

Comparative Study of Business Incubation Policy in APEC Economies*

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Abstract: Business incubators (BIs) could be regarded as an effective mechanism for linking research and industry to inspire technology and knowledge based entrepreneurship and innovation of start-up SMEs. The performance of BIs for small and medium enterprises (SMEs) innovation should be differentiated in accordance with the technology capacity of SMEs, the national entrepreneurial culture and characters in each economy. Therefore, the research intended to categorize BIs in the selected 10 APEC member economies into four types by investigating the issue of member economies' strategies, functions and characteristics in various focused programs.

Keywords: business incubators, 10 APEC member economies, public sponsored model, private enterprise model, multi-invested model, transitional model, start-up SMEs

1. Introduction

Small and medium enterprises (SMEs) have played a significant role in contributing to economic growth in most economies by introducing innovation and competition. However, they do suffer from size related disadvantages because of limited access to finance and managerial methods. It is likely to mean that commercial effectiveness and closer contacts with relevant institutes such as university and research

institutes could provide benefits for SMEs(see Lee 2004). In this sense, there is a need to consider the role of business incubators (BIs) for SMEs innovation.

According to National Business Incubation Association (NBIA), "business incubation is a business support process that accelerates the successful development of start-ups and fledgling companies by providing entrepreneurs with an array of targeted resources and services. These services are usually developed or orchestrated by incubator

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management and offered both in the business incubator and through its network of contacts. A business incubator's main goal is to produce successful firms that will leave the program financially viable and freestanding. These incubator graduates have the potential to create jobs, revitalize neighborhoods, commercialize new technologies, and strengthen local and national economies" (http://www.nbia.org/resource_center/what_is/index.php). In other words, BIs could be regarded as an effective mechanism for linking research and industry to inspire technology and knowledge based entrepreneurship and innovation of start-up SMEs.

The performance of BIs for SMEs innovation, however, could be differentiated in accordance with the technology capacity of SMEs, the national entrepreneurial culture and characters in each economy. For example, BIs in less developed economies could be characterized by a strong real estate component (offering modern, affordable space and facilities) and often in proximity to academic and research institutes, while BIs in developed economies intend to create high-tech and knowledge-based ventures by synergizing and linking the global R&D community, venture capital and international joint ventures (Lakshminarayanan 2004). Therefore, the main purpose of this paper is to categorize BIs in the selected 10 Asia-Pacific Economic Cooperation (APEC) member economies by investigating the issue of member economies' strategies, functions and characteristics in various focused programs.

The selection of 10 member economies among 21 APEC member economies is based on 'A research on the innovation promoting policy for SMEs in APEC' performed by APEC Innovation Center in 2006¹. Several criteria were considered

in this research; economic and industrial levels, industrial capacity and economic and population size.

2. Categorization of BI policy in the 10 APEC economies

This section identifies the status, initiatives, experiences and features of BIs in the 10 APEC economies and categorizes them. The organizational format of BIs varies and could generally be categorized as government sponsored model, private enterprise model and multi-invested cooperation model. The public sponsored model is supported by the government and non-profit organizations, whose primary purpose is to promote economic development. The private enterprise model is run by venture and seed capital investment groups or by corporations and real estate development partnerships. These incubators generally seek a return on their investment often through a stake in the firm. The multi-invested cooperation model is joint efforts between government or other non-profit organizations and a private developer.

In the case studies, it seems that the BIs in the 10 APEC economies could be categorized into 4 types; public sponsored, private enterprise, multi-invested and transitional type from public sponsored to multi-invested cooperation model (table 1). Along with the organizational forms of BIs, they could be classified into the range of their functional supports from hardware supports centering on real estate (offering affordable space and facilities) to highly specialized software

Table 1. Classification of Business Incubation Policy in the 10 APEC economies

	Public sponsored model	Private enterprise model	Multi-invested cooperation model	Transitional model
Hardware supports ↑ Specialized software supports	Thailand (1999)	Philippine (1991)		
	Malaysia(1997) Mexico(2003)			China (1987) Korea (1992)
	Canada	Australia	Japan (1988)	Chinese Taipei (1996)

Note: () refers the year that BIs launched in the first.

supports related to high technology transfer services, linking global R&D community and the significant level of technology capacity.

1) Public sponsored model

The first type, public sponsored incubators are well present in member economies such as Thailand, Malaysia, Mexico and Canada.

The main Thai government business incubation policies have been governed and coordinated by the Department of Industrial Promotion (DIP), the Institute of SME Development (ISMED)²⁾, Office of SMEs Promotion (OSMEP) and National Science and Technology Development Agency (NSTDA). The first government incubation program was created under the Thai national master plan for the development of SMEs in Southern Thailand. With funding and technical supports from the EU, the first incubation center was established in 1999 by the DIP, and the ISMED. The pilot center was set up on the grounds of the Regional Industrial Promotion Center in Hat Yai, Songkhla (www.ismed.or.th/IASBIA.php).

A significant business incubator emerged in 2002 using a new budget from 'New Entrepreneurs Creation (NEC)' program which aims to promote entrepreneurship development throughout Thailand(OSMEP 2006). The incubation center was

one of the major activities under the NEC program. The representative business incubation programs are Young SMEs entrepreneurship project, Creative Technician transform to SMEs business project and Technopreneur training project by OSMEP and Thammasat University. Notwithstanding these kinds of preferential BI policies the performance has been limited in terms of institutional reach and collaboration between tenants and academic institutes since most of BIs are in the early and pilot stage of development. Furthermore, the number of BIs is not more than 5 at present.

The status of BIs in Malaysia is likely to be similar to Thailand in terms of ownership and development stage of BIs. However, Malaysia has been at the forefront of setting up BIs focused on selected high-tech sectors including ICT, advanced materials, aerospace, BT and other environmentally sound technologies (Lakshminarayanan 2004). BIs have been mainly located in universities, R&D institutes and technology parks. There are a number of business incubation models being undergone in Malaysia (MOSTI 2005). The first BI models established in Technology Park Malaysia (TPM)³⁾ are for individuals and start-ups expanding from prototype or preproduction. There are 3 BIs in the TPM. The second BI model could be found in Technology Development Clusters(TDCs)

program promoted by Malaysian Technology Development Corporation (MTDC). TDC is an incubation center established within university to allow companies within specific industries such as BT and multimedia to operate in close collaborations with lecturers and scientist. It also strengthens linkage between universities and industry. Four BIs under TDCs program are located in four different universities⁴). The third model is Multimedia Super Corridor (MSC) incubator. It is another initiative of the MTDC to support budding entrepreneurs, SMEs and start-ups to become successful IT and multimedia enterprises. It is located within the multimedia university campus. Finally, SIRIM Berhad has established the 'one stop techno business incubator center.' It serves as a hub incubator to all other incubator activities within and outside SIRIM (SMIDEC 2006). However, the performance data is yet to be built up like Thailand since most BIs in Malaysia are at an infancy stage.

At the beginning of the Fox administration (2000-2003) in Mexico, the number of BIs created during the last 12 years reached only 15. Since 2003, however, BIs in Mexico has been stimulated under the supervision of the Under-ministry for SMEs, thanks to the Nation System as a part of application of new SME's policy that includes and connects all BIs in the country. The scheme contributes to the economic development of regions, states and territories. As a result, the number of BIs reached 220 in 2005. However, as most of them are at an infancy stage, major policy and program's impacts on SMEs and its consolidated data is not available. Nonetheless, what is clear in BI policy is that the technical assistance and the services supply to entrepreneurs

should be secured on concrete bases. These include grants support in different categories of Fondo PyME to all business incubators approved by the Under-ministry. Available funds are allocated through academic institutions, entrepreneurial organizations and NGOs, and they are capable of assigning human and material resources to set and operate a business incubator (PyME 2006). This mechanism ensures complementary financial resources from the state, country and private sector spreading a multiplier effect of this program.

The representative feature of BI policy in Canada is the strategy for strengthening collaboration between SMEs and research institutes established within National Research Council (NRC) by the government. NRC has 22 institutes. A few years ago, an incubator policy was put in place: to have one incubator attached to each of the institutes, which is called 'Industrial Partnership Facilities' (Connell 2006). It represents that the focuses of BIs in Canada is likely to be on knowledge production by enabling their tenants to be embedded in research institutes although the number of them is only 110.

2) Private enterprise model

The second type of BIs classified is a private enterprise model. It could be found in the Philippines and Australia.

Although the first business incubator in the Philippines was launched in 1991 in Bictan with 30 tenant working very closely with two R&D institute of the Department of Science and Technology (DST) and technology business incubators was included as one of the 'Science and Technology Agenda' initiated in 1993, the

facilitation of BIs was followed by 'the medium-term national action agenda' for productivity 2000-2004 (UNESCAP 2005). In particular, the strategies and policies were focused on promoting private sector investment in R&D and upgrading science and technology (S&T) support services. The government is now encouraging private sector initiatives to set up BIs by providing a number of special fiscal and tax incentive for private BIs (i.e. tax holiday, duty free importation, tax credit, etc.). It resulted in the rapid increase in private BIs, accounting for 61 out of 68 BIs in 2003 (SMED 2005).

Another country where the type of BIs is dominated by private enterprise model is Australia. There are three main features (AusIndustry 2005). First, while the federal government is not involved in the operation of BIs, it provides thorough ex post management for private BIs in monitoring contract execution between BIs and government (both federal and local). Second, there are two kinds of incubating fund program: establishment funding and post-establishment growth funding. The establishment funding involves the acquisition of an existing building (whether by purchase or lease) and fitting out that building or the construction of a new building. The support for an establishment funding project is conditional on the project plan demonstrating that the incubator will be operating, tenanted and fully functional within two years of the execution of the Establishment Funding agreement. The project plan submitted as part of the application must also indicate a period within which the incubator business will be financially self-sustaining. The post-establishment growth funding can support establishing clusters of incubator facilities, upgrading the capacity of

existing facilities and extension and/or enhancements of mentoring and other skills development services that meet their tenant needs. It will only be available to BIs that have commenced operation, can demonstrate their financial viability or capacity to achieve self-sustainability and, where applicable, have completed the incubator establishment project to the Commonwealth's satisfaction.

Third, they are focused on specific industry oriented development implemented through ICT incubator program (ICTIP) under the Department of Communications, Information Technology and Arts. It is originally established in 1999 under the name of 'building on information technology strengths (BITS) incubator program. Its main objective is to support the better-performing incubators previously funded under the BITS Incubator Program to continue making a significant contribution to the national innovation system by: 1) identifying and supporting high potential ICT start-ups; 2) facilitating growth in employment, revenue and exports for ICT start-ups; 3) assisting these ICT start-ups to secure financial and other support from third party sources (including VC firms, private investors, other technology firms, universities and government); 4) establishing mutually beneficial linkages with other elements of the NIS; and 5) adopting strategies to achieve ongoing financial self reliance without further government supports.

3) Multi-invested cooperation model

The third type of BIs classified is a multi-invested cooperation model. It could be found in Japan. Although Ministry of International Trade and Industry (MITI) is the nodal agency for incubators

promotion in Japan, most of BIs are joint efforts of local government along with private corporations (JSBRI 2006). In addition, some of BIs have been established by SMRJ to provide comprehensive assistance to the start-up phase of a business. There are three types of BIs operated by Small and Medium Enterprises and Regional Innovation, Japan (SMRJ): 1) establishment of BI facilities to foster business in local economies (11 facilities); 2) establishment of university affiliated BI facilities (12 facilities); and 3) capital invested with local governments to the JVs who establish BI facilities (5 facilities). BIs started to spread from 1988 and a total of 45 BIs were established up to 1993. Of the 70 S&T parks that had been established in 1994, 45 have incubators. The number of BIs in Japan reached 203 up to 2003. The main feature of Japanese BIs is that they do not function to hatch new corporations, but rather nurture hatched corporations (SMEA 2005). Both the purpose and function of a Japanese incubator differ greatly from those of the European and United States type of incubator which is intended for entrepreneurs newly establishing a corporation (UNESCAP 2005:28). It implies that the functional focus of BIs in Japan should be on specialized software supports centering on the upgrading technology capabilities of tenants.

4) Transitional model

The final type of BIs is a transitional model from public sponsored to multi-invested cooperation model. It could be found in China, Korea and Chinese Taipei. In reality, the dominant type of all of these three member economies is still public sponsored model. However, the recent BI policy direction of them has been placed on multi-

invested cooperation model to make self-reliant operation possible.

In the initial stage of BI development in China, provincial or city level science committees sponsored the majority of BIs and later, most BIs were sponsored by the Science and Technology Industrial Parks (STIPs) coordinated and administered by the Torch program initiated in 1988 and implemented by the Ministry of Science and Technology (MOST). During this period, the government has been China's business incubators' main investors by direct appropriation and loan from banks, which is typical government-sponsored model. In recent years, however, there has evolved enterprise-sponsored and multiple-invested incubators such as those funded by SOEs, privately owned enterprises, foreign enterprises, international organizations and other types of sponsors. BIs also have gradually evolved into corporate management as self-reliance organizations independently responsible for their own incomes and expenses.

One of the main features of Chinese BIs is that the type of BIs is diversified. There are six different types of BI: general BIs, specialized technology BIs, University related S&T parks, Incubators for Returned Overseas Scholars (IROS), International BIs (IBI) and SOE incubators (UNESCAP 2004). First, general BIs are the mainstay of incubators in China, providing small firms with necessary services from space and facilities to financial supports. Second, specialized technology BIs target at transformation of scientific achievements and cultivation of SMEs of a special technology field. It pays attention to design and use of incubation space and service with expertise orientation. It shows one of the development trends of Chinese

BIs. Third, University-related S&T parks are generally set up by universities to take advantages of technology resources in university by collaborative relationships with universities. Forth, IROS is a special kind of incubator, opening to Chinese students studying abroad and overseas Chinese scholars. It provides better infrastructure and policy according to the characteristics and demands of overseas scholars. Fifth, IBIs are designed to assist both international and Chinese start-up firms enter international market and to promote international cooperation. Sixth, SOE incubators have played an important role in reconstructing traditional industries by utilizing high technology. They can also promote the transfer of technology achievements. Up to 2005, more than 10 state owned enterprise (SOE) incubators have come into being, concentrated mostly in Beijing (UNESCAP 2005). These strong policy back-ups from the government and diversified BI types have led to significant increase in the number of BIs in China, accounting for 489 in 2003, which is only next to the USA.

Promotion of incubator center establishment in Chinese Taipei began in 1996. Within the period of eight years, a total of 1,883 enterprises had benefited from SME incubation services, of which 12 went on to secure stock market or over-the-counter (OTC) market listing. As the main agency involved in promoting BIs, SMEA has adopted a variety of innovative measures since the 'Five year plan for strengthening SME incubator functions' was implemented in 2001. In particular, in 2002 the government formulated the Asia Entrepreneurial Development Center (AEDC) plan. It set three major strategic objectives: 1) to establish an incubation center network that would strengthen

the incubation of start-ups; 2) to build up a start-up knowledge and information platform that would stimulate the development of knowledge-based entrepreneurial society; and 3) to establish sound, effective financing channels to stimulate investment in start-up activity. By the end of June 2006, there were 95 incubator centers in Chinese Taipei. Three of these were established directly by the SME Development Fund, and the Fund provided a support for the establishment of 79 others so as to strengthen Chinese Taipei's overall incubation capabilities. It shows that the type of BIs is dominated by public-sponsored model. However, as National Taiwan University Innovation and Incubation Center (NTUIIC) has appeared as the most successful incubator by corporaterizing it in 2002 with investment from banks, VC, NTU employees and private investors, the policy direction of BIs has been placed on the reduction of funds and encouraging self-reliance model. According to interview with Mr. Michael Liu, who is general manager of NUTIIC, over 90% of incubator centers in Taiwan receive funding support from the SME Development Fund.

Regarding the progress of BI program in Korea, in 1992, Small Business Corporation extended loans to BI centers. In 1998, the program began to be funded by the government, which bore some costs for establishing BIs at universities, national and public research institutes. In 1999, the government increased the number of BIs to create jobs and resolve unemployment. As of the end of 2003, 333 BIs were in place in the nationwide. Of 333 BIs, 322 BIs were government-sponsored model. It shows the type of Korean BIs is dominated by government-sponsored model. In addition to this, venture capital and service

companies started to operate incubators for their member companies. What is more, the government has planned to increase self-reliance BIs from 30 in 2005 to 150 in 2010 (Lee 2005). It represents that the policy direction of BIs in Korea is placed on corporate management and multi-invested cooperation model based on self-reliance organizations independently responsible for their own incomes and expense. Thanks to the strengthening BIs, the government has led to the great number of venture incubation effects, compared to Chinese Taipei and Japan, accounting for 4,287 in terms of the number of start-ups in BIs and 4,255 in terms of the number of the incubated in 2006. Nonetheless, the number of BIs in Korea has decreased from 333 in 2003 to 268 in 2006. Its reason is because BIs were consolidated under the supervision of SMBA.

3. Conclusion

The paper has categorized BIs in the selected 10 APEC economies by investigating the issue of member economies' strategies, functions and characteristics in various focused programs. The ten APEC member economies show great diversities in accordance with their economic development stages, industrial structures and technological capabilities. The diversities naturally lead them to various start-ups innovation policies in terms of strategies, priorities and approaches. Advanced member economies in APEC with a long history of industrial development and market economic systems show extensive SME support systems covering a wide range of SME innovation

policies from marketing to consultation and technology grants programs. Developing member economies with weak technological capabilities only recently recognized the importance of BIs for start-up's innovative activities.

BIs in the ten APEC member economies could be classified into four types: public sponsored, private enterprise, multi-invested and transitional type. Firstly, public sponsored incubators are well presented in member economies such as Thailand, Malaysia, Mexico and Canada. In Thailand, Malaysia and Mexico, although there are a number of incubator programs, the performance has been limited in terms of institutional reach and collaboration between tenants and academic institutes since most of BIs are in the early and pilot stage of development. Unlike these three economic members, the representative feature of BI policy in Canada is the strategy for strengthening collaboration between SMEs and research institutes by attaching an incubator into each of institutes within NRC.

Secondly, a private enterprise model could be found in the Philippines and Australia. Philippine encourages private BIs by providing a number of special fiscal and tax incentive. In Australia, the federal government is not involved in the operation of BIs. Instead, it provides supports for the self-reliance of BIs mainly in high-tech industry

Thirdly, multi-invested cooperation model could be found in Japan. Although MITI is the nodal agency for the promotion of BIs in Japan, most of BIs are joint efforts of local government along with private corporations.

Finally, the transitional model could be found in China, Chinese Taipei and Korea. In reality the dominant type of all of these three member

economies is still public sponsored model. However, the recent BI policy direction of them has been placed on multi-invested cooperation model to make self-reliant operation possible.

Note

- 1) The paper is a part of this research.
- 2) The ISMED has been set up since 1999 as a core technical center that serves as an interface between SME owners and the government.
- 3) Technology Park Malaysia (TPM) was the first science park established in 1988 by Ministry of Science, Technology and the Environment (MOSTE).
- 4) Under TDCs program, four universities in which BIs are located are as follows: University Putra Malaysia (UPM) in 1996; University Malaya (UM) in 1999; University Kebangsaan Malaysia (UKM) in 1999; and University Technology Malaysia (UTM).

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아시아 태평양 경제협력 국가의 창업보육 정책 비교 연구*

이승철**

요약: 창업보육센터는 산학연 연계 활성화를 통하여 기술 및 지식기반의 기업가주의와 신생 중소기업의 혁신을 촉진시키는 효율적인 메커니즘으로 간주될 수 있다. 그러나 창업보육센터의 중소기업 혁신성과는 중소기업의 기술역량, 국가의 기업환경과 경제적 특징에 따라 다양하게 나타날 수 있다. 따라서 본 연구는 선별된 10개 APEC 회원국가별 창업보육센터의 다양한 정책 및 프로그램을 중심으로 전략적 이슈, 기능 및 특징을 조사하여 이들 국가의 창업보육센터를 유형화 하고자 하였다.

주요어: 창업보육센터, 아시아 태평양 경제협력 10개국, 공공지원모델, 민간기업모델, 다중투자모델, 전환모델, 신생 중소기업

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