



Research Article

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Creating a University-Based Entrepreneurial Ecosystem in Indonesia

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Abstract

Being a country with the fourth largest population in the world, but with an entrepreneur rate that only rank six at the ASEAN level, is a challenge for Indonesia. Entrepreneurship education plays an important role to increase entrepreneurial graduates of higher education. Global awareness of the importance of the role of entrepreneurship and innovation, in line with the growing awareness of higher education institutions, especially universities, to walk the entrepreneurial path. This study aims to form an entrepreneurial university model using a systems approach, where the university should not carry its own burden in carrying out the responsibilities of a third mission to help accelerate community development. The model produced using the Interpretive Structural Modelling (ISM) method describes the sub-elements as the driver factor that influence the transformation process towards an entrepreneurial university. The elements of the entrepreneurial university model are come from the elements in the entrepreneurial ecosystem. One of the results showed that in Indonesia, producing entrepreneurial graduates as entrepreneurs is a very important factor and will encourage other factors, such as product commercialization, patents, and realizing science and techno parks, as has been achieved by several leading universities in the world.

Keywords: entrepreneur, entrepreneurial university, higher education, elements, sub-elements, ecosystem

1. Introduction

Indonesia will experience a demographic bonus, which will be an opportunity or challenge towards a golden Indonesia in 2045. The demographic bonus is a rare phenomenon because it will only occur once when the proportion of the population of productive age is more than two-thirds of the total population. Indonesia is entering an era of demographic bonuses that occur due to changes in the age structure of the population, which is illustrated by a decrease in the ratio of the ratio of the non-productive population (aged less than 15 years and 65 years and over) to the productive population (aged 15-64 years). Indonesia is predicted to experience a demographic bonus period in 2020-2035, and the peak is in 2028-2030 (Asrie, 2020). According to the Fiscal Policy Office of the Ministry of Finance of the Republic of Indonesia, the productive population in Indonesia in 2045 is estimated to reach 47 percent of the total population, or as many as 319 million people.

The potential demographic bonus that has begun since now has consequences that must be anticipated immediately. The increase in the number of the workforce must be followed by the availability of sufficient employment opportunities to accommodate job seekers. This of course can be a burden for the country. For this reason, the productive age workforce must be prepared not only to find work and depend on the state, but to be trained to be independent.

The problem of independence in productive age generations has become a global concern, marked by the growing awareness that entrepreneurship programs are a way to foster national independence. Global trend shows the importance of entrepreneurship. Various world organizations and several Asian countries have also launched and promoted entrepreneurship and innovation as a driver of community growth (Chen, 2016). Based on one study in Nigeria, the graduate unemployment can be reduced by entrepreneurship education in universities (Ubogu, 2020). In particular for higher education circles, UNESCO in 1988 declared that entrepreneurial skills and initiatives should be a major concern (Suryadi, 2020).

According to Etzkowitz (2016) the role of entrepreneurship is very crucial for realizing entrepreneurial academic, which then develops the concept of entrepreneurial university. As it is known that entrepreneurial university is the most appropriate form of adaptation in dealing with environmental turbulence (Hannon, 2013). This is because the university is institutionally required to be more independent, considering that subsidies from the government are no longer reliable (Sakapurnama, Huseini, & Soeling, 2019a). As an organization, transformation also needs to be done to prepare faculty, staff and students to be able to face change (Röpke, 1998).

In Indonesia, the transformation of higher education institutions has been widely carried out, especially universities to entrepreneurial universities. Various types of tertiary institutions in Indonesia, both public and private, have made efforts to make campuses become entrepreneurial (Kuswara, 2012). Empirical research conducted on 22 universities in Indonesia in 2017 with the aim of looking at the entrepreneurial situation, as well as introducing the concept of entrepreneurial university, proves that most have set entrepreneurship education and innovation development to be the agenda at their universities (Beehive, 2017). The project also has an agenda to build an entrepreneurial ecosystem, especially in Indonesia, through the role of entrepreneurship and innovation implemented by universities.

An ecosystem consists of a collection of individuals, organizations, industry, and environmental elements who join forces in complex ways (Guerrero, Urbano, & Gajón, 2020). At the university level, features that support the entrepreneurial ecosystem include entrepreneurship education available for various students, structured schemes that can support start-up students, mechanisms for knowledge transfer, entrepreneurial approaches applied to university governance, etc. (Beehive, 2017).

Therefore, the role of universities in transforming into entrepreneurial is very important to build an entrepreneurial-based ecosystem. This is also to support the achievement of long-term impacts from an entrepreneurial university so that it can play a real role in economic growth and community development (Sakapurnama, Huseini, & Soeling, 2020).

2. Literature Review

Entrepreneurial university was born as the 3rd generation of university development, which was initiated by Cambridge University. In this generation there is an additional function not only as a teaching and research university, but also activities for creating entrepreneurs and commercial values (Wissema, 2009). In this case there is a role for the university of initiating market innovations, helping start up and bridging the gap with industrial applications by bringing the ideas outside the university.

An entrepreneurial university can mean three things: 1) the university itself as an organization, becomes entrepreneurial; 2) the member of the university - faculty, students, employees - turning themselves into entrepreneurs; 3) the interaction of the university with the environment, between university and region (Röpke, 1998). Entrepreneurial university develops a university concept that initially focuses on two things, namely teaching and research, reaching a wider scope, namely playing a role in technological innovation. This was explained by Etzkowitz, Webster, Gebhardt, & Terra (2000) who stated that entrepreneurial universities emerged as a response to the interests of knowledge within the scope of innovation systems both nationally and regionally. Previously, Readings (1996) has mentioned the existence of a "third mission" for economic development as an additional role for universities in addition to research and teaching, although with various forms of various scenarios, which encourage the emergence of entrepreneurial universities.

Entrepreneurial Universities must be able to realize that they are channels of knowledge, which need to be disseminated to the wider community. This makes higher education an entrepreneurial capital ecosystem that allows freedom of futuristic thinking (Ratten, 2017).

According to Blackburn, De Clercq, Heinonen, Stam, & Spigel (2017), the definition of an entrepreneurial ecosystem is a combination of actors and factors that are interdependent and coordinate with each other in a way that allows the creation of productive entrepreneurship in a particular area. This definition emphasizes the importance of the role of actors or people with any background to be involved in entrepreneurial activities. Meanwhile according to Beehive (2017), entrepreneurial ecosystem is a combination of entrepreneurial actors, organizations, structures and processes that build and facilitate relationships with the aim of improving entrepreneurial performance.

It can be concluded that the entrepreneurial ecosystem cannot be separated from the entrepreneurial ecosystem. One of the popular ones is the entrepreneurial ecosystem model proposed by Isenberg (Purbasari & Wijaya, 2019), which consists of elements that can be grouped into six conducive cultural domains. These elements comprise: the corporation itself, policy and leadership, specialized finance, relevant human resources, impact of the culture, and business-friendly markets.

According to Brush (2014), the concept of entrepreneurship education is a central component of the university-based entrepreneurial ecosystem or entrepreneurial university ecosystem, where there is a dynamic network interaction between actors who support entrepreneurial education.



Figure 1. The Entrepreneurial Ecosystem Model by Isenberg

In a university-based entrepreneurial ecosystem, there are stakeholders who play an important role as actors who interact with other components in it. According to Hannon (2013), Leaders at all levels, including staff, students, mentors and coaches can become actors as agents of change towards entrepreneurship. Meanwhile, students, parents are said to be emerging prominent stakeholders for universities, while alumni, local government, community, media and industry are prominent stakeholders (Gibb & Haskins, 2014).

OECD in 2012 launched the HE Innovate Framework which is used as a self-assessment of the implementation of an entrepreneurial university model, with the first indicator being Leadership and Governance. It includes several aspects such as vision, strategy, leadership, integrated culture, coordination and innovative activities (Mudde, Widhiani, & Fauzi, 2017); (Clark, 1998); (Gustomo & Ghina, 2017).

Entrepreneurial university undertakes the requires activities to establish it as entrepreneurial minded (Audretsch, 2014). The indicators used to measure the increasingly entrepreneurial activity or not come from various approaches from entrepreneurship activities and their development at universities (Ahmad, Halim, Ramayah, Popa, & Papa, 2018).

Entrepreneurial university is the result of an entrepreneurial process or activity, as outlined in the IPOO Model (Salamzadeh, Salamzadeh, & Daraei, 2011). The main entrepreneurial output from the results of the study consists of: Entrepreneur human resources (professors, graduates, researchers, staff), innovations and inventions, effective researches in line with market needs, entrepreneurial network and entrepreneurial centres (incubators, science and technology parks, spin-off, etc).

The transformation towards entrepreneurial university requires support from various parties, who are jointly committed to realizing the entrepreneurial ecosystem. The triple helix concept would not have been possible without the role of parties outside the campus (Etzkowitz et al., 2008). Likewise, orchestration in the form of the involvement and role of infrastructure, the business world and adequate resources will determine the success of these goals (O'Shea, Allen, Morse, O'Gorman, & Roche, 2007); (Scharmer, 2018); (Guerrero, Urbano, Cunningham, & Gajón, 2018); (Budyldina, 2018); (Sakapurnama et al., 2019a).

Various challenges in realizing an entrepreneurial university have made many institutions take different paths. Challenges in the internal organization can become obstacles that make universities experience difficulties while on the entrepreneurial path (Clark, 2004). The ranking system also hinders the acceleration of the transformation towards entrepreneurial, which requires more dynamic indicators to be able to answer the challenges of change in the future (Etzkowitz et al., 2000).

3. Research Method

This study uses several combining research methods, which are theoretical reviews, empirical studies through surveys with in-depth interviews with experts, and synthesize.

The survey research method used is through interviews with several experts as resource persons, or what is called non-statistical research methods. The approach used is a systems approach, which is known as ISM (Interpretive Structural Modelling).

ISM is a computer-based structural modeling process that can help groups identify the relationship between ideas and fixed structures on complex issues. There are two parts to the ISM Technique, which is sub-element classification and hierarchical arrangement. The basic principle used is the identification of structures in a system that provide high value benefits in order to formulate the system effectively and for better decision making.

Some of the benefits of ISM are:

- Program Structuring
- Identification of key sub elements
- Formulation of a hierarchical relationship between sub-elements
- Classification of elements into four sectors, namely: Autonomous, Dependent, Linkages and Independent

Classification of elements and sub-elements obtained from the results of literature studies and opinions of competent experts. The result of the ISM analysis is in the form of a hierarchical model, which can identify the relationship between sub-elements and the influence (driver power) of the sub-elements on other sub-elements. The key sub-elements are the aspects that have the highest driver power which determines or affects other sub-elements.

4. Results and Discussion

From the literature studies and some concepts used to support the synthesis, the entrepreneurial university ecosystem can be formed as in the following figure:

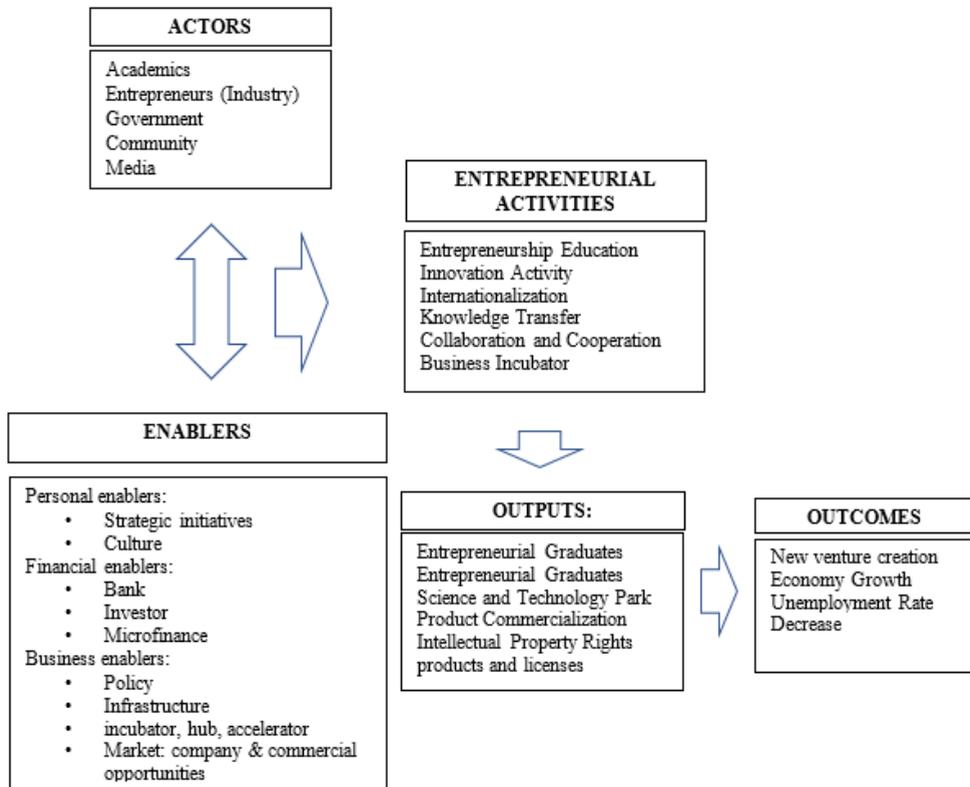


Figure 2. University-Based Entrepreneurial Ecosystem

The formation of an entrepreneurial university model is carried out in several stages as follows:

1. Study the literature to form elements and sub-elements
2. In-depth interviews with the informant as an expert to conduct content validation on the proposed elements and sub-elements
3. In-depth interview again with experts via closed questionnaire to gather judgment to determine the key sub-elements of each element.

The selected experts come from various groups representing three elements, namely: university-industry-government, which is considered to have knowledge and experience relevant to the research topic. In this survey nine experts were successfully collected with different roles between validating, validating as well as giving judgment, and giving judgment only.

The results of the literature study, content validation, in-depth interviews and continued with data processing, produce elements and sub-elements along with their hierarchies, as follows:

Table 1. Elements and Sub-Elements of Entrepreneurial University Model

Elements	Sub-Elements	Level
Actors	Top Level Management	7
	Faculty dan Staff	6
	Student	6
	Alumni	6
	Local Government	5
	Regulator	5
	Industry	5
	Media	4
	Community	3
	Research Institute	2
	Parents	1
University Governance	Vision and Mission	4
	Strategic Planning	4
	Leadership	4
	Organizational Culture	4
	Collective Entrepreneurial Action	4
	Internal Policies in Finance, Human Resource, Operation	3
	Capability of Entrepreneurial	3
	Independence Spirit	3
	Good University Governance Concept Implementation	2
Total Quality Management Implementation	1	
Entrepreneurial Activities	Collaboration with Industry	4
	Soft-Skills to support hard skills	3
	Coaching on Start-up Business	3
	Entrepreneurship education	3
	Innovation Activities	2
	Activities of Knowledge Transfer	1
Entrepreneurial Outputs	Internationalization	1
	Student and graduates Entrepreneurs	5
	Product Commercialization	4
	Patents from Business or Research	3
	Copyrights of Research output by Faculty and Student	3
	Business Incubator integrated with industry	3
	Science and Technology Park	2
Supports Needed	Commitment to execute cooperation of University-Industry-Government (Triple Helix)	5
	Adequate resources in term of experts, funds and facilities	5
	Accurate date to support innovative research in 5 to 10 years	4
	Support infrastructure for technology development	3
	Industry involvement in absorbing research output from university	2
	Support from Research Centre in Local and National related with research output	1
Challenges	Commitment of top management level	5
	Lack of stakeholder trust in the university	5
	Lack of supportive internal culture	4
	Lack of Entrepreneurial Capacity from internal university	3
	Unsupported ranking system to be entrepreneurial	2
	Unprepared technology infrastructure	1
Downstream of research output from university	1	

From the hierarchical structure obtained for each of these elements, it can be described the driver power or the main driving force that affects other sub-elements, as in figure below:

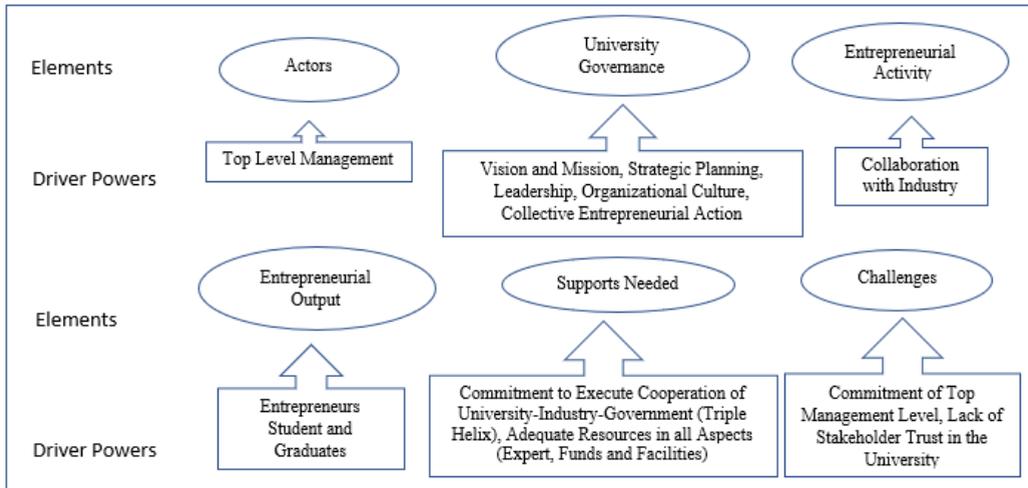


Figure 3. The Driver Powers of Entrepreneurial University Model

The driver power generated from the Actor element is Top Management. This shows that in Indonesia the approach taken to encourage awareness towards entrepreneurialism is a top-down approach, although a bottom-up approach is also frequently used in several other countries (Etzkowitz et al., 2008). Even though the change in the direction of the university to become entrepreneurial is also influenced by external factors, for example changes in market needs, the role of the top level is still very large which will change and determine steps to respond to these needs. This is very possible considering that Indonesia is still thick with a culture where the role of the top level is still very dominant, including to mobilize all elements in the organization.

From the elements of university governance, the vision and mission factors, strategic planning, leadership, organizational culture and collective entrepreneurial action collectively become the driver power that drives other sub-elements. It can be seen that indeed all components within the university are aware of the importance of a "spirit" that unites and equates steps, so as to encourage other factors such as entrepreneurial capabilities, to take part and play a role in the transformation process towards an entrepreneurial university. According to Papa & Demo (2018), vision, mission, and the leadership are the important aspects that encourage innovative and entrepreneurial agenda at all levels of institution.

In Indonesia, industry has an important role in higher education. Through its role, universities can be more aligned and able to understand the needs of the business world. The findings for elements of entrepreneurial activity where the resulting driver power is cooperation with industry. This means, through this collaboration, it can drive other activities, namely: entrepreneurship education, learning soft-skills to support hard-skills, and coaching start-up businesses.

The driver power of the entrepreneurial output elements generated from this study is the number and quality of students who become entrepreneurs. This is in line with conditions in Indonesia, where one of the drivers for the growth of the number of entrepreneurs is from universities. It is hoped that entrepreneurs who are born from higher education, not only in terms of numbers but also in quality, considering that they have received entrepreneurship education during college.

This condition is in line with the need in Indonesia to increase the entrepreneur rate, where the current position (2018) is still in the range of 3.1%, or is under other countries in ASEAN Indonesia needs at least 4 million new entrepreneurs to strengthen the economic structure (Kemenperin, 2018). According to Coordinating Ministry for Political, Legal and Security Affairs of the Republic of Indonesia, a country is called developed county if its entrepreneur rate is more than 14%. If we look at

benchmarks in developed countries, the resulting entrepreneurial output has gone further towards innovation and technology, such as Twente University (Meerman, 2015) or MIT (O'Shea et al., 2007). Even so, in Indonesia through President Joko Widodo's Nawa Cita Program, in the Economic Independence Program, several efforts were made through the Ministry of Research and Technology, including strengthening, especially in the fields of research, innovation and technological excellence. It is hoped that with some of these strengthening, several outputs such as techno park, science and technology institutions in higher education, and centers of excellence in science and technology can be realized (Suryadi, 2020).

In line with the efforts of the government to provide adequate facilities and support for innovation and technology generated from higher education, university-industry-government (Triple Helix) cooperation is very important. The study conducted resulted in a model on the element of external support, where the driver of power that drives is the commitment that supports the creation of the Triple Helix, along with the existence of adequate resources in all aspects (expert, funds and facilities). If the desire of the industry to collaborate already exists, supported by the capabilities of the university that produce good output, and facilities have been provided by the government, then what is needed is an agreement so that the concept can be executed and realized.

Going through the process of transformation to become an entrepreneurial university is not easy. Some universities run it for more than 15 years (Clark, 1998). In the process, the transformation that occurs is not incidental or accidental. Transformation occurs when a number of individuals jointly initiate change initiatives, strengthening their traditional habits with an entrepreneurial response. The journey is not without facing obstacles, both from internal to the organization and from outside (Sakapurnama, Huseini, & Soeling, 2019b).

The resulting model for the Challenges of this study is that top management's commitment together with constraints originating from outside the organization, namely distrust of other interested stakeholders, becomes the driver power that drives other constraints. If the commitment of the leader is not strong enough to make changes, then it can be ascertained that all elements in the organization will be affected, the internal culture of the organization is at the next level. The absence of top management commitment results in the absence of a clear direction to set themselves on the entrepreneurial path with all the consequences, including in terms of increasing their capacity and capability.

With the formation of the entrepreneurial university model, it can be concluded that in order to realize an ecosystem entrepreneurial university, roles and cooperation are needed from various parties, so that the interactions between elements in the ecosystem can run well. Creating a university-based entrepreneurial ecosystem, especially at the national level, is not only the responsibility of the university, but from various sectors whose participation and cooperation are urgently needed. With the good orchestration of all these elements, it is hoped that the resulting outcome will be realized more quickly.

5. Conclusion

Universities are required to play a greater role in national development and transfer knowledge in order to accelerate the economic growth of the community. The concept of entrepreneurial university is the direction of the university in the future which is considered the most appropriate in responding to the demands of market changes and adapting to the environment with potential like today.

It can be seen that at the end, success in building this ecosystem will produce outcomes that are expected to accelerate economic growth through the process of transforming universities into entrepreneurial universities. Entrepreneurial universities will be a significant driver of the birth of new venture creation, accelerate economic growth, and reduce unemployment.

Entrepreneurship plays an important role in the education curriculum in higher education. Entrepreneurship education that can foster innovation and use technological advances is a global trend today. In Indonesia, the awareness of changing universities to become more entrepreneurial is expected

to trigger more growth in the number of entrepreneurs, which in the long run will reduce the government's burden on job opportunities.

This is in line with the entrepreneurial university model which is formed through the analysis method of expert judgment, where one of the elements gives the result that in Indonesia it produces output in the form of students and graduates who become entrepreneurs who become driver power of other factors.

The elements contained in the entrepreneurial university model in this study come from the analysis of system requirements where in order to transform into entrepreneurial, a university cannot stand alone. From the results of the analysis of the models produced and supported by literature studies and several previous studies, a description of the university-based entrepreneurial ecosystem on a national scale can be made. The university will not be able to stand alone as a single entity, but it needs interactions that are created in the ecosystem.

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