

## Business Incubation Model for Startup Company and SME in Developing Economy: A Case of Thailand

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**Abstract**--Nowadays business landscape becomes more complex as an increasingly large number of new startup companies emerges and enters the market. These startup companies which start as small-and-medium sized companies are considered to be the driving force of the economy, especially in developing countries. However, without proper business strategy and support, new startup companies often fail to survive in the highly competitive market. Business incubator is considered as one of the support mechanisms for startup companies. This paper examines a case study of Thailand as a developing country to analyze the necessary business incubation activities that support startup companies and small-and-medium sized companies. In addition to the analysis, the paper also presents the recommended business incubation model for developing economy.

### I. INTRODUCTION

The business landscape today has become more complicated and increasingly fast-paced due to the ever-changing demand of the customers propelled by technological innovation. Globalization brings about even more competitions and opportunities. New startup companies emerge and enter the market everyday. These startup companies, which start as small-sized companies, would grow bigger to become medium-sized and some would continue to grow and become large-sized companies in the future if they can survive the highly competitive market. The small-and-medium sized companies are considered to be the driving force of the economy, especially in the developing countries, because they make up as the majority of companies in the countries and create more jobs. However, new startup companies often fail to survive within their first year of operation due to a number of reasons such as the misunderstanding of the business landscape, the inexperience in managerial skill of the founders, or the lack of proper financial supports, just to name a few [1]. Business incubation is generally considered as one of the main support mechanisms for startup companies [2]. In fact, business incubators can provide necessary means for startup companies to increase their survival rate in the market and even expand to become larger companies later on [3]. Thus, academia, practitioners and policy makers are interested in the mechanism and the successful deployment of business incubators in order to strengthen the nation's economy which would in turn bring about the well-being of all people.

This paper is organized as follows. Section II provides the historical background information on business incubation and business incubators as well as the literature review of business incubation research. Section III explains the case of

business incubation program in Thailand as well as the problems that hinder the incubation process in the country and the possible solutions of such problems, while section IV presents the recommendation of the suitable business incubation models for Thailand. Finally, section V concludes the study with some limitations and possible future research directions.

### II. HISTORICAL BACKGROUND AND LITERATURE REVIEW

According to Lewis [4], the first business incubator was established in New York, U.S.A. as Batavia Industrial Center in 1959 when a local real estate developer acquired a large vacant building and could not find any single tenant willing to lease the entire facility, so the developer divided the building space into smaller portions and sublet them to a number of different tenants, some of whom requested business advices and/or guidance on financial resources from the developer. This idea of providing physical office spaces along with business advices had diffused slowly across the U.S. in the 1960s and 1970s, most of the which were sponsored by the government. Then, in the 1980s and 1990s, as a number of business incubation programs were well widespread in the U.S. (along with the establishment of the National Business Incubation Association (NBIA) in 1985 which later changed its name to the International Business Innovation Association (InBIA) in 2015 [5]), the business incubation programs had gradually gained recognition and were established in Europe and the other parts of the world. As of today, it is estimated that there are more than 7,000 incubators all over the world [6].

As an international non-profit organization that mainly advocates global business incubation with over 2,000 members from more than 60 countries, InBIA is one of the most important bodies with 30 years of legacy for practitioners regarding business incubation [5]. InBIA provides the definition for business incubators as follows: "*business incubators nurture the development of entrepreneurial companies, helping them survive and grow during the start-up period, when they are most vulnerable. These programs provide their client companies with business support services and resources tailored to young firms* [6]." There are also a number of academic researches defining business incubators. For example, Chinsomboon defines incubators as "*a controlled environment that fosters the care, growth, and protection of a new venture at an early stage before it is ready for traditional means of self-sustaining*

operation” [7, p. 24]. This definition takes into account the nature of business that incubators generally involve. It also rings true with the origin of the usage of the word business incubator as a physical space where new business can be established, along with the opportunity to get advices and necessary support to survive. Even though there are numerous different definitions of incubators, it is apparent that both practitioners and academia share similar view of what the business incubators are. It is so because they all share the same essence of ideas.

Because of the sheer number of business incubators, several research studies attempt to categorize the typology of different incubators. The notable examples include the following studies. Kuratko and LaFollette [8] identify different sources of primary financial sponsorship for business incubators, namely, publicly-sponsored, nonprofit-sponsored, university-sponsored and privately-sponsored. Allen and McCluskey [9] propose four types of incubators based on value-adding continuum from the least value-adding to the most value-adding, i.e. for-profit property development incubators, non-profit development corporation incubators, academic incubators and for-profit seed capital incubators. Grimaldi and Grandi [10] map business incubators into four categories: business innovation centers, university business incubators, independent private incubators, and corporate private incubators; the former two categories mainly have non-profit purposes while the latter two categories usually have for-profit purposes.

Beside the typology of different business incubators, the mechanism of how the business incubators work is also the center of attention. A number of researchers try to identify the different operating models of business incubators. Campbell, Kendrick, and Samuelson [11] identify four key value-adding activities of business incubators, i.e. (1) the diagnosis of business needs, (2) the selection and monitored application of business services, (3) the provision of financing, and (4) the access to the incubator network, all of which implied the appropriate incubation process. Smilor [12] extends the previous model of Campbell, Kendrick, and Samuelson by indicating four key benefits that business incubators provided to their incubatees which include (1) development of credibility, (2) shortening of the learning curve, (3) quicker solution to the problems, and (4) access to a wider entrepreneurial network. Hackett and Dilts [13], [14] suggest the process of business incubators from selection of incubatees to providing business supports and mediations until the graduation of the incubation process. Bergek and Norrman [15] add the framework to the model of Hackett and Dilts by providing different strategies for different process components, i.e. how to select the incubatees, how to support the incubatees and the different mediation strategies. There is also an attempt to compile a systematic guide of how to set up an incubator by the Information for Development Program (*infoDev*) – a research and service organization sponsored by the World Bank Group to help developing countries for poverty reduction and sustainable economic growth [16].

The assessment and evaluation of business incubation is another research stream in the literature. Notable works include those of Campbell and Allen [17], Mian [18], [19] for university technology business incubator, Sherman and Chappell [20], Bearnse [21], and Colombo and Delmastro [22]. Moreover, there is also an interest in the impact and good practice of business incubators from different countries. The Organisation for Economic Co-operation and Development (OECD) publishes document identifying several good practices of technology incubators from many countries and regions such as the U.S., Europe, Australia, and South Korea, just to name a few [23]. Lalkaka [24], [25] also gives several examples of incubators from around the world and points out the interactions among different stakeholders and their contributions to the successful incubation process. The stakeholders in incubation process consist of five parties, namely (1) the government (which generates the sound and suitable public policy), (2) the business (which provides necessary private partnerships), (3) the university (which generates knowledge and technology transfer to the business), (4) the professional (which provides professional supportive networking) and (5) the community (with its support and involvement for the success of business incubation). Lalkaka [24], [25] also suggests the actions that business incubators should take in order to enhance its performance in three stages, i.e. planning, operation and monitoring. These actions include:

### A. For planning stage

- Preparing rigorous assessment of market and sound business plan.
- Developing linkage to appropriate knowledge providers.
- Leveraging policy support.
- Preparing physical facility that enables creativity and interaction among incubatees.

### B. For operation stage

- Building a dynamic management team.
- Selecting innovative and market-oriented incubatees.
- Adding values to incubatees with quality of services.
- Mobilizing the needed financial investment and working capital for both incubators and incubatees.

### C. For monitoring stage

- Monitoring performance and evaluating outcomes of incubation process.
- Being on the lookout for the emerging trends.

## III. A CASE OF THAILAND

The business incubation process in Thailand first started in 2002 at National Science and Technology Development Agency (NSTDA) where the Business Incubation Center was established to support startup companies and established firms with innovative technology-driven products. Then, in 2004, Office of the Higher Education Commission (OHEC) under the Ministry of Education launched the University

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TABLE 1 – LIST OF UNIVERSITY BUSINESS INCUBATORS (UBIS) IN THAILAND [26]

No.	University with Business Incubator	Number of Personnel
<b>(1) Upper Northern Region Network – 5 UBIs</b>		
1	Chiang Mai University (CMU)	3
2	Mae Fah Luang University (MFU)	6
3	Chiang Mai Rajabhat University (CMRU)	3
4	Maejo University (MJU)	5
5	Chiang Rai Rajabhat University (CRU)	4
<b>(2) Lower Northern Region Network – 4 UBIs</b>		
6	Naresuan University (NU)	10
7	Uttaradit Rajabhat University (URU)	4
8	Pibulsongkram Rajabhat University (PSRU)	3
9	Nakhon Sawan Rajabhat University (NSRU)	2
<b>(3) Upper Northeastern Region Network – 5 UBIs</b>		
10	Khon Kaen University (KKU)	7
11	Udon Thani Rajabhat University (UDRU)	6
12	Maharakham University (MSU)	14
13	Maha Sarakham Rajabhat University (RMU)	6
14	Loei Rajabhat University (LRU)	3
<b>(4) Lower Northeastern Region Network – 8 UBIs</b>		
15	Nakhon Ratchasima Rajabhat University (NRRU)	5
16	Buri Ram Rajabhat University (BRU)	3
17	Vongchavalitkul University (VU)	5
18	Ubon Ratchathani University (UBU)	3
19	Ubon Ratchathani Rajabhat University (UBRU)	3
20	Suranaree University of Technology (SUT)	3
21	Rajamangala University of Technology Isan (RMUTI)	2
22	Surin Rajabhat University (SRRU)	2
<b>(5) Upper Middle Region Network – 13 UBIs</b>		
23	Chulalongkorn University (CU)	7
24	Thammasat University (TU)	6
25	King Mongkut's University of Technology North Bangkok (KMUTNB)	3
26	Srinakharinwirot University (SWU)	3
27	Suan Dusit University (SDU)	3
28	Suan Sunandha Rajabhat University (SSRU)	3
29	Valaya Alongkorn Rajabhat University (VRU)	2
30	Rajamangala University of Technology Thanyaburi (RMUTT)	4
31	Chandrasakem Rajabhat University (Chandra)	3
32	National Institute of Development Administration (NIDA)	4
33	Sripatum University (SPU)	3
34	Ramkhamhaeng University (RU)	5
35	King Mongkut's Institute of Technology Ladkrabang (KMITL)	4
<b>(6) Lower Middle Region Network – 10 UBIs</b>		
36	King Mongkut's University of Technology Thonburi (KMUTT)	6
37	Kanchanaburi Rajabhat University (KRU)	3
38	Rajamangala University of Technology Krungthep (RMUTK)	3
39	Dhonburi Rajabhat University (DRU)	2
40	Nakhon Pathom Rajabhat University (NPRU)	4
41	Kasetsart University (KU)	5
42	Silpakorn University (SU)	4
43	Mahidol University (MU)	2
44	Phetchaburi Rajabhat University (PBRU)	2
45	Rajamangala University of Technology Phra Nakhon (RMUTP)	3
<b>(7) Upper Southern Region Network – 4 UBIs</b>		
46	Walailak University (WU)	11
47	Suratthani Rajabhat University (SRU)	3
48	Phuket Rajabhat University (PKRU)	3
49	Nakhon Si Thammarat Rajabhat University (NSTRU)	4
<b>(8) Lower Southern Region Network – 5 UBIs</b>		
50	Prince of Songkla University (PSU)	3
51	Songkhla Rajabhat University (SKRU)	3
52	Yala Rajabhat University (YRU)	3
53	Hatyai University (HU)	4
54	Thaksin University (TSU)	6
<b>(9) Eastern Region Network – 2 UBIs</b>		
55	Burapha University (BUU)	6
56	Rajanagarindra Rajabhat University (RRU)	3

Business Incubator (UBI) program to support the commercialization of technology from both public and private university in Thailand. Over the course of a decade, the number of business incubators in the universities under the UBI program had grown gradually to 56 incubators in 2014. The names of university with business incubator in Thailand are listed in Table 1 along with the number of incubator personnel per office. Nowadays, almost all business incubators in Thailand are operated in universities and public research organization (NSTDA) and are publicly funded with non-profit purpose.

From Table 1, it should be noted that university business incubators in Thailand are grouped into 9 networks based on their geographical locations and proximities. The reason is to use the pre-existing regional network of universities as a platform for the well-established incubators to act as “mentors” for the new incubators in the region as well as sharing experience and information among incubators in and across the regional network. Even though there are several efforts to ramp up the result of university business incubators, there are still rooms of improvement. During 2013-2014, there were only 124 startup companies (with revenue more than 120,000 Thai Baht per year) and 67 spinoff companies (with revenue more than 600,000 Thai Baht per year and 20% gross profit margin, as well as officially registered as a company at Department of Business Development, Ministry of Commerce) as a result of the UBI program [27], which can be inferred as an average of  $(124/56 = )$  2.2 startup companies and  $(67/56 = )$  1.2 spinoff companies per one university business incubator during the period of 2 years. It is claimed that business incubation program in Thailand have not demonstrated tangible results in terms of spinning out research from academic institutions and establishing new technology-based firms [28].

From the interviews with the stakeholders in business incubation in Thailand which include representatives from university business incubators and incubatees, the problems and obstacles that impede the successful results of business incubation in Thailand can be synthesized into 5 factors as depicted in Figure 1. These factors are categorized as internal and external factors of university business incubator and are listed as follows.

- A. Internal factors of university business incubator
  - Key Performance Indicators (KPIs) of university business incubator
  - Budget of university business incubator
  - Staffs or human resource of university business incubator
- B. External factors of university business incubator
  - Entrepreneurship in Thailand
  - Business ecosystem in Thailand

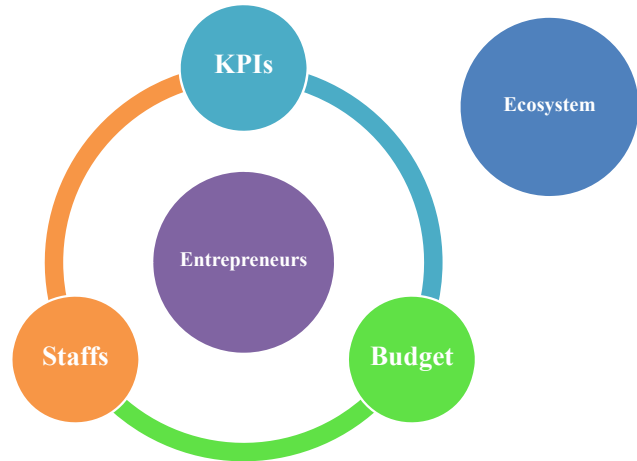


Figure 1 – Factors Pertaining to the Success of Business Incubators in Thailand

Each of the factors and the recommended solutions are explained in detail below.

1. KPIs of university business incubator are not supportive of the operation of startup companies. All of university business incubators in Thailand receive the budget from OHEC under the UBI program’s Terms of Reference (TOR) for 2-year project pending renewal by the reviewing committee according to the KPIs. These KPIs dictate that university business incubators should produce startup companies and spinoff companies capable of generating annual revenue and/or gross profit margin greater or equal to the specific thresholds. However, startup companies in different industries have different circumstances. Thus, judging the university business incubators by quantitative number of revenue generation is too rigid and counter-productive. It puts the pressure on the incubators to produce result rather than focusing on helping the incubatees. One possible solution to this problem is to modify the KPIs of university business incubator from institution-centric view to customer-centric view by using qualitative measure of business acumen improvement and comparison of company’s position among business competitors to measure the success of each startup company rather than only relying solely on the revenue of the company.
2. Budget of university business incubator is inadequate and inconsistent. OHEC allocates the budget around 72 million Thai Baht per year to the UBI program [28]. The budget is spread to all university business incubators that pass the preliminary KPIs reviewing at the interval of 6, 12, 18 or 24 months. Some incubators fail to achieve the KPIs and do not receive the funding at all. Even though some incubators find other sources of funding from their host institutions or other agencies such as the Science Park Promotion Agency under the Ministry of Science and Technology which allocate funding to promote science and technology activities in the university where regional science parks are located, the budget for

university business incubators is insufficient in most cases. Moreover, the UBI program is not guaranteed to be funded perpetually, thus it creates a concern of sustainability of university business incubators in Thailand. The possible solution for this problem is the reform of the incubator's source of income which should either be supported by reliable source such as the host institution itself or the income from incubation related service fees to make the incubator self-sustainable in term of balancing operational expenses and incomes.

3. The incubation staffs are insufficient and lack of essential skills. The university business incubator in Thailand has an average number of 4-5 staffs (see Table 1). Most of the staffs have no prior experience in business incubation and get a position as a filler for another job opportunity as there is no solid career-path for incubation personnel. Moreover, since most of university business incubators are funded under the UBI program which has no guarantee funding as described earlier, most of the personnel in the incubators are without job-security. This makes the turn-over rate of the incubation position even higher as it is difficult to retain the personnel in an unfavorable position. Thus, the problem becomes vicious circle. In order to solve this problem, university business incubators should break the vicious circle by trying to build the capability and experience of incubation staffs while creating appropriate career advancement and job-security for them. This can be done by putting more emphasis on human resource management on the personnel training and fair employment contract.
4. Startup companies in Thailand lack the necessary entrepreneurial skills and are not ready for business

incubation process. The Global Entrepreneurship and Development Institute (GEDI) compiles a global entrepreneurship and development index that measures the contextual feature of entrepreneurship across 130 countries around the world [29]. According to GEDI index in 2015, Thailand ranks 65<sup>th</sup> in the world and 11 out of 21 nations in the Asia-Pacific region. Out of the 14 sub-indexes (pillars), the three lowest score of Thailand are “internationalization aspiration” with the score of 8 out of 1000, “technology absorption” with the score of 23 out of 100 and “networking” with the score of 26 out of 100. The GEDI sub-indexes of Thailand in comparison with the region and the world is shown in Figure 2. It is clear that Thailand has to emphasize on some specific entrepreneurial aspects in order to boost its entrepreneurial capability. For example, the incubation process may include the activity in promoting the international market and the use of technology in business as well as the opportunity to expand the network of customers and/or suppliers for startup companies.

5. The business ecosystem in Thailand is weak and there is inadequate support system for startup companies. There are limited numbers of funding agency for startup companies in Thailand especially the angel investors and venture capitalists. It is also extremely difficult and complicated for startup companies to apply for and receive a loan from the banks. Moreover, most business incubators are facing a problem of unable to find or match the specialized experts and consultants to help their incubatees for specific technical problems, either because there are not enough experts in the country or because the expert matching system is inefficient. There are also

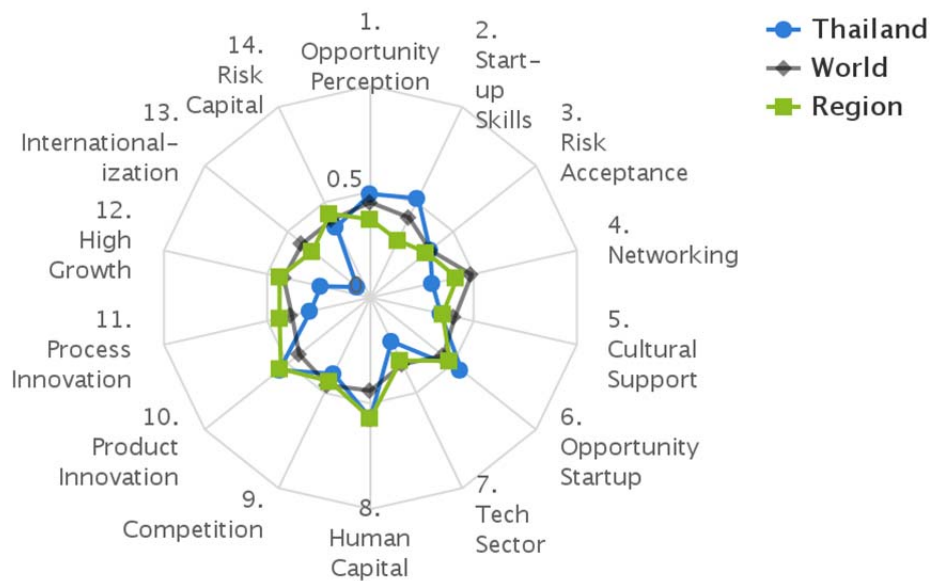


Figure 2 – GEDI sub-indexes of Thailand in comparison with the Asia-Pacific Region and the World (Screen captured from [30])

problems of matching the startup companies with other business partners in the value chain. The solutions to these problems are not easy and they cannot be solved in a short period of time. For the financing of startup companies, the government can stimulate the investors to put more investment in startup companies by using some kinds of incentive such as tax reduction. As for the matching of the specialized experts, it is possible to consolidate the national database of experts and consultants to facilitate the matching process. It is also possible to establish the national incubation agency to oversee this operation along with other efforts to assist business incubators in the country. As for the business partnership, the incubators with the help of other national bodies can arrange the events like business matching or seminar or business model pitching contest in order to create more opportunity for startup companies to appeal to both potential investors and business partners.

IV. RECOMMENDATION

Based on the problems presented in section III, the possible operational models of business incubators in Thailand (and other developing economies within the same context) are introduced as shown in Table 2. The rationale behind these models is to utilize the existing infrastructures and programs as much as possible in order to not wasting the scarce resources and modify the operation of business incubators to fit the needs of the incubatees. Moreover, the models call for the involvement of other institutions beside university to take part as a host organization for business incubator; this includes both public and private organization in Thailand.

From Table 2, incubators in university (Model 1) and public organization (Model 2) are mainly funded by the government with a not-for-profit objective (i.e. strengthening the economy or creating job), while incubators in private organization (Model 3) are privately funded by the investment parties who look for profit. Business incubators in university can also enjoy the benefit of donation from

alumni and other organizations as other sources of funding. It is possible for incubators from both public and private organization to charge some service fees and/or rental fees for office space to be able to sustain their operation. The appropriate strategy for incubators in the university (Model 1) is to utilize its location and proximity to local community to leverage the incubation process. University staffs, alumni, current students and entrepreneurs in local community can benefit from this area-based incubation that focuses on local proximity for networking among incubatees and other stakeholders. As for incubators in public organization (Model 2), they should utilize their expertise or specialty to supply the experts for cluster-based incubation, for example business incubator in Software Park can utilize its expertise in software industry to incubate startup companies in software cluster. Lastly, incubators in private organization (Model 3) may focus mainly on the startup companies that can generate profit to the investment parties, either by providing market-proven technology that are beneficial to the investment companies (typically large firms which can offer merger and acquisition deal to the startup companies) or by initial public offering (IPO) at the stock market to seek more capital investment for expansion of the company.

Even though incubators from different host organizations have different strategies of operation, the possible activities for business incubators of any operational models are similar. These activities are as follows.

- **Public awareness activity:** Incubators may use various media outlet and public relation channel to reach out to their target incubatees.
- **Pre-incubation activity:** Incubators may offer basic business training courses or seminars for prospective incubatees and interested parties. This helps the incubators in screening the incubatees that fit their operational strategy by getting to know the incubation applicants better. Incubators may also set up an aptitude interview and site-visit to startup company to evaluate its potential as a part of incubation application process.

TABLE 2 – POSSIBLE OPERATIONAL MODELS OF BUSINESS INCUBATORS IN THAILAND

Business Incubator Model	Model 1	Model 2	Model 3
Host Organization	University	Public Organization	Private Organization
Mode of Operation	Non-profit	Non-profit	For-profit
Main Source of Funding	Government funding	Government funding	Private funding
Other Sources of Funding	Donation	Service fee and/or office space rental fee	Service fee and/or office space rental fee
Incubation Strategy	Area-based incubation – focusing on local proximity	Cluster-based incubation – focusing on expertise of organization	Merger and Acquisition or Initial Public Offering (IPO) – focusing on return-on-investment of funding parties

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- **Incubation activity:** Incubators help incubatees with market and technical problems by connecting them to the experts and specialists. Incubators may also offer additional services such as administrative, legal and business assistance.
- **Acceleration activity:** For incubatees with high potential, incubators may offer special programs to accelerate their achievement such as expanding to overseas market or supporting the participation in international business competition.
- **Networking activity:** Incubators may organize the seminars or public showcase of the products of incubatees with open invitation to potential investors to create more opportunities for incubatees to exchange ideas and discuss possible collaboration or investment.

### V. CONCLUSION

Business incubation is one of the most important mechanisms to help support startup company for its survival and growth in the competitive business environment. The successful incubation process can lead to stronger startup companies and SMEs which would in turns create more jobs and strengthen the economic growth of the country. Thailand, as one of developing countries, follows the practice of developed economy by introducing business incubation program just over a decade ago. However, the business incubation program in Thailand shows less effective results than expected. This paper identifies a number of problems and obstacles for the operation of business incubation in Thailand as well as proposes the possible solutions. Moreover, this paper also presents three different operational models for business incubation that are suitable in the context of Thailand and other developing economies with similar situation.

Nevertheless, there are some limitations for the actual implementation of business incubators according to the suggested models. Firstly, it might not be possible to impose the operation of business incubators in private sector. The government can only provide preferable incentive for private organization to encourage the establishment of business incubators but it does not guarantee that any private organization would implement the new business incubator. Secondly, the limitation of budgets and human resources might impede the expansion of the government-sponsored business incubation program. Lastly, there might be a resistance to change of the status quo in the existing business incubators.

As for future research, it is interesting to see how the interactions among stakeholders in business incubation ecosystem affect the operational efficiency of business incubators. Moreover, future study may explore the impact of the new form of incubators which have not yet made a significant presence in Thailand and other developing countries, i.e. virtual or online incubators, and how these

kinds of incubator would complement the traditional form of incubators in developing economies or even replace them.

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