Empowering business incubator in creating technology based entrepreneurs

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ABSTRACT: We attempted to assess the performance of business incubators in Indonesia, focusing on their weaknesses. Questionnaire data were gathered from 8 business incubators, 39 incubates and 5 experts. Paired t-sample test was conducted and revealed that there was a gap between the tenants' expectations of business incubator services and the actual services provided by the business incubators. This study exposes the weaknesses of business incubators regarding space, personnel, operational funding, and networks. Strategic Assumption Surfacing and Testing (SAST) was used to develop strategic policies to overcome the weaknesses of business incubators in Indonesia. The strategic policies are proposing space expansion, hiring full-time managers, urging the institution head's commitment to providing funding, and promoting business incubators.

1 INTRODUCTION

Micro, Small, and Medium Enterprises (MSMEs) have an important role in the economic sector of many countries, including in Indonesia. A report by the Ministry of Cooperatives and SMEs (2015) notes that 57.9 million MSMEs absorbed 97% manpower, 89% of which were working in the micro enterprises. When compared to large enterprises, MSMEs contributed about 60% to GDP. Furthermore, at constant 2000 price, the growth of MSME sector's contributions to GDP was 5.89%, which was 0.33% higher than the growth of contributions made by big companies.

However, MSME sector is vulnerable to the numerous challenges. Tambunan (2007) concludes that the smaller the company, the bigger the challenges. Data from the Central Bureau of Statistics (2003) in Tambunan (2007) show the main obstacles for micro and small enterprises in Indonesia are the limited access to business capital (34.78%), difficulties in marketing the products (30.63%), and difficulties in obtaining supplies of raw materials (20.50%).

Another hurdle to MSMEs is related to utilization of technology to boost productivity. Data from the Central Bureau of Statistics in 2013 present a comparison of the output productivity per worker in the micro and small segment (20.1%) to that in the middle and large-scaled industries (79.9%). This condition has affected the quality of products, in which MSMEs' products have not been able to match big industry's quality standards. Furthermore, the export capacity of MSME segment was only 15.68% of the total output, far lower than the exports recorded by big industry at 84.32% of the total output (Ministry of Cooperatives and SMEs, 2015).

Business incubators (BIs) have the capacity to overcome these obstacles. The International Business Incubation Association/INBIA (2016) defines BI as an institution that provides supports in the business process to accelerate the growth of start-up companies that have limited access to business supports and resources.

However, in line with the development of BIs, people started to see weaknesses in this system, as reported by Al-Mubarak and Busler in their study (2013), which found BIs in five developing economies (China, Bahrain, Jordan, Morocco and Syrian Arabic Republic) have limitation in terms of financing for the company, expertise in entrepreneurship, personal

economic resources, and technology literacy. To that end, this study aims to identify the capacity of BIs to assist tenants in carrying out effective business and at the same time to assess the weaknesses of BIs in Indonesia.

2 METHODOLOGY

This study was conducted using a combination of qualitative and quantitative approaches through surveys. There were three stages in this study. First, questionnaires were distributed to BI managers to gather information about BI's resources. Second, questionnaires were sent to tenants who received 18 incubation items from the BIs and measured them based on the Likert scale. The questions in the questionnaire were divided into two groups. In the first group, the tenants were asked to express their expectations regarding the scope and extent of services provided by the BIs, and in the second group, they were asked to assess the services that have been received from the BIs during the incubation period. Third, questionnaires were also distributed to experts (represented by the BI management, government, and BI associations), in an effort to collect alternative policies to improve BI services.

Data sampling was conducted using purposive method targeting 15 BIs in the development and maturity phases (where in these phases BIs already provide adequate services) and 10 tenants from each BI located in Java and Bali, Indonesia between April and July 2016. Responses from the tenants were processed for preliminary mapping of the gap of the needs of these tenants, done by comparing means of each services. Meru and Struwig (2011) applied a paired t-test method to compare means between expected and perceived BIs' services in Kenya.

After that, a Strategic Assumption Surfacing and Testing (SAST) was applied to gather alternative policies from the perspectives of experts, in an effort to overcome gaps of tenants' needs. Mitroff and Mason (1981) explains that SAST is a very helpful tool to explore critical assumptions that become basis of a model or strategy. SAST is built through four stages, which are group formation, specifying assumptions and assessments, dialectic debate, and final synthesis.

3 RESULT

Responses were received from 8 BIs (50% university BIs, 25% public BIs, and 25% private BIs), 50% of which were in the development phase, while the rest were already in the maturity phase. Tenant questionnaire responses were collected from 39 tenants (97.44% males and 2.56% females). 35.9% of them held bachelor degrees, 30.8% held below bachelor degrees and the remainder had other backgrounds. The majority of the tenants (74.36%) received in-wall incubation, which means tenants enjoyed mutual work space and office facilities. Expert questionnaire responses were gathered from 5 experts (20% BI associations, 40% government, and 40% BI management personnel).

3.1 Space

The minimum standard of space area for a BI institution that applies in Indonesia, as mentioned by Syamas *et al.* (2015) is 500 m². Table 1 shows that only public BIs have 100% fulfilled or even exceeded the minimum requirement for space area. It is no surprise that financial sup-

Table 1. Total space.

Space	University	Government	Private	Total
<500m ²	75.0%	0%	50.0%	50.0%
>500m ²	25.0%	100.0%	50.0%	50.0%

Source: Survey, 2016.

port from the state budget has helped these institutions own adequate facilities. Mean while in the category of university BIs, most of them could not meet the minimum standard. This should be a concern because the majority of BIs in Indonesia are university BIs.

3.2 Management personnel

The majority of management personnel in university BIs had post-graduate degree. On the other hand, a lot of management personnel in government and private BIs held undergraduate degree. Overall, around 62.5% of the BI institutions already had full-time managers, while the remainder were led by part-time managers. Based on the institution type, 100% of private BIs and also government BIs assigned full-time managers, while only 25% of university BIs were managed by full-time managers. The low percentage of full-time manager assignment in university BIs can be accounted to the lack of available time of the BI personnel who also have the responsibility as lecturers. (Table 2)

Only a small number (37.5%) of BI institutions already engaged in internship or a benchmarking program with more advanced BIs. Both private and government BIs surveyed in the study already conducted internship at other BIs, but only 1 of 4 university BIs engaged in such a program involving other incubators with better performance. Regarding reward, 50% of BI personnel received monthly salary of between Rp5–Rp10 million. Unfortunately 50% of university BIs offered very small remuneration for their staff members, which was <Rp 1 million/month. However, personnel of university BIs had their main income source from working as lecturers.

3.3 Operational funding

BIs need financial support to carry out their activities. According to the survey, several sources of funding for BIs included funding from within the organization, grant, space leasing income, and profit sharing. Until the data were collected, BIs did not charge tenants for the services they provided.

The entire BIs surveyed in this study received a grant from the government under certain conditions. Governments BIs were 100% committed to providing budget on location for their activities, but some universities or private BIs did not provide budget on location for incubation activities (Table 3).

3.4 Network

All BIs in this study have been registered as members of an association, either nationally or internationally such as AIBI, in BIA, ANDE and IASP. Each BI has attended training,

Table 2. Management personnel.

Deskripsi	University	Government	Private
Educational Background			
<Bachelor	17.6%	12.8%	11.2%
Bachelor	8.8%	66.0%	55.6%
Master	58.8%	14.9%	27.8%
Doctoral	14.7%	6.4%	5.6%
With full-time manager	25.0%	100.0%	100.0%
With full-time staff	50.0%	100.0%	100.0%
Internship experience	25%	0%	100.0%
Salary/month			
<1 Jt	50.0%	0%	0%
Rp 1 Jt - Rp 3 Jt	25.0%	0%	0%
Rp 3 Jt - Rp 5 Jt	0%	50.0%	0%
Rp 5 Jt - Rp 10 Jt	25.0%	50.0%	100.0%

Source: Survey, 2016.

Table 3. Sources of operational funding.

Funding source	University	Government	Private	Total
Internal of organization	50.0%	100.0%	50.0%	62.5%
Government	100.0%	100.0%	100.0%	100%
Space leasing	25.0%	100.0%	50.0%	50.0%
Service providing	0%	0%	0%	0%
Profit sharing	50.0%	100.0%	50.0%	62.5%

Source: Survey, 2016.

Tabel 4. Networking.

Description	University	Government	Private	Total
Joining association	100.0%	100.0%	100.0%	100.0%
Attending training, workshops, exhibitions	100.0%	100.0%	100.0%	100.0%

Source: Survey, 2016.

Table 5. Paired t-sample statistics showing a gap in the Tenants' needs.

	Received (Mean)	Expected (Mean)	Mean difference	t-value	Significance (2-tailed) (p-value)
Supports and services					
Working space	4.46	4.56	-0.10	.681	.500
Laboratorium	3.56	4.41	-0.85	3.451	.001*
Office shared	4.36	4.49	-0.13	.777	.442
Internet	3.62	4.69	-1.08	4.352	.000*
Access to finance	3.36	4.59	-1.23	5.792	.000*
Access to investor	3.15	4.54	-1.38	5.246	.000*
Business plan services	3.77	4.56	-0.79	4.312	.000*
Training	3.90	4.46	-0.56	3.367	.002*
Mentorship program	3.46	4.33	-0.87	3.611	.001*
Product design and development	3.33	4.21	-0.87	5.157	.000*
Marketing and sales services	3.54	4.36	-0.82	4.391	.000*
Shows and exhibitions	3.51	4.41	-0.90	4.202	.000*
Bookkeeping services	3.23	4.15	-0.92	4.349	.000*
University collaboration	3.64	4.21	-0.56	2.641	.012*
R&D department collaboration	3.59	4.44	-0.85	4.748	.000*
Technology transfer	3.36	4.46	-1.10	5.593	.000*
Patent and copyright protection	3.28	4.41	-1.13	6.379	.000*
Legal services	3.05	4.26	-1.21	6.073	.000*

* Significant at $p < 0.05$.

workshops and exhibitions organized by the government at the least (Table 4). These aim at improving BIs' skills as well as broadening their network.

3.5 The need gap

The calculation results of tenants' needs gap as stated in Table 5 show that only 2 out of 18 service items that did not have significant disparities between the expectation and the reality in terms of the provided service from the BIs. It indicates tenants' satisfaction with these two BI services, namely working space ($p\text{-value} > 0.05$) and shared office equipment ($p\text{-value}$

>0.05). The remaining calculation results, on the other hand, show significant disparities between expectation and reality related to the provided services. The results suggest a gap between what tenants expected from the provided services and what the BIs offered to them.

3.6 Empowerment of BIs

While the tenants were satisfied with the working space provided by the BIs, the interview with the AIBI chairman showed that the majority of building dimension of BIs in Indonesia has not met the standards yet. Furthermore, based on the survey we conducted, there were merely 50% of the BIs that complied with the minimum standards.

Based on the gap of tenants’ needs and the staggering amount of below-minimum standard BI space dimension, we classified four weaknesses of BIs as follows: space, personnel, operational funding, and networking. Space is tenants’ place to work. Personnel are closely related to how the qualification and capacity of BI personnel in assisting tenants during the incubation. Operational funding reflects BI’s capability of funding its activities. Meanwhile, network is about how BI can successfully bridge or connect tenants to various stakeholders. Seventeen experts’ assumptions that have been identified using the SAST method are shown in Table 6.

3.6.1 Working space barrier

There are many BIs constrained by below-minimum standard building dimension. Considering these two identified assumptions (A1 and A2), Figure 1 shows that A1 is deemed the most essential, with high assurance and is possibly effective to get to the bottom of space barrier.

3.6.2 Personnel barrier

The commitment borne by BI manager which is represented by the institution’s vision, mission, and goal is appropriate. The entire BIs are committed to creating technopreneurs as well as to improve the cooperation between academic, business and government. Each personnel member is responsible for his or her roles according to the job descriptions.

Table 6. Strategy assumption on BIs’ role improvement.

Role improvement	Strategy assumption
Space	Proposing building expansion to the institution head Cooperating with state-owned enterprises/private sectors on CSR and government funding utilization for building expansion
Personel	Appointing dedicated and committed managers Assigning full-time managers Implementing junior–senior team-up Implementing junior–mentor team-up Delegating incubator manager interns in established incubators (national/ international) Signing up incubator managers for training on capacity building improvement Offering decent monthly income
Operational Funding	Financial support from institution head Seeking for government funding Cooperation on CSR program with state-owned enterprises and private sectors Generating income from tenants through space rent and profit sharing Formulating measured performance achievement target in order to attract investors
Networking	Identifying and understanding the stakeholders Proactively promoting BIs to stakeholders through business gatherings, workshops, exhibitions and training Signing up for incubator association as members

Source: Survey, 2016.

Figure 1. Priority working space enhancement.

Tenants' success is vastly determined by the performance of the BI manager who is in charge of the whole incubation activities. University BIs employing full-time managers are lower in proportion compared to the other two types. Full time is interpreted as someone who works 40 hours/week or 37.5 hours/week (for civil servants in particular). It has become a concern among the experts because the total number of BIs in Indonesia is mainly university BIs (72.8%). This outlook is in line with Scaramuzzi (2002) who views that BIs have to place a proportional number of full-time managers to match the size of the BIs, tenants and their activities.

BIs also have assistants. One of their tasks is to monitor tenants' growth as well as obstacles to be discussed with BI managers or mentors. These assistants have to be capable of understanding the general aspects of incubation management as well as tenant industry aspect in particular. In several BIs that we observed, there were many younger assistants with different background qualifications as required by the tenants. This phenomenon is accentuated by an opinion of one of the tenants who ran Oyster Mushroom cultivation saying that the assistant barely had any idea about mushroom. Another tenant in essential oil derivative sector also expressed a similar concern. According to him, the BI still had no specialist assistants in sales area, while sales function is undeniably vital to his business. Therefore, experts disclosed an assumption on how important it is to do junior assistant–senior assistant and junior assistant–mentor team-up.

It is possible to improve the ability of BI managers through capacity building programs. In 2015 a working group on BI enhancement was set up in accordance with the Coordinating Ministry of Economic Affairs decree No. 184/2015, where one of the functions is to conduct capacity building training for BI managers and tenants. Today there have been plenty of programs launched by both the government and private sectors to boost the managers' and tenants' capacity.

Another attempt, benchmarking against established BIs for an instance, has the potential to improve the quality of BI's personnel. Another advantage of benchmarking is to inspire managers to set off groundbreaking programs that improve service quality to tenants.

Providing decent income is deemed capable of boosting managers' motivation in doing their part. Unfortunately we explored no further than how much they earned on a monthly basis, and we did not seek further information if there was bonus sharing scheme, which is a common practice in private sector companies and state-owned enterprises.

Among seven assumptions which were identified as attempts to enhance management personnel's abilities, Figure 2 shows that A4 is deemed the most essential alternative with the highest assurance intensity to effectively improve the quality of BIs.

3.6.3 Operational funding barrier

In order to meet the financial demand for their operational activities, it is possible for BIs to seek funding from various sources. All government BIs are ensured to receive funding

Figure 2. Priority personnel enhancement.

Figure 3. Priority operational funding enhancement.

from the state budget through their core institution. However, not all BIs receive operational funding from the core institution such as university or private BIs. For example, a non-profit organization private BI received funding from grants such as the Lemelson Foundation, which provides aid to investors and invention-based enterprises in developing countries.

Another instance is a university BI in the maturity phase which already had the ability to generate its own income through government incentives, tenants, or state-owned enterprises as well as private sector companies' CSR. This is why despite the absence of internal funding, the BI was able to incubate more than 5 tenants using diverse funding sources within one year. On the other hand, university BIs in the development phase still relied their operations on grants and space rents, all of which raised only limited amount of fund. As a result, this incubator only incubated fewer than 5 tenants this year.

All BIs observed received funding from the government. However, it is important to retain that the grants offered by the government are competitive, which means that grants are only given to the BIs that meet the requirements in a certain period. The grant should be an additional source for operational funding: however, it is not meant to be the main source.

Therefore, from A10-A14 identified assumptions, it is visible in Figure 3 that A10 with the highest assurance intensity fortifies BIs' operational funding. This review is based on the fact that the majority of BIs in Indonesia are still on the startup and development phases, where their capacity to gather external funding is still limited, implying that internal funding

Figure 4. Priority network enhancement.

is highly prioritized. Back then Bank Indonesia (2006) also suggested the same concern, that commitment on continuous internal funding support from the chairman, mostly in universities, plays a critical role in the BI's sustainability.

3.6.4 Networking barrier

It is impossible for a BI to operate on its own in furnishing a range of programs for the tenants. Todorovic and Moenter (2010) emphasizes the significance of building network as well as increasing the number of stakeholder contacts, which the tenants might need in the future. Beate Pettersen *et al.* (2016) explains that potential networks to build are, among others, R&D divisions, public bodies, law firms, regional network organizations, investor groups, technology transfer office and diverse industry contacts and networks.

The next follow-up step is how to build a network with the above stakeholders. BIs have to be proactive in maintaining the relationships with the stakeholders. 100% of the surveyed BIs are members of BI associations in Indonesia, and some are even members of international associations. Registering to an association enables them to easily communicate with other BIs as well as nurture communication channels with the stakeholders.

Actively endorsing BIs is deemed potential to widen the networks. BIs' activity and achievement promotions through website page is a low-cost promotion tool. About 75% of the BIs studied already had their own website. Some of them even shared information on tenants' activities as well as their products. The remaining 25% of the BIs which did not have their own website were university BIs. Other promotional efforts that were already implemented by all the BIs are attending and enlisting to exhibitions, workshops or training. Even some BIs conducted business gatherings to bring tenants together with stakeholders from industry, government and investors.

The above efforts are in accordance with the experts' judgment. Out of the three identified alternatives, it is visible in Figure 4 that the experts believe that the policy to promote BIs to stakeholders is an utmost alternative with highest intensity of significance and assurance.

4 CONCLUSION

The findings of this research have shown that the services provided by BIs are still below tenants' expectation. It has been identified that there are four BI weaknesses in providing tenant assistance, which are space, personnel, operational funding, and networking. To overcome the space issue, the experts suggested that BIs submit a proposal on space expansion to the institution head. Furthermore, as for improving BI managers' capacity, each BI is suggested

to hire a full-time manager. This becomes an essential step to do, considering the lack of full-time managers in university BIs, while the majority of BIs in Indonesia stand under the shelter of universities.

BI's ability to gather funding sources accordingly relates to the number of the managed tenants. The priority highlights the fact that the majority of BIs in Indonesia are still on the startup and development phases, while operational funding issue can be resolved through funding support commitment from the institution head. To improve networking, BIs have to proactively promote their services by advertising their activities on their websites and organizing business gatherings, workshops, exhibitions and training.

Finally, to improve BIs' role in Indonesia, the government needs to focus on endorsing their existence by conducting development programs such as granting programs to BIs on the startup and development phases. University BIs also need to be prioritized, considering the fact that their proportion is the biggest out of all the BIs in Indonesia.

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