

Multiplier Effect Incubator Model Through Entrepreneurship Effectivity: Brief Analysis Of Higher Education Sustainable Planning Strategy

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Abstract

This research aims linear fundamental matters which would be revealed related to positive significance linear Development strategy was implemented as methodological technique and population involved in this research was Yogyakarta University students who collaboratively synergized in business incubator, entitled 145 students. The development strategy was implemented as methodological technique and population involved in this research was Yogyakarta higher education students who collaboratively synergized in business incubator, entitled total of 145 students and data collection technique used was full sample through selecting entire population as research subjects. Focus on implementing data collection through administering tests, questionnaires, observation assistance, interviews and documentation followed by descriptive analysis, percentages and non-parameter statistics implementing SPSS. There are number of fundamental problems which become research findings, entitled which order planning and developing business incubator model could be implemented on an empirical basis, conceptually and comprehensively structured. The stages of developing business incubator model are carried out in three stages, entitled introduction, developing model, and testing model. The business incubator model which encourages entrepreneurial skills of Yogyakarta higher education students is business incubator model which is projected to be innovative and requires entrepreneurial creativity. The business incubator model developed at Yogyakarta universities makes it possible to manifest participants' entrepreneurial skills. There are related studies which have been carried out at different locations and research durations as relevant and comparative research in drawing initial research conclusions. However, novelty is target of researchers in providing novelty research which focuses on achieving research targets supported by quantitative methods and descriptive analysis, discussion of field observations segmented within scope field research.

Keywords: Transformational. Business incubator model. College Business Incubator

INTRODUCTION

The Higher Education Business Incubator serves as a platform for business incubation aimed at fostering both community and higher education enterprises, realized through the provision of facilities and the establishment of higher education business units focused on profit generation. (Lutfiani, Rahardja & Manik, 2020; Nurul & Munandar, 2023; Ramli, 2024; Dharmastuti, Lembana & Sustaningrum, 2024). This incubation covered number of activities (Jones, Meckel & Taylor, 2021; Rukmana, et.al., 2023; Rifai, et.al., 2023, Hassan, 2024), included selection of commercially viable research findings and technological innovations; dissemination of research findings and applicable innovations; and initiation and access to product marketing networks from universities. Number of functions which play significant role in university business incubators focus on developing community businesses through education (Hassan, 2024; Covelli, et.al., 2020), development and mentoring; progressiveness benefits of university resources; progressivity of science and technology facilities, therefore, they are maximum applicable benefit; preparation of adequate human resources through mastery in management and technological knowledge; and stimulate incubation facilities as business development effort.

The significant impact of emergence of higher education incubators is progressive cost of student education and this condition is reflected in tuition fees and community donations which tend to experience progressive increases yearly. This phenomenon has significant impact on assumptions majority of society related capitalism and commercialism in higher education.

An effective strategy to meet needs of universities and improve quality of education is provision of facilities from Department of National Education to obtain programs block grant competitive from within country and abroad. Based on previous experience, this program could only be achieved by large universities whose funding sources meet requirements. The conditions which occur in small and medium universities, which are dominant number in Indonesia, are still identified as not having received this

program. The long-term alternative is to provide independent education costs through establishment of an institution capable of managing professional and business capabilities of university business incubator. The business incubator is expected to be medium for training initiation and business access and function as medium for entrepreneurship education for students, field work practice and facilities teaching company (N. Lutfiani, Rahardja & Manik, 2020; N.A Hassan, 2020; W.L. Setiawan & Fahmi, 2020; F.J. Ferreiro, Rodriguez & Vaquero, 2018; H. Etzkowitz, 2010; R. Viale & Etzkowitz, 2010; N.N Huda & Rejito, 2020). Moreover, business incubator apart from being unit income generating. It is also able to support teaching and learning process facilities, therefore, when implementation education system is able to produce professional graduates, it could be achieved optimally. Nearly all Indonesian universities face a common challenge in implementing higher education business incubators, as there is still a lack of understanding about what business incubators entail. Furthermore, the development of university business incubators across Indonesia requires a clear mechanism for the growth and advancement of ideal business incubators. Focusing target on this mechanism requires research related to evaluation of number of business incubators carried out by PTNs and PTSs, as well as obtaining input which could be used to improve guidance for higher education business incubators in Indonesia.

The higher education business incubator serves as a medium for business incubation, designed to support the growth of enterprises within communities and universities by providing facilities and preparing higher education business units that concentrate on profit generation (D. Rose & Patterson, 2016; H. Etzkowitz, 2004; A.j. Ahmad & Ingle, 2011; M.H. Morris, Kuratko & Cornwall, 2013; T.N Amelia et.al., 2017). This incubation covered number of activities, entitled selection of commercially viable research findings and technological innovations; dissemination of research findings and innovations to parties who need them; and initiation and access networking marketing university products.

Number of functions played by business incubators in universities covered community business development through education, development and mentoring; progressiveness benefits of university resources; progressivity of science and technology facilities, therefore, they are maximum benefit; preparation of human resources through mastery management and science and technology; and designing incubation facilities for business development.

Heningtyas, et. at (2022), android Application Development to Increase Process Efficiency and Effectiveness in Innovation Centers and Business Incubators succeeded in developing Sikubis Android application, which is particular marketplace for Yogyakarta higher education innovation centers and business incubators. This application is designed to increase efficiency and effectiveness of business processes at LPPM Yogyakarta Higher Education innovation center and business incubator, which allows buying and selling transactions for research products of students, lecturers and educational staff to be carried out easily and flexibly.

Sikubis is supported by two primary platforms, entitled mobile application for users, entitled buyers and sellers, and website as admin tool. System testing using black box testing and usability testing indicates optimal application functioning and linear expectations, of user satisfaction level reaching an average of 87%. This application provides business support through mentoring, training, professional networking, and assistance in finding fund; therefore, it could promote and sell research products more effectively. It was concluded that development of Sikubis application had achieved its target in increasing efficiency and effectiveness of business processes in Yogyakarta tertiary environment and providing significant benefits for its users.

Detailed framework for establishing higher education business incubator model is synergy between external factors in form of technology, investors and markets supported by government policies, entitled institutional and legal, which would enable internal conditions of higher education in form of human resources, economic potential, technological potential, market potential and university policies to produce output from higher education business activities. These outputs covered Tridharma market synchronization, changes in human resource behavior, university business plans, business at university and faculty levels, internships, fostered businesses and new businesses; requires higher education business incubator institution.

Yudhanto and Saleh's research (2024), designed an android-based tenant incubation program application at potential primary University in Medan, which was able to significantly increase efficiency and effectiveness of managing tenant data. This digital system replaces manual methods which use physical documents, thereby reducing time and effort required to access and process information. The android application also allows preparation of reports more quickly and accurately, as well as supporting

installation of technology required for tenant training and operations. The implementation of android-based system is expected to be able to improve quality of business incubator services, enable creation of strong new entrepreneurs supported by adequate technology and system is able to provide effective alternative solutions to overcome obstacles of manual data management and support optimal tenant business development.

Macro identification of three models, entitled iconic model, mathematical model, analogical model and this research focuses on analogical model by analogizing with incubators used to increase resilience of business embryos and higher education business systems. Incubators are equipment used to increase body resilience of premature babies and terminology then analogously increases resilience of small businesses which are developing and businesses which are already running which require business resilience focused on support from managerial and capital aspects. Since its inception, business incubators in universities have only been developed in number of universities.

The goals of establishing business incubators include fostering independent SMEs grounded in science and technology to reinforce the national economic framework; generating new employment opportunities to enhance living standards in underdeveloped economies; facilitating the transfer of technology from conventional methods to advanced, suitable cutting-edge technologies derived from major industries, universities, or research centers; and accelerating entrepreneurship development in Indonesia to achieve sustainable economic resilience in the context of free trade. Number of other incubators were developed as form of community development, entitled development of small industrial incubators as well as development of incubators in accommodative institutions related to collaboration to consider existence of economic institutions in universities linear which was formed in Prigi coastal community, entitled community economic institutions.

Universities equipped with adequate human resources, technology, services, and other supporting facilities have a significant potential to establish business incubators. These incubators not only foster entrepreneurship within the campus but also serve as a bridge for business growth and development in the surrounding community and the broader business environment at the macro level. Numerous villages, which were previously the focus of academic studies strictly oriented toward pure science, could now be effectively utilized for the balanced advancement of science and technology alongside economic development.

Taiwan Research, et. at (2023), Primakara Business Incubator Website Design Implementing Design Thinking and Kanban Board methods indicates use of method Design Thinking and Kanban Board synergistically succeeded in producing an attractive, easy to use and high-quality website. The designed website not only has an attractive aesthetic appearance but also offers intuitive navigation, making it easier for users to find information. Regardless of these conditions, branding implemented in website design strengthens Primakara's identity as professional and innovative business incubator, increasing user perception of brand.

The use of Kanban Board in website development project management has proven effective in monitoring progress and managing it efficiently, ensuring which each stage in development process runs optimally and is well organized. The final result is website which is able to meet needs and expectations of users and strengthen Primakara brand as leading business incubator. Higher education business incubator modeling was originally developed by Directorate of Higher Education as model designed linear number of functions Tridharma Higher Education, entitled community service. Moreover, organizational structure of universities tends to be in LPM in order to support PTNs which require supporting institutions to manage financing of higher education system. This institution is designed to provide survival for businesses in universities and surrounding community and business world, therefore, there is synergy between academic interests and business needs. Number of fundamental research is still needed as foundation for development of applied research which functions to be developed into business unit. IBPT is an integral university institution which bridges number of business units which grow within university completed business world environment.

Business development must depend on resources and fundamental scientific patterns developed by university. The model is business incubator which functions to build existing businesses within universities and also synergistically develop businesses with surrounding community and business world. This business development is designed to maintain maximum quality of university graduates who are able to utilize business potential to provide financial support for educational management and are able to improve welfare of wider community and internal universities.

The applicable institutional work mechanism covered universities forming IBPT with Decree from Head of University. The decision letter contains institutional form, institutional position in institutional structure of higher education, and internal institutional structure of IBPT. The work mechanisms which need to be regulated and rights towards obligations and rights towards fostered business units and formation of new businesses, incubation system and process for tenants, facility system and distribution of business results, management recruitment system. Detailed institutional working mechanisms would be presented in description model which would result from this study.

THEORETICAL DEVELOPMENT

Entrepreneurship linear implementation of internal strength and drive towards creativity and implementation of new ideas and creative exits. Alberti, Sciascia, and Poli (2004), entrepreneurship education, individual success in entrepreneurship is influenced by business climate created by state, support from world of education, and business world must also be enthusiastic. Entrepreneurship education is based on research by Welsh (1993), there are two factors which could be implemented in classroom to improve entrepreneurial abilities, entitled internal school factors and external factors. The internal factor of school is training to foster an entrepreneurial spirit, and external factor is participation of industrial world in training students' entrepreneurial skills, whether students go directly to company, or company comes to school to conduct training.

Winslow, Solomon, and Tarabishy (1997), entrepreneurship education and practice of setting up small businesses guided by teachers, are not necessarily able to improve students' entrepreneurial abilities, however, entrepreneurship learning using self-directed learning is able to improve students' entrepreneurial abilities.

Factually linear Powers and Dougall (2005), University Startup Information and Technology Licensing with Firms that Go Public: ResourceBased View of Academic Entrepreneurship Universities from an entrepreneurial perspective could be used as suppliers of innovative technology which is still new and has not been discovered or used by other people for existing companies go public. Linear entrepreneurial culture, Naughton and Cornwall (2009) related to Culture as basis of good entrepreneur, culture as basis for formation of an optimal entrepreneurial spirit. Proper culture would produce good character, encourage individuals to innovate, encourage moral and spiritual enthusiasm for business and discussing capitalist spirit could not be separated from Weber's Capitalist Spirit.

Brouwer (2002), Weber, Schumpeter, and Knight on Entrepreneurship and Economic Development. The concept of Protestant Ethic with Calvinist spirit to pursue better life is commitment of every human being. Stevenson, Howard H, and J. Carlos Jarillo, (1990), A Paradigm of Entrepreneurship: Entrepreneurial management, Entrepreneurial competency focuses more on ability to foster an entrepreneurial spirit, innovation, flexibility, handling large corporations, with theory and practical abilities.

MATERIALS AND METHODS

Participants

The research population involved was the entirely Yogyakarta higher education business incubator students 145 people. Based on population of 145 students, when testing limited scope model, samples were taken using random sampling technique or simple random sampling technique of 60 people. When testing broad model, samples were taken using saturated sampling technique for total of 145 people.

Procedure

This research implements research and development method of Gall and Borg (2003: 569 in Sri Setiti, 2013) and process of testing effectiveness of model for growing entrepreneurial competence is carried out through quasi-experimental approach. The framework used by researchers linear Sukmadinata (2005: 189 in Sri Setiti, 2013), operationally procedures in this research are divided into three primary stages, entitled preliminary studies, model development stages, and model validation and test stages. Data collection uses tests, questionnaires, observation guidelines, interview guidelines, and documentation. The collected data was analyzed using descriptive analysis, percentages and non-parametric statistics with Excel and SPSS.

Model Planning Development Preparation, Development Process

Planning for preparation and development of model is carried out based on theoretical studies and empirical facts in conceptual and structural loci. Firstly, is theoretical study of business incubator model using SWOT analysis. The results of SWOT calculation indicate that Yogyakarta higher education

business incubator has more dominant strengths than its weaknesses, and greater opportunities than its threats. Paying attention to results of SWOT analysis, position of Yogyakarta higher education business incubator is ingrowth position, entitled making maximum use of power to obtain number of opportunities available outside Yogyakarta higher education business incubator environment.

The second planning stage, entitled conceptual empirical facts, indicates which supporting facilities for implementation of Yogyakarta higher education business incubator are not yet fully available, business growth and hatching through provision of facilities and infrastructure has not been implemented optimally, structure and infrastructure are inadequate, administration has not been carried out in an orderly and neat manner, access to business networks and information as well as network access to capital or financing among students participating in incubation is felt to be still lacking. Structural empirical facts indicate that Yogyakarta higher education business incubator is an integrated system for higher education management. Its existence has strategic value in applying concept link and match. Despite these conditions, Yogyakarta higher education business incubator functions as medium for academic entrepreneurship guidance and development which remains linear human resource development is based on academic concepts. The findings of this research support research of Suwandi (2008), business incubator models developed by state universities in Indonesia and the entirely universities before determining model to be used and starting to prepare number of model plans, therefore, implementation of model development could be carried out optimally.

It was concluded that process of preparing and developing business incubator model in Yogyakarta universities included first stage, entitled carrying out preliminary study to develop business incubator model which included literature studies and field surveys. Based on these two stages, it is necessary to implement SWOT analysis and conceptual and structural empirical analysis. The first stage resulted in pre-model business incubator; second stage, entitled model development, covered pre-model validation stage by experts and testing of business incubator model in limited and macro scope.

Business incubator tenants learn about tenant selection from faculty, social media, mentors, friends, and courses. The recruitment process is straightforward, involving registration form and a business proposal. Some tenants join with existing products or businesses, while others start with just an idea. Idea maturation is crucial for transforming ideas into viable products or services. Incubators often accept tenants with only an idea, beginning with interviews on their business proposal, model, funding, and projections. Basic training helps redesign or optimize existing products, improve quality, and incorporate market feedback, includes motivation, design thinking, business plan preparation, pitching, and legal preparations (N.S. Tsygankov, et.al., 2020; D.J. Smith & Zhang, 2012; T.Lose & Tenge, 2016; C. O'reilly & Binns, 2019).

Table 1. Component of Pre-Incubation Stage

Component	Tenant								
	T1	T2	T3	T4	T5	T6	T7	T8	T9
Announcement	✓	✓	✓	✓	✓	✓	✓	✓	*
Recruitment	✓	✓	✓	✓	✓	*	✓	✓	*
Idea Development	✓	✓	×	✓	✓	✓	✓	✓	*
Basic Training	✓	✓	×	✓	✓	✓	✓	✓	✓

The table shows most prospective tenants participated in pre-incubation components (✓), while an X (×) indicates absence. An asterisk (*) means the researcher did not ask about that component, but it doesn't imply non-participation. The entirely registered tenants went through recruitment, though details on the process are unavailable. The pre-incubation stage focuses on selecting prospective tenants for incubation, ensuring they have foundational knowledge and resources to navigate the challenging entrepreneurial journey ahead (B.S. Mungila, Satyanarayana & Chandrashekar, 2019). During this phase, tenants could test their ideas by developing business models, thus avoiding waiting until the end of incubation to discover that their business cannot be developed (S. Nair & Blomquist, 2019). Small and new enterprises often face more obstacles than more extensive and established companies, resulting in lower survival rates. Most tenants fail due to lacking business planning, management experience, and skills. Incubators must enhance their service capabilities to meet tenant needs rather than merely being institutions with office facilities. This proactive approach could significantly improve tenant success rates and foster sustainable

business growth within incubator ecosystem (M. Masutha & Rogerson, 2015; W.H. Lai & Lin, 2015). Tenants with new ideas that fail market testing, ideas that have been market-tested but could not be scaled, or scaling unvalidated ideas will all end in failure (C. O'reilly & Binns, 2019).

Based on number of stages, it is expected that manifestation of business incubator model which has been tested theoretically and empirically is expected; third stage is carrying out model testing by comparing model which was tested in limited scope, and model which was tested with more macro scope, therefore, as to create final model of Yogyakarta higher education business incubator; The fourth stage is implementing model, therefore, it produces results output and outcome. Number of stages in development of model linear stages of business incubator development which have been developed by previous researchers Buchori Alma (2008) and Ardichvili et.al (2003).

Findings

Yogyakarta universities as one of universities in Indonesia are obliged to play an active role in facing these challenges and through establishment of this incubator program, it is hoped that linear incubator model which would be developed in this research could be realized, which is expected to be able to foster students' entrepreneurial spirit and ultimately be able to create jobs and be able to compete in era of digital industrial revolution.

Based on evaluation results, it was concluded that Yogyakarta higher education business incubator model oriented towards experimental group innovation was considered effective. The effectiveness of learning is based on achievement of learning objectives linear priority achievement set by incubation participants with incubator manager; have linearity in learning needs of incubation participants; significant positive effect on progressivity of knowledge, attitudes, behavior and skills, very supportive of progressivity entrepreneurial competence; optimize and channel potential, talents and interests of incubation participants; help, improve and speed up learning process more conductively.

The statistical test results obtained t value count experimental group knowledge (9.54), attitudes (10.71), and skills (12.88). Meanwhile, comparison group scored knowledge (7.76), attitudes (9.26) and skills (10.58). These results prove which experimental group's score is quite significant, entitled greater than table value of 1% (2.62) and 5% (1.76) and greater than control group's value based on indicators of knowledge, attitudes and skills. These conditions indicate which innovation-oriented Yogyakarta higher education business incubator model has more significant influence on progressivity of learning outcomes; have significant impact on students, therefore, they have an interest in disseminating knowledge, have higher motivation, responsibility, creativity, innovation and self-confidence, have desire to form professional organizations and cooperatives, are able to foster an entrepreneurial spirit and awareness of incubation participants related through cleanliness and protecting environment to improve production quality. The positive impact of developing business incubator on students' entrepreneurial abilities is linear to previous relevant research findings linear educational entrepreneurship, entitled Lacho and Bradley (2010); Winslow; Solomon, and Tarabishy (1997); Alberty, Sciascia, and Poli (2004); Welshch (1993); and Kuratoko (2004).

It is hoped that student incubator and business development center would be able to encourage enthusiasm and grow entrepreneurial spirit of students because in this model, incubation participants, entitled students as tenants, are directed at starting businesses which could be developed through use of e-commerce technology or online systems. Mentioned that it is enough to build cooperation with suppliers, entitled wholesale companies and even go directly to producers (H. Budiyanto, Suprpto & Poerwoningsih, 2017; D.E.P. Wicaksana, Yuniaristanto & Sutopo, 2016; D.Games, et.al., 2020). Tenants simply need to prepare media which could help disseminate information as promotional strategy and necessary transaction systems such as websites, Instagram, facebook and others

Developed Business Incubator Model

The Yogyakarta higher education business incubator model which is innovation oriented and focuses on business incubator training is targeted at developing entrepreneurial competence. The fundamental principle of model as sustainable training model system is which training participants not only complete training but are prepared to become reliable and independent entrepreneurs.

Model characteristics covered business incubator training which is an integration of student learning programs, manifestations of Yogyakarta higher education business incubator training which is structured based on opportunities and potential resources owned by Yogyakarta higher education institutions, business incubator training is implemented linear student interest, implemented in business incubator,

this model requires willingness of coaches, mentors and business partners in carrying out new businesses, and focuses on values of honesty, tenacity, intelligence in exploiting opportunities, being able to carry out risk analysis and having courage to try become an inseparable part of business business development. The developed model components covered input; business incubator process consists of theory and training; output; outcome; monitoring, evaluation and follow-up

Generally, incubation contracts are written, although there are also unwritten agreements, such as oral agreements between the incubator and the tenant. Incubation contracts outline various aspects between the incubator and the tenant. These contracts often cover fund usage, facility usage, program participation willingness, and collaboration readiness. Business incubators provide variety of training to their tenants. These trainings encompass various aspects ranging from market research, business development, management, law, and finance to marketing and technology. This training supports new tenants in developing skills and knowledge to effectively and sustainably manage their businesses (T. Lose & Tengeh, 2016; J. Wonglimpiyarat, 2016).

Table 2. Component of Incubation Stage

Component	Tenant								
	T1	T2	T3	T4	T5	T6	T7	T8	T9
Contract	✓	✓	✓	×	✓	✓	✓	×	✓
Skills Training	✓	✓	✓	✓	✓	✓	✓	✓	✓
Guidance	✓	✓	✓	✓	✓	✓	✓	✓	✓
Consultation	✓	✓	✓	✓	✓	✓	✓	✓	✓
Mentorship	✓	✓	✓	✓	✓	✓	✓	✓	✓
Production	✓	✓	✓	✓	✓	✓	✓	✓	✓
Marketing	✓	✓	✓	✓	✓	✓	✓	✓	✓
Exhibition	✓	✓	✓	✓	✓	✓	✓	✓	✓
Business Meeting	✓	✓	×	×	✓	✓	✓	×	✓
Business Administration	✓	✓	✓	✓	✓	✓	✓	*	✓

The table shows most tenants completed the incubation components (✓), while an X (×) indicates they did not. An asterisk (*) means the researcher didnot ask about that component, but it doesn't imply non-participation. During incubation, mentoring focuses on the process and the types of mentors involved. It is often personalized to meet tenants' business needs, covering administration, technology, finance, market research, and partnerships. Administrative consultations are the most frequent. Mentoring is crucial service that attracts tenants to incubation programs, covering pre-incubation, legal, competition, funding, and certification. Production and prototype testing are for companies with tangible products, while service-oriented tenants focus on application development. In early marketing stages, business incubators use campus networks to connect tenants with potential internal users. Incubators provide information on exhibitions, sharing schedules and opportunities. Tenants attend meetings to expand networks, find partners, and secure funding, including business matching, partner gatherings, startup gatherings, and pitching sessions. Initially, tenants often lack proficiency in business administration, relying on self-learning and instinct rather than standardized procedures.

The incubation stage provides physical and non-physical infrastructure support to help develop technology into products, identify markets, access funding, and recruit human resources to build the company. Incubators generally provide office space and equipment to share with other tenants. Incubation is strategy to help new companies grow faster by assisting in business counseling, networking opportunities, and physical facilities. The goal is accelerating the company's formation, development, sustainability, and growth. Tenants in university incubators could enhance company performance by cultivating closer relationships with the academic. Some incubators that partner with specific programs focus on particular types of businesses with unique needs. This gives each incubator distinct characteristic, making them incomparable to each other. Incubation programs serve as policy mechanisms to support innovation. University incubators should act as intermediaries between academia and industry to facilitate interactive relationships and promote the utilization of university research.

Evaluation and Follow-up to identify model effectiveness

Based on program implementation, coaching process which has been implemented would be evaluated at end of each period to identify performance achievements. Monitoring findings during coaching process indicate significant progress with target results. Student efforts would run optimally in linear program, because they receive encouragement, direction, coaching and assistance from supervisory lecturers in programmed and intensive manner. Based on these performance achievements, tenants are deemed to have been able to carry out their business independently and are considered successful in becoming beginner entrepreneurs and have become independent as well as being an indicator of management success. University incubators serve as an alternative model for guiding and nurturing students, aiming to cultivate the character of participants with a technopreneurial mindset. This initiative seeks to boost graduates' enthusiasm for pursuing technopreneurship and offers both students and alumni hands-on experience in launching, managing, and growing their businesses. Consequently, they develop confidence and entrepreneurial skills. Through this approach, students and graduates are expected to become young, well-educated technopreneurs who play a vital role as key drivers of the national economy by creating new employment opportunities.

Some incubators offer post-incubation contracts, continuing collaboration with workspace rental and facilities changes. Others maintain relationships without formal agreements, providing consultations and guidance. Incubators regularly monitor and evaluate the progress of tenants who have completed incubation, typically every few months. Monev helps incubators improve their programs based on tenant feedback. After incubation, the relationship between incubators and tenants often loosens, with tenants rarely seeking consultations. Ongoing consultations focus on funding and marketing, as tenants need guidance in securing financing and expanding market reach.

Table 3. Component of Post-Incubation Stage

Component	Tenant								
	T1	T2	T3	T4	T5	T6	T7	T8	T9
Contract Completion	✓	✓	×	×	×	×	×	*	×
Monitoring and Evaluation	✓	✓	✓	✓	✓	✓	✓	✓	✓
Post-Incubation Consultation	✓	✓	×	✓	✓	✓	✓	✓	✓

The table shows that most tenants completed post-incubation components (✓). An X (×) indicates a follow-up contract offer was received. An asterisk (*) means the tenant declined the contract due to mismatched expectations. Finally, the post-incubation stage focuses on the graduation of tenants who have completed the incubation process. The approach in incubation was initially designed for startups, not for large, established companies.

Hence, it could no longer solve scalability issues for large companies. Companies must enhance partnerships to leverage assets and business capabilities. The incubation process involves multiple phases, and tenants face high failure rates post-incubation. Therefore, incubator managers must understand the needs of tenants during this phase (W. H. Lai & Lin, 2015). This incubator is part of value chain that connects businesses with support systems such as legal services, corporate service providers, or accountants. The incubator provides opportunities for tenants to build a business foundation and establish relationships that could endure after they exit the incubator (J. Wonglimpiyarat, 2016; M. Cullen, A. Calitz, and L. Chandler, 2014). Incubation benefits tenants facing challenges such as limited knowledge and experience and restricted resources for experimentation. Through mentoring, tenants could enhance their knowledge and capacity to manage and develop business operations. This is crucial in achieving profitability and scaling the tenant company's business (V. A. Assenova, 2020).

Technopreneurship is technology business incubator with deep understanding related through development of entrepreneurial spirit of young people, particularly students and one of development strategies to overcome intellectual unemployment, could increase linearly and become entrepreneurs with new generation of children, particularly students, who would act as an economic driver by creating new job opportunities. Hope which emergence of technological generation would be able to help solve problem of intellectual unemployment. Regardless of these conditions, program implemented is platform for improving quality of human resources in studying science and technology, therefore, they could prepare personnel who could be trusted during global competition.

Business incubators have been developing for long while in number of countries, but in Indonesia to large

extent linear one of Tridharmas of higher education is community service, logical consequence of which is that business incubators which are developed tend to incubate business activities outside of higher education or out of school. Regardless of these conditions, it is deemed necessary to streamline campus autonomy with development of internal aspects through incubation of business units or commercial business units in universities, there are even universities with commercial units, but without going through business incubator. These conditions really depend on university policy. Linear business incubator models in higher education, number of typologies have been produced, entitled business incubator typology is linear, development model which would be implemented is not yet available; would be initiated; existing but underdeveloped; no business incubator was found but there was commercial or in wall incubator unit, there was business incubator but it only had an out or out wall orientation; and complete in-wall and out-wall business incubators.

Related through development pattern, number of activities need to be carried out in linear typology, entitled preparation for formation, coming back to life, equipped but still complete internally, formation and development of in walls, development of in walls and out walls. The development of higher education business incubators is based on general guidebook which has been prepared and these guidelines consist of two primary components, entitled efforts to implement development of higher education business incubators and model efforts implemented in building higher education business units internally and externally. The guidelines also contain criteria for success of business incubators and commercial business units being built. The business incubator which is formed requires finalization consisting of use or ethics of business and profit-sharing system supported by university policies, and development of networks from business world, alumni, and regional and central government.

The suggestion for this program is which development of university business incubator model needs to be directed; therefore, it does not only incubate business outside out-wall university, but needs to incubate in-wall inter-university through commercial business units, therefore, autonomy of university needs to be supported in its funding. Moreover, it is necessary to think about possibility of shift in orientation of research universities to become entrepreneurial universities. The development of higher education business incubators is one solution for higher education autonomy in aspect of alternative sources of funding to provide more meaning to society and country, number of stages of information dissemination and training are needed to develop it. The dissemination of information could only be carried out through book publication. Training for prospective university business incubator managers is very necessary as an effort to further understand aspects of developing and managing higher education business incubators.

This research focuses on developing an incubator model which would be implemented during three primary stages, entitled recruitment process, entitled the entirely students participating in courses are required to become incubator participants. The second stage is marketing strategies, promotions, sales transactions and number of customer services using e-commerce technology. The third post-incubation stage continues with mentoring and business development process with partnership system in business development institutions as follow-up to incubation process which has been implemented which is targeted at providing support for program sustainability, covered coaching technical training in field of production, operating systems and business management, mentoring in building access to business partnerships and capital and business development such as product development and market expansion programs and through accommodate this model, it is necessary to establish collaborative institution between incubator activities and business development resulting from incubation.

Model Development Planning

The higher education business incubator serves as a platform for business incubation aimed at fostering both community and higher education enterprises by providing facilities and preparing higher education business units that focus on profit generation. This incubation covered selecting commercially viable research findings and technological innovations; dissemination of research findings and innovations to parties who need them; and initiation and access to marketing networks for number of university products. Number of functions of business incubators in universities are community business development through education, development and mentoring; progressivity of university resource benefits; progressivity of Science and Technology facilities, therefore, they are maximum benefit; preparation of adequate human resources with mastery management and Science and Technology; and designing incubation facilities for business development.

Model Preparation and Development Process

Detailed framework of thinking in establishing higher education business incubator model, entitled synergy between external factors in form of technology, investors and markets and government policies, entitled institutions and laws that would encourage internal conditions of higher education in form of human resources, economic potential, technological potential, market potential and university policies in order to produce output of higher education business activities. These outputs covered market synchronization, changes in human resources behavior, higher education business plans, business at university and faculty levels, internships, fostered businesses and new businesses; requires an institution, entitled higher education business incubator.

The model development stages implement number of stages, entitled compiling mortgage model which is implemented through fundamental assumptions of institutional formation. The three fundamental assumptions for developing higher education business incubator model are gap between higher education and wider community. Higher education results are not transparently monitored by public, thereby reducing confidence in quality of results and these conditions would further improve quality of education because there is strict control over lecturer activities and because institutions are expected to be able to produce superior and honest people. Number of business activities are carried out by academic community; however, they are still within framework of individual and group businesses, therefore, they have not provided positive input to higher education institutions. Universities must implement strategic policies in changing individual and collegial business behavior into institutional business behavior. Develop an operational model through data collection and model discussion in next stages, entitled model testing, implementation and evaluation stages.

Developed Business Incubator Model

There are three universal models, entitled iconic model, mathematical model, analogical model and this research focuses on analogical model through analogy between hospital incubators which are targeted at increasing survival of babies, and these babies, entitled college business system.

An incubator is tool used to increase body resistance of babies born prematurely in maternity homes or hospitals. This terminology is then analogous to increasing resilience of small businesses which are just growing and old businesses that require business resilience, particularly support from managerial and capital aspects. Business incubators in universities initially started from new entrepreneurial incubator programs developed at number of universities. The goal of establishing a business incubator based on INWUB is to develop independent SMEs driven by science and technology to strengthen the national economic framework, generate new employment opportunities, and enhance the living standards of economically disadvantaged groups. Additionally, it aims to facilitate the transfer of technology from conventional methods to suitable advanced technologies derived from large industries, universities, or research institutions, thereby accelerating entrepreneurial growth in Indonesia and fostering sustainable economic resilience in the context of free trade. Other incubators developed for community development covered development of small industry incubators and development of incubators in accommodative institutions in relation to client relationship collaboration. Regardless of these conditions, it is necessary to consider existence of economic institutions in universities linear ever formed in society

Universities that possess adequate support in human resources, technology, services, and other areas have a strong potential to establish business incubators. These incubators not only promote entrepreneurship within the campus but also serve as a link for the growth of businesses in the surrounding community and the broader commercial sector. Assisted villages, previously primary focus areas for universities conducting purely scientific research, can now be leveraged in a balanced manner to foster both scientific and technological advancements as well as economic growth. Despite these circumstances, universities continue to operate within the framework of the tridharma of higher education, emphasizing education, research, and community service based on scientific development. Although efforts to encourage entrepreneurship have been made, only a limited number of universities have seen positive impacts on business growth. Moreover, the expansion of universities has been accompanied by rising educational costs, which has sparked opposition from certain groups. Consequently, to fully implement the entrepreneurial culture that has been initiated, the establishment of university business incubators is essential.

The Inwub Business Incubator Model developed by Directorate of Higher Education is model designed linearly with number of functions from Tridarma of Higher Education, entitled community service. Moreover, in organizational structure universities tend to be in LPM. In order to support PTN, supporting institution for managing financing of higher education system is needed. This institution is designed to

provide survival for businesses/businesses in universities and surrounding community and business world, therefore, there is synergy between academic interests and business needs.

Number of fundamental research is still needed as foundation for development of applied research which functions to be developed into business unit and it an integral university institution that bridges number of business units that grow within university with business world environment. Business development must depend on fundamental scientific resources and patterns developed by relevant universities. The form of IBPT hypothesis model is business incubator which functions to build businesses within universities and also synergistically develop businesses with surrounding community and business world. This business development is designed to maintain quality of university graduates by maximally being able to utilize business potential to provide financial support for education management and be able to improve welfare of wider community and internal universities.

Evaluation and Follow-up to identify model effectiveness

Number of prerequisites that should be met are that the entirely individual or group businesses which are running within university should be integrated; universities provide specific areas of business which are developed with reference to personal potential; number of fundamental research needs to be developed to strengthen potential applied research in developing business; correspondence between fundamental scientific patterns of higher education and development patterns and curricula; balance between educational development and business. Number of prerequisites are very necessary for it to run optimally.

Moreover, for universities that do not have one, there are two levels of development, namely, building and functioning institution as an entire incubator. Based on research results, number of obstacles were found in developing models and mechanisms for developing business incubators in higher education and these obstacles included networking obstacles; marketing constraints, bureaucratic constraints, entrepreneurial mental constraints, legal constraints.

Network constraints are in form of business which could be explained as form of organization in economic sector which is used to organize coordination and create cooperation between organizational elements. These elements are generally in form of business units and non-business units, however, are elements in series that facilitate operation of business units. The organization in question could be very loose, however, also very tight or somewhere between two. Forms of loose linkages covered informal communication between business units. The strict form could be joint venture collaboration. Meanwhile, something between these two forms could be an association or consortium. The form of linkage could also be horizontal or vertical. This business network is assumed to be working networking between internal resources and external resources of higher education. Internal resources are students, academic community, and campus organizations. External resources are SMEs, banking, strong entrepreneurs and alumni. The formation of business networks could occur because of certain backgrounds.

There are three backgrounds or models, entitled exchange perspective developed by Blau; resource dependency model; and Williamson's economic model of transaction costs, known as transaction cost economics. Based on first model, business networks could be seen as social structure which is formed due to existence of social relations between actors, for example through direct or indirect exchange related everything which is considered valuable. The second model describes that formation of business networks is result of strategic efforts by business units to secure important resources by other parties. Based on third model, with business networks, companies could obtain their needs efficiently through markets or hierarchies. Marketing constraints in higher education business incubators are still significant obstacle. Related through meaning of marketing, business incubators could be analogous to companies. Marketing can be seen as a fundamental activity of a company, thus it should not be regarded solely as a distinct function. Instead, marketing is a strategy that considers the company as a whole from the perspective of the outcomes and the viewpoint of its customers.

Most tenants completing incubation program show increased team size (V. A. Assenova, 2020; J.Lu, 2016), including more employees and partners. Incubation drives this growth to meet new market demands or develop complex products (M. Breivik et.al., 2020; H. Mubarak & Busker, 2014). Access to mentors, consultants, and networks helps expand their team.

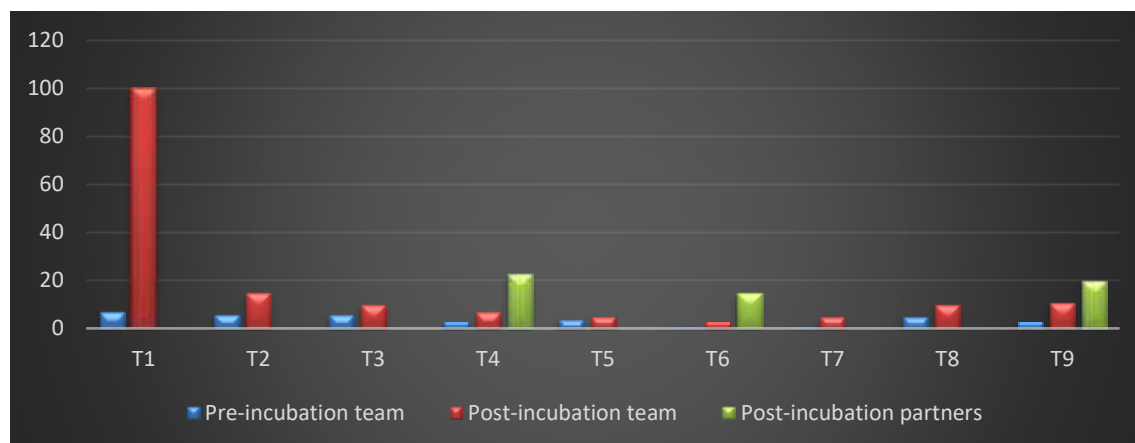


Figure 1. Tenant Job Creation

The figure indicates that T1 initially employed 7-8 individuals and now employs 100. T2 started with 6 employees and now has 15. T3 had 6 employees initially and now has fewer than 10. T4 began with 3 employees and currently has 7. T5 initially had 4 employees and now has 5. T6 started with 1 employee and now has 3. T7 began with 1 employee and now has 5. T8 had 5 employees at the start and now employs 10. T9 initially had 3 employees and now employs 11. These figures do not include partners involved in tenant business activities. T4 has 23-25 partners with disabilities, T6 employs nearly 15 career mentors for its clients, and T9 employs 20 passion advocates. Diverse employment types are shared among tenants in incubation, including permanent, contract, freelance, and part-time workers. This trend offers flexibility, specialized skills, and cost management. Permanent employees handle core responsibilities, while contract or freelance workers address specific projects. Diverse employment helps manage funding limitations and reduce overhead costs.

Business incubators play crucial role in businesses' early stages and growth by providing business training and mentorship that support business continuity in face of challenges such as capital constraints and access to credit (O. Alpenidze, Pauceanu, & Sanyal, 2019). The incubation process could enhance company performance by focusing on survival, revenue growth, job creation, business funding, and development of networks and business alliances (F. A. Ayatse, Kwahar, & Iyortsuun, 2017). Business incubators positively contribute to job creation. Startups are more likely to succeed when receiving technical business assistance from incubators, which enhances business networks and helps acquire necessary services (E. Stokan, Thompson, & Mahu, 2015). The strong relationship between country's economic development and number of available business incubators suggests that investment in incubators can have a significant positive financial impact. Therefore, it is essential to adopt business incubators as part of policy strategies to advance entrepreneurship sector and promote inclusive economic growth (Ogutu and Kihonge, 2013). However, significant challenge is diversity in program sponsors and policy goals, which requires flexible incubation approach to address various objectives, organizational forms, and contexts (S. Mian, W. Lamine, and A. Fayolle, 2016).

The success of a business is not solely determined by its customers; thus, it can be concluded that marketing is an integral component of a company's operations. Every member of the company should recognize the presence and role of marketing, as it involves internal parties. Marketing that prioritizes customers is essential for the company's survival and ongoing success.

Marketing details are activities that covered investigating and identifying materials that customers want, developing and planning products or services that fulfill these desires. Deciding best strategy for determining prices, promotions, and distributing goods or services produced. It could be concluded that marketing is total system of business activities designed to plan, determine prices, promote and distribute goods or services that could satisfy current and potential customers. Entrepreneurs have realized that marketing is vital to success of company, business thinking has been updated, new philosophies have developed and marketing concepts have been mentioned. There is fundamental provision that underlies marketing concept, entitled that bureaucratic constraints are created to organize and regulate in order to improve services to public. However, it should be supported by number of prerequisites, entitled good work system, adequate human resources and certain cultural prerequisites.

Generally, bureaucracy in Indonesia continues to play a limited role, and it remains one of the major

challenges in Asia, despite substantial reforms having been implemented in countries most severely affected by the 1997 financial crisis. Indonesia received score of 8.0 or did not move from 1999 score, from possible score range, entitled zero from worst. The score of 8.0 or far below average is based on consideration that there are still many high-ranking government officials who take advantage of their position to enrich individuals and those close to them. The legal framework surrounding business incubators significantly influences their performance. This framework is linked to the status of the university. It is important for the legal standing of business incubator entities to be clearly established, both in terms of the university's status and in relation to local government institutions. Beyond clarifying the position and function of business incubators within higher education, this legal clarity also supports their long-term viability. Legal considerations are a crucial factor for business incubators in addressing various challenges.

CONCLUSIONS AND FUTURE DIRECTIONS

Number of conclusions which could be conveyed are that business incubators have been developing for long time, however, in Indonesia one of three principles of higher education is linear, entitled community service. The consequence is that business incubators that have been developed tend to incubate business activities outside of higher education. Despite these conditions, it is also deemed necessary to implement campus autonomy in parallel with development of internal elements through incubation of university business units, there are even universities that have commercial units, however, without going through business incubator. These conditions are based on university policy linear model of business incubators in domestic universities has produced number of typologies.

The business incubator typology is closely related to development model that would be implemented, entitled that it does not yet exist; would be initiated; existing but underdeveloped; there are no business incubators but there are commercial incubator units, there are business incubators but they only have an outward orientation; and complete in-wall and out-wall business incubators. Related through development pattern, how many things need to be done in linear typology, entitled preparation for formation, formation, coming back to life, complete and remaining complete internally, formation and development of in walls, development of in walls and out walls. The development of higher education business incubators is based on general guidebook that has been prepared.

Based on results of model testing, data analysis and discussion, conclusions of research findings on development of an innovation-oriented business incubator model are formulated as follows:

The planning for preparation and development of model is carried out based on theoretical studies and empirical facts on conceptual and structural loci. Theoretical study of business incubator model implementing SWOT analysis. The results of SWOT calculation indicate that Yogyakarta higher education business incubator is in position of growth condition, entitled utilizing optimization of strengths to obtain opportunities available outside Yogyakarta higher education business incubator environment.

The process of compiling and developing business incubator model in Yogyakarta higher education institutions is carrying out preliminary studies, model development and third stage, entitled model testing by comparing models which are tested within limited scope, and models which are tested with wide scope, therefore, to create final model of Yogyakarta higher education business incubator. The final stage is implementing model to produce output and outcomes.

The Yogyakarta University business incubator model is innovation-oriented, as sustainable training model system where training participants not only pass training but are prepared to become reliable and independent entrepreneurs. Model components covered input inputs; business incubator process consists of theory and training; output; outcome; monitoring, evaluation and follow-up.

The Yogyakarta Higher Education Business Incubator Model is oriented towards experimental group innovation which is considered effective. The effectiveness of learning is based on achievement of learning targets linear Priority achievement are determined by incubation participants with incubator manager, have linearity in learning needs of incubation participants, and have significant positive effect on progressivity of knowledge, attitudes, behavior and skills, strongly supporting progressivity of entrepreneurial competence.

Related research findings, it is recommended that development of university business incubator model needs to be directed, therefore, it does not only incubate businesses outside university but also incubates inter-university through commercial business units, therefore, university autonomy needs to be

supported. Moreover, it is necessary to think about possibility of shift in orientation from just research university to an entrepreneurial university. Considering that development of higher education business incubators is one way out for higher education autonomy in terms of alternative sources of funding to provide greater meaning to society and state, number of stages of information dissemination and training are needed to develop it. Dissemination of information could only be done through publishing books. Training for prospective university business incubator managers is very necessary as an effort to further understand development and management of university business incubators.

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The obstacles to developing higher education business incubators are based on research findings, entitled that development of models and mechanisms for developing business incubators on networks; marketing constraints and bureaucratic constraints as well as entrepreneurial mental constraints and finally legal constraints.

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