

Success Factors in Triple Helix Coordination: Small-Medium Sized Enterprises in Western Java

Somariah Fitriani^{1*}, Sintha Wahjusaputri², Ahmad Diponegoro³

*Corresponding author

Abstract. *Triple helix model is a model of a knowledge-based economy, which collaborates with the university, business, and government sectors to help small and medium enterprises (SMEs) boost their business. The issue is the three actors have not yet synergized optimally in the development of SMEs. Hence, this study was to identify the critical success factors of the triple helix model for SMEs. This study employed a meta-ethnography and factor analysis to obtain components and indicators of the success factors. The result showed that 37 items of critical success factors have good content validity and excellent homogeneity reliability. Based on these success factors, a triple helix model consisting of six stages has developed. It indicates that these critical success factors make an essential contribution to the development and success of SMEs to achieve the goal of the program.*

Keywords: *critical success factors, small and medium enterprises, triple helix*

JEL Classification: L52, L53

Abstrak. *Model triple helix adalah model ekonomi berbasis pengetahuan, yang merupakan kerja sama tiga sektor yaitu universitas, bisnis dan pemerintah untuk membantu usaha kecil dan menengah (UKM) meningkatkan usaha mereka. Permasalahan yang muncul ialah belum sinerginya ketiga pelaku secara optimal dalam pengembangan UKM. Oleh karena itu, penelitian ini bertujuan untuk mengidentifikasi faktor penentu keberhasilan model triple helix untuk usaha kecil dan menengah. Penelitian ini menggunakan meta-etnografi dan proses hirarki analitis. Hasil penelitian menunjukkan bahwa 37 item faktor penentu keberhasilan memiliki validitas konten yang baik dan reliabilitas homogenitas yang baik. Berdasarkan faktor-faktor keberhasilan ini, model triple helix yang terdiri dari 6 tahap telah dikembangkan yang akan diuji pada pemangku kepentingan triple helix dan UKM di wilayah Banten dan Bandung untuk mendukung penerimaan dan standarisasi model. Faktor-faktor kesuksesan kritis ini memberikan kontribusi penting untuk pengembangan dan keberhasilan UKM untuk mencapai tujuan program.*

Kata Kunci: *faktor penentu keberhasilan, usaha kecil dan menengah, triple helix*

How to Cite:

Fitriani, S., Wahjusaputri, S., & Diponegoro, A. (2019). Success Factors in Triple Helix Coordination: Small-Medium Sized Enterprises in Western Java. *Etikonomi: Jurnal Ekonomi*. Vol. 18 (2): 233 – 248. doi: <http://dx.doi.org/10.15408/etk.v18i2.11548>.

Introduction

The term 'Triple Helix' was firstly introduced by Etzkowitz & Leydesdorff, (1995), an approach that describes how an innovation arises from a balanced, reciprocal and continuous relationship amongst academics, government, and business actors (enterprises) and a model of transformational processes amongst those three sectors (Etzkowitz, 1998, 2014; Etzkowitz & Viale, 2010; Leydesdorff, 2012; Leydesdorff & Meyer, 2006). In the Indonesian context, the synergy of the three components has been well known as ABG (Academic, Business, and Government), aiming to elevate the development of sustainable economic, innovation, and science policy (Irawati, 2007). Since innovation is acknowledged as the driving force of national economic development, the Triple helix model is increasingly believed to become the prerequisite basis for innovation and development in a knowledge-based society. It could become a fundamental strategy of a national or multinational innovation agenda of the new age (Etzkowitz & Leydesdorff, 1997). Innovation also contributes to national and global outcomes, including the growth of enterprises and market, the creation of new products and services and customer value, economic growth, job creation, comparative advantage, productivity, long-term wealth creation, and a higher standard of living (Milbergs, 2004). Furthermore, the concept of each helix takes on a different role and interest concerning foster innovation that is the so-called Triple Helix effect (Etzkowitz & Leydesdorff, 2000; Ranga et al., 2008). The collaboration of three actors creates a distribution of knowledge leading to innovation (Herliana, 2015), which can generate the economic growth of a country.

There is a growing body of literature and previous studies that recognizes the importance of triple helix contribution in various forms of collaboration (Etzkowitz, 2014; Etzkowitz & Viale, 2010; Leydesdorff, 2012; Supriyadi, 2012). The study revealed that SMEs correlate positively on the output growth, the economic prosperity and the economic development of a nation (Bacdon, 2004; Beck et al., 2005; Bello et al., 2018; Hu, 2010; Iromaka, 2006). Such collaboration has stimulated innovation and performance of SMEs (Brink & Madsen, 2016; Ueasangkomsate & Jangkot, 2017). It also reveals the potential benefits and advantages for SMEs in developing economies when SMEs collaborate with Triple Helix Agents to improve their innovation performance. The presence of both triple helix and SMEs give mutual contributions and receive mutual benefits (Brink & Madsen, 2016). Thus, Triple helix model can play a significant role in addressing the issues of the development of Small and medium enterprises.

The implementation of the Triple Helix model to develop SMEs, however, has encountered some challenges and obstacles, including financial constraints, a high level of corruption, and a lack of training and capacity building (Taiwo et al., 2012). In Indonesia, some constraints comprise of lack of communication and understanding amongst the actors involved mainly in the region of East Indonesia (Irawati, 2006), low innovation capability, lack of finance, marketing difficulties, lack of skilled workers and entrepreneurs and technology and business knowledge (Nugroho, 2015; Tambunan, 2011, 2015).

Central Bureau of Statistics noted that Indonesia's economy in quarter I-2019 grew 5.07 percent, and the gross domestic product (GDP) reached IDR 3782.4 trillion. The

leading emerging economies, as the 'E7' (i.e. China, India, Brazil, Russia, Indonesia, Mexico and Turkey) will be around 50% larger than the current G7 (US, Japan, Germany, UK, France, Italy and Canada) by 2050 (Hawksworth & Cookson, 2008). It implies that this positive economic outlook will bring Indonesia to have a brighter future on condition that the three actors of ABG work hand in hand to diminish the barriers, and its greater emphasis is consigned on the interaction, collaborations and linkages of three sectors as well.

Several problems on the practice of triple helix collaboration inevitably occur in Indonesia based on previous studies. For instance, the study of SMEs industrial clusters in Central Java indicated that the knowledge hubs have fewer impacts on the SMEs' business innovation and the practices of sustainability, although the tertiary education and government have aligned program for the development of SMEs by consensus and knowledge spaces. Apart from being prioritized by the capital input factor, the leading cause might be likely due to the absence of an innovation mechanism, technology transfer, incubation, and appropriate research to be applied (Prabawani et al., 2017). The study revealed that the major causes for the inability of Batik SMEs to compete in Medan take account of government support, laborer, entrepreneur, networking and market penetration, production, and consumers (Ramadini & Nasution, 2016). The study conducted in the city of Pangkalpinang, Riau found that the collaboration between academic and government have not reached maximum results because the A element (academic) was less involved in assisting even if the G element (government) had provided much assistance to creative industries (Hamsani & Khairiyansyah., 2018).

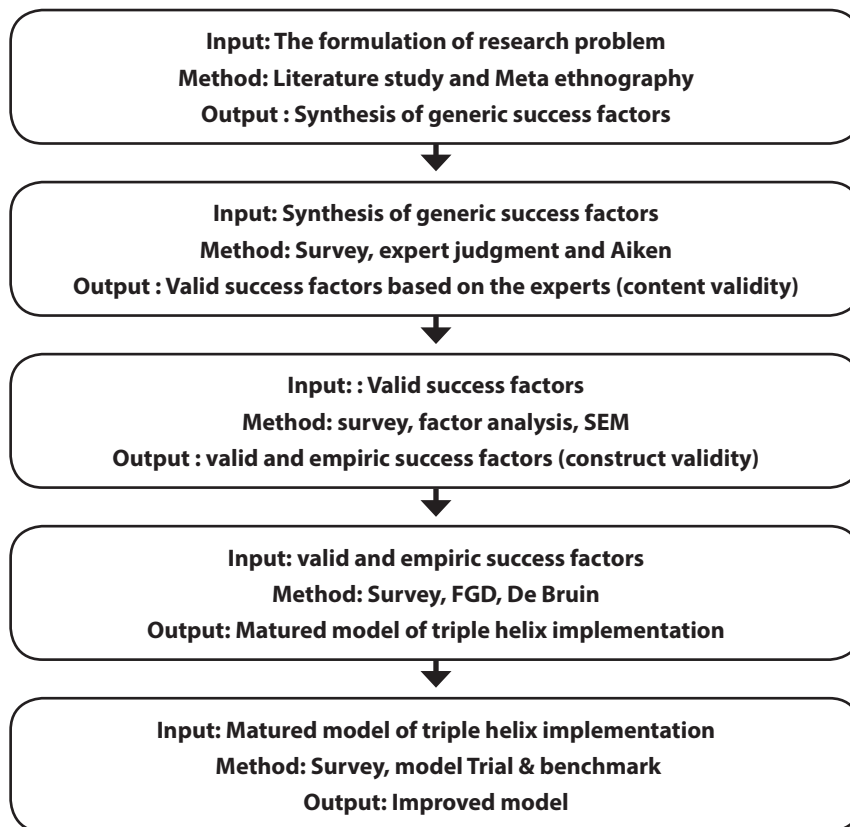
Several previous types of research have addressed aspects of the contribution, the challenges, and the constraints of SMEs as well as the implementation of Triple Helix for SMEs. However, very little research has done on the aspects of critical success factors in implementing Triple Helix in Indonesia. Not only do Triple helix actors need to collaborate and synergize optimally to the development of the economic condition in Indonesia. But, identifying and investigating why some regions can implement the triple helix successfully or SMEs perform better than others is also profoundly essential. Thus, in this study, we seek to extend the success factors to promote better performance and innovation of SMEs' products. The study was aiming to identify and examine several critical success factors when implementing the Triple Helix model, particularly in the Western part of Java Island. These success factors serve as an initial step to support SMEs and Triple Helix actors (academics, business, and government) to determine the appropriate strategies for a better system.

Methods

The research focuses on the development of a triple helix model to measure the level of development or growth of the triple helix model system implementation. However, beforehand, it is imperative to find out the factors that determine the success of implementing the triple helix model as a basis for developing the model. Three experts of Triple Helix, through questionnaire-based survey activities, validated a list of success factors. To test the success factor empirically as to be applied in the field, a survey conducted on thirty SMEs in Banten and Bandung, which were considered successful in implementing triple helix

(best practice) and eight key informants. Based on these success factors, a triple helix model consisting of six stages has developed. The model will be tested and applied to several triple helix stakeholders and SMEs in the Banten and Bandung regions until the third year to support the acceptance and standardization of the model. We also conducted Focus Group Discussion to discuss the implementation and the issues related to the topic. Nine SMEs include Pandan Craft, Griya Batik Banten, Sate Bandeng Kang Cepi, Rumah Juice Ummi, Bakso Ngeces (Serang and Pandeglang Banten); Hanny Lovely Fashion, UKM CV Wikarta Sari Bumbu Masak Cap Pohon Mangga, Brand Miedde Fashion & Craft, and Resto Ayam Madu si Bangkong (Bandung) took part in Focus Group Discussion. Besides, two officials from the government, two officials from industry, and three mentors of SMEs participated in this study.

Figure 1. Stages of Research



All SMEs represent the fashion, culinary, and craft industry, which are the most significant contribution of the Indonesian economy. Bandung and Banten are selected as the unit analysis of the research since, in terms of population density in West Java, West Java province is the largest, and Banten province is the fifth largest. Based on the data from the Central Bureau of Statistics, Bandung had about three hundred thousand micro, small, and medium enterprises in 2018. In addition, Bandung is famous for its creative city, which has successfully implemented triple helix and in the process of Penta helix synergy at this moment, whereas the synergy of Triple Helix has not run as expected in Banten especially Pandeglang

and Serang due to several reasons, including the aspects of entrepreneurial behavior, culture, and leadership.

The survey results were analyzed using a factor analysis approach to obtain components and indicators that illustrate the success of the triple helix model. According to Noblit and Hare, seven stages of meta ethnographic include: First, getting started by identifying the research topic for synthesis proses. Second, deciding what is relevant to the initial interest. Third, Reading the studies: the researchers read the studies a few times, reviewed and highlighted the concepts in the forms of interpretive metaphor which become raw data or input for the next process). Fourth, determining the relations of the studies: this stage involves creating a list of critical metaphors, phrases, ideas, and or concepts and the relationships used in each account, and they are all combined. Fifth, translating the studies into one another: It needs to find out the relationship between two existing texts (concepts) that focuses on the meaning of the texts, Sixth, synthesis translating by compiling the entire study involved in the study. Seventh, expressing the synthesis: to build a new interpretation from the data (Noblit & Hare, 1988). The stages of this research are explained in Figure 1.

Results and Discussion

Validation was carried out to test the results obtained from the research, taking into account the results of the study in the form of developing a triple helix model based on technology, namely ABCGM (Academic, Business, Community, Government, and Media). Therefore, this study proposed an evaluation using the Smart Mobile Application Assessment Model (SMAPA) from the tested characteristics in the form of questions that represent each characteristic. Before distributing the questionnaire, readability tests on each item was conducted to ensure that the resource person could easily understand it or to avoid ambiguous questions. For validity test, Aiken method was used to analyze the data by calculating the content-validity coefficient based on the results of the expert panel's assessment of $n = 16$ respondents on an item with the Likert scale rating scale = 5, which assesses the extent to which the item represents the measured construct. The questionnaire consisted of 37 statements, which shows the value of content-validity coefficients on each instrument of a particular item.

The first step is to calculate the content validity coefficient for each item of success factors using the Aiken's V formula given as it shows in Table 1. Based on the standard significance of content validity (V), for ten experts (rater) and five categories (Likert scale), the minimum value of the content validity (V) coefficient, which is considered to be significant, is 0.70 ($V > 0.70$).

Table 1 shows the value of the content validity (V) coefficient of each success factor ranges from 0.475 to 0.925. However, there are 13 success factor items (marked in gray) that do not meet significant standards ($V < 0.70$), then the 13 success factor items must exclude from the overall triple helix model success list, which is included in Delphi round 2 to obtain expert confirmation and accuracy about the significance of the item as presented in Table 2.

Table 1. Content Validity (V) of Items (Delphi round 1)

| No | Item (Critical Success Factor) | V Coefficient |
|----|--|---------------|
| 1 | Participation of the user | 0.925 |
| 2 | Project Planning | 0.825 |
| 3 | Continuous training | 0.800 |
| 4 | Promotion strategy/ marketing | 0.675 |
| 5 | Pilot Project | 0.875 |
| 6 | Skills and expertise | 0.525 |
| 7 | Leadership | 0.675 |
| 8 | Project coordination | 0.750 |
| 9 | Clear instruction | 0.850 |
| 10 | Sustainability Funding | 0.900 |
| 11 | Regulation and policy | 0.725 |
| 12 | Government consistency in developing SME | 0.850 |
| 13 | Use of Information and Technology | 0.675 |
| 14 | Organizational structure | 0.825 |
| 15 | Cooperation amongst SMEs | 0.650 |
| 16 | Cooperation amongst Industries | 0.525 |
| 17 | Cooperation amongst government | 0.850 |
| 18 | Cooperation amongst academics | 0.725 |
| 19 | Quality assurance | 0.675 |
| 20 | Benefits of SME products | 0.375 |
| 21 | Monitoring and Evaluation | 0.775 |
| 22 | Strategy Management | 0.825 |
| 23 | Support from the Government | 0.900 |
| 24 | Support from the industry | 0.500 |
| 25 | Support from the academic | 0.800 |
| 26 | Community Trust in SME products | 0.675 |
| 27 | Satisfaction | 0.600 |
| 28 | Service quality | 0.600 |
| 29 | Sustainable product development | 0.950 |
| 30 | Loyalty to the product | 0.775 |
| 31 | Public recognition of SME products | 0.675 |
| 32 | Sustainability of Income | 0.775 |
| 33 | Operational Equipment and Support in developing SME products | 0.725 |
| 34 | Vision, Mission, and Objectives of SMEs | 0.825 |
| 35 | Community empowerment | 0.825 |
| 36 | Community Initiative for SME products | 0.900 |
| 37 | Service Guarantee | 0.850 |

Based on Table 2, there are three invalid items based on experts' opinions. Thus an expert agreement has been obtained that the 11 items are not significant because they do not meet the minimum requirements ($V < 0.70$) through Delphi round 1 and Delphi round 2.

Therefore, three items eliminated from the list of success factors of the triple helix model, which includes the use of information and technology, quality assurance, and satisfaction.

Table 2. Content Validity (V) of Items (Delphi round 2)

| No | Item (Critical Success Factor) | V Coefficient |
|----|--|---------------|
| 1 | Promotion strategy/ marketing | 0.752 |
| 2 | Skills and expertise | 0.725 |
| 3 | Leadership | 0.775 |
| 4 | Use of Information and Technology | 0.675 |
| 5 | Cooperation amongst SMEs | 0.750 |
| 6 | Cooperation amongst Industries | 0.725 |
| 7 | Quality assurance | 0.675 |
| 8 | Benefits of SME products | 0.775 |
| 9 | Support from the industry | 0.700 |
| 10 | Community Trust in SME products | 0.775 |
| 11 | Satisfaction | 0.620 |
| 12 | Service quality | 0.740 |
| 13 | Public recognition of SME products | 0.775 |

Furthermore, in the second step, the homogeneity-reliability coefficient is calculated for each item of success factors using the Aiken's H formula, and the results obtained in Table 3. Based on the standard significance of homogeneity reliability (H), for 16 experts (raters) and five categories (Likert scale), the minimum homogeneity (H) reliability coefficient value that is considered significant is 0.51 ($H > 0.51$). Thus, after eliminating 13 invalid items, the remaining 24 items are tested for reliability with the reliability homogeneity indicator (H).

Based on Table 3, all 24 items of success factors have met significant standards of reliability homogeneity based on experts' opinions ($H > 0.51$). As such, no items excluded from the list of success factors. In other words, it can conclude that all 37 items have good content validity and good internal consistency (good homogeneity reliability). Instruments that have developed can be used to extract field data empirically.

This following phase development of the e-government maturity model refers to the generic methodology proposed by De Bruin, which consists of six phases, namely scope, design, populate, test, deploy and maintain (De Bruin et al., 2005). The phase-in of this study is the test phase, while the maintenance phase is the next development of the proposed model.

This following phase development of the e-government maturity model refers to the generic methodology proposed by De Bruin, which consists of six phases, namely scope, design, populate, test, deploy and maintain (De Bruin et al., 2005). The phase-in of this study is the test phase, while the maintenance phase is the next development of the proposed model.

In the next phase, the validity and reliability of the triple helix model is tested. This phase is a critical stage, which includes testing of the constructs of the model, especially

the instrument model, to show that the model is complete and accurate based on the scope of the predetermined model. The validity here is to ensure that the instrument results are consistent and can be repeatable. Asking carried out validity and reliability in this study for approval from several experts (expert judgment) using the Delphi method, where 2 Delphi rounds were conducted to obtain stability or consensus on the results related to the developed triple helix model. The questionnaire framework in the Delphi activity refers to the designed questionnaire model, where there are four stages of development from the implementation of the triple helix model, namely state 1, state 2, state 3, and state 4, which experts ask for each factor success of the model. Based on the questionnaire designed, it was then distributed to ask for expert opinion using the Delphi method. The stages of the Delphi method, in general, are presented in Figure 1.

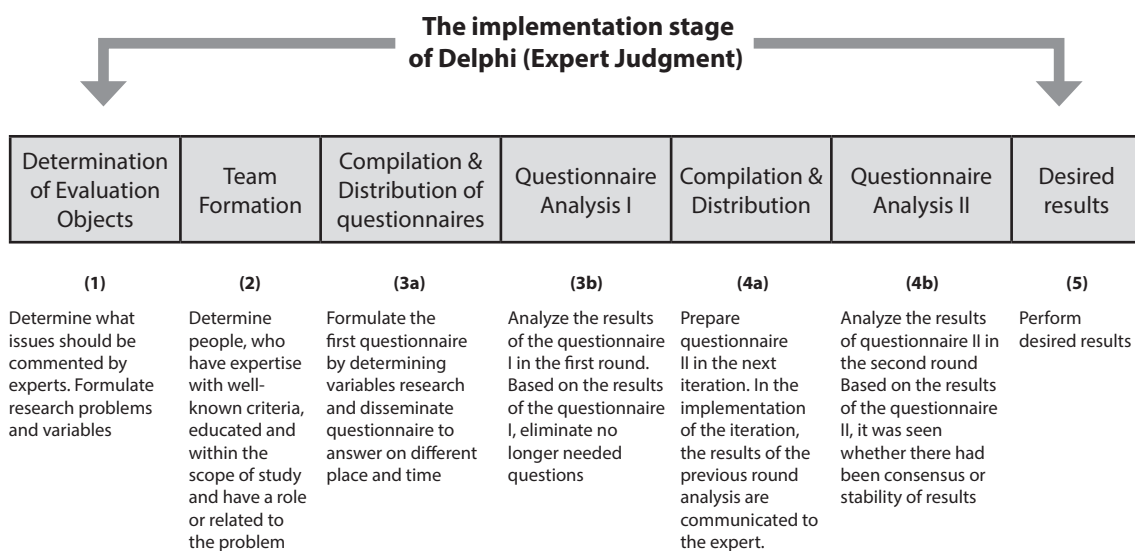
Table 3 Homogeneity Reliability (H) of Items

| No | Item (Critical Success Factor) | H Coefficient |
|----|--|---------------|
| 1 | Participation of the user | 0.925 |
| 2 | Project Planning | 0.825 |
| 3 | Continuous training | 0.800 |
| 4 | Pilot Project | 0.875 |
| 5 | Project coordination | 0.750 |
| 6 | Clear instruction | 0.850 |
| 7 | Sustainability Funding | 0.900 |
| 8 | Regulation and policy | 0.725 |
| 9 | Government consistency in developing SME | 0.850 |
| 10 | Organizational structure | 0.825 |
| 11 | Cooperation amongst government | 0.850 |
| 12 | Cooperation amongst academics | 0.725 |
| 13 | Monitoring and Evaluation | 0.775 |
| 14 | Strategy Management | 0.825 |
| 15 | Support from the Government | 0.900 |
| 16 | Support from the academic | 0.800 |
| 17 | Sustainable product development | 0.950 |
| 18 | Loyalty to the product | 0.775 |
| 19 | Sustainability of Income | 0.775 |
| 20 | Operational Equipment and Support in developing SME products | 0.725 |
| 21 | Vision, Mission, and Objectives of SMEs | 0.825 |
| 22 | Community empowerment | 0.825 |
| 23 | Community Initiative for SME products | 0.900 |
| 24 | Service Guarantee | 0.850 |

After obtaining all expert opinions on each level of maturity based on critical success factors (CSF), the results of the first Delphi activity analyzed and evaluated to seek agreement on the next Delphi activity. The results of the first phase of Delphi were analyzed and grouped

based on the same opinion. Since some experts had different views, they were asked again in the next phase of the Delphi activity (stage two) until an agreement reached. Of the 37 CSFs proposed in the model, it found that there were 24 CSFs based on the opinions of experts who had reached an agreement and could be grouped based on the same idea while 13 CSFs had not reached an agreement at each level. The 13 CSFs were confirmed again to experts to obtain an agreement. Therefore, from the results of the first phase of Delphi analysis, the next stage of Delphi was carried out by re-submitting 13 CSFs at each level to request a level of agreement based on expert opinion. In the Phase 2 Delphi activity, 13 CSFs were re-confirmed, and an agreement was obtained and summarized as a whole in the development of triple helix-based SMEs. This process was the result of a series of Delphi activities in the test phase.

Figure 1. Stages of Delphi Implementation

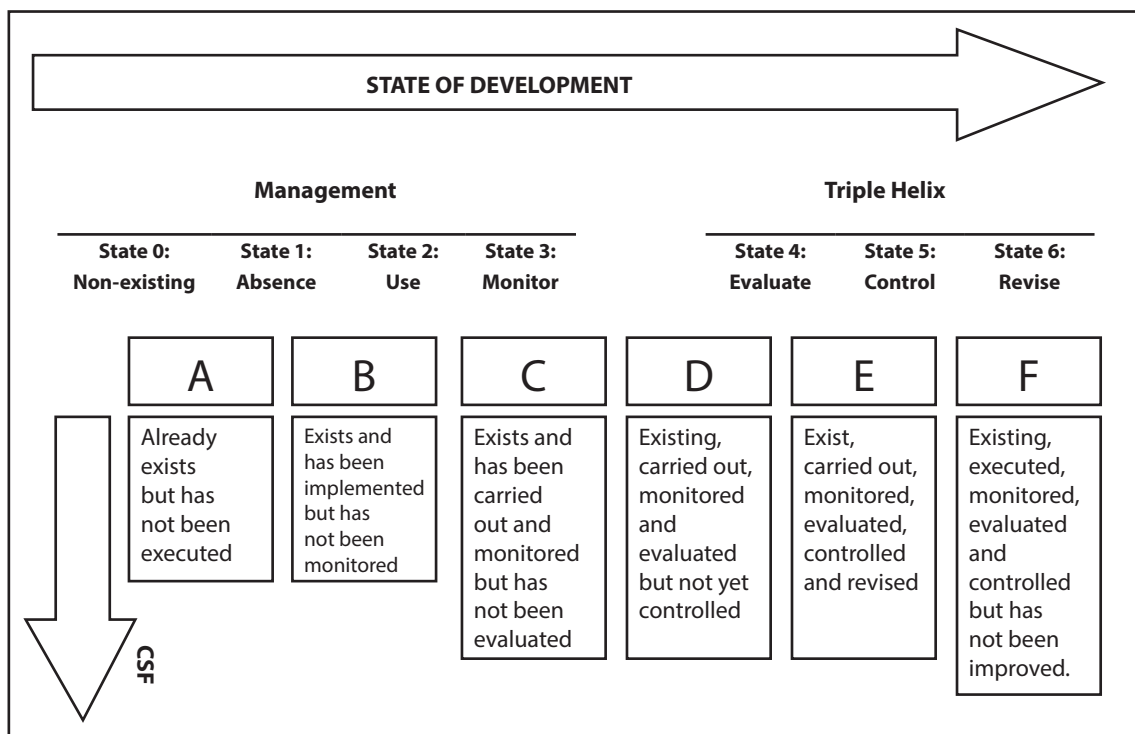


Based on the analysis of the state of development from each Critical Success Factors, it appears that expert opinion is different for each state of development. For example, for CSF “Sustainability Funding,” wherein state 3 says, “There are already policies/rules that encourage funding sustainability, but it written, “not implemented.” It is because the funding is not in the form of funds, but it is in the form of training/assistance to SMEs. The second example is for CSF “Government consistency in developing SMEs,” for state 2, it is said, “There are already mechanisms and standards for triple helix models, but they have not evaluated.” From state 3 for CSF “Sustainability Funding,” it shows that it already exists and has been implemented but not optimally. Whereas state 2 for CSF “Government consistency in developing SMEs” shows that it already exists and it is implemented but has not evaluated. Thus, the state of development of the proposed model needs to reformulate. Likewise, for CSF from another state of development needs to be reformulated as well. Therefore the previous state of development (state 1 - 4) needs to be mapped into e-Government maturity models such as presented in Figure 2.

Based on Figure 2, it can show that the maturity model of the implementation of triple

helix produced in this study has six states, namely from State 0: Non-existing to state 6: revise. State 0: Non-existing indicates that CSFs do not exist or do not have in the implementation of e-Government in Indonesia. State 1: Absence indicates CSFs have existed but have not done in triple helix implementation. State 2: Use indicates that CSFs have existed and implemented but have never been evaluated during the triple helix implementation process. State 3: Monitor shows CSFs have existed, implemented, and monitored but have not been evaluated. State 4: Evaluate shows CSFs have existed, implemented, monitored, and evaluated but have not been controlled. State 5: Control shows that CSFs have existed, implemented, monitored, and controlled but have not been revised. State 6: Revise shows CSFs have existed, implemented, monitored, controlled, and revised. The first four states, namely state 0 to state 3 are management areas where management performs plan, build, run and monitor (PBRM) on triple helix implementation activities, while the last three states, state 4 to state 6 are triple helix areas consisting of evaluation, directing and monitoring (EDM) conducted by the top leaders to achieve successful triple helix implementation.

Figure 2. Maturity Model for Triple Helix Implementation



The results show that the critical success factors for SMEs to determine the priority in developing their sustainability, according to the ten highest level of agreement include sustainable product development, participation of the user, sustainability funding, support from the government, community initiative for SME products, pilot project, government consistency in developing SME, cooperation amongst government, service guarantee, and explicit instruction. Even though there are 37 critical success factors, 13 items do not meet the significant standard in the first Delphi round. It is mainly due to different misinterpretations

of the data reading. The data can be interpreted differently due to the altered perception and application of the triple helix concept in these two regions.

From various empirical experiences in various regions regarding the application of the triple helix concept, generally, the findings result in different challenges, opportunities, and key affecting factors from one area to another. There are several factors that affect the success rate of SMEs development in West Java, such as: (1) Human resources; (2) Marketing; (3) Availability of capital and technology; (4) the type of organization (traditional/family-based and modern management); (5) Support the availability of infrastructure; (6) partnership and business legality; (7) The high level of competition with the same product (Herliana, 2015). Based on the experience reported by (Purnomo et al., 2015) on the application of triple helix of ABG actors in Majalengka, West Java, it shows that the consistency of guidance assistance from the university in a relatively long period to SMEs was a significant factor for the development of SMEs. The involvement of various community elements, including Islamic boarding schools and women's empowerment groups, also contributed to the success of the ABG collaboration. The success of individual SMEs in Majalengka was then formulated to be a model of development, which implement other SMEs in the surrounding area. Furthermore, from the experience of implementing a CSR program in the Pangalengan area, West Java, it was found that through an approach to community cultural understanding, it could minimize community resistance. With the same principle of approach, this cultural understanding can be applied to develop cooperation in the context of a triple helix, mainly to apply in rural areas (Rudito, 2014).

The university that functions as the knowledge transfer and research leader for the community plays a significant role in developing either the local economy or national economy as well. Research conducted in the city of Jatinangor, West Java, revealed that the success of the cooperation of ABG actors primarily determined by the factors of cohesiveness, leadership, mutual understanding, trust, information, and transparency in the collaboration process. Cohesiveness can be formed based on the recognition and mutual fulfillment of the needs between actors in forming strong social bonds (Supriyadi, 2012). In the triple helix model, universities are recognized to have a broader role in terms of the producer of innovation and the nation's development. They are not only considered as 'key architects' and 'the drivers of regional development (Etzkowitz & Klofsten, 2005). However, they are also appointed as a vital role in inducing and sustaining the processes of regional growth by interacting and collaborating with industry and the broader society in the context of the endogenous regional growth paradigm (Gustavsson et al., 2016).

Herliana's (2015) findings in terms of 'support the availability of infrastructure,' 'marketing,' 'availability of technology,' they have related factors to marketing, operational equipment, and support in developing SME products. Whereas compared to Purnomo's findings, three critical success factors, i.e., community empowerment, leadership, and support from academics, are proven to contribute to the development of SMEs. Continuous support from university brings an enormous contribution to the success of SMEs, as it recognized in our current research and Ristidja's research. It inferred that these findings have a significant impact on the sustainability of SMEs, given that that the synergy of the three

actors strengthened, and the critical success factors are well defined and created to attain better results. Conceptually, critical success factor define as individual factors, characteristics, variables, conditions and limited number of areas, if addressed and managed appropriately and significantly, will bring tremendous effect on the success of the organization performance and improve the chances of project implementation (Leidecker & Bruno, 1984; Pinto & Prescott, 1988; Rockart, 1979). CSF is a valuable approach for identifying the requirements of management's information for the reason that it can focus attention on areas where "things must go right". Based on this concept, CSF can create a specific goal within the triple helix model, but it must connect to the purpose of the economic development of Indonesia in the short and long term. In addition to playing a vital role in determining the right strategy to be applied in the other regions, critical success factors of the triple helix model also provide insights into which elements or factors are essential to be prioritized for the performance and development of SMEs as well. Hence, when the success factor is maintained and addressed suitably and optimally by three actors of the triple helix, it will have a significant effect on the success of SMEs towards the creative industry and lead to their innovation.

There are five sources of areas of critical success factors that affect an organization. The following five most important sources of CSF include industry critical success factors, competitive strategy and industry position critical success factors, environmental factors of critical success factors, management critical success factors, temporary factors critical success factors. These areas differ from each other because of that different situations lead to various critical success factors (Bullen & Rockart, 1981). These essential sources of CSF imply that the government, as a decision-maker, is required to have the capability to make a wiser decision when regulating the policy. For other actors, namely, academic and business, these sources give newly beneficial perspectives about what kinds of assistance, pieces of training, and efforts they can do to contribute to SMEs. The study shows that government support and institutionalized cooperation bring impact on value creation and value capture at the level of the locale in regional Triple Helix constellations (Danson & Todeva, 2016). The role of government as a catalyst and the policy decision-maker has an immediate effect on generating the innovation. For example, to grow the IT-based industry, the Government assists a variety of start-up industries in the form of innovation clusters in Bandung (Dhewanto et al., 2015). For a reason that small and medium enterprise are viewed as substantial sources of prosperity, community well being, employment, and nation's development in Indonesia, they need to adapt to the current changing and advancement of technology with the help of three actors collaboration.

Conclusion

The study shows that there are 37 items of critical success factors, which have good content validity and right internal consistency or excellent homogeneity reliability. Based on these success factors, a triple helix model consisting of six stages has developed, which later can be used to obtain the data in the field for further research. However, the study used only two regions and limited numbers of SMEs as research objects to conduct the analysis. When compared to Bandung region, which has been in the process of implementing 'Penta helix' (ABCGM synergism, Academic, Business, Community, Government and Media)) since June

2017, Banten, particularly the area of Pandeglang and Serang has more constraints in term of culture, entrepreneurial behavior, and leadership of government sector based on the interview to some officials and the entrepreneurs of SMEs. It indicates that culture, entrepreneurial behavior, and leadership contribute to the development of SMEs and their sustainability.

Some recommendations are addressed to have more comprehensive findings for this study. Firstly, the central government, especially the Ministry of Cooperatives, Small and Medium Enterprises, needs to get involved more and do continuous monitoring to those areas, which have more constraints to generate the number of SMEs and active participation of the community. Secondly, since Indonesia is made up of 34 provinces, which have different characteristics, such as environment, culture, demography, climate, education, and economy, the study of critical success factors and the practice of triple helix will bring different results. Therefore, researching expanding areas and scope to result in good comparison is highly needed in the future. Thirdly, the government sector as a catalyst and policymaker is required to embrace academics and business thoroughly and establishes the strong team of triple helix such as in Bandung (ABCGM synergism) as best practice and a role model that consists of three or more sectors involved. The last but not least, the development of the Triple Helix model is carried out in stages following the characteristics of the region and the needs of the community to provide explanatory power.

Acknowledgments

This research is supported by the Ministry of Research, Technology, and Higher Education of the Republic of Indonesia, which provided the grant of PDUPT No 149/F.03.07/2018. We would also like to thank the Institute of Research and Development, the University of Muhammadiyah Prof. DR. HAMKA, in supporting and facilitating the research.

References

- Bacdon, C. T. (2004). *Small Scale Industries and Economic Development in Ghana: Business and Strategies in informal sector Economics*. Saarbruckh, pp. 19-23. VerlagBreitenbech, Saarbruckh, Germany: VerlagBreitenbech.
- Beck, T., Demirguc-kunt, A., & Levine, R. (2005). SMEs, Growth, and Poverty: Cross-Country Evidence. *Journal of Economic Growth*, 10(3), 199–229.
- Bello, A., Jibir, A., & Ahmed, I. (2018). Impact of Small and Medium Scale Enterprises on Economic Growth: Evidence from Nigeria. *Global Journal of Economics and Business*, 4(2), 236–244.
- Brink, T., & Madsen, S. O. (2016). The Triple Helix Frame for Small and Medium-Sized Enterprises for Innovation and Development of Offshore Wind Energy. *A Journal of University-Industry-Government Innovation and Entrepreneurship*, 3(4), 1–23. <https://doi.org/10.1186/s40604-016-0035-8>.
- Bullen, C. V., & Rockart, J. F. (1981). A Primer on Critical Success Factors. *Working Paper No. 69*. Cambridge, Massachusetts.

- Danson, M., & Todeva, E. (2016). Government and Governance of Regional Triple Helix Interactions. *Industry and Higher Education*, 30(1), 13–26. <https://doi.org/10.5367/ihe.2016.0293>.
- De Bruin, T., Freeze, R., Kulkarni, U., & Rosemann, M. (2005). Understanding the Main Phases of Developing a Maturity Assessment Model. *ACIS 2005 Proceedings 16th Australasian Conference on Information Systems*. Retrieved from <http://aisel.aisnet.org/acis2005/109>.
- Dhewanto, W., Lantu, D. C., Herliana, S., & Anggadwita, G. (2015). The Innovation Cluster of ICT Start-up Companies in Developing Countries: Case of Bandung, Indonesia. *International Journal of Learning and Intellectual Capital*, 12(1), 32–46. <https://doi.org/10.1504/IJLIC.2015.067829>.
- Etzkowitz, H. (1998). The Norms of Entrepreneurial Science: Cognitive Effects of the New University—Industry Linkages. *Research Policy*, 27(8), 823–833. [https://doi.org/10.1016/S0048-7333\(98\)00093-6](https://doi.org/10.1016/S0048-7333(98)00093-6).
- Etzkowitz, H. (2014). The Entrepreneurial University Wave: from Ivory Tower to Global Economic Engine. *Industry and Higher Education*, 28(4), 223–232. <https://doi.org/10.5367/ihe.2014.0211>.
- Etzkowitz, H., & Klofsten, M. (2005). The Innovating Region: Toward a Theory of Knowledge Based regional development. *R&D Management*, 35(3), 243–255. <https://doi.org/10.1111/j.1467-9310.2005.00387.x>.
- Etzkowitz, H., & Leydesdorff, L. (1995). The Triple Helix: University - Industry – Government Relations: A Laboratory for Knowledge-Based Economic Development. *EASST Review*, 14(1), 14–19.
- Etzkowitz, H., & Leydesdorff, L. (1997). *Universities in the Global Knowledge Economy: The Triple Helix of University-Industry-Government Relations*. London: Cassell Academic.
- Etzkowitz, H., & Leydesdorff, L. (2000). The Dynamics of Innovation: from National Systems and “Mode 2” to a Triple Helix of University-Industry-Government Relations. *Research Policy*, 29(2), 109–123. [https://doi.org/10.1016/S0048-7333\(99\)00055-4](https://doi.org/10.1016/S0048-7333(99)00055-4).
- Etzkowitz, H., & Viale, R. (2010). Polyvalent Knowledge and the Entrepreneurial University: a Third Academic Revolution? *Critical Sociology*, 36(4), 595–609. <https://doi.org/10.1177/08969290510365921>.
- Gustavsson, L., Nuur, C., & Söderlind, J. (2016). An Impact Analysis of Regional Industry–University Interactions: The Case of Industrial PhD Schools. *Industry and Higher Education*, 30(1), 41–51. <https://doi.org/10.5367/ihe.2016.0291>
- Hamsani, & Khairiyansyah. (2018). The Opportunity of SMEs Development by Triple Helix ABG Method in Supporting Creative Economy in Pangkalpinang City. *Integrated Journal of Business and Economics*, 2(1), 76–83. <https://doi.org/10.33019/ijbe.v2i1.60>.
- Hawthornth, K., & Cookson, G. (2008). *The World in 2050: Beyond the BRICS: a Broader Look at Emerging Market Growth Prospects*. London: Pricewaterhouse Coopers.
- Herliana, S. (2015). Regional Innovation Cluster for Small and Medium Enterprises (SME):

- A Triple Helix Concept. *Procedia-Social and Behavioral Sciences*, 169, 151–160. <https://doi.org/10.1016/j.sbspro.2015.01.297>.
- Hu, M-W. (2010). SMEs and Economic Growth: Entrepreneurship or Employment . *ICIC Express Letters*, 4(6(A)), 2275-2280.
- Irawati, D. (2006). Understanding the Triple Helix model from the perspective of a developing Country: A demand or a challenge for Indonesian case study. *The International Conference Triple Helix Paradigm for Development: Strategies for Co-Operation and Exchange of Good Practice*. Bristol: Bristol Business School – University of the West of England.
- Irawati, D. (2007). Strengthening Cluster Building in Developing Country alongside the Triple Helix: Challenge For Indonesian Clusters – A Case Study of the Java Region in the Danish Research Unit for Industrial Dynamic (DRUID). *PhD Conference on Geography, Innovation and Industrial Dynamics*. Aalborg, Denmark.
- Iromaka, C. (2006). *Entrepreneurship in Small Business Firms*. Ikeja: G-Mag. InvestmentsLtd.
- Leidecker, J. K., & Bruno, A. V. (1984). Identifying and Using Critical Success Factors. *Long Range Planning*, 17(1), 23-32. [https://doi.org/10.1016/0024-6301\(84\)90163-8](https://doi.org/10.1016/0024-6301(84)90163-8).
- Leydesdorff, L. (2012). The Triple Helix Quadruple Helix, an N-Tuple Helices: Explanatory Models for Analysing the Knowledge-Based Economy? *Journal of Knowledge Economics*, 3, 25–35. <https://doi.org/10.1007/s13132-011-0049-4>.
- Leydesdorff, L., & Meyer, M. (2006). Triple Helix Indicators of Knowledge-Based Innovation Systems. *Research Policy*, 35(10), 1441–1449. <https://doi.org/10.1016/j.respol.2006.09.016>.
- Milbergs, E. (2004). *Measuring innovation for national prosperity, National Innovation Initiative—Innovation Framework Report, 3.0, IBM Corporation*. Retrieved from http://www.channelingreality.com/Competitiveness/Innovation_Framework_Report_3.00_January_2004_Update.pdf
- Noblit, G. W., & Hare, R. D. (1988). *Meta-ethnography: Synthesizing Qualitative Studies*. California: SAGE Publications Ltd.
- Nugroho, S. A. (2015). The Economic Development and the Growth of Small-Medium Enterprises in Indonesia: A Hometown Investment Trust. Fund Approach. *Yonsei Journal of International Studies*, 7(2), 170–193.
- Pinto, J. K., & Prescott, J. E. (1988). Variations in Critical Success Factors over the Stages in the Project Lifecycle. *Journal of Management*, 14(1), 5–18. <https://doi.org/10.1177/014920638801400102>.
- Prabawani, B., Saryadi, Widiartanto, & Hidayat, W. (2017). Knowledge Hubs for Empowering Indonesian SMEs and the Sustainability. *Advanced Science Letters*, 23(1), 448–452. <https://doi.org/10.1166/asl.2017.7219>.
- Purnomo, D., Pujianto, T., & Efendi, N. (2015). Unpad – Ibu Popon Collaboration: A Best Practice in Sustainable assistance model for social Entrepreneurship in agro-industrial based SME's. *Agriculture and Agricultural Science Procedia*, 3, 206–210. <https://doi.org/10.1016/j.aaspro.2015.01.040>

- Ramadani, F., & Nasution, I. G. S. (2016). The Development Model of Small and Medium Enterprises in Textile Sector (Batik, Weaving and Embroidery) with Triple Helix in Medan. *Academic Journal of Economic Studies*, 2(3), 125–140. Retrieved from <https://ideas.repec.org/a/khe/scajes/v2y2016i3p125-140.html>
- Ranga, L. M., Miedema, J., & Jorna, R. (2008). Enhancing the Innovative Capacity of Small Firms Through Triple Helix Interactions: Challenges and Opportunities. *Technology Analysis & Strategic Management*, 20(6), 697–716. <https://doi.org/10.1080/09537320802426408>.
- Rockart, J. F. (1979). Chief Executives Define Their Own Data Needs. *Harvard Business Review*, 57(2), 81-93.
- Rudito, B. (2014). The Improvement of community economy as impact of Corporate Social Responsibility program: A case study in Pengalengan, Bandung, West Java, Indonesia. *Procedia - Social and Behavioral Sciences*, 164, 471–476. <https://doi.org/10.1016/j.sbspro.2014.11.104>
- Supriyadi, R. E. (2012). Local Economic Development and Triple Helix: Lesson Learned from Role of Universities in Higher Education Town of Jatinangor, West Java, Indonesia. *Procedia - Social and Behavioral Sciences*, 52, 299–306. <https://doi.org/10.1016/j.sbspro.2012.09.467>
- Taiwo, M., Ayodeji, A., & Yusuf, B. (2012). Impact of SMEs on Economic Growth and Development. *American Journal of Business and Management*, 1(1), 18–22.
- Tambunan, T. T. H. (2011). Development of small and medium enterprises in a developing country: The Indonesian case. *Journal of Enterprising Communities: People and Places in the Global Economy*, 5(1), 68–82. <https://doi.org/10.1108/17506201111119626>
- Tambunan, T. T. H. (2015). *Development and Some Constraints of SME in Indonesia*. Retrieved from http://www.rieti.go.jp/jp/events/10100101/pdf/5-5_tambunan_paper_en.pdf
- Ueasangkomsate, P., & Jangkot, A. (2017). Enhancing the innovation of small and medium enterprises in food manufacturing through Triple Helix Agents. *Kasetsart Journal of Social Sciences*, XXX, 1–9. <https://doi.org/10.1016/j.kjss.2017.12.007>