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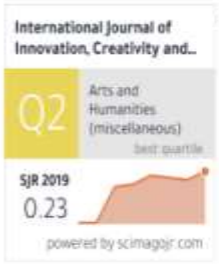

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Pdf **The Effects of Knowledge Management on School Performance among Teachers in Indonesia**

Wawan Wahyuddin[a], [a]Vice Rector for Student and Public Relation Affairs. Universitas Islam Negeri Sultan Maulana Hasanuddin Banten,Indonesia. Email: [a]wawan.wahyuddin@uinbanten.ac.id

This current study tried to investigate the impact of Knowledge Management (KM) on improving quality of school performance. To fulfil this objective, 150 Instruments were distributed to randomly selected teachers who are working in State High School, Depok, West Java Indonesia. Next, an inferential analysis was used to find out if any significant differences were found. Moreover, to know the relationship between Knowledge Management indicators and school performance and to determine the contributor of school performance through Knowledge Management, which consisted of ten indicators that are suspected to be a contributor in improving school performance. After analysing the data, the results indicated a significant improvement in school performance after utilising a Knowledge Management approach. Thus, the performance of schools can be improved by the effort of improvement of specialised Knowledge Management on the factors of digital sophistication, knowledge creation, knowledge sharing and team work and communication learning. Pages 356 to 368

Pdf **Triple Helix as a Model of a Knowledge-Based Economy for Small and Medium-Sized Enterprises: The Indonesian Case**

Somariah Fitriani[a*], Sintha Wahjusaputri[b], Ahmad Diponegoro[c], [a,b,c]University of Muhammadiyah Prof. DR. HAMKA, Email: [a*]somariah@uhamka.ac.id, [b]sinthawj@uhamka.ac.id, [c]adipone@uhamka.ac.id

The main idea of the triple helix (TH) is to harness the power of synergy amongst academics, business and government, which aims to help the community develop their economic well-being through knowledge transfer and applicable product innovation, particularly for small and medium-sized enterprises (SMEs). Hence, the objective of this study was to investigate the pattern of SME development in the creative industries using the Analytical Hierarchy Process (AHP) approach and by applying the TH model in the Bandung and Banten regions of Indonesia. This research has employed the analytical hierarchy process (AHP) to synthesise the comparison judgment of pair decision-makers at each level of the decision hierarchy. Face-to-face interviews, focus group discussion, literary reviews and documentation analysis were conducted for data collection, in which all the representatives of the TH actors had participated. The results showed that the hierarchy for the priority of SMEs' sustainability is a four-level of hierarchies in the TH model. The use of the analytical hierarchy process is then proven beneficial in formulating the priority of SMEs to implement the TH model successfully in accordance with the needs of SMEs. Pages 369 to 386

Pdf **Internet Based Collaborative Learning Management Blog to Improve Students' Writing Skills**

Wijaya Kusumah[a], Basuki Wibawa[b], [a,b]Post Graduate Department of Educational Technology, State University of Jakarta, Jl. Advance Rawamangun, East Jakarta 13220, Indonesia, Email: [a]wijayalabs@gmail.com, [b]bwibawa@unj.ac.id,

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Triple Helix as a Model of a Knowledge-Based Economy for Small and Medium-Sized Enterprises: The Indonesian Case

Somariah Fitriani[a*], Sintha Wahjusaputri[b], Ahmad Diponegoro[c], [a,b,c]University of Muhammadiyah Prof. DR. HAMKA, Email: [a*]somariah@uhamka.ac.id, [b]sinthaw@uhamka.ac.id, [c]adipone@uhamka.ac.id

The main idea of the triple helix (TH) is to harness the power of synergy amongst academics, business and government, which aims to help the community develop their economic well-being through knowledge transfer and applicable product innovation, particularly for small and medium-sized enterprises (SMEs). Hence, the objective of this study was to investigate the pattern of SME development in the creative industries using the Analytical Hierarchy Process (AHP) approach and by applying the TH model in the Bandung and Banten regions of Indonesia. This research has employed the analytical hierarchy process (AHP) to synthesise the comparison judgment of pair decision-makers at each level of the decision hierarchy. Face-to-face interviews, focus group discussion, literary reviews and documentation analysis were conducted for data collection, in which all the representatives of the TH actors had participated. The results showed that the hierarchy for the priority of SMEs' sustainability is a four-level of hierarchies in the TH model. The use of the analytical hierarchy process is then proven beneficial in formulating the priority of SMEs to implement the TH model successfully in accordance with the needs of SMEs.

Key words: *Triple helix model, SMEs, Creative industry, Analytical Hierarchy Process.*

Introduction

Small and medium sized enterprises (SMEs) make an important contribution of economic development and community welfare. Numerous studies have been conducted around the world to prove their contribution towards economic growth and development. For instance,

SMEs have a strong positive correlation on output growth, economic prosperity and economic development (Bacdon, 2004; Beck, Demirguc-kunt, & Levine, 2005; Bello, Jibir, & Ahmed, 2018; Hu, 2010; Iromaka, 2006), while supporting local economies accounts for 99% of all private sector businesses in Europe (ECORYS, 2012). SMEs are also one of the key means of socio-economic development of any society as well as bringing about a positive impact on poverty reduction (Opafunso & Omoseni, 2014). Obi et al have revealed a significant relationship between the operation of SMEs and economic growth in developing countries (Obi et al., 2018). *Okhankhuele has also* disclosed a significant and positive relationship between SME's contribution to Nigeria's Gross Domestic Product (GDP) from 1982-2012 (Okhankhuele, 2017). Even German SMEs are considered to be the backbone of the German economy (Herr & Nettekoven, 2017).

In Indonesia, the contribution of micro small medium enterprises (MSMEs) has reached 57.6 percent with an average growth of 6.7 percent of Gross Domestic Product in the period of 2009-2013 (Kementerian PPN/Bappenas, 2016). Tambunan shows that MSMEs have been the leading players in the activities of the domestic economy as they constitute more than 99.9% of all companies and employ 96.2 % of the labour force (Tambunan, 2011). In terms of the number of establishments and the labour force, the SME sector gives a great extent of the contribution to the Indonesian Economy (Hayashi, 2003). If it is compared with large enterprises, the performance of the LE sector is generally better than the SME sector. Hayasi pointed out that along with LEs, SMEs have developed moderately well in terms of output and employment growth (Hayashi, 2003). Yet, when the Asian economic crisis hit Indonesia in 1997, SMEs endured the crisis better than LEs (Irawati, 2011). Furthermore, SMEs also bring a significant impact on Indonesia's net export levels. In 2010 the exports by small and medium-sized enterprises amounted to some IDR 175.894.9 billion (15.81% of the total net exports), with the most significant exports (30%), apparel and accessories (29%), furniture (27%), food and beverages (10%), and health and beauty items (4%) (Tambunan, 2015).

Despite their contribution, SMEs faced some constraints including financial constraints, a high level of corruption and a lack of training and capacity building (Taiwo, Ayodeji, & Yusuf, 2012). To face the current global business competition such as the ASEAN economic community, Karaev et al. have acknowledged two challenges faced by SMEs. Firstly, they are required to respond to business opportunities, which is extensively open due to globalisation. Secondly, they ought to establish and keep up business networks to advance their corporate. If not coped with immediately, those constraints and challenges will hinder their activity, performance and sustainability (Karaev, Lenny Koh, & Szamosi, 2007). Hence, to reduce the financial constraints for SMEs, many countries including Indonesia have implemented some policies, such as preferential loans with a low-interest rate and a preferential tax treatment (International Monetary Fund, 2007).

The involvement and collaboration of academics, business and government known as the Triple Helix (TH) model is an approach capable of facing such challenges. (Etzkowitz & Leydesdorff, 1997) emphasised that the TH model could become an essential strategy of a national or multinational innovation agenda of the new epoch. As a model of a knowledge-based economy, the TH model is introduced by (Etzkowitz & Leydesdorff, 1995). In addition, the concept of TH provides a model for the process of transformation amongst tertiary education, private businesses and government (Etzkowitz, 1998, 2014; Etzkowitz & Viale, 2010; Leydesdorff, 2012; Leydesdorff & Meyer, 2006).

Each helix notion takes on a role and has a different interest as to foster innovation, which is the so-called the effect of the Triple Helix (Etzkowitz & Leydesdorff, 2000; Ranga, Miedema, & Jorna, 2008). The industry sector predominantly aims for the growth of business development. As the source of academic knowledge, the university sector's contribution of research and development and innovation aims to realise research projects, transfer knowledge and apply this knowledge to society. It is also possible to transfer the knowledge to industry and government. Government bodies have a goal of reinforcing sustainable energy for public welfare and the sustainability of the 'triple bottom line' of citizens, earth and profit (Silvius & Schipper, 2014). In the transition to a knowledge-based society the university has a greater part in building new economic and social development platforms. This new role is sometimes called the "third mission", which is not isolated (Etzkowitz, 2011). As the most principal leading actor, support provided by government policy can become a catalyst for entrepreneurial growth which, in its support, can make SMEs sustainable (Nugroho, 2015).

Previous studies have noticed that the triple helix idea truly provides benefits in various forms of collaboration (Etzkowitz, 2014; Etzkowitz & Viale, 2010; Leydesdorff, 2012) since their collaboration produces a distribution of knowledge that leads to innovation (Herliana, 2015). It is also notable that the exchange of knowledge and technology amongst the three sectors will make the innovation occur (OECD, 1997). (Yokakul & Zawdie, 2011) have pointed out that the Triple Helix benefits society and economics when it focuses on innovation infrastructure. Thus, the collaboration of universities, Private Corporation and governmental bodies is very important in the development of SMEs to increase economic growth, social welfare and economic competitiveness. (Rostek, 2012) contended that in order to ensure the survival of SMEs in a changing environment and strong competition among businesses, they need to improve their competitiveness since its competitiveness increases bargaining position in business competition as well (Ada, Kazancoglu, & Sagnak, 2013).

In the last three years, the ratio of the number of entrepreneurs to the total population in Indonesia has increased from only 1.55 percent in 2014 to more than 3.1 percent by the end of 2017 (Fadli & Firhand, 2018). The Central Bureau of Statistics reported that Indonesia has

risen by 5.07% and GDP has exceeded IDR 3782.4 trillion in the first quarter of the 2019 year (Fitriani, Wahjusaputri, & Diponegoro, 2019). Despite such a significant increase, it is considered low compared to developed countries, which is above 14% (Tempo, 2017). The main issues faced by many SMEs in Indonesia include lack of finance, marketing difficulties, low innovation capability, lack of skilled workers and entrepreneurs and technology and business knowledge (Nugroho, 2015; Tambunan, 2011, 2015).

The three actors of the TH - i.e., intellectuals, businessmen and government - are not synergised optimally in developing the SMEs, particularly in the field of creative industries in the Bandung and Banten regions. To solve these problems, identifying success factors, as the critical factors are predominantly imperative to find a successful implementation of the TH model on SMEs of the creative industries to sustain a rapid economic change. SMEs in the field of Creative Industry are a concept able to harmonise ideas, creativity, skills and innovation to create products that will ultimately prove productive and valuable for themselves and those around them.

The Indonesian Government's Central Bureau of Statistics has noted that the creative industries have experienced significant improvements, which play an imperative part in economic growth. The creative economy sector is arguably a new force for the Indonesian economy. Its contribution amounted for 7.38 percent of the total GDP of IDR 852.24 trillion (USD19.4 billion), or 13% to total national exports with labour absorption of 13.9% or 15.9 million workers in 2017. The Indonesian Agency of Creative Economy has reported that, so far, the three creative economic sub-sectors absorbing the greatest part of the labour force are culinary (32.33%), craft (31.48%), and fashion (26.2%) with a total share of around 9.34% of the total creative economy workforce and the creative economy of GDP is contributed mostly by the culinary subsector (32.5%); fashion (28.3%); craft (14.4%) (Budianto, 2017; Ministry of Tourism and Creative Economy of the Republic of Indonesia, 2014).

Under these circumstances, the paper has focused on the pattern of SMEs development with the Analytical Hierarchy Process (AHP) approach aiming to develop the weight or priority of small and medium scale businesses that have successfully implemented the triple helix model in accordance with the needs of each SME to lead the creative industry.

Methods

This study employed the Analytical Hierarchy Process (AHP), which was based on a comparison of expectations of each element in hierarchy, to solve multi-objective and multi-criteria problems. The AHP is a method of "measurement through pairwise comparisons and relies on the judgments of experts to derive priority scales" (Saaty, 2008). Development of the TH model with the AHP approach is used to help resolve complex issues by structuring a

hierarchy of criteria, interested parties, results and by drawing on various considerations to develop the weightiness or priority of SMEs considered to have successfully implemented this TH model (best practice), according to the needs of SMEs, particularly in the Banten and Bandung regions as the location of the object research. The research stages are as follows: 1) identification and data collection (primary and secondary data, and field study); 2) hierarchical preparation of the TH model including focus determination (goal), alternative priority determination, essential element identification, element grouping and the compilation of a collection of elements; and 3) conclusion and suggestions.

The research was conducted from March to September 2018 in Bandung and Banten, Indonesia, since two of the regions have already implemented triple helix models to develop small and medium scale business (SMEs). Face-to-face interviews were conducted with ten SMEs, which were intended to find out the general description and integrity of TH implementation to find out a detailed activity carried out by the management of the SMEs that are supported by the three actors (Government, Business/Industry and Academic). The researchers also interviewed three heads of the cooperative service, micro, small and medium enterprises, two personnel of the bank of Indonesia as an industrial partner, and two companions of SMEs.

In addition, a focus group discussion was conducted to find out more information from representatives of SMEs, three companions, industrial partners, academicians and head of local government aiming to find solutions of the problem faced by SMEs and its application of the TH model. The purpose of this study is to arrange a hierarchy of priorities, which is the first step in the AHP methodology to determine the priority of triple helix aspects for SME sustainability. Thus, this research has focused on the preparation of the triple helix hierarchy to determine the priority needed by the SMEs in the field of creative industries in the western part of Java.

Results and Discussion

Since all stakeholders of the TH have limited resources, determining the priorities of the TH aspect are of importance and have a great impact on the sustainability of SMEs. Owing to maintaining their sustainability in the long term, the TH hierarchy is necessary for the SME's development. By reviewing the regulations of the Ministry of Cooperatives and SMEs, the *Tri Dharma Perguruan Tinggi* or "Three Principles of Higher Education" and willingness of private corporations, this research determines several aspects of the TH applied to development the SMEs, its implementation for the creative industry and the formulation of triple helix hierarchy related to the sustainability of an SME. The results are presented in Table 1, Figure 1 and Figure 2.

Table 1: The application of Triple Helix for the development of SMEs

University	Business	Government
1. Provides consultation / guidance service 2. Provides assistance 3. Provides Training / mentoring 4. Facilitates marketing access 5. Provides Information assistance	1. Provides consultation / guidance service 2. Provides assistance 3. Provides Training / mentoring 4. Facilitates marketing access 5. Provides Information assistance 6. Provides capital assistance and loans 7. Provides Technology assistance 8. Provides Technology loans 9. Provides Information loans 10. Establishes creative home of State-owned Enterprises (RKB BUMN)	1. Provides consultation/ guidance service 2. Provides assistance 3. Provides Training / mentoring 4. Facilitates marketing access 5. Provides Capital assistance 6. Provides Technology assistance 7. Provides Information assistance 8. Provides Access to capital distribution 9. Provides Technology loans 10. Provides Information loans 11. Establishes integrated business service center (PLUT)

The implementation of the TH in Bandung and Banten regions includes four main activities. First, the growth of communication, telecommunication and digital SMEs supported by PT Telkom Indonesia, or PT Telkom for the sake of brevity. PT Telkom is a multinational telecommunications conglomerate, which is a semi-private company that has a major business in fixed-line telephony and Internet communication, providing connectivity services, commercial services and content services. PT Telkom has established the *Rumah Kreatif* BUMN (Creative Home of State-owned Enterprises) aiming to raise the level of SMEs in order that they become more modern and technology-literate in facing the global economic challenge.

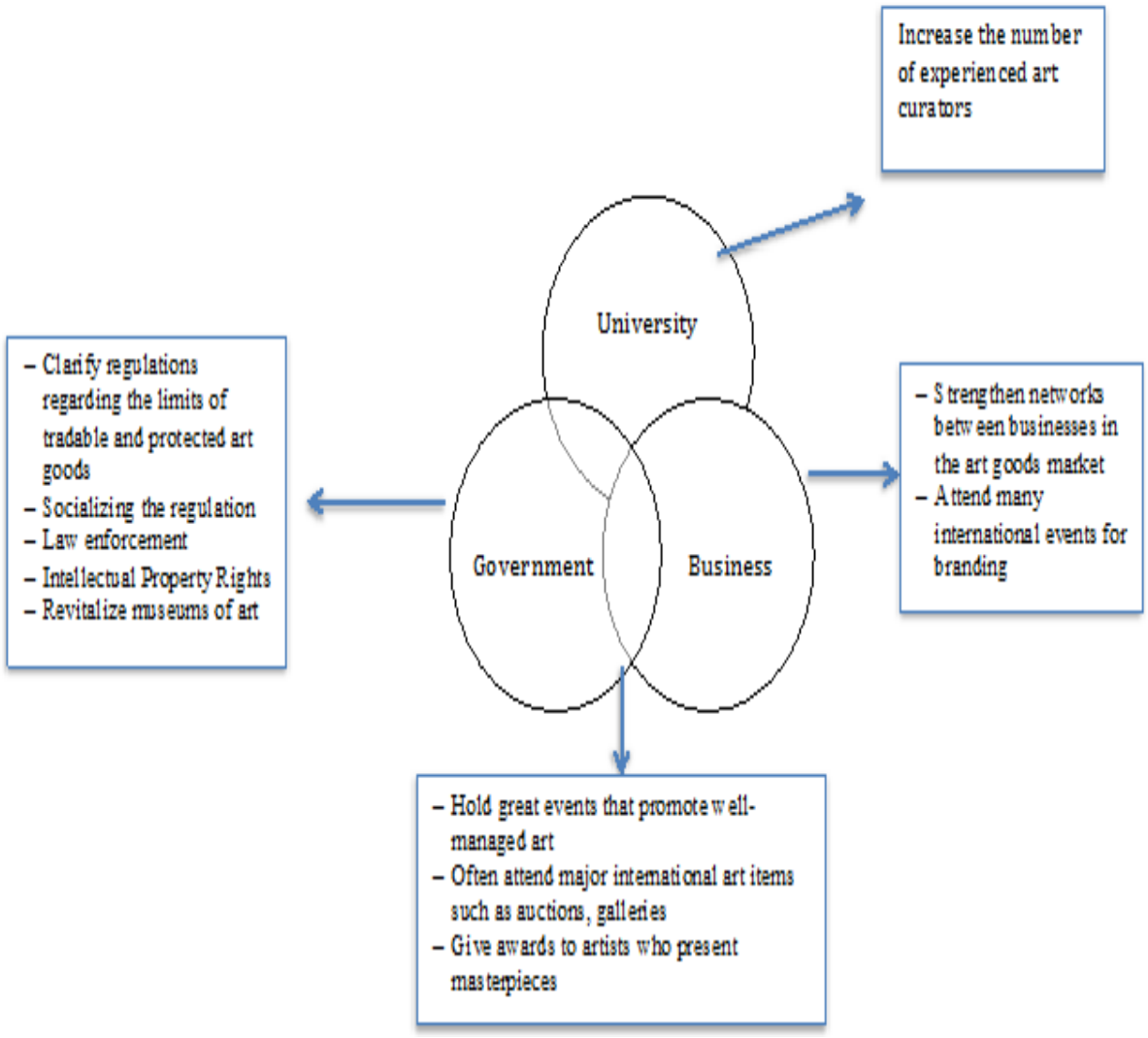
Second, the implementation of the TH in creative industries specialising in craft, art and fashion, as shown in Figure 1. According to the Indonesian creative industry development plan, there are fourteen sub-sectors included in the development of creative industries: advertising, architecture, design, fashions, movies (video), interactive games, music, printing,

art market, crafts, computer services, radio/television, performing arts, and research and development (Pangestu., 2008).

Third, the provincial government has established an integrated business service centre (*Pusat Layanan Usaha Terpadu*, or PLUT for short) under the Ministry of Cooperative, Small to Medium-sized Enterprises. Its objective of establishing the integrated business service centre is to elevate the level of cooperatives and MSMEs (micro, small, and medium-sized enterprises) by providing consultation and mentoring services for the cooperatives and the MSMEs to improve their product quality, to enhance their human resources' competency, to increase their regional superior potential productivity, to widen their access to financial institutions and to grow their partnerships in business networks. There are at least seven services for the management of the Integrated Business Service Centre among business consultations, mentoring or business mentors, promotion or marketing, IT and e-commerce, access to financing sources, business training, networking and business partnerships, proposal material and entrepreneur library services.

The fourth is the ABCGM synergism, which, since June 2017, has been implemented officially only in the Bandung region so far. The ABCGM stands for Academic, Business, Community, Government and Media, for which their connection is called the 'Penta Helix' model, which is an integrated coordination design of five players (sectors). In West Java Province, the Regional Office of Cooperative initiated the model to extend the known TH model to further optimise every opportunity generated from the external environment, starting from the micro, macro and global external environment. The office invited stakeholders who are committed to helping themselves to elevate their business scale in particular and entrepreneurs in general, so that they truly become entrepreneurs who can go up the classes from the micro, small, medium and large scale. Since entrepreneurs need social capital - i.e., information, market access, access to licensing, financial access, access to business facilities and networks - to improve their business, the synergism of the ABCGM is expected to provide a beneficial platform to facilitate their need.

Figure 1. Implementation of Triple Helix for Creative Industry

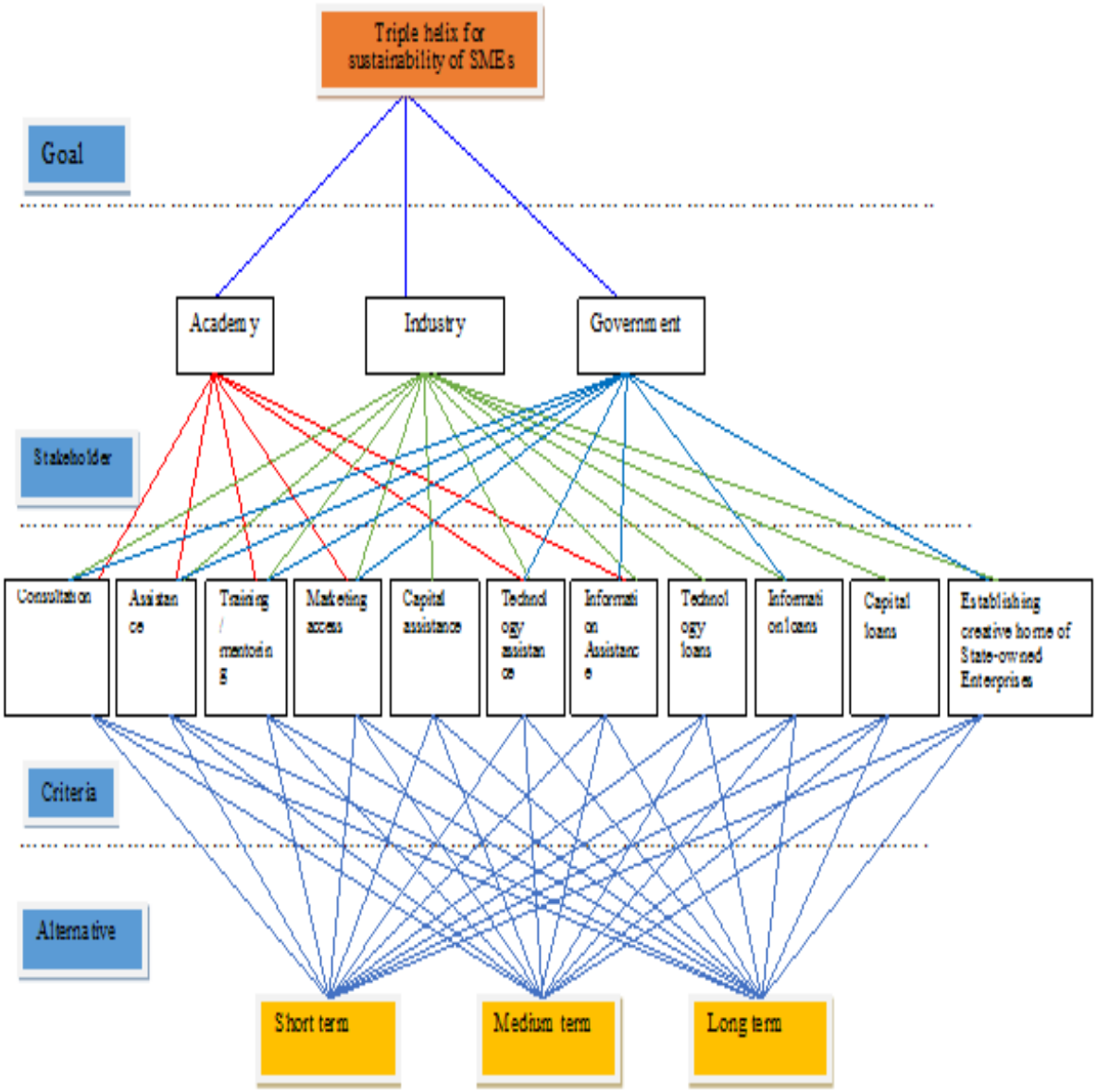


Decision-making related to determining the SMEs priority in Banten and Bandung regions with the triple helix aspect is that the decision maker will consider what effects will happen when the triple helix aspect joins and participates in the SMEs to make it run sustainably. Basically, the sustainability of an SME in Banten and Bandung is expected to increase the revenue of the businesses in order to increase employment opportunities for the community. In addition, there are also factors that are taken into consideration; namely, the creation of social opportunities and economic development of the community.

Based on the triple helix aspect, the focus (goal) as the overall target is the sustainability of SMEs, while alternative stakeholders are academic, business and government (ABG). SMEs then determined by the triple helix priority will be restored and developed. The identification of important elements influencing the results of improvement decisions; namely,

guidance/consulting services, mentoring, coaching / training, marketing access facilities, capital assistance, technology assistance, information assistance, capital loans, technology loans, information loans, and establishing Integrated Business Service Center (PLUT) and creative home of State-owned Enterprises (RKB). These elements can be grouped into: 1) Acting groups (actors or decision makers) - namely academic, business, and government (ABG); 2) Factor groups - namely guidance/consultation services, mentoring, coaching/training, marketing access facilities, capital assistance, technology assistance, information assistance, capital loans, technology loans, information loans, and establishing work groups; and 3) Alternative groups - namely short, medium and long term, as presented in the figure below.

Figure 2. Hierarchy of Triple Helix



SMEs have limited resources to develop and maintain their performance as well as improve product quality. SMEs are seriously in need of collaboration with other sectors to achieve it. Hence, joining a triple helix agent will provide a significant contribution. In terms of the industry sector, Brink and Madsen have revealed that SMEs is obliged to obtain market access and industry partners to recognise, learn and choose the opportunities for business innovation (Brink & Madsen, 2016). SMEs in Indonesia need government support to develop marketing networks and access to financial institutions (Anton, Muzakan, Muhammad, Syamsudin, & Permono, 2015; Hill, 2001).

Anak Agung Gede Ngurah Puspayoga, Minister for Cooperatives and Small and Medium Enterprises, said governments need to actively develop local businesses through the provision of people training, the enhancement of production in SMEs, and a low interest rate on People's Business Credit (KUR). In regards to marketing, he encourages SMEs to boost online sales and align them with offline sales (Tempo, 2017). Therefore, government and industry have provided such training in order for SMEs to be familiar with the new technology and use it optimally to boost their sales. To respond to financial constraint, Indonesia has already reduced a 0.5% interest rate for MSMEs lately.

Some findings have revealed that the collaboration of SME with the industrial sector and government sector in the context of the TH has a positive effect. Such collaboration has enhanced SMEs' innovation and performance (Brink & Madsen, 2016; Ueasangkomsate & Jangkot, 2017), while also revealing the prospective advantages for SMEs in arising economies when doing collaboration with the agents of Triple Helix to enhance their innovation performance. The participation of both three helixes and SMEs is advantageous and has mutual benefits (Brink & Madsen, 2016).

Several countries have proposed and implemented the framework of innovation enhancement. Cooper and Edgett have pointed out that Competitive and Market Intelligence (CI/MI) Research, which functions as a prospective source and plays an important role, is able to develop the innovation capability of SMEs to have a successful new product, services, processes and development capability (Cooper & Edgett, 2002). In Thailand, some universities have the innovation incubator and university business incubator (UBI) as an incubation program to support the entrepreneurial development and innovation commercialisation, which provides insightful implication for an entrepreneurial university aiming to stimulate innovation development and diffusion (Wonglimpiyarat, 2016). A business incubator has been used widely in many countries as a part of innovation and entrepreneurship policies to stimulate economic development (Ács & Naudé, 2011) and to reinforce and nurture the development of SMEs (Barrow, 2001; Bøllingtof & Ulhøi, 2005).

The Indonesian government has enacted various sets of policies and programs as a means of

revitalising the economy by supporting the existence of SMEs in the realisation that SMEs play major roles in terms of economic growth and job creation. One of these programs is the Knowledge and Technology Vision 2025 or VISI IPTEK 2025, whose objective is to strengthen the national development and prosperity of the Indonesian people. In this program, LEs (Large Enterprises) and SMEs play a significant role and are expected to make substantial contributions to the country's economy, science, and technology.

In the context of the TH collaboration, one of the attempts is a regional innovation cluster approach designed to strengthen regional innovation systems and boost the competitiveness of SMEs in Indonesia (Herliana, 2015). The cluster approach is one of innovation-based business incubation activities contained within an incubator, which has been adopted in many countries, including Indonesia. The clustering of companies makes it easier for the government, LEs, universities and other development-supporting agencies to provide cheaper and better services (Tambunan, 2005). Tambunan has also asserted that clustering benefits the development of SMEs and the development of rural areas in Indonesia too, being that the majority of SMEs are situated in rural areas.

Porter defines clusters in particular referred to commonalties and complementarities, as regional clusters of interconnected companies and institutions (Porter, 1998). Porter adds that clusters provide a way of organising thinking about many policy areas that go beyond the common needs of the entire economy and offer many potential advantages in their capacity to innovate and upgrade their competitiveness compared to an isolated location (Porter, 2000). Therefore, clusters are often perceived not only as patterns for economic transactions and economic outcomes, but also as social systems and multidisciplinary environmental drivers for change (Zheliazkov, Zaimova, Genchev, & Toneva, 2015).

As a conceptual strategy in Indonesia, clusters can be classified into four types based on the level of their development (Irawati, 2011).

1. The first type is the artisan, in which the clustering process is still at an 'infant' level.
2. The second one is active, signifying that it has rapidly evolved in terms of improving skill, technological advancement and fruitful penetration of domestic and export markets.
3. Dynamic is the third type. This type of cluster is characterised by the decisive role of leading/pioneering firms. The defining function of leading / innovative companies is defined by this type of cluster. These are usually larger entities, which expand more rapidly to handle a diverse and distinct collection of ties within and outside the clusters between companies and institutions. The clove cigarette clusters in kudus, tea processing in Slawi and Bali's tourism clusters are examples of this type of cluster. Tea manufacturing clusters led by major companies like Sosro have become pioneers in the Indonesian soft drink industry (Tambunan, 2005).
4. The fourth type of clusters are better developed, more complex and more advanced than

previous forms. Examples are three of Indonesia's most famous cluster agglomerations. The first one is in the Yogyakarta-Solo area with its tourist, furnishings and interior design, metal processing as well as textile and leather goods. The other is Bali, called a tourist destination with small and medium-sized enterprises, that produces traditional crafts, furniture and interior goods. The third one is the Jakarta Bogor Tangerang and Bekasi area where automotive SMEs are located.

Besides an innovation approach, establishing an Integrated Business Service Centre (PLUT) as the creative home of State-owned Enterprises (RKB) and "*Jabar naik kelas*" (West Java goes up to class) under ABCGM synergy have come to constitute effective programs in the pursuit of triple helix context. For the Bandung region in particular, it has risen in class with the new implementation of Penta Helix model. Based on the research findings, four factors can be said to contribute to the success of SMEs; that is the character of entrepreneurs, companies / products, business networks, and business climate including government support (Kementerian PPN/Bappenas, 2016), which is similar to the concept of the onion model (Reeg, 2013), including entrepreneur characteristic, enterprise characteristics, personal and professional networks and business environment as the concept of class upgrading for SMEs.

Furthermore, the type of SMEs needs a specific support from the government, business and university in the triple helix context since each of them has different characteristics. According to Herr and Nettekoven, there are three groups of SMEs: namely Schumpeterian SMEs, which are able to innovate and create something new; normal SMEs, which are capable of adapting to the challenges posed by Schumpeterian firms; and poverty-driven SMEs due to lack of economic development, employment opportunities and insufficient welfare (Herr & Nettekoven, 2017). Under this type of SMEs group, determining the priority need of SMEs by formulating the TH hierarchy for SMEs is highly important to find out which SMEs have successfully implemented the TH model.

The purpose of the TH model is also to figure out the constraints faced by each of SME as the basis for triple helix agent to restore and develop their performance. Hence, the business and government sector will be able to support SMEs based on their respective constraints and problems. As most of SMEs in developing countries are part of the normal SMEs group, some policies supporting the existence of normal SMEs are access to finance, vocational training, employers' association, wages and working conditions providing public goods and a macroeconomic framework. In addition, learning from Germany as a role model for SMEs and a good example of best practice will reveal some of the success factors contributing to the development of SMEs, amongst them access to finance, the education system, industrial cluster and global chains and social capital (Herr & Nettekoven, 2017).

Conclusion

SMEs produce a significant impact and have a significant role in employment, economic development and community welfare in every country in the world. Thus, the government must pay very special attention to their actions and provide assistance in terms of policymaking decision as well as collaboration with other sectors to increase their economic and social upgrading. Being that SMEs usually have inadequate resources, which are otherwise required to conduct innovative research, connecting to the network of the TH will provide remarkable access to the advancement of technology; resources and knowledge transfer for exploring the wider opportunity in the business milieu.

As a productive of innovation technology, knowledge takes on a very important role in bridging the process of change that enhances development and industrial growth. Therefore, the collaboration and interaction of three sectors (university, corporation, and government) in the TH model is in great need to develop SMEs' product innovation and economic value. All three leading players of the TH can benefit from the approach to SMEs for the sake of the country's economic growth.

The results show that the hierarchy for the priority of SMEs sustainability is a triple helix hierarchy, which consists of four hierarchical levels. Our research has revealed how the hierarchy of the triple helix is essential to determine SMEs' priority needs in order to determine which SMEs have implemented the triple helix successfully. Its main objective is to restore and develop the performance of each SME, as each of has its own issues, constraints and limitations. In addition, this article has explored the importance of the understanding of the effect of incorporating SMEs in a triple helix sense to create innovation and certain success factors necessary to upgrade SMEs.

Conflict of Interest

None

Acknowledgments

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Sintha Wahjusaputri - Triple Helix as a Model of a Knowledge-Based Economy for Small and Medium-Sized Enterprises: The Indonesian Case

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Triple Helix as a Model of a Knowledge-Based Economy for Small and Medium-Sized Enterprises: The Indonesian Case

Somariah Fitriani[a*], Sintha Wahjusaputri[b], Ahmad Diponegoro[c],
[a,b,c]University of Muhammadiyah Prof. DR. HAMKA, Email: [a*]somariah@uhamka.ac.id, [b]sinthaw@uhamka.ac.id, [c]adipone@uhamka.ac.id

The main idea of the triple helix (TH) is to harness the power of synergy amongst academics, business and government, which aims to help the community develop their economic well-being through knowledge transfer and applicable product innovation, particularly for small and medium-sized enterprises (SMEs). Hence, the objective of this study was to investigate the pattern of SME development in the creative industries using the Analytical Hierarchy Process (AHP) approach and by applying the TH model in the Bandung and Banten regions of Indonesia. This research has employed the analytical hierarchy process (AHP) to synthesise the comparison judgment of pair decision-makers at each level of the decision hierarchy. Face-to-face interviews, focus group discussion, literary reviews and documentation analysis were conducted for data collection, in which all the representatives of the TH actors had participated. The results showed that the hierarchy for the priority of SMEs' sustainability is a four-level of hierarchies in the TH model. The use of the analytical hierarchy process is then proven beneficial in formulating the priority of SMEs to implement the TH model successfully in accordance with the needs of SMEs.

Key words: *Triple helix model, SMEs, Creative industry, Analytical Hierarchy Process.*

Introduction

Small and medium sized enterprises (SMEs) make an important contribution of economic development and community welfare. Numerous studies have been conducted around the world to prove their contribution towards economic growth and development. For instance,

SMEs have a strong positive correlation on output growth, economic prosperity and economic development (Bacdon, 2004; Beck, Demirguc-kunt, & Levine, 2005; Bello, Jibir, & Ahmed, 2018; Hu, 2010; Iromaka, 2006), while supporting local economies accounts for 99% of all private sector businesses in Europe (ECORYS, 2012). SMEs are also one of the key means of socio-economic development of any society as well as bringing about a positive impact on poverty reduction (Opafunso & Omoseni, 2014). Obi et al have revealed a significant relationship between the operation of SMEs and economic growth in developing countries (Obi et al., 2018). *Okhankhuele has also* disclosed a significant and positive relationship between SME's contribution to Nigeria's Gross Domestic Product (GDP) from 1982-2012 (Okhankhuele, 2017). Even German SMEs are considered to be the backbone of the German economy (Herr & Nettekoven, 2017).

In Indonesia, the contribution of micro small medium enterprises (MSMEs) has reached 57.6 percent with an average growth of 6.7 percent of Gross Domestic Product in the period of 2009-2013 (Kementerian PPN/Bappenas, 2016). Tambunan shows that MSMEs have been the leading players in the activities of the domestic economy as they constitute more than 99.9% of all companies and employ 96.2 % of the labour force (Tambunan, 2011). In terms of the number of establishments and the labour force, the SME sector gives a great extent of the contribution to the Indonesian Economy (Hayashi, 2003). If it is compared with large enterprises, the performance of the LE sector is generally better than the SME sector. Hayasi pointed out that along with LEs, SMEs have developed moderately well in terms of output and employment growth (Hayashi, 2003). Yet, when the Asian economic crisis hit Indonesia in 1997, SMEs endured the crisis better than LEs (Irawati, 2011). Furthermore, SMEs also bring a significant impact on Indonesia's net export levels. In 2010 the exports by small and medium-sized enterprises amounted to some IDR 175.894.9 billion (15.81% of the total net exports), with the most significant exports (30%), apparel and accessories (29%), furniture (27%), food and beverages (10%), and health and beauty items (4%) (Tambunan, 2015).

Despite their contribution, SMEs faced some constraints including financial constraints, a high level of corruption and a lack of training and capacity building (Taiwo, Ayodeji, & Yusuf, 2012). To face the current global business competition such as the ASEAN economic community, Karaev et al. have acknowledged two challenges faced by SMEs. Firstly, they are required to respond to business opportunities, which is extensively open due to globalisation. Secondly, they ought to establish and keep up business networks to advance their corporate. If not coped with immediately, those constraints and challenges will hinder their activity, performance and sustainability (Karaev, Lenny Koh, & Szamosi, 2007). Hence, to reduce the financial constraints for SMEs, many countries including Indonesia have implemented some policies, such as preferential loans with a low-interest rate and a preferential tax treatment (International Monetary Fund, 2007).

The involvement and collaboration of academics, business and government known as the Triple Helix (TH) model is an approach capable of facing such challenges. (Etzkowitz & Leydesdorff, 1997) emphasised that the TH model could become an essential strategy of a national or multinational innovation agenda of the new epoch. As a model of a knowledge-based economy, the TH model is introduced by (Etzkowitz & Leydesdorff, 1995). In addition, the concept of TH provides a model for the process of transformation amongst tertiary education, private businesses and government (Etzkowitz, 1998, 2014; Etzkowitz & Viale, 2010; Leydesdorff, 2012; Leydesdorff & Meyer, 2006).

Each helix notion takes on a role and has a different interest as to foster innovation, which is the so-called the effect of the Triple Helix (Etzkowitz & Leydesdorff, 2000; Ranga, Miedema, & Jorna, 2008). The industry sector predominantly aims for the growth of business development. As the source of academic knowledge, the university sector's contribution of research and development and innovation aims to realise research projects, transfer knowledge and apply this knowledge to society. It is also possible to transfer the knowledge to industry and government. Government bodies have a goal of reinforcing sustainable energy for public welfare and the sustainability of the 'triple bottom line' of citizens, earth and profit (Silvius & Schipper, 2014). In the transition to a knowledge-based society the university has a greater part in building new economic and social development platforms. This new role is sometimes called the "third mission", which is not isolated (Etzkowitz, 2011). As the most principal leading actor, support provided by government policy can become a catalyst for entrepreneurial growth which, in its support, can make SMEs sustainable (Nugroho, 2015).

Previous studies have noticed that the triple helix idea truly provides benefits in various forms of collaboration (Etzkowitz, 2014; Etzkowitz & Viale, 2010; Leydesdorff, 2012) since their collaboration produces a distribution of knowledge that leads to innovation (Herliana, 2015). It is also notable that the exchange of knowledge and technology amongst the three sectors will make the innovation occur (OECD, 1997). (Yokakul & Zawdie, 2011) have pointed out that the Triple Helix benefits society and economics when it focuses on innovation infrastructure. Thus, the collaboration of universities, Private Corporation and governmental bodies is very important in the development of SMEs to increase economic growth, social welfare and economic competitiveness. (Rostek, 2012) contended that in order to ensure the survival of SMEs in a changing environment and strong competition among businesses, they need to improve their competitiveness since its competitiveness increases bargaining position in business competition as well (Ada, Kazancoglu, & Sagnak, 2013).

In the last three years, the ratio of the number of entrepreneurs to the total population in Indonesia has increased from only 1.55 percent in 2014 to more than 3.1 percent by the end of 2017 (Fadli & Firhand, 2018). The Central Bureau of Statistics reported that Indonesia has

risen by 5.07% and GDP has exceeded IDR 3782.4 trillion in the first quarter of the 2019 year (Fitriani, Wahjusaputri, & Diponegoro, 2019). Despite such a significant increase, it is considered low compared to developed countries, which is above 14% (Tempo, 2017). The main issues faced by many SMEs in Indonesia include lack of finance, marketing difficulties, low innovation capability, lack of skilled workers and entrepreneurs and technology and business knowledge (Nugroho, 2015; Tambunan, 2011, 2015).

The three actors of the TH - i.e., intellectuals, businessmen and government - are not synergised optimally in developing the SMEs, particularly in the field of creative industries in the Bandung and Banten regions. To solve these problems, identifying success factors, as the critical factors are predominantly imperative to find a successful implementation of the TH model on SMEs of the creative industries to sustain a rapid economic change. SMEs in the field of Creative Industry are a concept able to harmonise ideas, creativity, skills and innovation to create products that will ultimately prove productive and valuable for themselves and those around them.

The Indonesian Government's Central Bureau of Statistics has noted that the creative industries have experienced significant improvements, which play an imperative part in economic growth. The creative economy sector is arguably a new force for the Indonesian economy. Its contribution amounted for 7.38 percent of the total GDP of IDR 852.24 trillion (USD19.4 billion), or 13% to total national exports with labour absorption of 13.9% or 15.9 million workers in 2017. The Indonesian Agency of Creative Economy has reported that, so far, the three creative economic sub-sectors absorbing the greatest part of the labour force are culinary (32.33%), craft (31.48%), and fashion (26.2%) with a total share of around 9.34% of the total creative economy workforce and the creative economy of GDP is contributed mostly by the culinary subsector (32.5%); fashion (28.3%); craft (14.4%) (Budianto, 2017; Ministry of Tourism and Creative Economy of the Republic of Indonesia, 2014).

Under these circumstances, the paper has focused on the pattern of SMEs development with the Analytical Hierarchy Process (AHP) approach aiming to develop the weight or priority of small and medium scale businesses that have successfully implemented the triple helix model in accordance with the needs of each SME to lead the creative industry.

Methods

This study employed the Analytical Hierarchy Process (AHP), which was based on a comparison of expectations of each element in hierarchy, to solve multi-objective and multi-criteria problems. The AHP is a method of "measurement through pairwise comparisons and relies on the judgments of experts to derive priority scales" (Saaty, 2008). Development of the TH model with the AHP approach is used to help resolve complex issues by structuring a

hierarchy of criteria, interested parties, results and by drawing on various considerations to develop the weightiness or priority of SMEs considered to have successfully implemented this TH model (best practice), according to the needs of SMEs, particularly in the Banten and Bandung regions as the location of the object research. The research stages are as follows: 1) identification and data collection (primary and secondary data, and field study); 2) hierarchical preparation of the TH model including focus determination (goal), alternative priority determination, essential element identification, element grouping and the compilation of a collection of elements; and 3) conclusion and suggestions.

The research was conducted from March to September 2018 in Bandung and Banten, Indonesia, since two of the regions have already implemented triple helix models to develop small and medium scale business (SMEs). Face-to-face interviews were conducted with ten SMEs, which were intended to find out the general description and integrity of TH implementation to find out a detailed activity carried out by the management of the SMEs that are supported by the three actors (Government, Business/Industry and Academic). The researchers also interviewed three heads of the cooperative service, micro, small and medium enterprises, two personnel of the bank of Indonesia as an industrial partner, and two companions of SMEs.

In addition, a focus group discussion was conducted to find out more information from representatives of SMEs, three companions, industrial partners, academicians and head of local government aiming to find solutions of the problem faced by SMEs and its application of the TH model. The purpose of this study is to arrange a hierarchy of priorities, which is the first step in the AHP methodology to determine the priority of triple helix aspects for SME sustainability. Thus, this research has focused on the preparation of the triple helix hierarchy to determine the priority needed by the SMEs in the field of creative industries in the western part of Java.

Results and Discussion

Since all stakeholders of the TH have limited resources, determining the priorities of the TH aspect are of importance and have a great impact on the sustainability of SMEs. Owing to maintaining their sustainability in the long term, the TH hierarchy is necessary for the SME's development. By reviewing the regulations of the Ministry of Cooperatives and SMEs, the *Tri Dharma Perguruan Tinggi* or "Three Principles of Higher Education" and willingness of private corporations, this research determines several aspects of the TH applied to development the SMEs, its implementation for the creative industry and the formulation of triple helix hierarchy related to the sustainability of an SME. The results are presented in Table 1, Figure 1 and Figure 2.

Table 1: The application of Triple Helix for the development of SMEs

University	Business	Government
1. Provides consultation / guidance service 2. Provides assistance 3. Provides Training / mentoring 4. Facilitates marketing access 5. Provides Information assistance	1. Provides consultation / guidance service 2. Provides assistance 3. Provides Training / mentoring 4. Facilitates marketing access 5. Provides Information assistance 6. Provides capital assistance and loans 7. Provides Technology assistance 8. Provides Technology loans 9. Provides Information loans 10. Establishes creative home of State-owned Enterprises (RKB BUMN)	1. Provides consultation/ guidance service 2. Provides assistance 3. Provides Training / mentoring 4. Facilitates marketing access 5. Provides Capital assistance 6. Provides Technology assistance 7. Provides Information assistance 8. Provides Access to capital distribution 9. Provides Technology loans 10. Provides Information loans 11. Establishes integrated business service center (PLUT)

The implementation of the TH in Bandung and Banten regions includes four main activities. First, the growth of communication, telecommunication and digital SMEs supported by PT Telkom Indonesia, or PT Telkom for the sake of brevity. PT Telkom is a multinational telecommunications conglomerate, which is a semi-private company that has a major business in fixed-line telephony and Internet communication, providing connectivity services, commercial services and content services. PT Telkom has established the *Rumah Kreatif* BUMN (Creative Home of State-owned Enterprises) aiming to raise the level of SMEs in order that they become more modern and technology-literate in facing the global economic challenge.

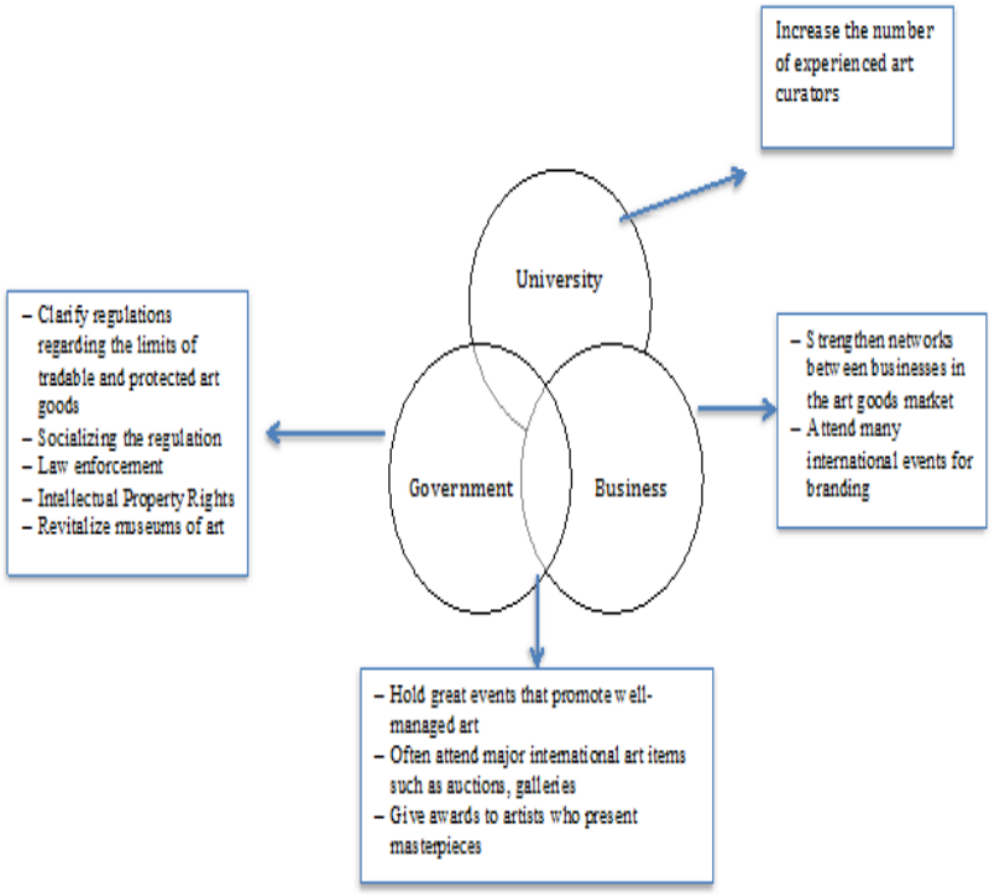
Second, the implementation of the TH in creative industries specialising in craft, art and fashion, as shown in Figure 1. According to the Indonesian creative industry development plan, there are fourteen sub-sectors included in the development of creative industries: advertising, architecture, design, fashions, movies (video), interactive games, music, printing,

art market, crafts, computer services, radio/television, performing arts, and research and development (Pangestu., 2008).

Third, the provincial government has established an integrated business service centre (*Pusat Layanan Usaha Terpadu*, or PLUT for short) under the Ministry of Cooperative, Small to Medium-sized Enterprises. Its objective of establishing the integrated business service centre is to elevate the level of cooperatives and MSMEs (micro, small, and medium-sized enterprises) by providing consultation and mentoring services for the cooperatives and the MSMEs to improve their product quality, to enhance their human resources' competency, to increase their regional superior potential productivity, to widen their access to financial institutions and to grow their partnerships in business networks. There are at least seven services for the management of the Integrated Business Service Centre among business consultations, mentoring or business mentors, promotion or marketing, IT and e-commerce, access to financing sources, business training, networking and business partnerships, proposal material and entrepreneur library services.

The fourth is the ABCGM synergism, which, since June 2017, has been implemented officially only in the Bandung region so far. The ABCGM stands for Academic, Business, Community, Government and Media, for which their connection is called the 'Penta Helix' model, which is an integrated coordination design of five players (sectors). In West Java Province, the Regional Office of Cooperative initiated the model to extend the known TH model to further optimise every opportunity generated from the external environment, starting from the micro, macro and global external environment. The office invited stakeholders who are committed to helping themselves to elevate their business scale in particular and entrepreneurs in general, so that they truly become entrepreneurs who can go up the classes from the micro, small, medium and large scale. Since entrepreneurs need social capital - i.e., information, market access, access to licensing, financial access, access to business facilities and networks - to improve their business, the synergism of the ABCGM is expected to provide a beneficial platform to facilitate their need.

Figure 1. Implementation of Triple Helix for Creative Industry

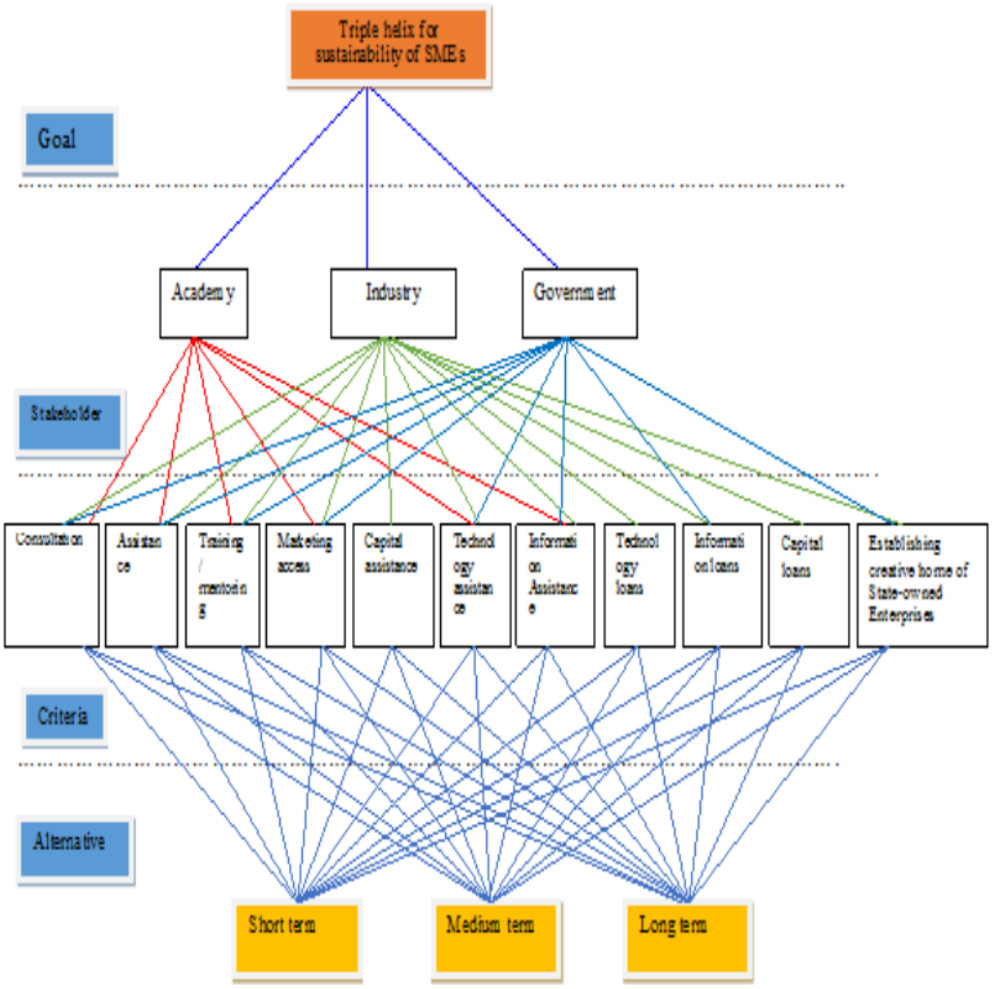


Decision-making related to determining the SMEs priority in Banten and Bandung regions with the triple helix aspect is that the decision maker will consider what effects will happen when the triple helix aspect joins and participates in the SMEs to make it run sustainably. Basically, the sustainability of an SME in Banten and Bandung is expected to increase the revenue of the businesses in order to increase employment opportunities for the community. In addition, there are also factors that are taken into consideration; namely, the creation of social opportunities and economic development of the community.

Based on the triple helix aspect, the focus (goal) as the overall target is the sustainability of SMEs, while alternative stakeholders are academic, business and government (ABG). SMEs then determined by the triple helix priority will be restored and developed. The identification of important elements influencing the results of improvement decisions; namely,

guidance/consulting services, mentoring, coaching / training, marketing access facilities, capital assistance, technology assistance, information assistance, capital loans, technology loans, information loans, and establishing Integrated Business Service Center (PLUT) and creative home of State-owned Enterprises (RKB). These elements can be grouped into: 1) Acting groups (actors or decision makers) - namely academic, business, and government (ABG); 2) Factor groups - namely guidance/consultation services, mentoring, coaching/training, marketing access facilities, capital assistance, technology assistance, information assistance, capital loans, technology loans, information loans, and establishing work groups; and 3) Alternative groups - namely short, medium and long term, as presented in the figure below.

Figure 2. Hierarchy of Triple Helix



SMEs have limited resources to develop and maintain their performance as well as improve product quality. SMEs are seriously in need of collaboration with other sectors to achieve it. Hence, joining a triple helix agent will provide a significant contribution. In terms of the industry sector, Brink and Madsen have revealed that SMEs is obliged to obtain market access and industry partners to recognise, learn and choose the opportunities for business innovation (Brink & Madsen, 2016). SMEs in Indonesia need government support to develop marketing networks and access to financial institutions (Anton, Muzakan, Muhammad, Syamsudin, & Permono, 2015; Hill, 2001).

Anak Agung Gede Ngurah Puspayoga, Minister for Cooperatives and Small and Medium Enterprises, said governments need to actively develop local businesses through the provision of people training, the enhancement of production in SMEs, and a low interest rate on People's Business Credit (KUR). In regards to marketing, he encourages SMEs to boost online sales and align them with offline sales (Tempo, 2017). Therefore, government and industry have provided such training in order for SMEs to be familiar with the new technology and use it optimally to boost their sales. To respond to financial constraint, Indonesia has already reduced a 0.5% interest rate for MSMEs lately.

Some findings have revealed that the collaboration of SME with the industrial sector and government sector in the context of the TH has a positive effect. Such collaboration has enhanced SMEs' innovation and performance (Brink & Madsen, 2016; Ueasangkomsate & Jangkot, 2017), while also revealing the prospective advantages for SMEs in arising economies when doing collaboration with the agents of Triple Helix to enhance their innovation performance. The participation of both three helixes and SMEs is advantageous and has mutual benefits (Brink & Madsen, 2016).

Several countries have proposed and implemented the framework of innovation enhancement. Cooper and Edgett have pointed out that Competitive and Market Intelligence (CI/MI) Research, which functions as a prospective source and plays an important role, is able to develop the innovation capability of SMEs to have a successful new product, services, processes and development capability (Cooper & Edgett, 2002). In Thailand, some universities have the innovation incubator and university business incubator (UBI) as an incubation program to support the entrepreneurial development and innovation commercialisation, which provides insightful implication for an entrepreneurial university aiming to stimulate innovation development and diffusion (Wonglimpiyarat, 2016). A business incubator has been used widely in many countries as a part of innovation and entrepreneurship policies to stimulate economic development (Ács & Naudé, 2011) and to reinforce and nurture the development of SMEs (Barrow, 2001; Bøllingtof & Ulhøi, 2005).

The Indonesian government has enacted various sets of policies and programs as a means of

revitalising the economy by supporting the existence of SMEs in the realisation that SMEs play major roles in terms of economic growth and job creation. One of these programs is the Knowledge and Technology Vision 2025 or VISI IPTEK 2025, whose objective is to strengthen the national development and prosperity of the Indonesian people. In this program, LEs (Large Enterprises) and SMEs play a significant role and are expected to make substantial contributions to the country's economy, science, and technology.

In the context of the TH collaboration, one of the attempts is a regional innovation cluster approach designed to strengthen regional innovation systems and boost the competitiveness of SMEs in Indonesia (Herliana, 2015). The cluster approach is one of innovation-based business incubation activities contained within an incubator, which has been adopted in many countries, including Indonesia. The clustering of companies makes it easier for the government, LEs, universities and other development-supporting agencies to provide cheaper and better services (Tambunan, 2005). Tambunan has also asserted that clustering benefits the development of SMEs and the development of rural areas in Indonesia too, being that the majority of SMEs are situated in rural areas.

Porter defines clusters in particular referred to commonalties and complementarities, as regional clusters of interconnected companies and institutions (Porter, 1998). Porter adds that clusters provide a way of organising thinking about many policy areas that go beyond the common needs of the entire economy and offer many potential advantages in their capacity to innovate and upgrade their competitiveness compared to an isolated location (Porter, 2000). Therefore, clusters are often perceived not only as patterns for economic transactions and economic outcomes, but also as social systems and multidisciplinary environmental drivers for change (Zheliazkov, Zaimova, Genchev, & Toneva, 2015).

As a conceptual strategy in Indonesia, clusters can be classified into four types based on the level of their development (Irawati, 2011).

1. The first type is the artisan, in which the clustering process is still at an 'infant' level.
2. The second one is active, signifying that it has rapidly evolved in terms of improving skill, technological advancement and fruitful penetration of domestic and export markets.
3. Dynamic is the third type. This type of cluster is characterised by the decisive role of leading/pioneering firms. The defining function of leading / innovative companies is defined by this type of cluster. These are usually larger entities, which expand more rapidly to handle a diverse and distinct collection of ties within and outside the clusters between companies and institutions. The clove cigarette clusters in kudus, tea processing in Slawi and Bali's tourism clusters are examples of this type of cluster. Tea manufacturing clusters led by major companies like Sosro have become pioneers in the Indonesian soft drink industry (Tambunan, 2005).
4. The fourth type of clusters are better developed, more complex and more advanced than

previous forms. Examples are three of Indonesia's most famous cluster agglomerations. The first one is in the Yogyakarta-Solo area with its tourist, furnishings and interior design, metal processing as well as textile and leather goods. The other is Bali, called a tourist destination with small and medium-sized enterprises, that produces traditional crafts, furniture and interior goods. The third one is the Jakarta Bogor Tangerang and Bekasi area where automotive SMEs are located.

Besides an innovation approach, establishing an Integrated Business Service Centre (PLUT) as the creative home of State-owned Enterprises (RKB) and "*Jabar naik kelas*" (West Java goes up to class) under ABCGM synergy have come to constitute effective programs in the pursuit of triple helix context. For the Bandung region in particular, it has risen in class with the new implementation of Penta Helix model. Based on the research findings, four factors can be said to contribute to the success of SMEs; that is the character of entrepreneurs, companies / products, business networks, and business climate including government support (Kementerian PPN/Bappenas, 2016), which is similar to the concept of the onion model (Reeg, 2013), including entrepreneur characteristic, enterprise characteristics, personal and professional networks and business environment as the concept of class upgrading for SMEs.

Furthermore, the type of SMEs needs a specific support from the government, business and university in the triple helix context since each of them has different characteristics. According to Herr and Nettekoven, there are three groups of SMEs: namely Schumpeterian SMEs, which are able to innovate and create something new; normal SMEs, which are capable of adapting to the challenges posed by Schumpeterian firms; and poverty-driven SMEs due to lack of economic development, employment opportunities and insufficient welfare (Herr & Nettekoven, 2017). Under this type of SMEs group, determining the priority need of SMEs by formulating the TH hierarchy for SMEs is highly important to find out which SMEs have successfully implemented the TH model.

The purpose of the TH model is also to figure out the constraints faced by each of SME as the basis for triple helix agent to restore and develop their performance. Hence, the business and government sector will be able to support SMEs based on their respective constraints and problems. As most of SMEs in developing countries are part of the normal SMEs group, some policies supporting the existence of normal SMEs are access to finance, vocational training, employers' association, wages and working conditions providing public goods and a macroeconomic framework. In addition, learning from Germany as a role model for SMEs and a good example of best practice will reveal some of the success factors contributing to the development of SMEs, amongst them access to finance, the education system, industrial cluster and global chains and social capital (Herr & Nettekoven, 2017).

Conclusion

SMEs produce a significant impact and have a significant role in employment, economic development and community welfare in every country in the world. Thus, the government must pay very special attention to their actions and provide assistance in terms of policymaking decision as well as collaboration with other sectors to increase their economic and social upgrading. Being that SMEs usually have inadequate resources, which are otherwise required to conduct innovative research, connecting to the network of the TH will provide remarkable access to the advancement of technology; resources and knowledge transfer for exploring the wider opportunity in the business milieu.

As a productive of innovation technology, knowledge takes on a very important role in bridging the process of change that enhances development and industrial growth. Therefore, the collaboration and interaction of three sectors (university, corporation, and government) in the TH model is in great need to develop SMEs' product innovation and economic value. All three leading players of the TH can benefit from the approach to SMEs for the sake of the country's economic growth.

The results show that the hierarchy for the priority of SMEs sustainability is a triple helix hierarchy, which consists of four hierarchical levels. Our research has revealed how the hierarchy of the triple helix is essential to determine SMEs' priority needs in order to determine which SMEs have implemented the triple helix successfully. Its main objective is to restore and develop the performance of each SME, as each of has its own issues, constraints and limitations. In addition, this article has explored the importance of the understanding of the effect of incorporating SMEs in a triple helix sense to create innovation and certain success factors necessary to upgrade SMEs.

Conflict of Interest

None

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