ANALYSIS OF BUSINESS INCUBATOR PROFILES ON SMALL AND MEDIUM ENTERPRISES OF TECHNOLOGY IN INDONESIA

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Abstract

The purposes of this research are to know: (1) the profile of business incubator of technology; (2) the stages of the business incubation program; and (3) the tenant's success and failure factor in Indonesia. The sample of research was 24 business incubators in Indonesia. Data collection technique was using surveys to map the condition of business incubator. Furthermore, direct observation was done to clarify and to describe the data. Data analysis techniques were descriptive quantitative (percentage), GAP and SWOT analysis. The results of the study showed that 24 respondents of incubator can be mapped into seven incubators at the growing stage, nine incubators at the developing stage, and eight incubators in the mature stage. Some of the programs that were considered supportting the success of tenant such as periodic training and mentoring. Meanwhile, the cause of tenant failure was the weakness of market access.

Index Terms—incubator, tenant, growing, developing, mature

I. INTRODUCTION

Globalization era has been marked by major changes in the world community as a whole including the business area. This era indicates a massive increase in business competition and unemployment and it makes all parties become competitors. In this competition, there will be

two actors, as a winner or a loser. Winning or losing is determined by the response to globalization, i.e. the ability to compete in the era of global economic integration. This ability not only relies on the country but also the actors involved in globalization and economic integration, either big companies or corporations, individuals, or productive sectors. Therefore, it requires innovative ways to promote sustainable economic, social and technological development.

In terms of responding to globalization, it seems that Indonesia's position is not fully ready compared to other countries in Southeast Asia (ASEAN) or Asia. For example, China incorporated through ACFTA (China-ASEAN Free Trade Area) agreement utilizes it as a tool to liberalize its economy. Through ACFTA, China is more freely to liberalize into the domestic market of Indonesia. Imported products from ASEAN or China will be easier and cheaper to enter Indonesia due to the reduction of custom tariff and other tariff elimination, and even the tariffs will be zero percent within three years.

To anticipate this global urgency, the government of Indonesia tries to establish business incubators at several universities. Business incubator serves as an institution for Small Medium Enterprise (SME) tenant in Indonesia. SME as national economic stabilizer has got more severe challenges with the ACFTA. The challenge is to obtain resources, to maintain and to enhance SME's competitiveness as creative and innovative industries, to improve the standards, the design and the quality to fulfill ASEAN requirement as well as diversifying output and stabilizing micro business revenue.

The role of SME in national development cannot be underrated because it takes part as the main society life. The existence of small businesses represents almost all business units in various economic unit that live in the economy sector because of its large number. Till now, small businesses represent about 99.05% of the existing business units while medium enterprises are only 0.14%, and big enterprises are only 0.01%. It means Indonesian economy characterized by the legal subjects of business actors is consisting of small-scale enterprises in various sectors, especially agricultural and trade sectors as well as services and processing industries and most of them are micro-enterprises.

Another fact proposed by Keenan Institute Asian Studies (Thailand) in case of SME condition in Indonesia shows that the main problem faced by small and medium enterprises is relatively complex such as the image of entrepreneurs, inadequate SME programs from the government, difficulty on starting a new business, consumer purchasing power, tax issues, lack of local government support, lack of coordination with among the institutions which protect SME, less supportive policies, management capabilities of SME, poor products quality, lack of quality human resources, inadequate market information, lack of marketing skills, and credit access. "The biggest problem for many small and medium enterprises (SMEs) is not the idea or the product provided and neither its customers, but their needs. High prices of production and office space are critical to the survival of a small business. Incubators come as a response to the needs of small and medium enterprises in key steps of a business, such as initiation and market penetration. An incubator aims to have a positive effect on the economic health of an area, of a community"[1]

In order to solve the problems commonly encountered by SME, especially SME tenant, the guidance and assistance activities are needed or it is often called as incubation activities. This incubation activity is carried out by an agency called a business incubator. The role of incubator is important for beginners to assist them in developing their business. In the incubator, SME tenant is given assistance in various things such as marketing, product developers, management and others.

However, there is no standardize pattern of incubation activities from the business incubators. The concept of incubator development should be clear whether it is oriented to technology or non-technology. Since incubator development still appear varied by assisting tenants from various fields, it causes business incubator do not focus in carry out its function.

Many business incubators has been growing in Indonesia. These current incubator agencies need to be mapped to see whether the incubators that have been established, either by government or private institutions, are fulfilling the existing standards. The study of incubator mapping is important as a reference in managing good business incubators. The purposes of this research are to know: (1) profile of technology based business incubator; (2) the stages of the business incubation program; and (3) the tenant's success and failure factor in Indonesia.

II. LITERATURE REVIEW

1. Business Incubator Concept

Business incubators as a platform for new businesses to enhance business development and sustainability opportunities by providing utility, managerial (resource training) facilities and other services [1]. Another opinion was expressed by Tri Siwi (2011) in his research where Business Incubator is an institution that helps new entrepreneurs in starting a business, improving the development prospects, and business endurance, so that it can survive in real market conditions [2]. The main purpose of business incubators establishment is to accelerate potential business development, to develop the region and to create new jobs. The goal cannot be separated from the concept of business incubator as a dynamic process of business development. The incubator provides three major stages in business development: entrepreneurial and training environments, access to mentors and investors, and market visibility [3].

The concept of "incubator" is often used in organizations to create a conducive environment when "hatching" and developing new companies [4] [5] [6]. Some experts state that business incubators have become phenomena in some parts of the world. Policy makers have viewed incubators as a tool to promote economic development, innovation, and to stimulate the emergence of new companies. Incubators also serve as vitamins for areas that face problems in business development [7].

Based on these opinions, it can be concluded that the business incubator is an institution that provides a designed program to foster and to accelerate the success of business development through partnership support or other business coaching in order to make the business profitable, well organizational and financial management, sustainable, and positively impact on society.

2. Business Incubation Model

The business incubation process can vary from one incubator to another, because it is influenced by the goals to be achieved, the characteristics of the region in which the incubator is located and several other factors. Here is the "evolution of the Concept of Business Incubator" [8].
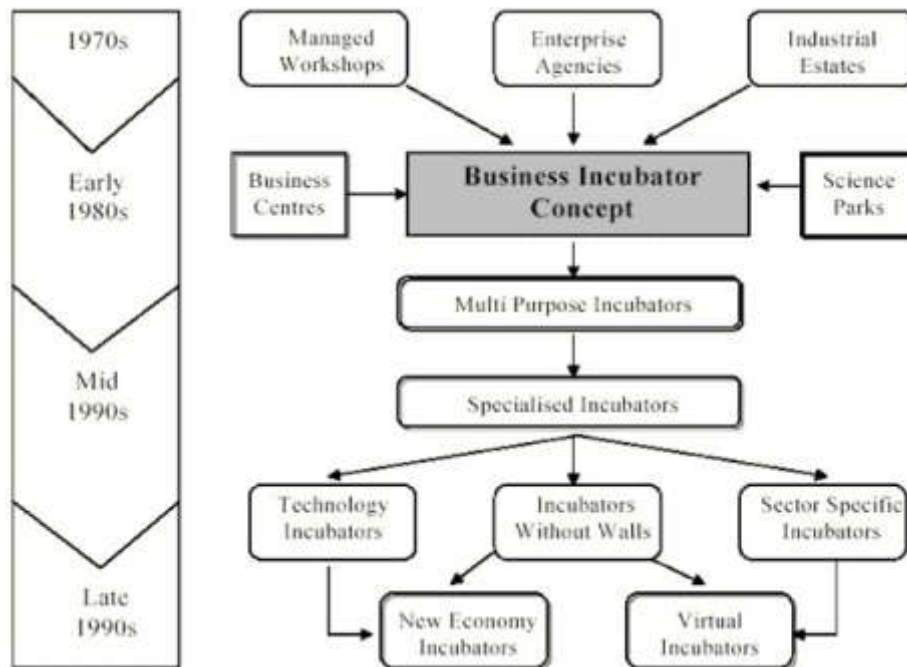

Figure 1. Evolution of the Business Incubator Concept

Zimmerer (2005) explains that there are two stages in entrepreneurship development, namely, the initial stage (start-up) and growth stage (growth) [9]. The main goal of the start-up phase is achieving the goals continuity and basic plans or ideas creation to market. The start-up phase has the following characteristics: (1) focus on the future than the present and the medium-sized business is directed to the long term; (2) moderate risk taking with a high level of tolerance for change and failure; (3) the capacity to find innovative ideas that give satisfaction to consumers; and (4) technical knowledge and field experience. Meanwhile, the growth stage aims to grow in a simple, efficient, profit orientation and direct plan to achieve it. The growth stage possesses the following characteristics: (1) ability to survive during the rapid growth, organizational purity, and numeracy; and (2) managerial knowledge and experience to employ other people and existing resources.

Several incubation models refferring to incubator model from Universidad Nacional Experimental Del Táchira, in Venezuela [10]. This model is divided into several stages:

    a. Pre-incubation

The purpose of this model is to change innovative ideas into business commercial project. This stage is called the generatation process of potential client to the next stage.

b. Incubation

In this stage, incubator offers the required infrastructure and strategic support to develop their activities.

c. Disincubation

The purpose of this stage is to support SME tenant so they can be autonomous outside the incubator's infrastructure.

In this model, the incentives for innovative activities that come from universities are more emphasized on the pre-incubator stage. In line with the process of establishing and developing from the incubated tenant, this model proposes that there should be a constant assessment of the business incubator performance and the business performance of the incubated company.

In terms of the incubation model, this model emphasizes the need for a support phase for expansion/ improvement of business plan and supporting phase when SME leave the incubator. It is similar to Inkubator Teknologi from Standards and Industrial Research Institute of Malaysia (SIRIM) where the incubation stage is also divided into three stages [11], namely:

a. Development of the entrepreneur: in this phase, the basic principles of entrepreneurship are taught to potential entrepreneurs with the aim of expanding skills, increasing knowledge and updating their skills.
b. Establishment of the Business: in this phase, entrepreneurs learn how to start a business, practice the knowledge gained in the previous stage.
c. Market development: entrepreneurs learn how to turn ideas into market products, setting up a network of contacts and suppliers both regionally and internationally.

Many ideas support that the start-up is a critical stage for new entrepreneurs where the failure rate for new ventures is very high [12] [13]. The common problems encountered in managing business incubators consist of incubator problems in incubating tenant and the problems faced by tenant [14].

III. RESEARCH METHOD

This study was using quantitative and qualitative with the primary that had been collected through surveys and observations. The use of quantitative methods was intended to reveal facts and information based on survey results and secondary data. Meanwhile, the use of qualitative methods was intended to provide an overview of interview data and observation [14].

The population of this research was Business Incubator Management in Indonesia, while the business incubator managers from both government and private institutions took part as research subjects. The sample of research was 24 business incubators in Indonesia.

Data collection technique was using surveys to map the condition of business incubator. Furthermore, direct observation was done to clarify and to describe the data. Data analysis techniques were descriptive quantitative (percentage), GAP and SWOT analysis. Here is a

illustration of the research flow:The sample of research is 24 business incubator in Special Region of Yogyakarta and Central Java. Data collection in the form of surveys conducted to map the condition of business incubator. Furthermore, direct observation is made to clarify and describe the data. Data analysis techniques are descriptive quantitative (Percentage), GAP and SWOT analysis. Here is a picture of the research flow:
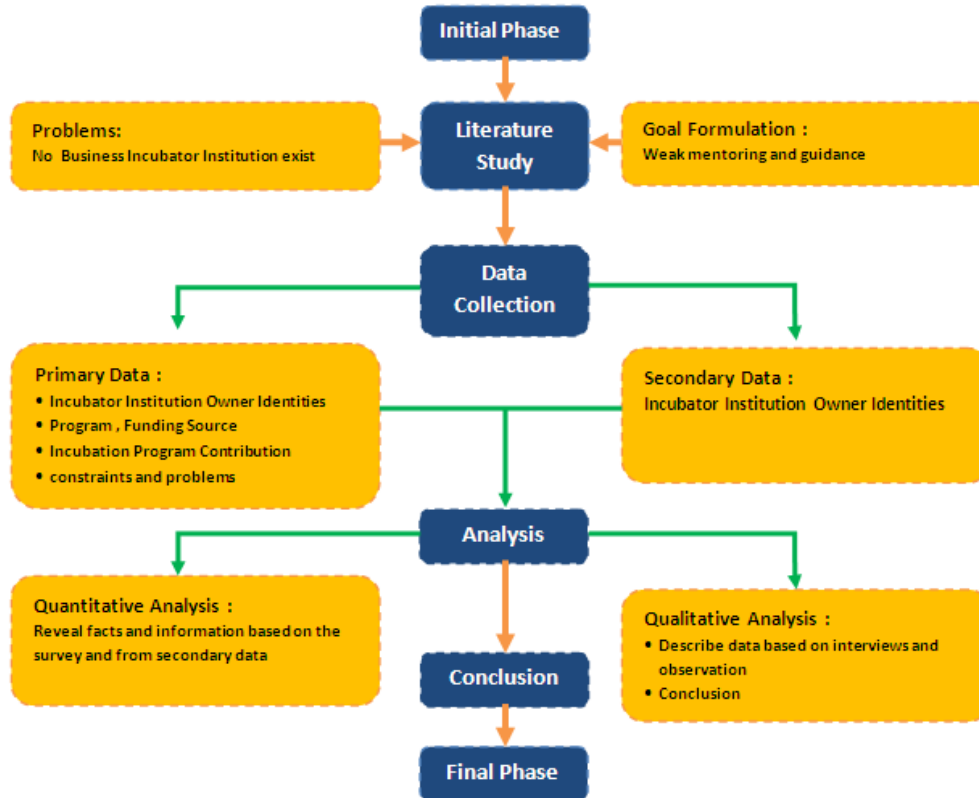

Figure 2. Research flow

IV. RESULTS

The study was conducted to 24 respondents of business incubator managers from government and private institutions in Indonesia. Respondents come from the incubation of technology business in the small and medium-sized industry in technology-based start-up companies.

1. Profile of Business Incubator In Small Medium-Based Technology

The result of the research is the condition of the incubator institution, and the SMEs participating in the Technology Innovation Incubation program by Ministry of Research, Technology and Higher Education and Incubator of Technology Business, government/ ministry, university, financial institution, KADIN, and other stakeholders considered related to this study program.

Based on the results of data collection, the institutional legality of the respondents varied according to the founding institute of the incubator described in table 1 below.

Table 1. Business Incubator Institutional

No	Founding Institution of Incubator	Decree	Percentage
1	Government and Private	Rector or Head of LPPM	54%
2	Central Government dan Local Government	UPT atau Related Head Units	21%
3	Private Enterprise and State-Owned Enterprise	Notarial Deed or Head of BUMN	17%
4	Foundation	Leader of the Foundation	8%
Total (Responden Number of 24)			100%

Based on table 1, 54% of respondents answered that the Incubator's establishment decree was issued by the Rector or Decree of the Chairman of LPPM, 21% respondents answered UPT or Head of the Unit concerned, 17% respondents certified Notary or Leadership of BUMN and 8% by Leaders of Foundation for its incubator establishment decree.

In management resources, there are 159 managers dominated by S1 graduates with full working time of 38%. Based on the data, it is found that the average manager in each incubator is 7 personnel. Furthermore, the data is analyzed for each incubator with a minimum personnel limit of five people and is compiled as in table 2 below:

Table 2. Business Incubator Staff Number

No	Staf Number	Incubator
1	Less than five(<5) person	8
2	Five (5) person	4
3	More than five (>5) person	12
	Total	24

Table 2 explains that there are still 33% incubators with fewer than five staff members, 17% incubators have five staffs, and 12 incubators have more than five staff members. In terms of facilities, the minimum standard of building area for each business incubator is 500 m² while the results show the following data:

Table 3. Building Area of Business Incubator

No	Building Area	Respondents of Incubator	Percentage
1	Less than 500 m²	16	67%
2	500 m²	1	4%
3	More than 500 m²	7	29%
		24	100%

Table 3 shows that 67% of incubators have a sub-standard building area, 4% incubators are standard, and 29% incubators have exceeded minimum standards. Based on the number of tenants, on average each incubator has 9 indoor outlets and 38 outdoor outlets.

Table 4. Incubator Business Tenant Amount

No	Inwall Tenant	Incubator Respondents	Percentage
1	Less than five (<5)	13	54%
2	Five (5)	2	8%
3	More than five (>5)	9	38%
	Total	24	100%

Based on the above datam it can be seen that the number of tenants inwall less than 5 SMEs tenant are still there 54%. This indicates that the number of assisted SMEs on average are still low because they still under 5 tenants.

The data were analyzed to compare the actual performance with the expectation performance using GAP analysis model. GAP analysis is used to compare ideal scores with actual score of each incubator. Ideal score in this study was obtained is 19 with the results of analysis as in Figure 3 below:
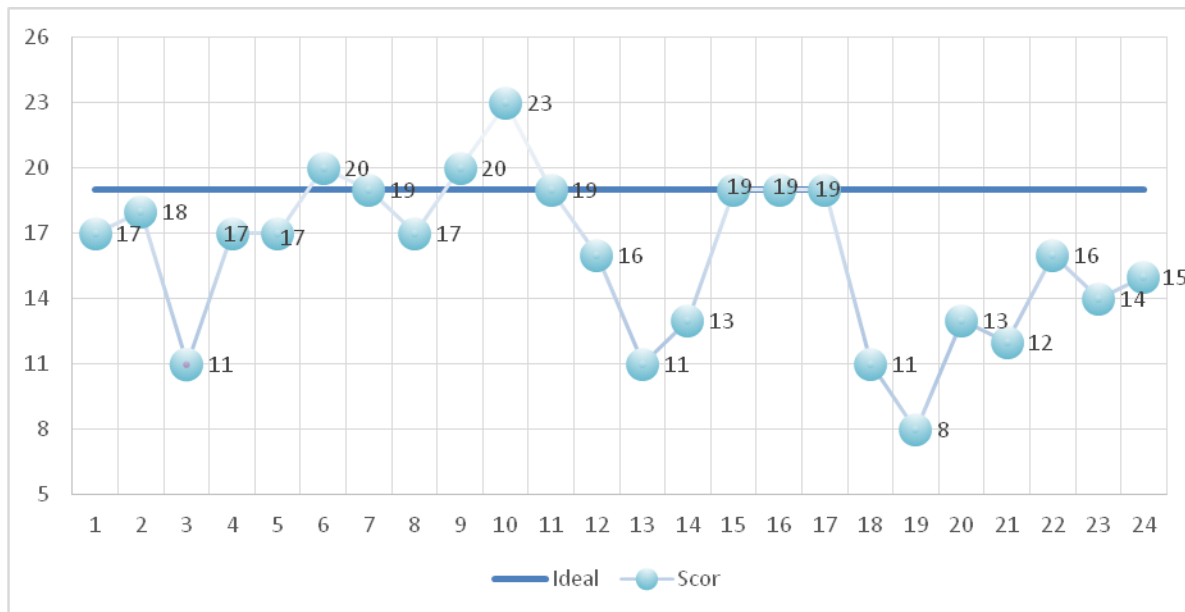

Figure 3. GAP Analysis

Figure 3 shows that 8 incubators of 24 incubators or 33% have met the ideal performance and the remaining 67% of the sample incubators have not met the ideal performance.

2. Technology Based Business Incubation Stage

Based on these data, SWOT analysis is divided into three parts, namely SWOT analysis for each respondent group: adult stage, developing stage, and early growth stage.

a. Initial Growth Stage of SWOT Analysis

This early incubator stage SWOT incubator analysis was an incubator that had a GAP score below 13. In this study there were 7 incubators with a GAP score below 13. It is known that the largest incubator force at the initial growing stage is the Internal Stakeholder Support (Founder / Owner Institution) with a value of 2.3. The second biggest strength is the mentoring score of 1.8. The SWOT analysis for the biggest weakness is the Funding of the Incubator Operations and the Initial Capital of Limited value of 2.52. The second weakest sequence is the Weak HR Income of 1.54. Data from the research results obtained from the largest opportunity analysis is Support external stakeholders (alumni, BUMN, Government, Local Government, etc.) with the value of 1.4. The next weakest sequence is the Government encourages the growth of creative economy gets a value of 2.42.

Table 5. Initial Growth Stage of SWOT Analysis

Strength	Weakness
1. Stakeholder Role (Founding Institute) 2. Fasility and Infrastructure 3. Network	1. Initial Operating Incubator and Capital Financing are Limited 2. Low Skilled Human Resource Incubator 3. Facilities and infrastructure are limited
Opportunity	**Threat**
1. Support of external stakeholders (alumni, BUMN, Government, Local Government, etc.) 2. The government encourages creative economic growth	1. Government policy is less support for incubation program

b. Growth Stage of SWOT Analysis

This incubator stage SWOT incubator analysis is an incubator with a GAP score of 14 to 18. In this study there are 9 incubators with GAP scores between 14 and 18. It is known that the greatest strength of the business incubator is the Stakeholder Support Internal (Founding Institution / Owner Incubator) with a value of 1.2 and this is equal to the strength of Facilities and Infrastructure. Low improvement of tenant competitiveness became the highest weakness factor with the value of 1.52. The next weakness is the Human Resource Capabilities Limited incubator (Mentor and manager) with a value of 1.19. The greatest opportunity analysis is the demand into a high incubator tenant with a value of 1.52. The next sequence of opportunities is the Government supports for creative economic growth with a value of 0.64. Especially on the biggest threat is the competition of similar products from abroad with a value of 1.14. The next threat is the financial management regulation does not support the entrepreneurial incubator authority with a value of 0.8.

Table 6. Growth Stage of SWOT Analysis

Strength	Weakness
1. Stakeholder Role (Founding Institute) 2. Fasility and Infrastructure 3. Network	1. Increased Tenant competitiveness, which is low 2. Limited Human Incubator Skill (Mentors and Managers) 3. Do not have Standard of Operational Procedure
Opportunity	**Threat**
1. High demand becomes an incubator tenant. 2. The government supports the growth of creative economy. 3. Infrastructure Support from government, local government and founding institute of incubator.	1. Competition of similar products from abroad. 2. Financial management regulations do not support the entrepreneurial incubator authority. 3. Government funding for initial capital of incubator tenant is still low.

c. Mature Stage of SWOT Analysis

This advanced stage incubator SWOT analysis is an incubator with a GAP score equal to or greater than 19. In this study there are 8 incubators with a GAP score equal to or greater than 19. The greatest strength of a business incubator is a network with a value of 2.16. The second largest strength is the professional human resources (full time staff, and mentor) with a value of 0.96. Incubators that do not have financial authority become the highest weakness factor that is equal to 0.96. The second sequence of weaknesses is the commitment and effectiveness of entrepreneur incubator management is not optimal yet with a value of 0.65. The biggest opportunity analysis is the market share for IKM tenant incubator products is still wide with a value of 1.08. The biggest threat is the obligation to obtain halal certificates, patents and brands with a value of 1.14. The second sequence is the financial management regulation does not support the entrepreneurial incubator financial authority with a value of 0.64.

Table 7. Mature Stage of SWOT Analysis

Strength	Weakness
1. Network 2. Profesional Human Resource 3. Operasional Budget	1. Lack of Financial Authority 2. The commitment and effectiveness of the incubator management work is not yet optimal 3. The SME selection system still needs to be refined
Opportunity	**Threat**
1. Market share for IKM tenant incubator products is still wide 2. Request to be a high incubator tenant	1. Obligation to obtain halal certificate, patent, and brand 2. Financial management regulations

3. Offer of cooperation from various parties in the country and international	do not support the incubator financial authorities 3. Government financing for initial capital of low incubator tenants

Assessment of success can be seen based on the following criteria: Annual Production Volume, Packaging Design, Marketing Area, Business License / Product Certification, Total Workforce, Business Entry, Turnover / Years, Technology Used, Total Business Space, Assets and Venture Capital. On the other hand, support programs for incubation success with the highest score according to tenant incubator were perodic training and assistance (21%), focus on running business (19%), and market access (13%). Meanwhile, the factors that cause incubation failure with the highest score are weak marketing access (22%), not focus on business product type (19%), and poor management (15%).

Table 8. Success Supporting Programs

No	Incubator Role	Respondent Choices (%)
1	Periodical Training and Guidance	21
2	Focus on the running business	19
3	Market Access (promotion, working capital, marketing)	13
4	Good Manajement	11
5	Financial Access	10
6	Network	10
7	Products that fit the market needs	9
8	Government Support (Local Goverment, Central Goverment, Company)	7
	Total (%)	**100**

Table 9. Factor Causes Failure of Tenant

No	Failure Factor	Respondent Choice (%)
1	Weak Market Access	22
2	Unfocussed Product	19
3	Bad Management	15
4	Low Working Capital	11
5	Low Skilled Incubator Management Human Resource	7
6	Do not use technology	6
7	Low Product Quality	6
8	Low Entrepreneurship Motivation of the tenant	6
9	Low performed Incubation Program	5

10	Low networking	4
	Total (%)	**100**

V. CONCLUSION

Based on the research result some conclusion can be drawn as below:

1. Profile of Business Incubator In Technology based Small Medium enterprises
   a. The institutional legality of the respondents varied according to the founding institution of the incubator, obtained by 54% of respondents that the establishment of incubator decree was issued by the Rector or Chairman of LPPM, 21% respondents answered UPT or Head of Unit concerned, 17% respondents certified notary or leadership of BUMN and 8% by the Foundation Leaders for the decree of its incubator establishment.
   b. On the management side, there are 33% incubators with less than five staff members, 17% incubators have five staffs, and 12 incubators have more than five staff members.
   c. From the Facility side, the minimum standard building area of each business incubator is 500 m2 while the results show that 67% of incubators have building area still below standard, 4% incubator at standard level, and 29% incubator has exceeded the minimum standard.
   d. In terms of number of tenants, on average each inkubantor has 9 inwall tenants and 38 outwall tenants. That the number of tenants inwall of less than 5 SME tenants is still 54%. This shows that the number of SME tenants who become the average is still low because it is still under 5 tenants.
   e. The GAP analysis results show that 8 incubators out of 24 incubators or 33% have met the ideal performance and the remaining 67% of the sample incubators have not met the ideal performance.
2. The increment of a Technology Based Business Incubation Program from 24 respondents' incubators can be mapped to seven incubators at the growing stage, nine incubators at the developing stage, and eight incubators in the mature stage.
3. Some of the programs that are considered to support tenant success are training and mentoring periodically. Meanwhile, the cause of failure of tenant is weak market access.

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