

Incubators, SMEs, and Economic Development of China

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Abstract

In this rapidly growing and competitive technological development world, business incubation is a very supportive and productive tool for promoting the entrepreneurial environment, job creation and economic development. The efficacy of incubators is a crucial aspect for boosting the speed of local, regional and national economies and SMEs development. This study argues to suggest that efficiency of business incubators is vital for actively contributing in economic development especially for developing countries, namely China. A document analysis and archives based survey was conducted to review and analyse the practices of business incubators, as well as their strengths and weaknesses. Finally, the findings of the study reveal some future directions of business incubators in China with policy recommendations.

Keywords: *Business incubators, SMEs, Entrepreneurship, Economic Development, china*

1. Introduction

Business incubators are considering as a growth engine for the prosperity in both advanced and emerging society. It helps in the promotion of SMEs through entrepreneurship and technological innovation. SMEs play an important role in enhancing national economic growth, reducing the basic overhead cost of industries, development of new markets and jobs creation. Many developing countries are improving by addressing the policy instrument regarding SMEs, like developed countries. Business incubation is one of the tools that have helped to create new opportunities for innovations & entrepreneurship. The concept of business incubation has achieved worldwide popularity for its efficaciousness in enabling a conducive environment for Development of SMEs. Incubators are considered as a means of providing special business development service through innovations. Business Incubators provide the intensive support to start-up companies with economic and social program, to accelerate their development and increase the chances of success through business assistance [1]. Business incubators have an important role in the development of local, regional and national economies through the reduction of primary overhead cost, creation of jobs & innovations [2-4]. If its entrepreneurs are continuously working for innovations, the chances of economic development automatically increase [5-6]. Indeed, technology is the backbone of the businesses in the contemporary world. However, it can be judged crucially by three aspects; technological innovation, technology sharing and technological entrepreneurship [7]. These three aspects of technology are considered most important for the business progress of business as well as national economic development. Similarly; it helps in jobs creation and attaining a leading role in the international market. However, technology transfer mechanisms are highly dependent on national innovation systems and government policies with a very wide range of effectiveness.

The structure of this paper is as follows: Section 2 provides literature review of business incubation concepts & development. Section 3 provides types & roles of business incubators in China. Section 4 discusses survey about incubators in China. Section 5 discusses business incubators need for Chinese economy. Section 6 discusses policy recommendation for China Incubators system. Section 7 concludes with recommendations which ought to guide the future development of business incubators in China.

2. Related Literature Review of Business Incubators

The history reveals that incubation system start from United States over 50 years ago; now more than 7000 incubators exist in the whole world. [8-9]. In 1959, Joseph Mancuso started the first business incubator in Batavia, New York, a privately owned for-profit centre [10] for the economic necessity [11]. At the beginning of the 1990s only 200 business incubators are existed but numbers of incubators over the world are more than 7000 today. In 1980, there were only 12 incubators & now more than 1250 incubators in the United States [12]. There are more than 1500 incubators in Asia [13]. According to the Ministry of Science and Technology statistics, by the end of 2012, there were 1,239 technology business incubators with over 22,000 service and management staff nationwide, of which 435 were at the national level [14]. Currently China has a significant contribution in SME by having the figure of over 10 million which is almost 99% of enterprises. In economic perspective, SMEs contribute around 60% of output, 80% in job creation while also having 50% public money revenue. Business incubators are provide support to young firms to survive and grow during start up with new technological innovation and integrating business range of service [15-16] including:

- Business incubators are centre of different services like coaching, networking and access to venture capital [17-18].
- Incubators offer access to financial resources with the help of business angels, capitalist and companies [19], except of this provision of other services enterprise counseling and training, R&D and risk capital, assistance with product development and marketing.
- Business incubators provide presentation skills to the incubatee who helps for attracting customer & sometimes search investor [20-21].

Role of Incubation System in Economic Development

The National Business Incubation Association of the United States defines business incubators as entities that "accelerate the successful development of entrepreneurial companies through an array of business support resources and services, developed or orchestrated by incubator management and offered both in the incubator and through its network of contacts" (NBIA 2005) [22]. All countries are adopting business incubators as a vehicle for economic development & prosperity. Business Incubator uses their tangible and intangible services for providing a haven during growth stages. The growth of new businesses can be achieved by integrating personnel, technology, capital and knowledge. Incubators work on the same phenomena to support for job creation and economic development [23]. The physical sharing services include space sharing of renal space and other office infrastructure ranging from assistance staff and other business office equipment. On the other hand, it keeps and helps newly established business by rendering it in house consultation and access to specialized and expert business market planning, legal, accounting and other services in a productive way. Financial services to incubates in the most of the cases includes emergence or linkages to new ventures survival [24].

3. Types & Role of Business Incubators in China

Following main types of business incubators are exist in China.

University Based Incubators

Main goal of universities is education; they can still make a substantial contribution to local, regional & national economies through innovative research & technology transfer to industry [25-27]. UBI's are a unique type of business incubator that exists in China; these universities facilitate their students & industry through new innovations. University based incubators are similar to general business incubators but they have some unique characteristics; employment opportunities for their own students, they facilitate to private sectors & regular monitoring till firm graduation [28]. Now days, an effective and well integrated incubation system at universities is considered as crucial to stimulate an entrepreneurial society by strengthening the entrepreneurial culture and institutional development [29]

Innovation Centre

One of the most modern types of business incubators in China is Innovation Centre. The local government is mainly sponsoring these Centres to create more innovations.

Technology Business Incubators

Economic progress and social benefits are frequently linked with the advancement of technology [30]. A technology incubator is an entity that assists and stimulates innovation. TBIs seek to combine resources related to technology, accelerate the development of nascent business and promote the commercialization [31].

Over Sea Student Enterprise Park

These incubators have different kinds of objectives, the primary objective of this incubator is to reduce the brain drain & attract those talented & expert Chinese people who are working in foreign countries, to get benefit from their knowledge for the development of motherland.

Industrial Business Incubators

At the Small-medium enterprise level, industrial incubators facilitate new ventures to seek the objective of strengthening entrepreneurship and support the idea of the establishing industries. There are no restrictions on tenant admission beyond the minimum basic requirements as may be stipulated in the admission procedure.

International Business Incubator (IBI)

In order to access and collaborate with international markets by local ones, the establishment of IBIs is initiated. As a result, 9 IBIs are approved by Ministry of Science and Technology (MOST) in first phase in different cities of China. These cities include Beijing, Shanghai, Tianjin, Chongqing, Guangzhou and other 4 cities. IBI serves as a bridge of communication between local and international markets. The local SMEs get benefits through IBI to explore the opportunities in international market. Similarly, foreign SMEs avail the chance to access the Chinese market.

China Overseas Science Park

Chinese government has set up several overseas science parks in Manchester UK, Cambridge UK, Maryland USA, Moscow Russia, Vienna Austria, Singapore as well as Australia.

Business Incubators Sponsorship

The Torch Program is a program which was inaugurated under the MOST by the Chinese government to help out and deal with establishment of incubators in China. In 1990s, the development of incubators in China has contributed immensely through the line of “construction “. The government has many forms of dedicated funds to help the incubators. Some forms of these funds are “construction” funds for incubators, “seed capita” funds for incorporation and “innovation” funds for small and medium size which in the process of growth in their lives cycles .The MOST made incubator building a core part of the 11th five years plan (2005-2010), by allocating 150 million Yuan (17 million USD) in the annual funding for incubator building which is 3 times more than as compared to 10th five year (2001-2005) [14-32]. As a result, incubation system in China make progress by leaps and bounds in incubating capacity [31] Furthermore, government of China considers business incubators as a strategic and crucial measure for China’s transition towards the technology oriented market economy and therefore, willing to invest heavy resources into these crucibles of entrepreneurship [33] .

4. Survey of Business Incubators in Xi’an, Shaanxi, China

A survey of business incubators in Xi’an, Shaanxi, China was undertaken with a view to ascertaining the performance and service of incubators. The information and data collected from field survey provided the background material for the research findings & recommendation in this study. In undertaking the survey the methodology adopted included a combination of the following:

- Document analysis of incubators through archives, websites, newspapers and reports,

Details of TIBs in Shaanxi and Xi’an in 2012

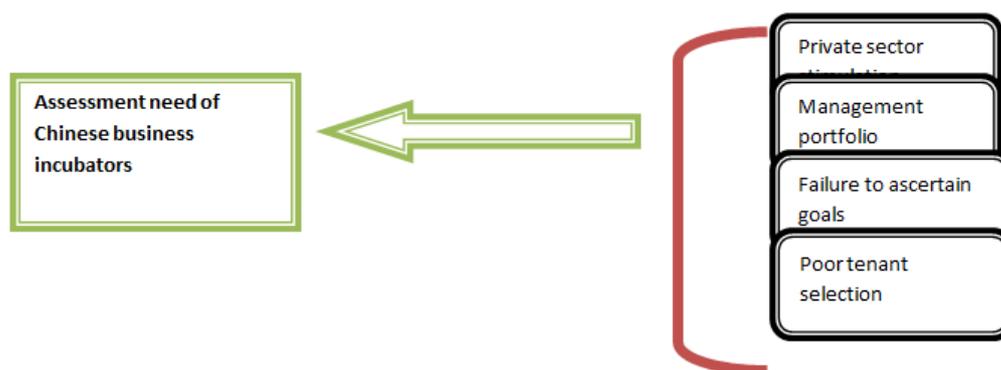
This table includes the incubator working in the Xi’an and Shaanxi and the information about the each incubator regarding the total incubator fund, Accumulated amount of Venture Capital for tenants (1000 Yuan), Accumulated Number of tenants obtained Investment and finance (unit), Number of Approved Intellectual Property (piece), Number of Invention Patent (piece), Number of Science and technology projects (item) is included.

City	Incubator	Total Incubator Fund (1000 Yuan)	Accumulated amount of Venture Capital for tenants (1000 Yuan)	Accumulated Number of tenants obtained Investment and finance (unit)	Number of Approved Intellectual Property (piece)	Number of Invention Patent (piece)	Number of Science and technology projects (item)
Shaanxi	Qidi Science and Technology Park Development Ltd	3000	8250	8	55	11	0
Xi'an	Professional Photoelectron Business Incubator Ltd.	800	-----		23	12	0
Xi'an	Lianchuang Biological Medicine Business Incubator Ltd.	8000	59000	6	12	8	7
Xi'an	Software Park Development Center	30000	-----	10	111	3	14
Xi'an	Hi-Tech Industrial Development Zone Innovation Park Development Center	220000	740850	1210	248	52	53
Xi'an	IC Design Incubator Ltd.	4200	194251	7	235	161	11
Xi'an	Weisheng Electronic Information Development Ltd.	800	300	4	53	10	0
Xi'an	Advanced Manufacturing Incubator	32051	34000	7	15	3	23
Xi'an	Aviation Science and Technology Innovation Service Center	5000	7800	2	8	2	0
Xi'an	Space Base International Incubator Ltd.	3000	2500	8	14	6	0
Xi'an	Jiaotong University Science Park Hi-tech Innovation Service Center	13000	--- --	-----	11	7	7

Source: MOST, P.R China

5. Need Assessment of Business Incubators in China

Based on the survey of business incubators in China especially in ancient city Xian, Capital of Shaanxi Province as highlighted above, a number of needs have to be addressed urgently before the incubators can make the desired impact in promoting entrepreneurship development and technological innovation.



Most of the incubators are being sponsored and organized by the government, with prime concern is the optimality of the commercial activities and economic prosperity .On the other hand the role of the private sector in this regard is not contributing as much greater as it possesses the capacity to contribute in the incubation system. This is due to poor government strategies and lack of sufficient funds to BIs over the last twenty years.

No concrete steps were taken in this regard except the payments of lip service. All plans and strategies for the establishment of the business incubators remain on paper only and they keep shifting one year to another

Another important issue in this regard is the specification of the time for defined goals and objective. However, it deals with the utilization of available resources for the achievement of the goals within the specified period of time. Another important issue in this regard is the selection of tenant for the incubation. In the most of the cases, attention is not paid to alignment of companies'. Similarly; it does not seem unusual to find a company in an incubator with a complete different scope

6. Policy Issues and Recommendations

The key policy issues, which ought to guide the future development of business incubators in China as well as the recommendations arising there from, are highlighted as follows.

6.1. Ownership and Sponsorship

The role of the three knots of government namely State, Provincial and local should be clear and must play their role to prepare a comprehensible policy on ownership and sponsorship of incubators centers. Government must support universities to establish business incubators to target the commercialization of R&D

6.2. Legal Status

For the business incubators promoted by government agencies, such incubators should be incorporated as companies limited by guarantee *i.e.* not for profit organizations. For incubators promoted by the private sector IPI's are individual or group of individual who promote to entrepreneurs for creation of new business & growth of business [34].

6.3. Industrial Linkages

Physical location has a significant effect on the development of incubator. Chinese people very much curious about losing face, the public image of a firm is just like a person's face. To reduce the start-up cost, incubators centers should be established near or within the industrial estate/ universities.

6.4. Coordination with Other SMEs

The support of other SMEs plays an integral role in the efforts being made development of small and medium enterprises.

6.5. Incubators Managerial Efficiency

According to [4] private incubators management team concern with their own investment in the new ventures and they actively participated in all affairs related to the management and day by day operational aspects whereas public incubators management act as intermediaries. In addition it should be kept in mind that key to success of the incubator is the incubator manager.

6.6. Entry and Exit

Incubator must lay down selection process through which it evaluates recommends and selects tenant firms [35-36]. Normally private incubators emphasize on investment potential, real estate development and technology transfer while pub; like incubator facilitate job creation and economic development.

7. Conclusions

The survey of business incubator centers in Xi'an, Shannxi, China revealed that, the role of incubation system in the development and sustainable growth of the small and medium business is vital through entrepreneurship, innovation and technologies. The innovation creates new jobs and economic development. The incubators are designed to promote entrepreneurship development and technological innovation at the small and medium enterprise level by nurturing a steady flow of successful productive enterprises after an incubation period of three to five years. However, a review of the present operational status of the business incubators showed that most of the business incubators are government sponsored, due to political influence on incubator management, process of innovation & development is not working properly. Given this unsatisfactory state of affairs, there is an urgent need to streamline the organizational, legal, management, financial and operational aspects of the incubator programme in order to avoid the mistakes of the past and ensure effective realization of the overall objective of promoting small enterprise establishment and economic development of China.

Acknowledgement

The authors are thankful to Northwestern Polytechnical University, NPU, Xi'an, and National Natural Science Foundation of China under Grant No. 2014JM9368.

References

- [1] Al M. H. and Busler M., "Entrepreneurship, Incubators and Innovation in Thailand", *Journal of American Academy of Business*, Cambridge, vol. 19, (2013), pp. 90-97.
- [2] Aernoudt R., "Incubators: Tool for entrepreneurship? *Small Business Economics*", doi:10.1023/B:SBEJ.0000027665.54173.23, (2004).
- [3] Aerts K., Matthyssens P. and Vandembemt K., "Critical role and screening practices of European business incubators", *Technovation*, doi:10.1016/j.technovation.2006.12.002, vol. 27, (2007), pp. 254-267.
- [4] Grimaldi R. and Grandi A., "Business incubators and new venture creation: An assessment of incubating models", *Technovation*, doi:10.1016/S0166-4972(03)00076-2, vol. 25, (2005), pp. 111-121.
- [5] D. Koenraad, M. Luwel and R. Veugelers, "Can technology lead to a competitive advantage? A case study of Flanders using European patent data", *Scientometrics*, vol. 44.3, (1999), pp. 379-400.
- [6] Bathula H., Manisha K. and Malcolm A., "The role of university- based incubators in emerging economies", ISSN-1176-7383, (2011).
- [7] Mahmood N., Jianfeng Cai and Jamil F., "Business Incubators: Boon or Boondoggle for SMEs and Economic Development of Pakistan", *International Journal of u- and e- Service, Science and Technology*, <http://dx.doi.org/10.14257/ijunesst.2015.8.4.15>, vol. 8, no. 4, (2015), pp.147-158.
- [8] http://www.nbia.org/resource_library/faq/index.php.
- [9] Monkman D., "Business incubators and their role in job creation. *Small Business Committee*", United States House of Representatives, (2010).
- [10] Brown M., Harrell M. P. and Regner W., "Internet Incubators: How to invest in the new economy without becoming an investment company", *Business Lawyer*, vol. 56, no. 1, (2000), pp. 273- 284.
- [11] Burger F., "Business Incubators: How Successful Are They?" Available at www.area-development.com/past/jan99/feature/incuba.htm, (1999).
- [12] http://www.nbia.org/resource_library.
- [13] H. A. Mubarak and M. Busler, "Critical Activity of Successful Business Incubation", *Int. j. emerge. sci.* vol. 1, no. 3, (2011), pp. 455-464.
- [14] <http://www.ctp.gov.cn/>
- [15] Campbell C., "Change agents in the new economy: Business incubators and economic development", *Economic Development Review*, vol. 7, no. 2, (1989), pp. 56-59.
- [16] Petree R., Petkov R. and Spiro E., "Technology Parks-Concept and Organization", Summary Report prepared for Center for Economic Development, (1997).
- [17] EC, "Benchmarking of Business Incubators", Final Report, Brussels, (2002).
- [18] Lalkaka, Bishop J. "In: Business Incubators in Economic Development—An Initial Assessment in Industrializing Countries", United Nation Development Programme, New York, (1996).

- [19] Von Z. M., "Classification and management of incubators: aligning strategic objectives and competitive scope for new business facilitation", *Int. J. Entrepreneurship and Innovation Management*, vol. 3, no. 1/2, (2003), pp.176–196.
- [20] www.NBIA.org/2006
- [21] A. Mubarak, H. Mubarak and M. Busler, "The incubators economic indicators: Mixed approaches", *Journal of Case Research in Business and Economics*, vol. 4, (2008), pp. 1–12.
- [22] NBIA, "What is Business Incubation?" Consulted October 25, 2014. http://www.nbia.org/resource_Centre/what_is/index.php, (2005).
- [23] Smilor R. W., Gibson D. V. and Dietrich G. B., "University spin-out companies: Technology start-ups from UT- Austin", *Journal of Business Venturing*, vol. 5, (1990), pp. 63-76.
- [24] Chandra A., He W. and Fealey T., "Business Incubators in China: A Financial Services Perspective", *Asia Pacific Business Review*, vol. 13, no. 1, (2007), pp. 79-94.
- [25] "European Commission", *Benchmarking of business incubators*, Brussels, (2002).
- [26] Chiesa V. and Piccaluga A., "Exploitation and diffusion of public research: the case of academic spin-off companies in Italy", *R&D Management*, vol. 30, no. 4, (2000), pp. 329–340.
- [27] Varga A., "University Research and Regional Innovation", *A Spatial Econometric Analysis of Academic Technology Transfers*, Kluwer Academic Publishers, London, (1999).
- [28] Mian S., "The university business incubator: A strategy for development of new research/technology - based firms", *The Journal of High Technology Management Research*, vol. 7, no. 2, (1996), pp. 191–208.
- [29] Jamil F., Ismail K. and Mahmood N., "University Incubators: A Gateway to an Entrepreneurial Society", *Journal of Economics and Sustainable Development*, vol. 6, no. 6, (2015), pp. 153-160.
- [30] DTI, "Excellence and opportunity: a science and innovation policy for the 21st century. Command Paper 4814", the Science and Innovation White Paper, 26 July, Department of Trade and Industry, London, (2000).
- [31] Harwitt E., "High technology incubators: Fuel for China's new entrepreneurship?" *China Business Review*, vol. 29, no. 4, (2002), pp.26-29.
- [32] Mahmood N., Jianfeng C. and Jamil F., "Snapshot of Technology Business Incubators in China", *International Journal of u- and e- Service, Science and Technology*, <http://dx.doi.org/10.14257/ijunesst.2015.8.7.23>, vol. 8, no. 7, (2015), pp. 235-242.
- [33] Scaramuzzi E., "Incubators in developing countries", *Info Dev. Program. The World Bank*, (2002), pp. 1-54.
- [34] S. M. Hackett and D. M. Dilts, "A systematic review of business incubation research", *Journal of Technology Transfer*, vol. 29, (2004), pp. 55–82.
- [35] Von Z. M., "International R&D strategies of TNCs from developing countries: the case of China", In *Globalization of R&D and Developing Countries*, vol. 24, January (2005).
- [36] Ruping K. and Von Z. M., "Risk management in incubators", in L. Lefebvre, T. Khalil, H. Mueller, G. Haour and M. von Zedtwitz (Eds.), *Proceedings of the 10th IAMOT Conference*, Lausanne, March 19-22, (2001).