Incubation framework for a new startup: A case study in Thailand

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Abstract

The aim of this study is to propose an incubator framework for a new start-up in Thailand. Literature review of the incubator practices, critical success factors and their processes were analyzed and summarized. The paper conducted in-depth interviews with five incubator experts and,-two successful startups in Thailand followed by an-, in-depth case study at the Chulalongkorn University's Innovation Hub. Six incubation's activities to support and scale up the startup were observed in conjunction with interviews the participants and mentors. The analysis shows that the incubator activity consists of pre-incubated process, incubated process, and accelerator process. Factors such as startup team capability, networks, quality of the mentors, and market efficiency play an equally important success in the incubation process.

Keywords
Startup team; innovation; incubation; incubation management; mentorship

1. Introduction

Innovation has been widely recognized in the industrial sector for providing the competitive advantage and create the economic value for countries around the world. Many countries are continuously searching for innovative promotion framework which are best suited to their country's economic environment. Many new start-ups use innovation create the opportunities for their business, but not all of them survived. There are number of reasons why some start-up companies fail, for example, the product does not meet the market demand, wrong team, lack of business skills, lack of managerial experience, lack of funding support (Crowne, 2002). Incubation activity has been addressed as a mechanism to support start-up through education, resource sharing, co-working space, and collaborative network (Smilor, 1987; Heckett and Dilts, 2004a; Dee et al., 2011). The incubation concept try to link the technology, knowledge and capital in order to increase the new start-up competency and support to develop the new start-up companies (Grimaldi and Grandi, 2005). In developed countries, the various studies using the incubation concept determine the business policy which assists in promoting sustainable economic growth (Salem, 2014). However, the incubation process is not exactly defined in many related studies (Tehodorakopoulos et al. 2014), especially in developing country. In a developing country, like Thailand, still encounters problems lack of quality start-up. Even though the government, private sector and university are continuing to provide support and educate the new start-ups, these start-ups still lack business and technology knowledge, and struggling to find an innovative partner. (National Science Technology and Innovation Policy Office, 2017). Moreover, there is less communication between institutions, each operates on its own (Wonglimpiyarat, 2016) hence there are duplicated activities, resources and no improvement of the incubation processes. The aim of this study is to propose an incubator framework for a new start-up in Thailand by using a mixed methodology research that include the key success factors and the incubation process in Thailand.

2. Literature Review

2.1 Incubation concept

Incubations are an organization to support startup for creating an innovation. Incubations are designed to support and help a startup to grow rapidly from the start-up period through various services such as co-working space, coaching and mentoring, training create a collaborative network and the business advice (Smilor; 1987; Allen and McCluskey, 1990; Peter et al., 2004; Hackett and Dilts, 2004; Dee et al., 2011). The incubation service and support evaluated from concept of sharing physical infrastructure such as working space, tools and equipment until present business support activities such as business advisory services, mentoring, coaching, networking, business acceleration (Tehodorakopoulos et al. 2014). Most of incubation is a non-profit organization. The target group is always local startup company. Some incubators are associated with university and do not invest in the startup company (Dempwolf et al., 2014). The new generation of incubation focused on business skill and knowledge (Pauwel et al. 2016). A new start-up should be constantly monitored throughout the process after receiving business advice and provide with sufficient funding. Grimldi and Grandi (2005) identified two incubation models; the first model, incubation emphasizes on reduce the start-up cost for the new startup by providing physical assets and market commodities. The second model, incubation offers high-value service such as funding, the business knowledge, operational support, and collaborative network. The incubation service should be tailored to the need of the new startup.

Many researchers proposed the efficiency incubation mechanism. Smilor (1987) classified the benefit of incubation into four dimensions: credibility development, the shortening of the learning curve, faster troubleshooting and access to the business network. In addition, Heckett and Dilts (2004a) suggested that the incubation process should select startup performance before getting into the process because performance is the key to selecting a passion start-up. Berge and Norrman (2008) implied that the selection is one of the important tasks that the incubator use for deciding which ones will be accepted or rejected. In addition, there are two different selection approaches: 1) the selection based on the business idea by using the interviewer's existing knowledge and experience to evaluate the possible idea. 2) the selection based on the startup by evaluating from personality, knowledge, experience, skill and commitment of startup (Hackett and Dilts, 2004a). Moreover, a research and service organization sponsors by the World Bank Group call information for Development Program (infoDev) (2009) recognize that the incubator should be a link between startup problems and the incubator activity. Therefore, they identify the connection between entrepreneurial life cycle and incubator process. The entrepreneurial life cycle consists of four stages: idea, startup, expansion and maturity. The incubator process comprised of three main stages: pre-incubation, incubation, and post-incubation. These connections help the business incubators to adapt to different strategies for incubating start-ups. In 2011, infoDev has divided incubator to three categories by the main service include seed capital providers, Network boosters, business development service. The individual startup has the most influence on the incubation models and services. The incubation should adjust the model that suitable for the start-up in order to increase the effectiveness and efficiency of the management.

2.2 Critical success factor (CSFs) of incubation

Many research works have identified the success factors of incubation to be around the aspects of characteristic, activity, or event such as the criteria of selection that should consider the startup team capacity, existing prototype, and intellectual property (Isabelle, 2013), the mentorship who are the business or technology expert that can give a useful advice to the startup (Komi et al. 2015). We proposed the key driving success factor that mention in the literature as showed in Table 1.

Table 1. Critical Success Factors of incubator

CSFs	Reference/researches
Startup Team capacity	Isabelle, 2013; Lee and Lee (2015)
Market need	Miller and Bound. 2011; Isabelle, 2013
Incaution Management	Heckett and Dilts, 2004a; Grimaldi and Grandi, 2005; Dee et al., 2011; Ebbers, 2013
Coaching and Training support	Bruneel et al. 2012; Cohen, 2014; Pauwel et al. 2016

Table 1. (Continue)

CSFs	Reference/researches
Networking	Bruneel et al. 2012; Isabelle, 2013; Cohen, 2014; Pauwel et al. 2016; Bergek and Norrmann. 2008; Komi et al. 2015
Mentorship and Business advices	Cohen, 2014; Komi et al. 2015; BagheiMoghadam et al., 2012; Colapinto and Porlezza, 2011; Dempwolf et al., 2014

3. Methodology

In this research, many methodological approaches are applied to gather data includes literature review, case study, in-depth interview, and observation.

3.1 Related work

We selected and analyzed the data which was published between 1980–2016, these data that we collected was published by various incubators that have a role in promoting a new start-up.

3.2 In-depth interview with semi-structured questionnaire

In order to select an interviewer, there are certain criteria which the candidate has to be met: the university incubator, the private incubator and accelerate, the start-up founder who have more than three year experiences in dealing with the incubation and accelerator process in Thailand and also the startup who used to involve with the incubator and accelerator activities.

We interviewed five incubator experts in Thailand including the director of KMUTT Knowledge Exchange for Innovation Center (KX), the co-founder and faculty advisor Sasin Entrepreneurship Center, Chulalongkorn University, the director of Prince of Songkla University Business Incubation Center (PSUBIC), the deputy director of Science and Technology Park Chang Mai University, the director of Dtac Accelerate, and two successful startups in Thailand. The interview question divided into three main parts include 1) the key success factor to promote the startup 2) the incubator and accelerator process for promoting startup and 3) the obstacle to foster startup. In addition, after the transcription we verified the data reliability with those interviewers to examine and confirm the correctness of the summary.

3.3 Observation

Chulalongkorn University Innovation Hub (CU I-Hub) was selected as an in-depth case study for this research which was established on 27th September 2016, an innovation ecosystem platform that empowers talents, and develop innovation that helps transforming how Thais live, learn, and play. The hub nurtures talents through cultivating creative thinking and entrepreneurial skills for students, professors, and alumni. The impactful innovations addresses the global revolutions and local challenges are developed through promoting cross-disciplinary research collaboration among faculties and students, and supported by incubation and acceleration program, which provides incubation space, seed fund, mentorship and network connections to early stage investors, and outreach program to generate awareness. The previous year performance, CU I-Hub trained 2,725 people, supported 126 innovation projects, successfully incubated one Series A start-up, and build innovation community's engagement from more than a hundred thousand people. We started to observe the six activities that encourage the start-up for create innovation.

We have selected an observation case study which used the data was collected by non-participatory observation. The main issues used as an observation guideline include 1) the startup activities engagement behavior 2) the activities work flow and 3) the resources and facilities during execution the activities. We verify the data analysis reliability with triangulation method (Denzin. 1978) by observe the different activities and having the informal conversation with the participant in the same issues for confirming the reliability of the data collection. The observation case information is summarized in Table 2.

Table 2. Observation case information

Case study detail	**Program Name**					
	Seed of Innovation	**Twenty-Four steps to a Successful Startup (Chula Startup League)**	**Lean Startup Workshop (University Edition)**	**Innovation Bootcamp**	**Industry-tech Hackathon By FTI-CU**	**Smart Energy Hackathon**
Feature	Training and workshop	Training and workshop	Training and workshop	Training and workshop	Training and Competition	Competition
Incubation phase	Pre-incubation	Pre-incubation	Pre-incubation	Incubation	Pre-incubation competition	Pre-incubation competition
Overview	The program emphasis on teaching and coaching the participants for create the innovation idea and building the innovation network.	The program on how to build a startup designed for student at the introductory level.	The program is to support and encourage students who interested in build startup business. This program can increase the understanding of the startup concept and inspire the concept	The activity is to encourage the startup team for developing the new business ideas through intensive coaching the team go from ideas to an executive pitch.	The program is to encourage the startup creativity in the prototype idea to support the Thailand industry sector in aging society.	The program is to accelerate the innovation idea using software as a solution to energy challenge in Southeast Asia.
Length	1 month	2 months	3 days	10 weeks	2 days	2 days
No. of applicator	Over 80	No data	300	56	No data	Over 100
No. of participant	56	156	60	48	88	76
No. of teams	14	39	12	12	22	16
Process	1. Selected the tenants 2. Training program include design and entrepreneurship 3. Pitch the idea to the judge	1. Selected the team tenants 2. Educated how to be a successful startup 3. Mentor advice every week 4. Pitch the idea	1. Selected the tenants 2. Training and workshop 3. Mentoring 4. Pitch the idea to the expert	1. Selected the tenants from “seed of innovation” program 2. Coaching by special guess 3. Mentoring every week 4. Practice pitching 5. Final pitch to the expert	1. Selected the team tenants 2. Obtain the competition topic 3. Coaching 4. Mentoring 5. Pitch the idea to the judge	1. Selected the team tenants 2. Obtain the competition topic 3. Mentoring 4. Pitch the idea to the judge

Table 2. (Continue)

Case study detail	Program Name					
	Seed of Innovation	**Twenty-Four steps to a Successful Startup (Chula Startup League)**	**Lean Startup Workshop (University Edition)**	**Innovation Bootcamp**	**Industry-tech Hackathon By FTI-CU**	**Smart Energy Hackathon**
Screening and Selection Criteria	1.Startup background 2.Idea 3. Alumni or student at Chulalongkon University	1. Statup team background 2. Idea 3. Skill test 4. The student at Chulalongkon University	1. Statup background and desire 2. Idea	Interview the startup team attended the seed of innovation program	1. Statup team background 2. Idea	1. Startup team background 2. Idea
Partnership	CU Innovation Hub	CU Innovation Hub	CU Innovation Hub and Lean Startup Thailand	CU Innovation Hub and Sasin Business School	CU Innovation Hub and The Federation of Thai Industries	CU Innovation Hub and Knowledge Exchange Center (KX) and Deutsche Gesellschaft für International e Zusammenarbeit (GIZ) GmbH
Mentorship and Business advices	None	Yes	Yes	Yes	Yes	Yes
Activity KPIs	14 ideas solution	39 ideas for solution	12 tested ideas from customer	10 innovations	22 solutions for aging society	16 new solution for renew energy

4. Findings

The outcome of the interviews with incubator experts and successful start-ups in Thailand found that the important incubation process divide into 3 phases: pre-incubation, incubation, and acceleration. However, before the start-up gets into the stage, they have to present ideas or technology that meets the needs of the market through the selection committees. The selected start-up team tenants who are part of the process is also important. The selection is the method to screen the start-up and the initial idea before proceeding to the pre-incubation phase, incubation phase, or acceleration phase. The selection criterial can depend on the incubator activity such as knowledge activity, start-up boot camp, start-up workshop and so on. The incubator selection process the incubator can identify what a start-up lacks and needs. That means an incubator can choose the right program and process for each innovator. The result of this process is the survival or failure of the tenants and the process that suitable for tenants.

> *"…the selection process is the key element for us to know what start-up need or what knowledge they are lacking, so we could provide the appropriate resource and training for our start-up team…" (Expert A, Dec 2016)*

> *"…we have an external committee who are experience in business and technology to assist in selection the start-up" (Expert C, Mar 2017)*

Pre-incubation phase is to define the idea to the business plan. There is a first stage of the start-up team to develop the individual idea by collecting ideas, screening, prototype development, and market test. Pre-incubation goes from the definition of the innovation idea to the business plan. During the process, the business incubator should examine the idea of innovation created by the expert committee in the related sector in order to make a business idea clearer. The further support will provide in the innovative idea. The incubation should offer the office space and business consultant to help a start-up to create a better business idea. The service and activities in this stage are as follows: developing the idea, business expertise advice, training and coaching. The final result of this phase should be the ideal solution or business plan for screening the innovation idea that has a potential to scale up.

> *"… the pre-incubation phase makes the concept or idea more solid. During this phase, the right right technology to support start-up idea and clear their business model can be discovered…" (Expert B, Feb 2017)*

Incubation phase is the product to market by using the tangible assets and intangible assets that incubation has been provided. It usually takes approximately one to three years depending on the startup readiness. This phase will bring the idea to a business plan by the special service that suits for individual start-up such as advance training and coaching, legal and administrative support, assistance with business basics and marketing, mentoring, networking and funding.

> *"…the incubation stage will focus on building the product and market testing. The start-up has to be prepared to an incubation plan for incubation committee, an incubation plan is a tool for incubation to monitoring and tracking start-up's work progress. This stage emphasis on advanced business training, collaborated with network, private mentor, and business advice..." (Expert B, Feb 2017)*

The acceleration phase is for the high potential startup who want to scale up the product by offering the special program to achieve the goal. It provides the relevant activity in supporting a mature and ready start-up to scale up in the new market. The main activities are to connect to the global network and finding an investor for who is willing to invest in the company.

> *"... the most of start-up, in the accelerating phase, need to expand their market knowledge and rise fund, so we can support them by coordinating with our affiliate network such as alumni, government agencies…." (Expert C, Mar 2017)*

The result from the observation found that the most of activities during the training and workshop help to create the idea to meet the market need. The program began with selecting participants through the application and interview. It focused on the applicant intention, background, experience and the possibilities of ideas. The innovation boot camp program is set up to provide mentor and business expertise monitoring The screening and selection criteria came from the seed of innovation program by focusing on the possibilities of the idea that meet the market need.

In addition, we found that the successful idea drawn from the customer requirement. A good program should provide activities that allow the startup tenant to explore the actual market need and applying the idea to test market acceptance.

> *"…we had change the idea after survey the customers' need. Our idea could not meet the customers' needs and our idea is not modern for them…" (Start-up tenant, December 2016)*

> *"…I think the start-up tenant should go out of the room to find the real market need, they cannot dream of the customer needs without asking customer…" (Mentor, August 2017)*

We also found that the team leader is the key to helping to create innovation. A team leader must be passionate and committed creating an innovation. He/she has to fame the innovation idea, team coordinate and solving the problem.

Moreover, another key factor that assists in startup tenant understanding of the innovation process is a mentor. Mentors give the essential advice to individual startup tenant. Two types of mentors are allocated to each activity – one with business knowledge the other with technology knowledge. However, all of them is a domain expert and high experience guidance and feedback in such an area.

> *"… a mentor is important, both in the business field or technical field, they are giving good advice in the domain that we didn't know well…" (Start-up tenant, September 2017)*

> *"…a mentor cannot point out which idea is right or wrong. The useful advice comes from the mentor's experience and mistake…" (Mentor, June 2017)*

After attending the activities, startup tenants will able to adjust the mindset on entrepreneurship and would exchange the idea with mentor and other tenants which can also create a good connection between different groups. Interaction will prove to be useful for the start-up tenant in the future.

After, the interview and observation of six case studies, we found that the CSFs which play an equally important part in the process as shown in Table 3.

Table 3. The Critical success factors from in-depth interview and observation from case study

Key success factor	Expert							Observation Case study						Total
	1	2	3	4	5	6	7	A	B	C	D	E	F	
1. Startup Team capacity	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	13
2. Idea meet the market demand	-	✓	✓	✓	✓	✓	✓	-	-	✓	✓	✓	✓	10
3. Administrative support	✓	✓	✓	-	✓	-	-	✓	✓	✓	✓	✓	✓	10
4. Training and coaching	✓	✓	✓	✓	-	-	✓	✓	✓	✓	✓	-	-	9
5. Networking	✓	✓	✓	✓	✓	-	✓	✓	-	✓	✓	✓	✓	11
6. Appropriate activities/programs	-	✓	-	✓	-	-	✓	✓	-	✓	✓	-	-	6
7. Business advices	-	✓	✓	-	✓	✓	-	-	✓	-	✓	✓	-	7
8. Selected process	-	✓	✓	-	✓	-	-	✓	✓	✓	✓	✓	✓	9
9. Mentorship	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	13
10. Fund	-	-	✓	-	✓	-	✓	✓	-	-	-	✓	✓	6
Total CSFs	5	9	9	6	8	4	7	9	6	8	9	7	6	

The experts agree that the start-up team is an important step to creating an innovation. The characteristic of successful start-up should consist of the passion and commitment to create innovation. We found that the mentorship is also an important mechanism in providing encouragement and guidance for the start-ups, leading them in the right direction by providing business and technology knowledge arising from their past experiences. The alliance network is an essential part for connecting the start-up to the internal and external network, creating the opportunities for exchanging ideas and discuss in collaboration or investment such as alumni, business consultants, and marketing. Moreover, the product must be marketable and help to resolve the customer's problem. If the start-up knows the market demand, the opportunity of success would be higher. Thus, the ten critical success factors can be divided into factors of incubation process base on 3 stages: pre-incubation, Incubation, and acceleration as showed in Figure 1.

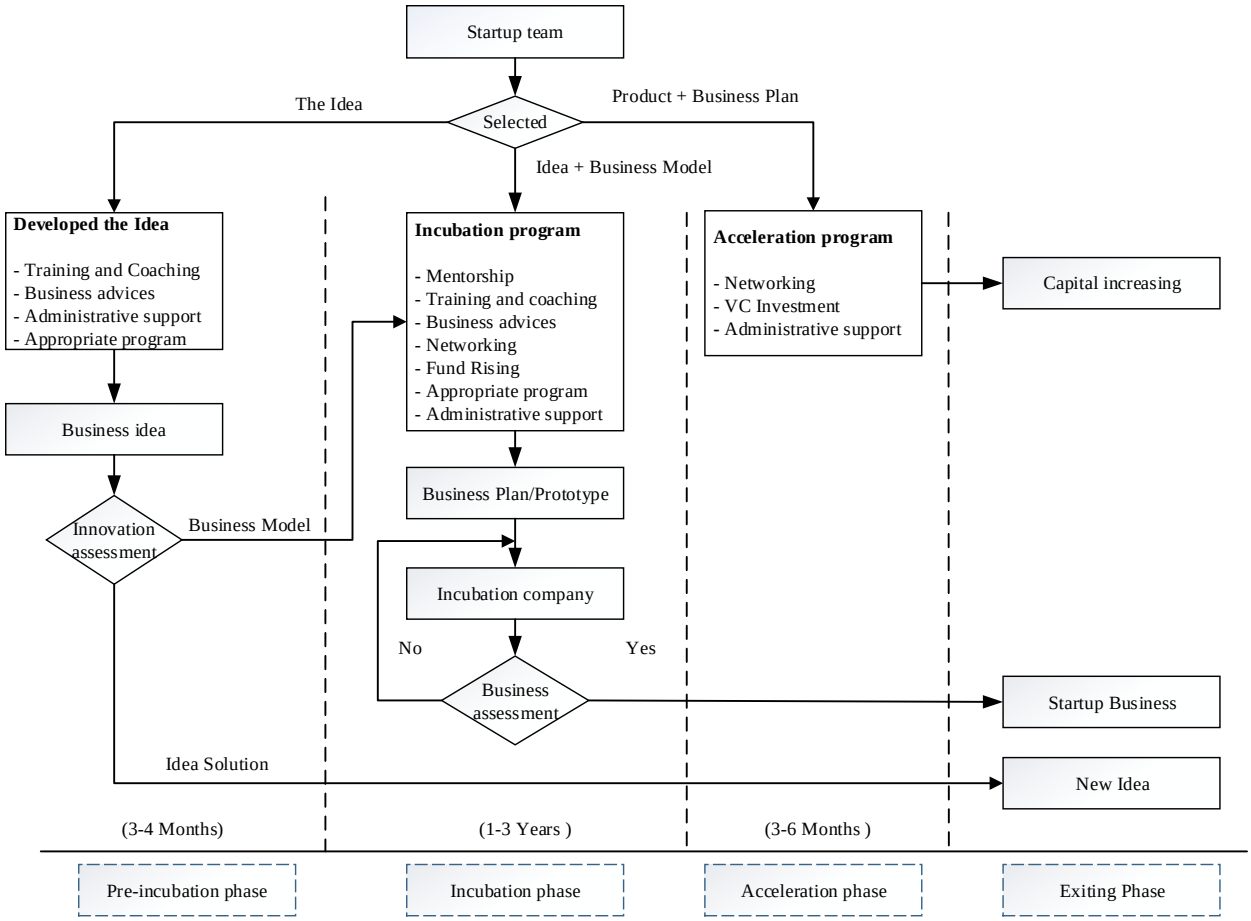

Figure 1. Incubation Conceptual Framework

5. Conclusion and Recommendation

Incubation play an important role in encouraging the startup for its survival and growth in the competitive business environment. This paper looks at incubation concept framework in Thailand. We developed a framework of incubation model based on the theoretical foundation and the literature on incubation effectiveness model. The critical success factors were exposed from the in-depth interview and observation case study of incubation in Thailand. The incubation conceptual framework consists of pre-incubation, incubation, acceleration phase. Each phase provide the activities in support of the start-up. The pre-incubation phase focus on the development of the startup idea base on the market need and the start-up capability. The incubation phase focus on bring the product to market by provision service including advance business coaching and training, share administration support, and monitoring startup tenant closely against their business plan. The acceleration phase focus on scale up the potential startup into the global new market.

Most activities focus on training and workshop the startup tenant of creating the idea to meet the market need. The screening and selection criteria is help to screen the applicant who are talented and fit for the program through the application and interview. The program activities should provide the section that allow the startup tenant to explore the market need by survey the customer need outside the classroom. The activity key success factors are the startup team especially team leader and the mentor. The result is, the startup tenant receive after attending the program are the mindset on entrepreneurship and the connection between other tenants and mentor.

By comparing the result of in-deep interview and observation six case studies, the result implies that the success of the innovation begins with the start-up team who have a passion and commitment. Under incubation process, there

are a number of factors that supports the successful start-up, there are administrative support, training and coaching, business advice, mentor, and network.

Incubation should act as a centre of knowledge that encourages the start-up and community to exchange the ideas between inside and outside of the incubation. The incubation should create the value-added network system between government, university, the private sector and the community. The value-added network system is providing real-time, two-way transactional capabilities for the stakeholders. The important mechanism is to connect to an automatic network where important information or advice can be obtained. Sometimes, a start-up does not know where to contact each network such as where to find the source of funds, which technology can support their concept, etc. Therefore, the business incubator should act as an immediate centre of the network that can find the relevant network for an entrepreneur. In addition, every entrepreneur needs different incubation services, especially training, coaching, and consulting. The incubation should find out what the new start-up lack and choose the right program for their needs.

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