrating early growth and profit potential,
- (g) Flexibility of strategy and technology and
- (h) Potential for a large investor pay off

Among the various factors discussed above, this study confines to meeting

1. Product objectives (technology/innovation)
2. Funding objectives (funding / meeting revenue goals)
3. Market (customer acceptance/growth)
4. Impact including job creation as measures of success of an incubatee firm

### **Factors Contributing to the Success of Incubatees**

Lalkaka (2001) presents the evolution of the incubator concept after studying and analysing incubators across the globe as follows:

“the ‘first generation’ incubators in the 1980s were essentially offering affordable space and shared facilities to carefully selected entrepreneurial groups. In the 1990s the need was recognised for supplementing the work space with counseling, skills enhancement and networking services to access professional support and seed capital, for tenants within the facilities and affiliates outside. This has led to the ‘second generation’ incubator. Starting in 1998, a new incubation model emerged in parallel. This is intended to mobilise start-ups and provide a convergence of support, towards creating growth-potential, technology based ventures.”

Business incubators provide many value added services to the incubatee firms. They provide affordable work space as well as shared facilities, counseling, training, information and access to external networks (Lalkaka, 2002).

According to another related study (Abduh, M, D’Souza, C, Quazi, A, Burley, H, T. 2007), the services are classified as:

- (a) Facility related services (affordable and flexible space, amenities to do with physical infrastructure including equipment access, visibility to start ups by virtue of incubator's reputation)
- (b) Counseling and business assistance related services (mentoring and business development support in the areas of planning, marketing, finance, legal, regulation, product development and employment assistance, facilitation in fund raising) and
- (c) Networking services (access to business resources, information and to businesses outside the incubator).

The table 1 provides a summary of findings from literature on various types of value added services received by an incubatee firm in order to mitigate the risks in the venture creation and to build a successful firm.

**Table 1**  
**Incubation Service Offerings**

<i>Incubation Services</i>	<i>Components</i>	<i>Literature References</i>
Access to infrastructure	office space, amenities like conference & meeting facilities, laboratories for development and testing of products (eg: like wet labs/ animal house facilities in case of biotechnology start-ups)	Mian, S, A. 1995, Al-Mubarak, H, M, et al. 2013, Voisey, P, et al. 2006, Lalkaka, R.2006, Haiyang, Z et al. 2011, Arlotto et al. 2011, Kumar, S, K, et al. 2011, Aruna, C et al. 2012, Kumar, S, K, et al. 2012
Access to mentoring	wisdom and expertise of the seasoned experts available in the incubator or in its network to address technological challenges and business challenges	Al-Mubarak, H, M, et al. 2013, Voisey, P, et al. 2006, Lalkaka, R. 2006, Arlotto et al. 2011, Kumar, S, K, et al. 2011, Aruna, C et al. 2012, Kumar, S, K, et al. 2012
Access to funding	facilitation to raise money helps the incubatees to raise the required resources (talent/ equipment/materials etc...)	Mian, S, A.1995, Al-Mubarak, H, M, et al. 2013, Voisey, P, et al. 2006, Lalkaka, R.2006, Bergek, A, et al. 2007, Haiyang, Z et al.2011, Arlotto et al.2011, Kumar, S, K, et al. 2011, Aruna, C et al. 2012, Kumar, S, K, et al. 2012
Access to talent	access to talent support from the incubator, its host institute (institutions hosted in academic environments) or from its network as the incubatees find it very hard to get the required manpower (lack of reputation/ lack of ability to pay/ risk of survival)	Mian, S, A. 1995, Lalkaka, R. 2006, Haiyang, Z et al.2011, Arlotto et al. 2011, Kumar, S, K, et al. 2011, Aruna, C et al. 2012, Kumar, S, K, et al. 2012

---

Access to market	to obtain validation for its product / service offering, take the necessary course corrections if there are differences between the actual need and its offering and more importantly stay in the business by clocking in sales and revenues	Mian, S, A. 1995, Al-Mubarak, H, M, et al. 2013, Voisey, P, et al. 2006, Aruna, C et al. 2012, Kumar, S, K, et al. 2012
Access to legal / IPR support	protect the IPR and legal needs: Availability of access to legal/ IPR support from the incubators help the incubatee firms to exercise care and caution in statutory dealings and to safeguard intellectual assets	Safraz A. Mian , Voisey, P, et al. 2006, Lalkaka, R.2006, Aruna, C et al. 2012, Kumar, S, K, et al. 2012

---

Most incubators provide some level of the above mentioned services and assistance. The services generally include low cost office, laboratory, warehouse, and/or manufacturing space, secretarial services (word processing, typing, photocopying, receptionist, clerical, and filing), administrative services (mailing, accounting, equipment rental, billing, and contract administration), access to library and computer facilities, inexpensive graduate and undergraduate student assistance, consulting services (general management, marketing, financial, loan packaging, accounting, and legal), and a network to reach bankers, venture capitalists, technologists, and government officials. In this supportive environment, the entrepreneur can grow and nurture the company.

Apart from the basic infrastructure support, the value added services to incubatees are in the areas of mentoring, funding, marketing, team and other business support services like legal, accounting and regulatory issues.

## **RESEARCH OBJECTIVE**

The objective of this work is to rate the dominant factor among the various factors that contribute to the success of incubatees in the incubation environment. This would help the stakeholders connected to the business incubation environment to focus and strengthen the same for enhancing the performance of incubation process.

## **RESEARCH METHOD**

This research study was carried out using survey method.

Though there have been a number of studies done in the past on the above lines, their target groups generally were incubators in USA, Europe, China, and Brazil. Very limited information in this context is available in Indian incubation

scenario. After an effort to reach the DST supported incubators for this study, it was found that 52 business incubators were active and operational. Among these, 32 of them are located in 4 southern Indian states.

The study focuses on incubatees operating out of five Indian incubators located in the southern Indian states of Tamil Nadu and Kerala. Before a complete population study (which involves over 500 start-up incubatees), it was decided to carry out a pilot study of incubatees in some incubators, in this study. This study is confined to start-up firms under incubation (incubatees) in these five chosen incubators.

A two stage convenience sampling was done. Access and ease of data collection were the basic reasons for choosing this approach as this work needs the support and coordination of business incubation managers. At the first level, 5 incubators out of 52 incubators promoted by the Department of Science and Technology, Government of India were chosen considering their location, incubation infrastructure, longevity of operation, number of companies under incubation and number of companies graduated. In the second level, of the 79 start-up companies (incubatees) in these incubators, 53 were sent the survey questionnaire during the months of September-October 2014 and 35 responses have been obtained. The response rate is 66%.

### **Validity**

The validity of the survey instrument was ascertained through interaction with the experts in the field.

### **Randomness**

Since a two stage convenience sampling was considered, as per the requirement, the data needs to be random. Therefore 'Run Test' was used to ascertain the randomness of the data.

H1: The Data collated from the respondent group is random.

The Run test result:

Since asymptotic significance values are greater than 0.05 (5% level of significance), the hypothesis is accepted.

## **FINDINGS AND ANALYSIS**

### **Defining success**

The respondents were asked to rate qualifiers of the success of incubatee firms under incubation and were given various options to rate on a five point scale. The Table 2 depicts the mean value of the responses (n=35).

The respondents have rated 'Gaining acceptance from customers / generation of orders and setting a growth trend' as the most important factor (4.57) for a firm to be categorised as a successful one. Success in the market place would lead to sales and revenues resulting in profits, survival and growth. The respondents have chosen this as most important among all the factors defining success.

Meeting product/service objectives (4.49) is rated next by the respondents and this translates the importance of the firm's ability to be innovative, differentiate its offerings and stay competitive in the market place.

Surviving for at least for 3 years after moving out of incubator and recording consistent growth has been rated next in the order (4.46). During incubation, the primary tasks for the incubatee firms are developing & launching the product, and getting traction in the market place. The growth and survival are possible only after reaching the preceding steps.

**Table 2**  
**Qualifiers of Incubatee Success**

<i>Descriptive</i>	<i>Mean Score</i>
Meeting product /service objectives / goals (concept to commercial acceptance)	4.49
Meeting financial objectives / milestones (breakeven / financial sustenance)	4.37
Acquiring angel investments / early stage venture capital investments / bank funding / Govt. or other grants	3.06
Achieving certain thresholds in number of employees	2.83
Gaining acceptance from customers / generation of orders and setting a growth trend	4.57
Impact creation	3.71
Surviving for at least 3 years after moving out of incubator and recording consistent growth	4.46

Meeting financial objectives and milestones in terms of break even and financial sustenance is rated as the next factor to define the success (4.37). The start-ups under incubation typically look for seed and angel investments. They use the funds to develop the product and launch in the market place. Hence, the respondents view meeting financial objectives during the incubation period as desirable but not important as the preceding factors mentioned above.

Impact creation as a factor to define success had a score of 3.71. Impact creation at the incubation stage assumes less significance than the other set of activities that would eventually lead them there. Acquiring angel investments / early stage venture capital investments / bank funding / Govt. or other grants had a score of 3.06. This brings out an interesting issue for further research as to whether the incubation offerings slow down the immediacy of fund raising by incubatees.

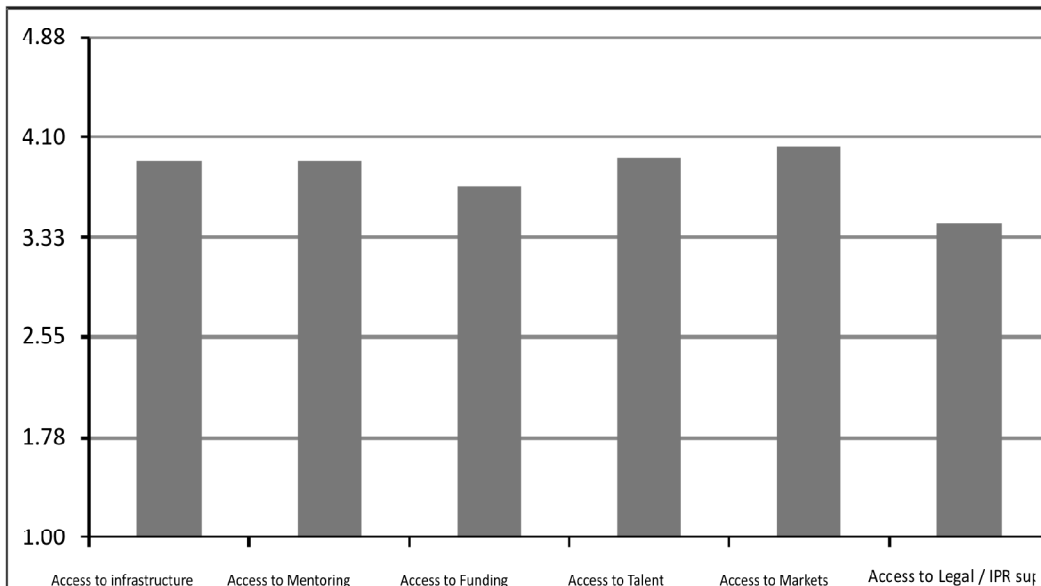
Achieving certain thresholds in number of employees had the lowest score of 2.86. Growth in number of employees happens mostly after market or financial success. Even though employee growth is a visible sign of growth of a venture, incubatees ranked this the lowest among identified factors. This throws opens a new issue to verify as to whether the incubatees are more rational than the other firms not undergoing incubation due to extensive mentoring and training by the incubator.

### Determining Factors of Incubatee Firms' success

In the next section of the questionnaire, the respondents rated various factors (among the incubator service offerings) that contribute to the success of incubatee firms. The table 3 and figure 2 depict the values:

**Table 3**  
**Factors Determining Incubatee Success**

<i>Determining factors</i>	<i>Mean Score</i>
Access to infrastructure	3.91
Access to mentoring	3.91
Access to funding	3.71
Access to talent	3.94
Access to markets	4.03
Access to legal / IPR support	3.43



**Figure 2: Determinants of Incubatee's Success**



### **Access to Infrastructure**

Access to infrastructure is a requirement for the incubatees from the incubator during the early stages of venture creation. This as a determining factor was given a score of 3.91. When probed further on various contributing factors (Table 4) under the access to infrastructure support, the respondents attached greater significance to low or subsidised cost of access to the infrastructure facilities (3.89).

**Table 4**  
**Contributing factors -Access to Infrastructure**

<i>Contributing factors</i>	<i>Mean Score</i>
Access to product development facilities	3.74
Access to testing / validation facilities	3.63
Access to other common facilities like library / conference / training facilities	3.37
Low or subsidised cost of access to the above facilities	3.89

This could be one of the important reasons as to why start-ups seek incubation support. Access to product development facilities and access to testing and validation facilities had mean scores of 3.74 and 3.63 respectively. Unlike life sciences or manufacturing, the requirement of product development facilities required in 'Information and Communication Technology (ICT)' sector (to which majority of the respondents belong) is considerably lower. The soft resources like library /training facility access (score of 3.37) assumes even lesser significance.

### **Access to Mentoring**

Mentoring by the incubator staff or by the mentoring resources from the incubator's network brings in significant value to the incubatee firms. This is evident from importance attached to mentoring (score of 3.91) among the various factors determining the success of incubate firms.

When examined further through a set of contributing factors (Table 5) availability of mentors to address the business requirements (4.17) and ease of access to mentoring (4.14) were higher than contributing factors such as mentoring support from the incubator team members / from incubator's network (4.03),

**Table 5**  
**Contributing factors-Access to mentoring**

<i>Contributing factors</i>	<i>Mean Score</i>
Mentoring support from the incubator team members / from incubator's network	4.03
Availability of mentors to address the technological requirements	4.00
Availability of mentors to address the business requirements	4.17
Ease of access to mentoring	4.14
Low / subsidized cost of access to mentoring	4.00

availability of mentors to address the technological requirements (4.00) and low / subsidised cost of access to mentoring (4.00).

Most founders of the start-ups are of the opinion that availability of business mentors and access to mentoring are more important.

### **Access to Funding**

Access to funding as deterministic factor for the success of incubatee firm had a mean score of 3.73. The respondents of the view that while funding is essential in obtaining other resources like infrastructure, talent and to reach out to the market place, it is not as important as infrastructure or mentoring or talent or marketing. The reasons could be that the incubation environment provides these resources at a low cost.

**Table 6**  
**Contributing factors-Access to Funding**

<i>Contributing factors</i>	<i>Mean Score</i>
Availability of seed funding support from the incubator	3.97
Providing access /facilitation to raise grants from Govt. and other agencies	4.09
Providing access /facilitation to raise angel investors /angel networks	3.71
Providing access /facilitation to raise early stage venture capital investments	3.54
Providing access /facilitation to raise bank loans	3.26

Among various contributing factors in the access to funding support, providing access/facilitation to raise grants from Government and other agencies had a maximum mean score of 4.09. This reflects the fact at the idea to product development phase, the incubatees require risk capital.

There are uncertainties related technology /markets and other factors. The next best score (3.97) was assigned to availability of seed funding from the incubator. Since many of the incubators have started offering seed funding, the speed / flexibility /cost of fund seem to weigh in favor of this factor. Providing access/facilitation to raise early stage venture capital investments had a mean score 3.71 and as this is another great resource for incubation stage venture, there seem to be preference to this after grants and incubator managed seed funding. As the angel funds are scarce and limited to few pockets, accessing angel funds through incubation is quite difficult and evolving. Providing access/facilitation to raise early stage venture capital investment had a mean score of 3.54. The reasons could be that at incubation stage the businesses won't be in the venture capital investment radar. The venture capitalists generally look for traction in the market, potential for scaling & growth and significant competitive advantages. Most of these factors wouldn't be there /visible during incubation phase and hence the respondents

might not have felt that this very essential during incubation phase. The lowest score of 3.26 was attributed to providing access / facilitation to raise bank loans. Since bank loans are very difficult for a risky idea stage venture. Also, the tangible assets syndrome of the bankers makes the bank loans unattractive. Moreover, the cost of money (higher interest rates) and shorter & rigid moratorium periods are the other factors that seemed to make the bank loans less attractive in the opinion of incubatee respondents.

### **Access to Talent**

The very fact that the survey respondents belong to incubators hosted by academic institutions makes it relevant that the 'Access to talent' as a deterministic factor had a mean score of 3.94. The incubators (by virtue of their association with the host institute) provide valuable access to the student talent (for internships / part time jobs/ project opportunities) and also assist the incubatees in their recruitment process (from the alumni pool or using its resource networks). Among various contributing factors, reputation of the incubator to attract talent for working in the incubatee companies had a maximum mean score of 4.14.

In fact, it is surprising that incubatees were more interested in leveraging the reputation of the host institution over accessing lower cost but high quality human resources. This issue is also flagged for a future research direction.

**Table 7**  
**Contributing factors-Access to talent**

<i>Contributing Factors</i>	<i>Mean Score</i>
Availability of interns / facilitation to hire interns	3.94
Availability of project trainees / part time employees / temping staff	3.71
Availability of relevant talent pool in the vicinity of incubator and hiring facilitation	3.97
Reputation of the incubator to attract talent for working the incubatee companies	4.14
Facilitation in hiring through the incubator's network	3.94

As start-ups during formative stages pose several perceived risks for a prospective employee (continuity / financial issues / lack of recognition in the job market), the incubator's reputation (past successes / selection process) mitigates the risks. The environment in the incubator is also very conducive for employees than working in a garage housed start-up. This is emerging clearly from the substantiation through the mean scores of other contributing factors, 3.97 for the availability of talent pool in the incubator's neighborhood and 3.94 for intern's availability & facilitation and hiring facilitation through incubator's network respectively.

Availability of project trainee/part time/temping staff (mean score of 3.71) seemed to be of lesser significance as incubatees with their limited management bandwidth generally look for self-starters and those set of team members requiring minimum guidance and training.

### **Access to Markets**

Among all the deterministic factors, the respondents opted to assign maximum score (4.03) to the 'Access to markets support' from the incubator. It's the rationale that the logical culmination of efforts during incubation should result in the success of the venture in market place. The acceptance of product /service offerings in by customers and the ability of the firm to translate this in to revenues and profits determine ultimate success of the venture. Among various contributing factors to the 'Access to market' support, strong association between industries and incubator involvement of industry in the incubator had maximum scores (4.34).

**Table 8**  
**Contributing Factor-Access to Markets**

<i>Contributing Factors</i>	<i>Mean Score</i>
Facilitation to reach out to potential clients	4.29
Availability of a favorable industrial ecosystem in the incubator's location	4.17
Strong association / tie ups between incubator and industry (industry associations / industrial clusters)	4.34
Involvement of officials from industry in the incubation events / activities	4.34
Facilitation in mergers / acquisitions / deal making efforts	3.46
Reputation of the incubator in attracting the industries towards access to market facilitation activities	3.94

Closely trailing score of 4.29 assigned to 'Facilitation to reach out to potential clients' depicts the importance attached to the 'Access to market' support by the respondents. It should be noted that the success of incubation process is strongly associated to this particular form of support than to all other support factors. Presence of a favorable industrial ecosystem (with a score of 4.17) brings in many positives. Reputation of the incubator (score of 3.94) is essential to motivate industries to spend some time with the start-up businesses in order to establish a vendor relationship. The merger /acquisition targets are farfetched during the incubation stage and hence had the lowest score of 3.46.

Based on the findings it looks quite certain that all incubatees certainly look for strong support from incubator to reach markets. Hence, incubators may be able to see greater success with incubatees if they are able to strengthen their market connections. This along with the earlier finding that gaining acceptance from

customers as a key success metric of incubatees shows that this is an important determinant of incubatee success.

### **Access to legal / Intellectual Property Rights (IPR) Support**

The respondents assigned lowest importance to the 'Access to legal / IPR support (3.43). Even among various contributing factors, there is no significant difference in the mean scores (3.63 for availability of such services and 3.89 for low cost of access). Ease of access (3.74) and facilitation of access (3.66) are in the mid-level. Hence, overall it appears that the respondents did not consider this as a significant factor contributing to the success of incubation effort. These findings also pave way for examining the consequences of the low scores like, 'Is these low scores reflect that incubatees don't really have IPR?' and 'Is it because most of the incubatees focus on incremental innovation?' These issues are also flagged here for future research directions.

**Table 9**  
**Contributing Factors-Access to legal/IPR support**

<i>Contributing Factors</i>	<i>Mean Score</i>
Availability of such services /service providers in the incubator	3.63
Low cost / Subsidised cost of access to such services /service providers in the incubator	3.89
Ease of access to such services /service providers in the incubator	3.74
Facilitation for accessing service providers in the incubator's network	3.66

### **CONCLUSION**

There is consistency in the incubatees' opinion of defining success as '**Gaining acceptance from customers**' and reiterating the same opinion by exercising strong preference to '**Access to market support**' among various determinants of success. The inference is that the 'Access to market' support helps the incubatees to gain acceptance from customers, generate orders and eventually set a growth trend for the organisation.

This makes us to bring out a recommendation to the incubators to work out specific steps in order to provide in access to market initiatives. The approaches could be leveraging the power of its network if the markets are industries in the neighborhood. This could be done by involving industries concerned in the incubator activities like mentoring, coaching and showcase events. If the markets are online and global in nature, the incubators may then look at roping in experts on a retainer basis either to bring in the required expertise even on certain commercial terms. The emerging business model innovation of 'Open innovation' is yet another approach that incubators might consider and make an attempt to initiate

open innovation linkages from industries to its incubatees. These steps would be necessary to increase the chances of success of incubatee firms. Consistent success of incubatees increases the reputation of the incubator there by bringing a critical mass around the incubation process.

### References

- Abduh, M, D'Souza, C, Quazi, A, Burley, H, T(2007), 'Investigating and classifying clients' satisfaction with business incubator services', *Managing Service Quality: An International Journal*, Vol. 17 Iss 1: 74 – 91.
- Aernoudt, R(2004), 'Incubators: Tool for Entrepreneurship?' *Small Business Economics* 23: 127–135.
- Al-Mubarak, H, M, Busler, M (2011), 'The Development of Entrepreneurial Companies through Business Incubator Programs', *International Journal of Emerging Sciences*, 1(2): 95-107.
- Al-Mubarak, H, M, Busler, M, Al-Ajmei, R, Aruna, M, (2013), 'Incubators Best Practices In Developed and Developing Countries: Qualitative Approaches', *Asian Journal of Empirical Research*, 3(7): 895-910.
- Arlotto, J, Sahut, J, M, Teulon, F, (2011), 'What is the Performance of Incubators? The Point of View of Coached Entrepreneurs', *International Journal of Business*, 16 (4): 341-352.
- Bergek, A, Norrman, C, (2007). 'Incubator best practice: A framework 2008', *Technovation*, (28): 1-2, 20-28.
- Bøllingtoft, A, Ulhøi, J, P, (2005), 'The networked business incubator – leveraging entrepreneurial agency?' *Journal of Business Venturing*, 20: 265–290.
- Chandra, A, Silva, M, A, M, (2012), 'Business Incubation in Chile: Development, Financing and Financial Services', *Journal of Technology Management and Innovation*, Volume 7, Issue 2.
- Cusumano, M A (2013), 'Evaluating a Start-up Venture: Considering the key elements of successful start-ups', *Communications of the ACM*, Vol. 56, no. 10.
- Haiyang, Z, Tetsushi, S, (2011). 'Business Incubators In China: An Inquiry Into The variables associated with incubatee success', *Economics: The Open-Access, Open-Assessment E-Journal*, Vol. 5, Iss7: 1-26.
- Hisrich, R, D, (1988), 'New Business Formation through the Enterprise, Development Center: A Model for New venture creation', *IEEE transactions on engineering management*, Vol. 35, no. 4.
- Lalkaka R, (2001), 'Best Practices' in Business Incubation: Lessons (yet to be) Learned', *European Union - Belgian Presidency International Conference on Business Centers: Actors for Economic & Social Development Brussels*.
- Lalkaka, R, (2002). 'Technology business incubators to help build an innovation-based economy', *Journal of Change Management*, Vol. 3, 2, 167– 176.
- Lalkaka, R, (2006). 'Technology Business Incubation, A Tool Kit on Innovation, Engineering, Science and Technology', United Nations Educational Scientific and Cultural Organization (UNESCO)
- Mian, S, A, (1996), 'The University Business Incubator: A Strategy For Developing New Research/Technology-Based Firms', *The Journal of High Technology Management Research*, Volume 7, Number 2: pages 191-208.

- Mian, S, A, (1997). 'Assessing and Managing The University Technology Business Incubator: An integrative Framework', *Journal of Business Venturing* 12: 251-285.
- Peters, L, Rice, M, Sundararajan, M, (2004), 'The Role of Incubators in the Entrepreneurial Process', *Journal of Technology Transfer*, 29, 83-91.
- Hackett, S, M, Dilts, D, M, (2004), 'A Systematic Review of Business Incubation Research', *Journal of Technology Transfer*, 29: 55-82.
- Kumar, S, K, Ravindran, S, D, (2011), 'Technology Business Incubators: Enablers for Creating Knowledge based Enterprises', *Journal of Management and Entrepreneurship*, Vol. IV, No. 3: 78-90.
- Kumar, S, K, Ravindran, S, D, (2012), 'A Study on Elements of Key Success Factors Determining the Performance of Incubators', *European Journal of Social Sciences*, Vol. 28, No. 1: 13-23.
- NBIA, (2014), What is Business Incubation? [online] [http://www.nbia.org/resource\\_library/what\\_is/index.php](http://www.nbia.org/resource_library/what_is/index.php)
- Stuart, R, Abetti, P, A, (1987), 'Start-Up Ventures: Towards the Prediction of Initial Success', *Journal of Business Venturing*, 2: 215-230.
- Smilor, R. W. (1987), 'Commercializing Technology through New Business Incubators', *Research Management*, 30(5): 36-41.
- Sun, H, Wenbin, N, Joseph, L (2007), (2007), 'Critical Success Factors for Technological Incubation: Case Study of Hong Kong Science and Technology Parks', *International Journal of Management*, Vol.24 No.2.
- Voisey, P, Gornall, L, Jones, J, Thomas, B, (2006). 'The measurement of success in a business incubation project', *Journal of Small Business and Enterprise Development*, Vol. 13 Iss 3: 454-468.

