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A study on the implementation approaches of University Incubation Centres to reinforce entrepreneurship - taking the example of Singapore

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Abstract

Purpose. *This study deals with missions, significant policies, operational approaches, and training programs learned from Singapore's experiences, thus contributing to a more profound knowledge of entrepreneurship in order to establish suggestions and boost the implementation of entrepreneurship and incubator business, particularly in universities in Indonesia. This study purposes to understand in-depth the practical implementation approaches of university incubation centres to facilitate entrepreneurship in Singapore. Insights were obtaining following a literature review approach.*
Design/methodology/approach. *Data for this study were collected from a variety of sources, including government documents, university reports, global related entrepreneurship research websites (GEI, Global Entrepreneurship Monitor [GEM], 2019), and related journals (e.g., Entrepreneurship, Incubators, and University Incubators).*
Findings. *Synthetically, incubation centres possess the following primary missions: (1) they integrate professionals in various fields to promote industry partnerships and engagement; (2) they provide training to new entrepreneurs for achievement enhancement, mainly to help them acquire missing business knowledge; (3) they encourage start-ups to engage with one another in the culture of incubators, to enlist more people to join in supporting and expanding the society; (4) they commercialise intellectual properties and promote the commercialisation of inventions and innovations for the future market; (5) they bridge academic professors with industry entrepreneurs for technology upgrades and business transformation. To summarise, University Incubation Centres in Indonesia should strive to emulate the best practices of some Singaporean universities and do everything possible to help their tenants accelerate their entrepreneurial processes. In order to be competitive, an incubator must extend its network and partner with successful industries, funding agencies, industries, and universities.*

Keywords

University Incubation Centres, missions, significant policies, operational approaches, training programs

INTRODUCTION

Incubation centres have been broadly established in universities for entrepreneurship development from the 1950s. These centres were relied on to facilitate economic growth and social prosperity by means of knowledge implementation and job creation (Robles 2017). Sanyal and Hisam (2018) say that incubation centres first appeared in the 1960s in the United States and later spread to the United Kingdom and Europe in science parks, techno-poles, and innovation centres. They identified several economic and socioeconomic policy needs, including prosperity creation, encouraging large-potential small-business development, carrying technology, fostering creation, and strengthening relations among research institutions, universities, and business communities.

Al-Mubaraki and Busler (2012) devised an incubators' roadmap based on four key factors, which are mentioned below. The primary goal of the incubator was to foster an entrepreneurial environment, which received 62% of the vote; commercialisation innovations received 55.5 % of the vote; jobs received 51.6 % of the vote; and creativity received 46.1 % of the vote. As a result, these findings show that one of the strategic consequences of incubation centres is entrepreneurship.

Incubation centre is a variant of University Incubation Centres (UIC). In this regard, various typologies have been offered. The three types of incubators are private incubators, public incubators, and university incubators. The current study is based on a university incubator. Universities and incubation centres (ICs) must work together because universities are the source

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of mastery, study, resources, and innovation-driven centres. Entrepreneurs benefit greatly from association with or managing an IC program within a university since these institutions may offer links to business, society, and government organizations (Hassan 2020). Universities have been urging for more public accountability and direct contributions to nearby, territorial, and national economic growth by means of various 'third mission' actions for the past two decades. Incubations of new business, commercialization of knowledge, the creation of knowledge-sharing alliances, as well as the provision of entrepreneurship courses are examples of such activities.

As part of their new missions, universities could improve their role by introducing a practical and well-integrated incubation process for encouraging, making, and enhancing entrepreneurial community. Barbero et al. (2012) and Grimaldi and Grandi (2005) described university incubators as 'a university with an incubation system that provides a physical space within the university to facilitate the growth of university spin-offs.' Xu (2009) agreed. Universities and college campuses house approximately one-third of ICs (Robles 2017). These ICs are a great way to find new ways to collaborate and build networks that add value. Entrepreneurs, students, universities, and incubators all benefit from IC–university partnerships, according to Roura (2015).

Singapore is a quickly growing nation with a diverse populace, situated on the Strait of Malacca, one of the world's most strategically positioned straits, in which ships carry more than half of all trade products (Nawaz & Koç 2019). Universities play a critical role in Singapore's economic development and entrepreneurship (Reyes 2016). Universities have been providing research-based expertise to aid economic development in recent years. Wong (2011) explains that universities, especially the national universities of Singapore, are oriented toward entrepreneurship.

Based on figure 1, from *US News & World Report* 2019, Singapore won first place in the entrepreneurship ranking in South East Asia in 2018. As a city-state with limited natural resources on a small land area of less than 720 square kilometers, Singapore has recognised the significant role of entrepreneurship since its first encounter with the economic recession in 1985. In hours, Singapore was able to complete broadly recognised strategies as one of the easiest nations globally to do enterprise and incorporate a new business (Anthony 2015). The city-state sees more venture capital investments and has access to important foreign markets, and the Lion City was ranked the Asian Pacific leader for entrepreneurship (Henry 2014).

According to Anthony (2015), a welcoming climate, substantial government funding, and widespread use of soft power to overcome entrepreneurship obstacles have all contributed to Singapore's emergence as an entrepreneurship hub. According to the 2015 Global Start-up Ecosystem Ranking, Singapore has the tenth most robust start-up ecosystem in the world (Compass 2015). The city-state is home to almost 3,600 start-ups in segments extending from e-commerce to social networking to gaming. This report also notes that Singapore is positioned ninth in terms of venture financial support. According to Henry (2014), local government funding, a plethora of chances, high movability, internet penetration, and increasingly venturesome society contribute to Singapore's strong entrepreneurial streak.

Furthermore, the Global Talent Competitiveness Index (GTCI) has published the findings of their most recent research. In 2019, the GTCI report focused on global competitiveness, particularly in entrepreneurship, and how entrepreneurship is promoted, nurtured, and established around the world, as well as how this affects various countries' relative competitiveness. Based on Lanvin and Monteiro (2020), Singapore is ranked second in the world for global entrepreneurship, with a score of 77.27, after Switzerland with a score of 81.82, and followed by several countries such as the USA, Norway, Denmark, and Finland (Balland et al. 2015). The data shows that Singapore is the country that tends to be the most open to developing entrepreneurial talents. In the 1990s, as part of its economic structural reform, the country began to shift gears from its initial twin strategy of export promotion and

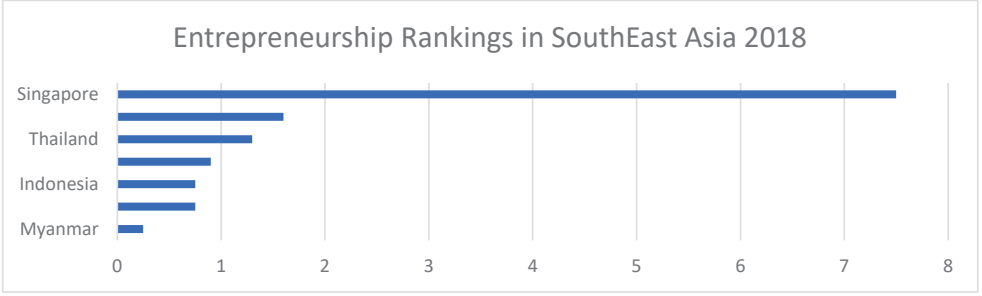


Figure 1. Entrepreneurship Rankings in South East Asia

Source: US News & World Report, 2019

foreign direct investment to advocating innovation and entrepreneurship and the liberalisation of various service sectors—finance, utilities, and telecommunications. Despite its small size, Singapore has a large number of start-up accelerators and incubators. Singapore's business incubators and accelerators have been slowly expanding over the last ten years.

Start-ups and incubation are supported through a number of projects, including the National Research Foundation's Technology Incubator System. For example, since 2011, BLOCK71, also known as Blk71, has been home to more than 30 incubators, accelerators, and investors in Singapore. It is next to the Biopolis and Fusionopolis technology clusters. SingTel Inov8 (the Singtel Group's venture capital arm), NUS Enterprise, and the Singapore Media Development Authority collaborated on Blk71. It defined itself as an entrepreneurial centre that brought together entrepreneurs, incubators, and accelerators within a few years of its founding. *The Economist* described it as 'the world's most densely packed entrepreneurial ecosystem' in 2014. Singapore's government has revealed the construction of two more entire infrastructures, namely Blk73 and Blk79, to accommodate more accelerators, incubators, and start-ups based on the success of Blk71.

Universities have a significant position in economic and entrepreneurship growth in Singapore (Reyes 2016). Universities have also been successfully providing research-based expertise to support economic development in recent years. The activities of universities, especially Singapore's national university, are described by Wong and colleagues (2011) as geared toward the entrepreneurial direction. The notion of university entrepreneurship in the country concentrates on launching new ventures, cultivating intellectual wealth, and taking high-quality research to market. Six national universities are among Singapore's 34 universities. Based on the 2019/2020 QS World University Rankings, the National University of Singapore (NUS-SG) is the best known of the three. It is ranked first in Asia and twelfth globally. Nanyang Technological University (NTU-SG) was the second-best university in Asia and the thirteenth best in the world.

Furthermore, Singapore Management University (SMU) is another of Singapore's widely known institutions, graded high among the world's education providers. In Asia, the National University of Singapore's (NUS) entrepreneurship program offers programs on technical creation and new venture growth (Wong et al. 2011). Since the late 1980s, NUS has provided entrepreneurship education. Its services have developed and grown in quantity and quality over time.

Students from all faculties may participate in various entrepreneurship courses provided throughout the Nanyang University of Singapore. Traditional lectures and workshops are among them, as are more hands-on activities, including business plan competitions and mentoring sessions. Through an overseas internship program, NUS has embarked on a new approach to experiential entrepreneurship education. Students work in advanced technology start-ups for a year while also taking entrepreneurship classes at partner universities. The sum of information accessible on entrepreneurship development and appraisal has enormously progressed due to progressions in entrepreneurship education. For instance, based on Global Entrepreneurship Monitor (GEM) investigations, local and international elements of information on entrepreneurship are offered (Singer et al. 2015). The elements selected include missions, significant policies, incentives, execution approaches, and training programs. The aims of this study emphasized universities in Singapore.

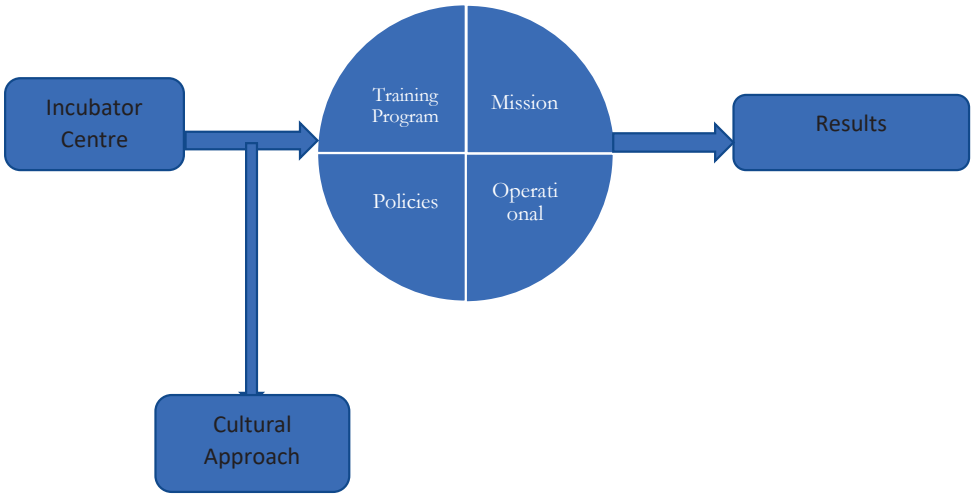


Figure 2. The Implementation Approaches of University Incubation Centres in Singapore

Source: Authors' own work

Research Purpose and Research Questions

This study deals with missions, significant policies, execution approaches, and training programs learned from Singapore's experiences, thus contributing to a more profound knowledge of entrepreneurship. This study proposes to understand in depth the practical implementation approaches of university incubation centres to facilitate entrepreneurship in Singapore. Insights were obtaining following a literature review approach. In line with the research purpose, this study focused on the following major questions: (1) What are the primary missions of the incubation centres in universities that effectively encourage entrepreneurship among students? (2) What are the critical incubation policies centres to support entrepreneurship? (3) What is the training program of incubation centres in universities to support entrepreneurship? (4) How to effectively operate the incubation centres in universities to support entrepreneurship?

METHOD

Data for this study were collected from a variety of sources, including government documents, university reports, global related entrepreneurship research websites (GEI, (Global Entrepreneurship Monitor [GEM], 2019), as well as related journals (e.g., *Entrepreneurship*, *Incubators*, and *University Incubators*) and studies (e.g., Reyes 2016; Yu 2017)

RESULTS

Singapore University Incubation Centres Missions

Active Industry Partnership

Through the NUS Industry Liaison Office (ILO), The Nanyang University of Singapore's Enterprise initiative underpins the university's force for business collaborations and cooperation in order to change university creation into goods as well as services (NUS 2020). Thanks to its extensive industry experience, expandsion of the technical network, and comprehensive intellectual property legal experience, the Industry Liaison Office is broadly perceived as a prominent force, and technological transfer of Singapore culture is critical. The Industry Liaison Office is in charge of handling NUS intellectual attributes, commercialising NUS intellectual properties, as well as promoting the commercialisation of NUS inventions and innovations.

Promoting industry partnerships and engagement, as well as providing close contact with research centres and faculties, and driving dealing for outside collaborations, are ways to achieve this commercial effect. ILO also assists NUS innovations and study in forming new start-up companies. This is accomplished through the ILO's facilitation of industry-promoted research as well as joint R&D ventures.

Extensive Entrepreneurship Underpinning

NUS Enterprise offers a wide range of resources to facilitate personal and business achievement of entrepreneurship goals, including incubator and accelerator programs that enable entrepreneurs to examine, share, and develop their concepts. It connects potential entrepreneurs with a vast network of experienced mentors and industry contacts.

The Technopreneurship Centre, on the other hand, has as its primary objective the development of a regional R&D hub for innovation and entrepreneurship. The NTU is leading six projects as part of the S$250,000 NRF grant proof-of-concept initiative, demonstrating its significance in Singapore's search for innovative creation, concept, and entrepreneurship (Ng 2012). NTU also plays a key role in two new NRF Campus for Research Excellence and Technological Enterprise programs (CREATE). Building Efficiency and Sustainability in the Tropics (BEST), a project led by the NTU and the University of California, Berkeley, would have an effect on both new and existing buildings.

NTU wishes to cooperate with Ben-Gurion University of the Negev and the Hebrew University of Jerusalem to create solutions that improve energy effectiveness and minimise water waste. It is worth noting that the government's involvement to encourage innovation and entrepreneurship is very widespread, even at the organisational level. CREATE is an illustration of a government forum where organisations and universities with a robust academic fundamental partner on ground-breaking initiatives and research with social and economic effect (National Research Foundation 2008).

The BIG Incubation Program (Business Innovations Generator) is a four-month program for entrepreneurs and start-ups. The aim of this program is to assist early-stage entrepreneurs in validating their product and preparing for seed funding. Grants, world-class mentors and consultants, masterclasses, benefits, and a workspace are all given to selected teams.

Catalytic Entrepreneurship Outreach
Along with year-round Outreach and Education projects and undertakings, NUS Enterprise supports and empowers the entrepreneur community. These types of behaviors are often activated in response to market trends. They serve as catalysts, encouraging others to join in order to support and expand the group, thus propelling them forward and cultivating awareness, as well as encouraging participants to adapt and react to the rapidly changing social enterprise landscape.

Singapore University Incubation Centres Major Policies

Campus-Wide Collaborator
To organise entrepreneurship-related activities and projects, the Incubator collaborates closely with students, research centres, and other members of the university community. Among the partners are the Institute of Engineering Leadership in the Engineering Faculty, the Computing School, NUS Business School, the School of Design & Engineering, and the Asia Centre for Social Entrepreneurship and Philanthropy (ACSEP).

Collaborative and Strategic Partnerships
BLOCK71 is a collaborative and strategic collaboration between NUS Enterprise and existing corporations and government agencies. It's a tech ecosystem creator and universal connection that catalysed and connected the start-up society while also launching new initiatives. It offers mentorship and opportunities for development in both local and global markets.
BLOCK71 embraces the spirit of creativity, cooperation, and partnership in every instance and place by leveraging each entity's unique expertise, the university's research resources and technologies, as well the partners' investment and business acumen encourage the entrepreneurial ride throughout the regional geography and beyond.
Expanding start-ups can use BLOCK71 locations to gain access to new markets while utilising NUS Enterprise's global network of capital and connections. NUS Enterprise provides extensive support services to entrepreneurs in the BLOCK71 family, including access to capital, committed mentoring, unique connections opportunities beyond the physical area, and support in integrating seamlessly into local ecosystems.

Expansion of Industrial Relations
The technology licensing office at NUS Enterprise has been reorganized to make it more investor-friendly, with the aim of bringing a larger percentage of NUS technologies into the marketplace, whether by licensing to established companies or spin-offs. In the future, the role of industrial liaison will be expanded as well. NUS Enterprise aims to add an entrepreneurial dimension to the university's education and research while also generating more economic benefit from the university's intellectual assets.

Singapore University Incubation Centres Programmes

NTUitive Pte Ltd
NTUitive Pte Ltd is the research and business arm of Nanyang Technological University. The Lean LaunchPad (LLP) software, for instance, assists engineers and research scientists in transforming their novel ideas into commercially feasible goods and business enterprises. The Overseas Entrepreneurship Programme offers NTU undergraduates a once-in-a-lifetime chance to obtain valuable expertise outside the classroom during start-up internships, entrepreneurship experience, and international immersion. NTUitive Pte Ltd is a full-service incubator that guides aspiring entrepreneurs through the early stages of their business. Young innovators will share, debate, and try new ideas in a supportive atmosphere provided by NTUitive.

NUS Enterprise
The collaboration between Ascendas-Singbridge and NUS Enterprise to launch Singapore's first Deep Technology Hub resulted in NUS Enterprise at Singapore Science Park. Its goal is to cultivate a community of deep technology entrepreneurs, accelerators, corporate partners, academics, and university researchers to foster the emerging deep technology area. Space Age Labs, Roceso Technologies, and Pro Space are only a few of the latest incubators. NUS Enterprise, which was established in 2001, adds an enterprise attribute to the NUS's education and research by involving students, staff, and alumni. Modern Aging Singapore,

a group accelerator and learning forum for new ventures that assist individuals to live better as they live long lives, is one of the programs offered by NUS Enterprise. Some elements of this assistance include the Lean Launchpad Singapore Software, geared to university and public research institute researchers who want to commercialize their technical innovations; Business Model Design, which helps social enterprises develop, envision, and evaluate business models; and more. At Asia's leading university, NUS Enterprise develops entrepreneurial talent with global mindsets while advancing creativity and entrepreneurship. The NUS ILO has been instrumental in obtaining more than 670 patents in products and services over the last five years. There are more spin-offs than technology-based businesses (National University of Singapore 2019).

NUS campus and NUS Enterprise both provide incubation areas, source capital, and a wide range of educational chances. Via programs like Enterprise House, a themed residence for learners working on or operating their businesses, it offers guidance from industry leaders. The NUS Enterprise Incubator is another service that provides start-ups and entrepreneurs with one-stop access to the tools necessary to create and sell the solution as well as networking with investors and partners.

To accomplish entrepreneurial objectives, NUS Enterprise was founded as the significant arm for entrepreneurial-associated actions. Its mission is to assist in the development of business concepts and the incubation of profitable businesses. NUS Overseas Colleges (NOC) and BLOCK71 are two of NUS Enterprise's most well-known programs. NOC is a global network of entrepreneurial hubs that helps start-ups develop and enter new markets while allowing students (mostly undergraduates) to intern at start-ups in business hubs around the world while taking entrepreneurship programs at renowned collaborator universities; and BLOCK71 is a global network of entrepreneurial hubs that helps start-ups grow and access new markets. The NUS ILO is a collaborative effort between the university's technology translation and commercialisation arms. It specialises in taking NUS research to market and managing the intellectual property generated as a result (IP). The ILO, which is part of NUS Enterprise, is responsible for linking the university with industry for future partnership and cooperation in research, as well as financing of entrepreneurial initiatives led by NUS learners and faculty. NUS Enterprise also oversees the NOC entrepreneurship training and practical experience in entrepreneurial hubs in Silicon Valley, Stockholm, Shanghai, Beijing, and New York. The NUS Enterprise has a section called the NUS Entrepreneurship Centre. The centre's research and education programs are focused on emerging entrepreneurship patterns.

The NUS Entrepreneurship Centre (NEC)

The NUS Enterprise Division was established to encourage entrepreneurial education utilising a hands-on educational curriculum and outreach. It provides entrepreneurial resources to professors, learners, and graduates who want to initiate their own companies, as well as conducting research to advance expertise in technology venturing policy and practice. Like several university-based entrepreneurship centres, NEC provides a diverse range of educational resources both within and outside the classroom. A specific effort to catalyze the growth of the external venture ecosystem beyond NUS and make NUS an attraction for entrepreneurial networking efforts that connect the NUS group with the external venture ecosystem was a distinctive characteristic of NEC's non-classroom learning activities. NEC created the yearly public business plan competition Start-up in Singapore in 1999, which is available to members of Singapore society. In addition, NEC developed a Technopreneurship Minor Program, which was the start to all NUS undergraduate entrepreneurship programs but primarily targeted engineering and science students. The aim was to make technical learners more business-understanding and entrepreneurship-orientated, as well as to close the entrepreneurial skills gap between business and technical students.

NEC then launched a new experiential education program called Innovative Local Enterprise Achiever Development (iLEAD). It provides NUS students a seven-month internship in high-tech start-ups in Singapore, followed by a two-week visiting study to international high-tech hubs. The centre received supplementary financing in 2009 to launch a series of new educational initiatives to expand its entrepreneurship education offerings. For example, the Extra Chapter Challenge is an experiential learning program for Ph.D. students that provides a six-month fraternity extension to Ph.D. students who have developed commercially viable revelations or innovations through their paper studies. The Creation and Entrepreneurship Practicum grant design, which provides students with up to S$10,000 in seed funding to help them transform their creative concepts into successful output concepts or a detailed plan for a business, is another ground-breaking initiative.

Singapore Management University - Business Innovations Generator (SMU-BIG)

The BIG is a world-class university incubator where people who are excited about entrepreneurship can come together and launch their own businesses from the ground up. Founders who work out of BIG's central co-working space have direct access to corporations and business titans who may be their first customers, mentors, or investors (SMU 2020).

The BIG Incubation Program is a four-month incubation program for entrepreneurs and start-ups. It is intended to assist early-stage entrepreneurs in validating their ideas and preparing for seed funding. Grants, world-class mentors and consultants,

masterclasses, benefits, and a workspace in the heart of downtown Singapore are all available to selected teams.
BIG provides a robust support structure to enable entrepreneurs to concentrate on what matters most: creating and scaling a great product. A downtown co-working room, a team of high-powered mentors, masterclasses, sharing sessions, founders' updates, and, most significantly, equity-free funding and financing for incubates are all available to start-ups.

Equity-Free Grants
BIG incubates will apply for funding via the Start-up SG Founder Grant, HSBC-SMU Sustainability Grant, IIE Acceleration Grant, Start-up SG Entrepass, and SG:D Spark. Start-up SG Founder offers mentoring and a venture fund grant to novel entrepreneurs with creative business concepts. Entrepreneurs would receive a S$50,000 venture capital grant as part of the scheme. To be eligible for the award, start-ups must raise and contribute a matching fund of S$10,000. The IIE Acceleration Grant offers additional funding to help start-up companies expand. Up to $10,000 will be awarded to start-ups that demonstrate promise in terms of growth and development. SMU Institute of Innovation & Entrepreneurship has joined the start-up SG EntrePass as a partner. A foreign entrepreneur who has registered in the SMU Institute of Innovation and entrepreneurship's acceleration or incubation program or whose start-up has obtained funding from the SMU Institute of Entrepreneurship and Innovation would be qualified for this opportunity. The SG:D Spark Programme aims to address main challenges as well as promoting the development of successful Singapore-founded ICM start-ups utilising authority resources and the development of a vibrant, collaborative ecosystem and network.

Mentors & Advisors
BIG is a mentorship-based program that aids the development of start-ups by offering individualized access to industry insights, networks, and experience. This mentors' network consists of successful entrepreneurs, industry experts, and government officials who assist the community.

Masterclasses
BIG's curriculum and pedagogy are created to offer entrepreneurs with unique access to theoretical as well practical information, equipping them with the knowledge and skills they need to succeed.

Downtown Co-Working Space
The Greenhouse is now the new home for BIG's creators, located inside the glass bridge that connects SMU Connexion and School of Law. SMU Connexion provides students with a shared environment where they can collaborate with faculty, professionals, and external partners to address real-world issues in a variety of fields. This room, which is located directly across from the Fort Canning Tunnel, aims to become a downtown landmark for local and foreign innovators and entrepreneurs to learn and share information about innovation, Singapore, and the area. To help with day-to-day activities, there are conference rooms, conversation areas, printing services, and more.

NTU's Technopreneurship
The Nanyang Technological University has a Technopreneurship Centre, whose primary aim is to serve as a regional R&D centre for entrepreneurship and innovation (Ng 2012). Singapore's creation is built on a base of entrepreneurship and training courses. In this context, the Innovation Program and Technopreneurship at NTU, which began in 2002, appears to be the country's first training program. Despite its late start, Singapore's entrepreneurship framework has aided several other initiatives, allowing the nation to remain competitive in the global innovation market. In addition, educational institutions in Singapore, for instance the Institute of Technical Education (ITE), offer competitive training programs in collaboration with local and foreign businesses and industries. Universities are now closely collaborating with business managers to provide education and internship programs that are specific to the industries involved (Lim 2014).

The NOC (NUS Overseas College)
In 2001, NUS Overseas College (NOC) was established with the aim of merging globalisation and entrepreneurship. The fundamental idea behind the NOC program was to send entrepreneurially spirited NUS students or graduate students to various entrepreneurial hotspots around the world for up to a year as interns in high technology businesses. They will also take entrepreneurship courses at collaborator higher education institutions in each of the territories. This program was essentially a trial in education about entrepreneurship by 'immersion,' or putting students as 'apprentices' in high-tech start-ups or growth enterprises in international locations to expose them to the unspoken facets of foreign business culture and entrepreneurship.

This program's goal is to instill an entrepreneurial mentality in students, rather than expecting them to start their businesses immediately after graduation. It will guide their potential research into commercially viable innovations and influence their career choices, to encourage them to be more innovative and entrepreneurial. This program's goal is to help entrepreneurs in leading advanced technology hotspots abroad build valuable lifelong social networks so that they are more likely to, ideally suited for, operating in, or initiating new advanced technology start-ups with global ambitions. (Wong et al. 2007).
The first NOC initiative includes Stockholm in Sweden, Philadelphia and Silicon Valley in the United States, Shanghai and Beijing in China, Tel Aviv in Israel, and diverse locations in India. The most recent addition to the list of destinations is New York. Through their services, NUS and NUS Enterprise provide incubation areas, seed resources, a range of training opportunities, and guidance from business leaders. NUS Enterprise Incubator offers one-stop access to the resources start-ups and entrepreneurs need to build and sell solutions successfully and to network with investors and partners. Enterprise House is a themed residence for learning or operating their start-ups.

NUS Start-Up Runway (NSR)
The NSR is a comprehensive set of accelerator and incubator programs designed to help entrepreneurs test, share, and develop their concepts. It provides access to a large network of seasoned mentors and industry connections. This program supports start-ups in a variety of industries, including biomedical, ICT, and social entrepreneurship. All of them have access to the NSR at any point in their business growth to receive help tailored to their specific level of entrepreneurial progress.
This program is unusual in that start-ups have access to the university's academic capabilities, proprietary technologies, and test-bedding opportunities in addition to the normal variety of physical facilities and fund-raising mechanisms. Entrepreneurs sponsored by NUS Enterprise benefit from the team's extensive business expertise, government agency connections, and extensive network. These extend beyond Singapore to places like Beijing, Suzhou, Silicon Valley, and others.
NUS Start-up Runway offers subsidies for an on-campus and off-campus incubator area of more than 40,000 square feet.

Singapore University Incubation Centres Operational
This program provides students with rare immersion opportunities to obtain entrepreneurial and global experiences. Students participate in full-time internships at start-ups worldwide while also taking entrepreneurship programs at a distinguished affiliated higher education institution. The Singapore NOC program complements the NOC by offering apprenticeship opportunities with creative Singapore-founded businesses.
Scholars from outside Singapore can learn more about activities and entrepreneurial culture through the NUS Enterprise Summer Program. This two-week residential program provides insight into domestic business practices and entrepreneurial growth efforts.
The Lean Launchpad Singapore program developed and run by NUS Enterprise is primarily for researchers at public research institutes and universities with the desire to commercialise their technical innovations. This curriculum provides Business Model Design to promote, develop, envision, and examine business patterns for social entrepreneurs forming the next wave. It is specially designed for social projects, evaluating the social impact of enterprises and their financial viability.

DISCUSSION

Today, incubators have become a fundamental part of the entrepreneurial environment, supporting the development of new businesses of all sizes. In fact, we are seeing the development of various forms of entrepreneurial support. According to the prior studies, we can make some conclusions to guide principles reflecting on Indonesia, considering that Singapore and Indonesia are Southeast Asian countries. This study starts to look further at University Incubation Centres in Singapore as a crucial policy at the economic level in developing and developed countries, addressing their capability to deal with financial issues and accomplish economic growth. The author emphasises that the primary mission of the university's business incubator should be encouragement of industrial engagement and partnerships. The universities and industry can practice it, and the public sector mutually reinforces and deepens industry understanding, developing professional networking and broad authorised expertise in intellectual attributes in Singapore.
UICs, particularly in National University in Singapore, are directed to achieve the entrepreneurial track, support the university's search for partnerships and industry engagement, and re-form university creation into services and products utilising the Industry Liaison Office (ILO). ILO is responsibility for handling UIC's intellectual assets, commercialising intellectual capital, and facilitating the transformation of findings and discoveries to maximise commercial effects. Gopinathan (2010) and Wong

and colleagues (2011) describe universities' actions and focus on commercialisation activities that establish start-ups, develop intellectual assets, and carry high-standard research to industry. Synthetically, incubation centres have the following primary missions: (1) they integrate professionals in various fields to promote industry partnerships and engagement; (2) they provide training to new entrepreneurs for achievement enhancement, mainly to help them acquire missing business knowledge; (3) they encourage start-ups to engage with one another in the culture of incubators, to support more people to join in supporting and expanding the society; (4) they commercialise intellectual properties and promote the commercialisation of inventions and innovations for the future market; (5) they bridge academic professors with industry entrepreneurs for technology upgrades and business transformation.

Incubators are critical in the development and promotion of certain technology-intensive businesses. Second-generation incubators began to provide knowledge-based services and long-term use of physical resources because these companies frequently lack the expertise needed for business survival (Jamil et al. 2015). Training and mentoring programs are an essential service for business incubators (Alpenidze et al. 2019). These programs are thought to be necessary for lifelong learning and ability growth, as well as excellence. They provide clients with business support services in Singapore, such as training, mentoring, and funding. Their best aspect is their offer of customised facilities based on the needs of each business owner. Business incubation initiatives provide a variety of services to new businesses (Al-mubaraki & Busler 2011). The three universities provide incubator services, including these essential services for entrepreneurship at UICs: (1) Common working space, together with other entrepreneurs; (2) Mentoring support to start-ups; (3) Professional working space; 4) Start-up capital grants; 5) Technology commercialising and helping to patent product ideas.

A broad array of incubator outcomes and indicatory scales were debated. Economic growth, technological diversity, job creation, tax revenue, corporation earnings, business initiation, business survival, the incubator's financial and corporate outcomes, the advantage to participating universities, as well as benefits to the local society, are examples of possible effects (Mian 1996). Several reports have highlighted the accomplishments of incubators regarding the number of businesses that have been helped and which have survived, as well as the turnover, jobs, and income they have created.

CONCLUSIONS

The studies in the preceding literature are about incubator success in Singapore. To summarise, Indonesian business incubators should strive to emulate the best practices of some Singaporean universities and do everything possible to help their tenants accelerate their entrepreneurial processes. In order to be competitive, an incubator must extend its network and partner with successful industries, government, funding agencies, and universities. A business incubator must continue to improve the incubation process as a group activity. The author believes that an incubator should serve as a platform for entrepreneurial learning as well as a gathering place for intellectuals to collaborate and connect. The incubator must thus have a suitable climate. One of the most important aspects of the entrepreneurship process is social interaction, which has a profound effect on entrepreneurship behaviors. Entrepreneurs in the early stages of their venture formation and growth will benefit from positive social interaction because it provides a conducive learning atmosphere. The author made the following recommendations to policymakers and entrepreneurs in order to establish suggestions and boost the implementation of entrepreneurship and incubator business, particularly in universities in Indonesia. For Indonesian policymakers and governments: (a) To increase the incubator's potential, the government should actively promote and share programs. It is possible that it will contribute funds to incubation projects; (b) Incubation centres should be established in universities to combine professors' expertise, college courses, entrepreneurs' contributions, and students' demands for entrepreneurship in communities; (c) Universities should have incubation centres to integrate business resources and professors' courses related to practicum to initiate their entrepreneurs; (d) Current incubators must also have their main performance indicators widened and fixed to improve their efficiency (KPIs). It was created to monitor, assess, and evaluate the effectiveness of UICs; (e) To encourage their active involvement, policymakers should consider offering financial and legislative assistance to university incubators, as well as implementing incentives for the private sector; (f) Increase the number of business incubators in both the public and private sectors at each university. Provide entrepreneurs with more value-added resources and seek networking, mentoring, and business management systems.

In order for higher-education business incubators and academic communities in Indonesia to promote entrepreneurial efforts: (a) To initiate their entrepreneurs, these students must be given access to knowledge of global trends and the market world, and enabled to enhance their social and teamwork skills to apply professional knowledge to the real world; (b) In all regions, a comprehensive entrepreneurial awareness program is necessary. As a critical component of the Ministry of Education's

learning system, entrepreneurial education must adapt; (c) The close collaboration between government, industry, and academia aims to achieve a common goal: increase entrepreneurship. Qualified human resources and entrepreneurs can provide the incubator with higher benefits and better learning and practising opportunities; (d) Organising an annual national business plan competition held by each institution makes students interested in starting as entrepreneurs and having an entrepreneurial mindset; (e) In the incubation process, they can enlist the help of experts and experienced entrepreneurs. To understand and succeed in their market, start-ups need mentors and advisors. A new venture's survival can be aided by the presence of experienced people from the same industry.

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