

Function of Technology Incubator as Risk Taker on New Technology-Based Firms: A Case Study on Technology Incubator LIPI

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Abstract

Technology Incubator is an intermediary institution which undertakes the process of coaching, mentoring, and developing the incubator participant / tenant focussing on aspects of technology that will be developed. Participants in technology incubator are entrepreneurs of the category of new technology-based firms (NTBFs). These companies in carrying out their business activities sometimes cannot run optimally, let alone compete with large companies of long standing. Their weaknesses include minimal financial resources, management deficiencies, lack of access to raw materials, less mature core technologies used in manufacturing their products and difficulties in marketing and market access.

The risks they face can be reduced by joining a technology incubator, where the technology incubator creates a supporting climate for the NTBFs to grow and expand their operations. LIPI, the Center for Innovation of the Indonesian Institute of Sciences has a funding scheme and the necessary resources for technology incubation. It has facilitated the 17 start-ups involving different types of technology. It also facilitates infrastructure and human resources development through workshops, scientific support for academics / researchers, and access to market information owned by the Technology Incubator, LIPI. Support from LIPI has enabled the tenant to use existing resources optimally to run the activities of the company and assisted in the establishment of successful technology based firms

Introduction

Technology Incubator is an intermediary institution which undertakes the process of coaching, mentoring, and developing the incubator participant/tenant focussing on the aspects of technology that will be developed. The development of Business and Technology Incubator in LIPI is through Government Regulation No. 20/2005 of the Republic of Indonesia (ROI) on The Technology Transfer Based on Intellectual Property and Research and Development Result.. The main purpose of the regulation is to spread the use of science and technology and to enhance community involvement. This regulation is supported by the Presidential Regulation of ROI No. 27/2013 on Incubator Bussiness Development in order to create economical based highly competitive new ventures and optimize the utilization of educated human resources to drive the economy utilizing science and technology.

In Indonesia, Incubators have been known since 1992 through initiatives of the Cooperation Department to encourage collaboration with universities. This effort has contined since then, at

1997 held Entrepreneurship Culture Development Program in universities, which one of the program is New Entepreunship Incubator (INWUB). This made the incubator number increased to 29 Incubators. According to State Minister for Cooperatives, Small and Medium Enterprises, there are only 56 active incubators in Indonesia.

The development of technology incubation has become one of the very important strategy to develop technology-based startup companies. This strategy could also accelerate the rate of adoption of technological innovation through technology transfer mechanisms corporately especially products from research results. In line with this, LIPI has build Technology Incubators in Cibinong Science Center and began operating in 2013. This incubator has an important role into the meeting location between academics, businessmen and government as well as shorten the gap interaction between research institutions with the industry.

Technology Incubator LIPI Program is intended to provide services for inventors and/or innovator with technology resources that can come from internal and external LIPI especially the young technopreneur. Through this program, various

activities to strengthen the management capacity of technology and innovation do so creates a supporting climate for the new technology-based firms to grow and expand their operations.

Participants in technology incubator are entrepreneurs of the category of new technology-based firms (NTBFs). These companies in carrying out their business activities sometimes can not run optimally. There are several things need to be strengthened, which are:

- Low financial resources
Budget allocation is for pre-research and simple prototype.
- Management deficiencies
The company has low management capacity.
- Lack of access to raw material
Difficulty in finding location of material resources to make a good product
- Less mature core technology
No comparative study with other product from other research institution/universities.
- Difficulties in marketing and market access
No market orientation based product and not commercial ready.

There are specific challenges that faced by NTBFs e.g.:

1. Starting from the concept stage to the development stage through prototyping, next to the finished product at the same time to produce and bring to market needs and based on competitive price.
2. The system is organized and ensure access to raw material provider, and the provider of financial credit.
3. Attempt to open and develop the market, from creating new distribution channels to educate potential buyers (potential buyers).

A wide variety of risks faced by the NTBFs can be managed better by joining a technology incubator as tenants. LIPI provided financing and a wide range of facilities to help tenants / start-ups to grow and become more competitive in business.

Methodology

This paper uses qualitative research method to analysis of descriptive data. First the data obtained with the approach of desk studies, interviews and discussions, and participant observation. References are obtained from written sources such as books, journals, articles, and official government website/organization. In-depth interviews and discussions were conducted to Technology Incubator LIPI managers and tenants with semistructured questions. Observations conducted

to gain an understanding of the condition being faced. The second stage is the extraction of the data and information obtained from each approach. The next step is final analysis of the data and information obtained and explained in descriptive.

Result and Discussion

Technology Incubator LIPI

Technology Incubator LIPI provides assistance and guidance to startups that develop business based on technology. Every tenant who joins can obtain the facilities provided by the Incubator with low pay rent space. It's select by team that specialized in current area.

Tenant Facilities

In accordance with a function as a temporary protective for NTBFs, the Technology Incubator LIPI provides facilities such as:

1. Financial Access
Every tenant who joins can get financing through the specific mechanism and requirements. This financing includes advanced research activities, pre-production activities, scaling-up activities. The manager can also provide assistance in obtaining funding from outside sources (private or other government agency programs).
2. Promotion Facilities
Promotion facilities provided by Technology Incubator LIPI in order to increase market penetration of products technology development / appropriate fields.
3. Training Facilities
Facilitation of training given to tenants to improve the capacity and capability of tenants. Planning of the training facility is scheduled by Manager of Technology Incubator LIPI and communicated to the tenant and the implementation time specified together.
4. Intellectual Property Consulting
Intellectual property in accordance with needs of tenants for intellectual property required.
5. Other services
Assistance from researchers in developing specific products, utilization of laboratory and lab equipment at other LIPI's research center, land-use trials, other facilities with special requests from tenants.
6. Infrastructure
 - a. Office building, including tenant workspace, syndication rooms, meeting rooms, and auditorium.

- b. Workshop, including processes and equipment space, QC laboratory space, warehouse, and Health, Safety and Environment (HSE) facilities.

Tenant Category

Technology Incubator LIPI has facilitated 17 tenants involving different types of technology. Most of tenants are under agro industry category. Second rank is in category of material / manufacture, followed by energy and chemistry (Fig. 1).

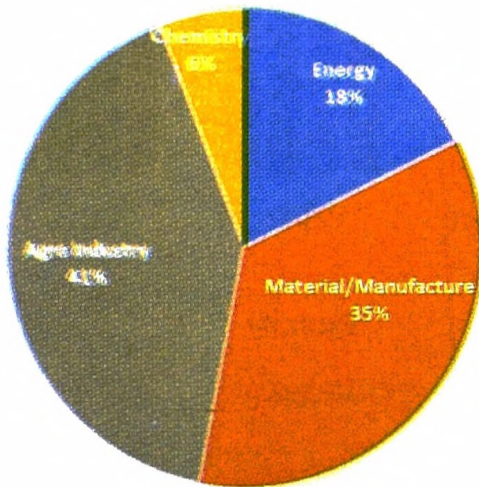


Fig. 1. Technology Incubator LIPI Category

Risks faced - tenants of Technology Incubator LIPI

In general there are two risks that were analyzed in this study, i.e the risk faced by tenants that comes from internal and from external (Fig. 2).

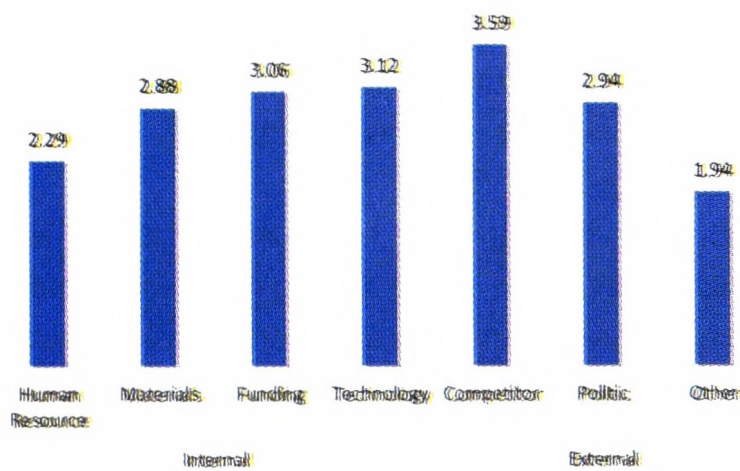


Fig. 2. Internal and external risk faced by tenants of Technology Incubator LIPI

According to the analysis conducted, there are seven risks that were faced by tenants. A competitor company was recognized as being one of the biggest risks. The need to compete with other established companies was one thing tenants had to be aware of and make plans to deal with. The detailed risk faced by each category are shown in (Fig. 3):

Tenant in Energy Category

1. The biggest risk in this category was shown by the analysis to be political instability especially with regards energy policy. Tenants felt that they were dependent on government policy in the energy sector. There are several regulations that still affect startups in the energy sector and are a huge challenge to them.
2. Technological obsolescence also was a factor which could influence the sustainability of the business in the energy field, while the competition factor is still associated with regulations and politics.

Tenant in Material / Manufacture Category

1. Need for technology update was important and can become a big risk.
2. Materials or resources could become a challenge. Limited access to raw material are obstacles perceived to be a threat in the future.
3. The political situation and current regulations have improved with the Law of the Republic of Indonesia No. 4 of 2009 Concerning Mineral And Coal Mining notably banning the export of raw minerals (ore).

Tenant in Agro Industry Category

1. The biggest risk encountered by tenant in the agro industry category was competition. Natural and agro product are easy to find, easy to develop and thus give rise to competition..
2. Financial constraints are the next biggest risk that must be face by the tenant in agro industry. With a high level of competition, stable funding would help the tenant to make his/her company more competitive.
3. The problem of availability of raw material is also an issue of concern and there is the risk that it could become a challenge for the tenant.

Tenant in Chemistry Category

Tenants in the chemistry category in Technology Incubator LIPI also regard competition as a potential risk in its business development. This is understandable because there is practically no novelty in chemical formulations unless something is hidden as a trade secret.

Risk preventive that have been implemented so far

Technology Incubator LIPI already has a programme preventing issues faced by tenants become potential risks, those activities including:

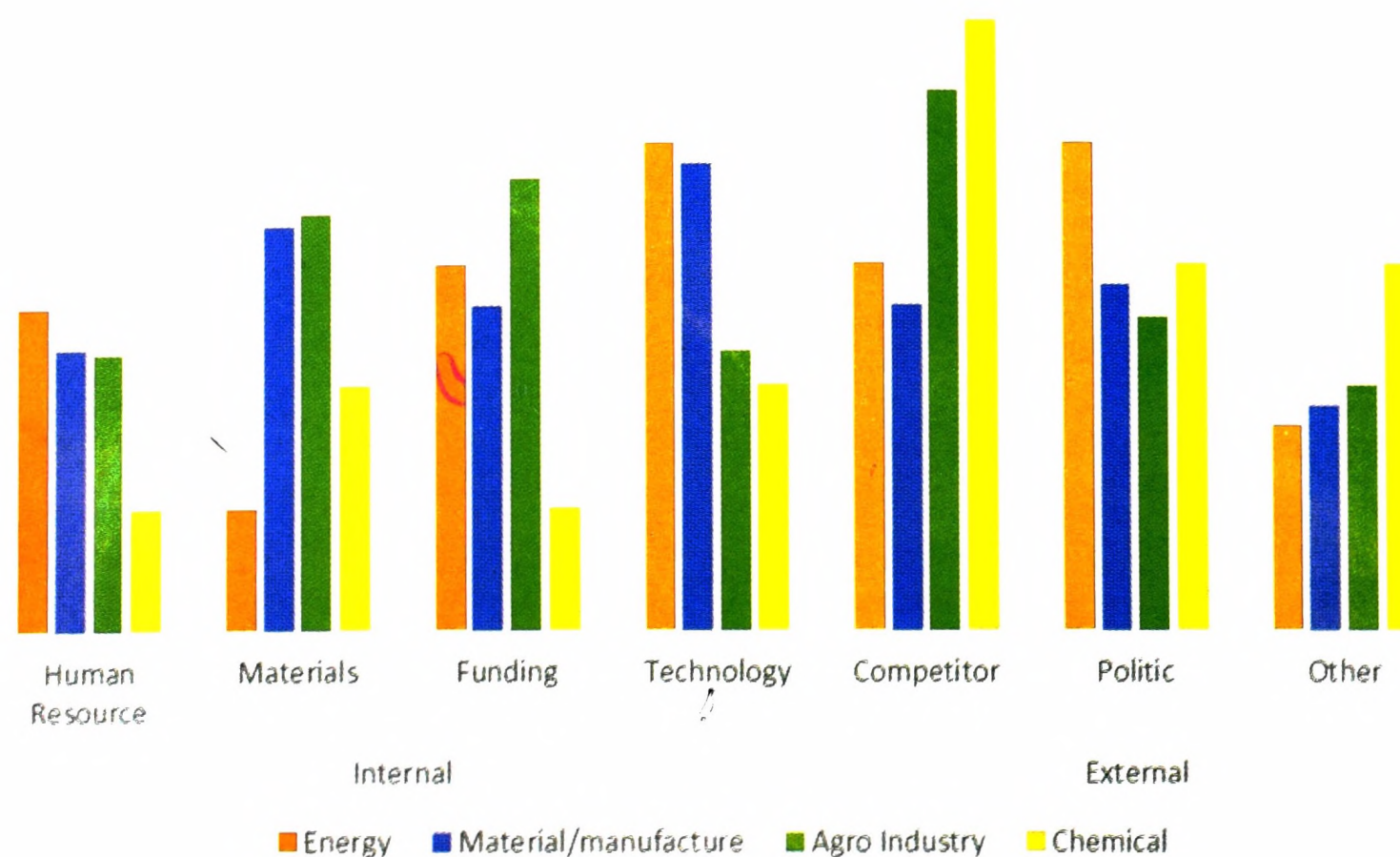


Fig 3. Detailed risk faced by tenants of Technology Incubator LIPI

- Human resource:
 - Mapping of human resources from tenant.
 - Increasing capacity of human resources through regular training.
 - Proposing a specific formation to strengthen the capability of tenant.
- 1. Material Resources
 - Documenting the raw material requirement for the tenant.
 - Providing of access to sources of raw material needed.
- 2. Funding
 - Fund rising from other funding sources.
 - Helping create a good business plan that can attract investors.
- 3. Technology
 - Protection of the technology owned by tenant in the form of patent, trademarks, copyrights, or other intellectual property protection.
 - Collaboration with researchers at research centers for product development.
- 4. Competitor
 - Analyzing of competitors intelligent to know the strengths and weaknesses of competitors.
 - Doing reverse engineering of the products on the market.
- 5. Politic
 - Submission of a standard form of certain products as an Indonesian National Standard (SNI).

1. Conclusion

Technology Incubator LIPI has been doing mentoring and coaching to new technology-based firms / tenants / starts-up as well as providing the necessary facilitation. The analysis of the risks faced by tenants become concern of Incubator so deficiencies and weaknesses of the tenants can be overcome and solved together. Support from LIPI has enabled tenants to use existing resources optimally to run the activities of the company and assisted in the establishment of successful technology-based firms.

The other finding from this paper research is to create activity in order to develop competitive strength through training and workshops and strong business plan. A strong business plan can create new opportunity that eliminate the minor even major risks.

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