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RESEARCH MAPPING OF INNOVATION, ENTREPRENEURSHIP, INTRAPRENEURSHIP, AND BUSINESS INCUBATORS

Lina Gozali[1], Christhoper Robin[2], Pricilia Micca Zulfan[3]

[1]Department of Industrial Engineering, University Tarumanagara
Email: linag@ft.untar.ac.id
[2] Department of Industrial Engineering, University Tarumanagara
Email: christhoper.545210027@stu.untar.ac.id
[3] Department of Industrial Engineering, University Tarumanagara
Email: pricilia.545210033@stu.untar.ac.id

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ABSTRACT

A business incubator is an entity that is built to help startup companies to grow. The purpose of a business incubator is to help startup companies develop their innovative ideas and make products or services out of these ideas so that they can be used to improve the quality of life. Therefore, the role of a business incubator is very important in supporting and developing emerging startup companies. The final role of a startup company is to create jobs and improve the economy in a certain region. In this research, gap research was conducted on research and studies on innovation, entrepreneurship, intrapreneurship, and business incubators from various regions in the world. This research was carried out by comparing the results of these studies so that new research can be conducted to fill the gaps that exist on this topic. It can be seen that there are 6 studies conducting business incubator research, 5 studies studying entrepreneurship, 3 studies studying intrapreneurship, 1 study studying sustainability, 2 studies studied scaling start-ups, 1 study studied research for commercialization, 3 studies studied innovation, and 11 studies were conducted at universities.

Keywords: *Innovation, entrepreneurship, intrapreneurship, business incubator, startup*

1. PREFACE

Corporate Sustainability is an important and essential problem that should be managed in the beginning of the company establishment. The application of the sustainability topics still need to elaborated in the highest level of education. Recently Many improvements in the companies' goals should be examined. The effective methods in sustainable improvement needs a deep analysis of innovation section which would elaborate much development to get the better solution [1].

According to Lee and Olson, innovation is new innovations that are put in many forms of application to create new or added value [2]. Innovation has been an important duty of people all around the history of human existence [3]. This innovation is carried out so that humans can remain alive and increase the quality of life [4]. According to Schumpeter, innovation is the process of creating products or services or utilizing methods or inputs that are new to the company. Innovation also has a very important role in entrepreneurship [5].

This innovation aims to create a valuable product that can be traded, developed and used commercially [6]. In the scope of entrepreneurship, innovation is an idea or concept that is put into practical use with a combination of resources, both capital and support from institutional

leadership [7]. Innovation plays a role in research and development programs so that they can create products that can make people's lives easier.

The first business incubator was started by Joseph Manusco in 1958 [8]. Business incubators play a role in helping entrepreneurs develop their ideas, this process is called incubation. Business incubation is the most effective method to help entrepreneurs in newly started companies [9].

A business incubator is an institution established to help incubated entrepreneurs by providing resources that are important for their survival and growth [10, 11]. Business incubators are an important part of promoting entrepreneurship because they provide access to entrepreneurial projects, the development of new enterprises, and ecosystem that support innovation and new challenges [12].

Entrepreneurship is the practice of starting a new organization or revitalizing an existing organization, especially new businesses that are a response to identified opportunities [13]. According to Hessel and Naudé, the ultimate goal of entrepreneurship is to create jobs and cause economic development [14].

Intrapreneurship is a bottom-up and proactive activity related to the work of each employee who can turn ideas into successful businesses [15, 16]. In the academic environment, intrapreneurship refers to entrepreneurial behavior possessed by researchers. The aim is for researchers to be involved in the commercialization of knowledge without leaving the academic world. [17].

Business incubators have a powerful role in improving entrepreneurship skills. Business incubators aim to develop and support emerging businesses. This support is in the form of office facilities, easy access to business equipment, knowledge about management skills, and educating entrepreneurs to use crisis thinking in decision-making [18]. This research was conducted to find out the gaps that exist in research regarding innovation, entrepreneurship, intrapreneurship and business incubators so that research can be carried out to fill these gaps.

2. RESEARCH METHOD

The methodology in this study consists of eleven case studies, six qualitative studies, one quantitative study, and four mixed methods studies on the topic of innovation, entrepreneurship, intrapreneruship, and business incubators in universities research. This study presents a methodology for comparison in some case studies. This comparison study caters to similar universities researches across several case studies in innovation, entrepreneurship, intrapreneruship, and business incubators; therefore, process variants may manifest due to differences in some nature of researches. An in-depth comparison is conducted once the case study compares to the other case studies.

3. RESULT AND DISCUSSION

Research on Entrepreneurship and Business Incubators in the University Environment

The research by Sieg, et al. is Academic Entrepreneurship as a Source of Innovation for Sustainable Development. This research was conducted on entrepreneurship in an academic environment with an innovation and sustainability perspective. The goal of this research is to explore and analyze innovation and eco-innovation support projects. Based on this research, it can be seen that the final form of the project carried out by researchers at Bydgoszcz University of Science and Technology is in the form of a prototype, followed by research findings. The main barrier to implementing innovation is insufficient funding to conduct research for implementation. Funding only comes from funds for high-risk projects, so there are no other

sources of funds. This research also shows that the project inspection at Bydgoszcz University of Science and Technology has followed sustainability indicators [19].

Research title by Shekha, et al. is Role and Contributions of an Incubator in Academic Intrapreneurship – An Examination. This research was conducted to expand its scope and impact over time so that it can become a core function of Education and Research at NSCREL, India Institute of Management Bangalore. The results of this research show that funding is one of the important things provided by NSCREL. Apart from that, this research also shows that the incubator actively ensures that important routine, process and structural changes are made from time to time as a form of response to the dynamic entrepreneurial environment [20].

The research title by Gozali, et al. (2020) is Performance Factors for Successful Business Incubators in Indonesian Public Universities. This research aims to assess the connection between incubator performance and business incubator success attributes at universities in Indonesia. The research used mixed methods and obtained a sample of 95 incubator managers from 19 universities in Indonesia. The results of this research show that the business incubator image factor influences the incubator's performance. In addition, various attributes from the local wisdom are positively affiliated to support the ecosystem highlighting the incubator strategy [21].

The research title by Gozali, et al. (2018) is Critical Success and Moderating Factors Effect in Indonesian Public Universities' Business Incubators. This research was conducted to examine the influence of critical success and moderation success factors of university business incubators in Indonesia. The research results show that good systems and infrastructure have a strong connection with success attributes and information techniques show a strong connection with moderating factors, namely age and quality of facilities. Apart from that, this research also found that mentoring and networking show a deep connection with the moderating factors of good systems and infrastructure, and university regulations have a strong relationship with the moderating factors of credit and awards. Finally, it can be seen that entry criteria, exit criteria, and funding support describe a powerful direct connection with success attributes [22].

The research title by Gozali, et al. (2016) is a Framework of Successful Business Incubators for Indonesian Public Universities. This research was conducted to explore the success factors of business incubators and develop and propose a framework for successful business incubators for state universities in Indonesia. The results found from this research indicate that the framework for successful business incubators at Indonesian state universities consists of nine independent variables, three moderating variables, and one dependent variable. In addition, this research

includes a proposed business incubator framework for state universities in Indonesia including related factors, variables and dimensions [23].

Research on Entrepreneurship in the University Environment

The research title by Sampene, et al. is Yes! I want to be an entrepreneur: A case study on university students' entrepreneurship intentions through the theory of planned behaviour. This research was conducted to overcome the gap by observing students' entrepreneurial intention and finding out its relationship with attitude towards entrepreneurship, perceived social norms, perceived entrepreneurial capacity, and entrepreneurship education. The results found from this research show that attitude from an entrepreneurship point of view in social ethics, perceived entrepreneurial skill, and entrepreneurial guidance have a positive impact on business intention. Apart from that, it can be seen that entrepreneurial guidance conciliate the connection between perceived social ethics and business intention, then perceived entrepreneurial capacity and

entrepreneurial intention. Finally, it can be seen that perceived university support has a relationship that moderates entrepreneurial education and entrepreneurial intention [24].

The research title by Taboada-Álvarez, et al. is Analysis of Entrepreneurial Resilience as Part of the Development of Entrepreneurship in a Learning Management Model in Incubators. This research was conducted to find out whether entrepreneurial resilience produces a positive impact on an organization's learning through multivariate statistical analysis. According to the research outcome, it is known that entrepreneurial resilience has a significant impact on the entrepreneurial spirit. Entrepreneurial resilience contributes 12% to entrepreneurs from the total management learning model in an incubator. This shows the importance of entrepreneurial resilience [25].

Research on Innovation in the University Environment

The research title by Kruachottikul, et al. is New Product Development Process and case studies for deep-tech academic research to commercialization. This research aims to develop a new product design process with minimal resources and inadequate infrastructure so that it can be used in many developing countries with low research and development costs. This new product design model consists of five steps, including step 0 – innovation and ideation, step 1 – build case development, step 2 – development, step 3 – testing and validation, step 4 – launch, and step 5 – scale-up. up. These steps are analogous to gates. To enter the next step, the gate must be passed. These gates are the criteria that the innovation team must achieve before reaching the next step. In this research, a case study of the development of intellectual property owned by the Chulalongkorn University Technology Centre is provided [26].

The title of the research by Slimani and Abakouy is Universities at the Heart of Attractive Territories: a Novum Trivium Formula in the Era of Energy Consumption Optimization. This research was carried out to show the importance of adapting map of innovation frameworks, such as the innovation entrepreneursial ecosystem and the triple helix innovation model according to the weight of the regions and how they participate in their attractiveness. The triple helix model envisions innovation through relationships between universities, industry and government. Meanwhile, the business ecosystem model encourages each region to choose the most effective fields to form innovative regions to achieve the SDGs [27].

Research on Start-Ups in an Incubator Environment

The title of the research by Page and Hölstrom is Enablers and Inhibitors of Digital Startup Evolution: A Multi-case Study of Swedish Business Incubators. This research was conducted to find out what factors influence the impact of pivoting in a startup. The results found in this research are that start-ups generally have made at least one strategy change, even though this change does not meet the criteria to be called a pivot. This is done to respond to problems, such as low sales, customer feedback, customer needs, pandemic, costs that are too high, and others. There are three consequences of a pivot, namely scaling or enlargement, failure or failure, and inertia or the state

of a company that is not experiencing development. Several factors that hinder entrepreneurs from pivoting with the aim of scaling are low ambition, lack of partners and/or required capabilities, and entrepreneurs who feel that the right time has not yet come. Failure in startups is very rare in the startups studied. Inertia can occur because startups experience financial difficulties, natural disasters such as pandemics, and lack of motivation [28].

The title of the research by Pinto and Rua is Incubators' Practices Influence in the Born Global Startup's Internationalization Process. Uni research was conducted to analyze the internationalization process of global start-ups that were born and the practices of incubators in creating resources and mechanisms to improve the process of solving problems experienced by companies in terms of resources and mechanisms developed by business incubators and what contributions business incubators make to the start-up internationalization activities. The results found in this research are that four factors are influential according to the perspective of the incubator and initiator (entrepreneur, network, mentor, credibility). This proves that incubation influences the internationalization process of the global start-up that is born. Apart from that, it can also be found that business incubators can improve and support the appearance of companies that can boost the country's economy [29].

In Table 1, there are many papers in Business Incubator, Entrepreneurship, Intrapreneurship topic.

Table 1. Research Gap Innovation, Entrepreneurship, Intrapreneurship, and Business Incubators in Universities Research

Description	**Authors**										
	Sieg, et al.	**Kruacho-ttikul, et al.**	**Sampene, et al.**	**Shekhar, et al.**	**Page, Holm-ström**	**Taboada-Álvarez, et al.**	**Slimani, Abakouy**	**Pinto, Rua**	**Gozali, et al.**	**Gozali, et al.**	**Gozali, et al.**
Business Incubator	V					V		V	V	V	V
Entrepreneurship	V		V	V	V	V					
Intrapreneurship	V		V	V							
Sustainability	V										
Scaling Startup					V			V			
Research for commercialization		V									
Innovation	V	V					V				
Research for Universities	V	V	V	V		V	V	V	V	V	V
Analysis	QUAL	QUAL	QUAL QUAN	QUAL	QUAL	QUAL QUAN	QUAL	QUAL	QUAL QUAN	QUAN	QUAL QUAN
Countries	(PL, EE)	(TH, SEA)	(GH, WA)	(IN, SEA)	(SE, NE)	(CO, SAM)			(INA, SEA)	(INA, SEA)	(INA, SEA)

QUAL: Qualitative, QUAN: Quantitative, PL: Polandia, EE: East Europe, TH: Thailand, SEA: South East Asia, GH: Ghana, WA: West Africa, IN: India, SA: South Asia, SE: Swedia, NE: North Europe, CO: Kolombia, SAM: South America, INA: Indonesia

In Table 1, there are many papers in Business Incubator, Entrepreneurship, Intrapreneurship topic. Some of them have companies' Business incubators analysis in sustainability companies, startups, research commercialization topics, Innovation background, and research universities. the analysis of their research papers are in qualitative,

quantitative and mix method in many countries in the world. Business incubators are still a hot topic of research because much further study needs to be assessed in the growth and modern business changes in some countries.

4. CONCLUSIONS AND RECOMMENDATIONS

Each paper ends with a conclusion, which summarizes the results of the paper written, as well as suggestions as recommendations resulting from the research.

Based on a literature review of previous research, the relationship between entrepreneurship, innovation, and business incubators can be seen in Table 1. It can be seen that there are 6 studies conducting business incubator research, 5 studies studying entrepreneurship, 3 studies studying intrapreneurship, 1 study studying sustainability, 2 studies studied scaling start-ups, 1 study studied research for commercialization, 3 studies studied innovation, and 11 studies were conducted at universities. Most of the methodologies used were qualitative methods, 4 studies used mixed methods, and only 1 study used quantitative methods. The analysis of their research papers are in qualitative, quantitative and mix method in many countries in the world. Business incubators are still a hot topic of research because much further study needs to be assessed in the growth and modern business changes in some countries.

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