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The Synergy Effect of "ABCGM" for Small and Medium-Sized Enterprises

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ABSTRACT

Entrepreneurship is believed to bring a positive impact on the prosperity of a community, job creation, and economic outlook of a nation through the numerous small and medium-sized enterprises (SMEs). Thus, the study was to examine the correlation of five actors (academic, business, community, government, and media, ABCGM in short) in terms of the Penta Helix model, which aims to develop the performance of small and medium-sized enterprises as the fundamental pillar of a national economy. The study employed a quantitative and qualitative approach. The data were obtained from an online survey, Focus group discussion, and interviews with several small and medium-sized enterprises. Fifty-four respondents of small, medium-sized enterprises in Bandung participated in the study. The data were analyzed using the non-parametric test of Kendall's tau to find out the correlations of five variables. The finding has revealed that the five variables have a significant correlation, both at the 0.05 level and at the 0.01 level. Based on the component matrix, the strength of the correlation of each factor that is formed is 0.840 (academic), 0.924 government, 0.884 (industry/business), 0.842 (media) and 0.729 (community). Besides, the government plays a significant contribution to the development of SMEs as it functions as a policymaker, which synergizes the other actors. It indicates that five actors of Penta helix model enable to develop the performance of SMEs and its sustainability through their collaboration.

Keywords— Penta helix model; small and medium-sized enterprises; entrepreneurship, economic growth.

1. INTRODUCTION

The attribution of entrepreneurship and small and medium enterprises, which brings significant impacts to the global economic development, has been beyond doubt proven both in developed and developing countries. Entrepreneurship and innovation have affected economic growth and socioeconomic development of a country as well [1]–[3]. Saru pointed out that employment in SMEs has a considerable effect in a growing economy [4]. In the words of Bhiwajee, SMEs contribute to poverty alleviation, employment and resource of livelihood of millions of people around the world [5]. It is also reported that SMEs constitute more than 95% of manufacturing enterprises and an even greater share of numerous service industries in OECD countries [6]. They even support local economies in Europe for 99% of private sector business [7]. Carpentier, Landveld and Shahiar emphasized that not only does entrepreneurship contribute to building resilient infrastructure, but it also promotes inclusive and sustainable industrialization and fosters innovation, particularly in the context of the 2030 Agenda for Sustainable development Goals (SDG) [8]. In terms of the contribution of Gross Domestic Product (GDP), however, The World Bank approximates that SMEs provide on average 51.5% of GDP in high-income countries, which

is higher than in developing countries or in low income countries, that is only 15.6% [5].

Regardless of such numerous contributions, SMEs experience several hindrances including financial issues, marketing access, lack of trainings, capacity building, lack of skilled workers and entrepreneurs, lack of technology and business knowledge [9]–[12]. In Indonesia, the research shows that SMEs have faced ten major issues including tight competition, management skill, financial access, inefficient production cost, sales barrier, process, cost of energy, economic factors, technology, and limited raw material [13]. In terms of financial issues, Mullen and Shepherd emphasized the important role of various other parties such as academics, government and capital providers [14]. In this sense, the right solution is highly required to be implemented immediately, otherwise, these obstacles will hamper SMEs' business activity, performance and sustainability[15].

The synergy of ABCGM, well known as Penta Helix, turns out to be one of the solutions to cope with the mentioned major issues of SMEs in Indonesia. Penta Helix, which is a developed form of Triple Helix model introduced by Etzkowitz and Leydesdorff [16], is an integration design among five key players, which are coordinated and collaborated each other. Hence, Penta Helix is the expansion of Triple Helix model by engaging a variety of elements of community to realize the innovation [17]. On the other word, the synergy of actors plays a significant role for innovation

both in triple helix and Penta Helix. Nevertheless, the application of Penta Helix model has several slightly differences in terms of the five players depending solely on the objective and the configuration of the players within circumstances. For instance, according to REPEC, Penta Helix is described as a model of socio economic development, which stimulates a knowledge based economy to catch up with innovation and entrepreneurship through the effort of collaboration and advantageous joint venture amongst the academia, the public authorities, business, NGOs, civic society sectors, as well as entrepreneurs as cited in Halibas, Sibayan and Maata [18]. Calzada's Penta Helix model includes public, private, social entrepreneurs, academe and civil society [19], whereas the model of Penta Helix in The Republic of Croatia has been implemented with the addition of diaspora as the fifth component aiming to introduce economic development program. The five players includes government, academia, entrepreneurs, diaspora and non government organization (NGO) [20]. In Hungary, the adapted Penta Helix model is appropriate to delineate the main elements of the context of corporate embeddedness as local economy, government society, science, and natural and built environment [21]. In Indonesia, the application of Penta helix, which is known as ABCGM, comprises academic, business, community, government and media. The Ministry of Cooperatives and Micro, Small and Medium Enterprises (MSMEs) and the Ministry of Tourism have introduced the synergy of Penta Helix to boost the development of two sectors. In tourism sector, Penta Helix synergy has successfully implemented the largest international food and beverage exhibition, SIALInfood aiming to meet all players in one event, which the number of participants increased for 25% [22].

Previous research findings have noted the pivotal role of Penta Helix contribution to reinforce shared innovation goals and provide the progress of socio economic of the region [18], [23]. To achieve the capability of high innovation, developing the innovation culture and practices is recommended for any organizations [24], [25]. Consequently, strong collaboration and partnership among leading players enables the innovation [26]. Since SMEs considerably play a part of nation's economic development, the synergy of Penta Helix is highly essential to advance the development of SMEs, especially with the involvement of community, which many type of Penta Helix models haven't embraced it. The aim of ABCGM synergism is particularly to accelerate the development of Cooperatives and Micro, Small and Medium Enterprises (MSMEs) sector, which the model has been implemented since July 2017 in the Province of West Java. Thus, the focus of this study was to investigate the correlation of five players to figure out the effectiveness of its synergy for the growth of SMEs, particularly in the area of Bandung.

2. METHODS

The study employed quantitative and qualitative approach to obtain the information about the correlation of five sectors in terms of Penta helix model implemented in Bandung, West

Java. A total of 54 SMEs filled the questionnaire of online survey. Besides, 15 SMEs took part in Focus Group Discussion (FGD) after receiving an invitation letter from the researchers. The invited SMEs are mostly from fashion, culinary and craft sectors. Two government officials of Department of cooperatives and small and medium businesses in the province of Bandung and coordinator of ABCGM, personnel of TELKOM, mentors of SMEs were invited to be key speakers of the discussion. Thus, the data were obtained from questionnaire, online survey, interviews and FGD. During the FGD, the researcher used personal contacts to approach several SMEs and interviewed them.

Given the nature of the survey data, the data were statistically analyzed using the non-parametric test of Kendall's Tau to determine the correlational relationships among the variables. To find out more about the strength of the correlation of each variable to the factor formed, the Component Matrix was used as well. The items used in the instrument were generally from previous research finding about critical success factors for SMEs [27]. The type of questionnaire was multiple choices of five variables with five point Likert scale. For the qualitative data, method triangulation was adopted to ensure the accuracy and validity of the data.

3. RESULTS AND DISCUSSION

Based on the test results Kolmogorov-Smirnov and Shapiro-Wilk at a significant level of 0.05 and a significant level of 0.01, the five variables namely academics, government, industry, media and the community are not normally distributed. Thus, Kendall's Tau non-parametric test is used to determine the correlational relationships among these variables. The results of the statistical value of the test are presented in the table 1 below.

Table 1. Correlations (Kendall's tau_b)

		Academic	Government	Industry	Media	Community
Academic	Correlation Coeff.	1.000	.605**	.561**	.712	.231**
	Sig. (2-tailed)	.	.000	.000	.000	.023
	N	54	54	54	54	54
Government	Correlation Coeff.	.605**	1.000	.791**	.481**	.259
	Sig. (2-tailed)	.000	.	.000	.000	.009
	N	54	54	54	54	54
Industry	Correlation Coeff.	.561**	.791**	1.000	.453**	.248*
	Sig. (2-tailed)	.000	.000	.	.000	.013
	N	54	54	54	54	54
Media	Correlation Coeff.	.712**	.481**	.453**	1.000**	.224*
	Sig. (2-tailed)	.000	.000	.000	.	.030
	N	54	54	54	54	54
Community	Correlation Coeff.	.231*	.259**	.248*	.224*	1.000**
	Sig. (2-tailed)	.023	.009	.013	.030	.
	N	54	54	54	54	54

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

From the above table, it can be concluded that the five variables have a significant correlational relationship, both at the 0.05 level and at the 0.01 level. The level of closeness of

relationships between variables can be summarized in the table below.

Table 2. Correlations Interpretation (Kendall's tau_b)

	Academic	Government	Industry	Media	Community
Academic	Perfect	Strong Positive	Strong Positive	Strong Positive	Weak Positive
Government		Perfect	Very Strong Positive	Fair Positive	Fair Positive
Industry			Perfect	Fair Positive	Weak Positive
Media				Perfect	Weak Positive
Community					Perfect

Factor Analysis

Factor analysis is carried out to identify the grouping of interrelated variables based on the factors. Before knowing the results of the factor analysis, the feasibility of the variables is tested to do the factor analysis. Firstly, the KMO and Bartlett test were conducted to determine the feasibility of the variable as presented in below table.

Table 3. KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.757
Bartlett's Test of Sphericity	Approx. Chi-Square	213.695
	df	10
	Sig.	.000

From the table above, it is known that the KMO-MSA value is $0.757 > 0.5$ and the value of the Bartlett's Test of Sphericity Significance is $0,000 < 0.05$. Thus the requirements to continue the factor analysis test are fulfilled. Second step is to see the results of the Anti-Image Matrix as follows.

Table 4. Anti-image Matrices

		Academic	Government	Industry	Media	Community
Anti-image Covariance	Academic	.276	-.024	-.013	-.198	.052
	Government	-.024	.125	-.116	-.020	-.085
	Industry	-.013	-.116	.159	.012	.012
	Media	-.198	-.020	.012	.282	-.072
	Community	.052	-.085	.012	-.072	.559
Anti-image Correlation	Academic	.757[a]	-.131	-.061	-.711	.133
	Government	-.131	.723[a]	-.825	-.105	-.322
	Industry	-.061	-.825	.734[a]	.057	.042
	Media	-.711	-.105	.057	.754[a]	-.181
	Community	.133	-.322	.042	-.181	.883[a]

a. Measures of Sampling Adequacy (MSA)

From the above table, the MSA value can be extracted for each variable as follows:
a.   Academic: MSA = 0.757 > 0.5
b.   Government: MSA = 0.723 > 0.5
c.   Industry: MSA = 0.734 > 0.5
d.   Media: MSA = 0.754 > 0.5
e.   Community: MSA = 0.883 > 05

Based on the MSA values, it can be concluded that all variables meet the requirements for factor analysis. The next step is to look at the results of the Communalities Test as presented in the following table.

Table 5. Communalities

	Initial	Extraction
Academic	1.000	.706
Government	1.000	.854
Industry	1.000	.781
Media	1.000	.709
Community	1.000	.532

In the Extraction column it appears that all variables have an Extraction value> 0.5. This means that all variables are said to be feasible to be used in explaining factors. Next is to pay attention to the Scree Diagram to find out how many factors can be raised.
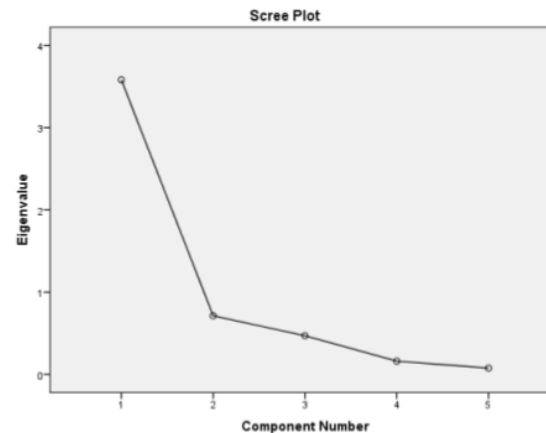
Scree Plot

Based on the Scree Plot diagram above, it appears that there is only one factor that has an Eigenvalue that is worth more than 1 (> 1). Thus only one factor arises. To find out more about how strong the correlation of each variable to the factor formed is to look at the results of the Component Matrix table as given below.

Table 6. Component Matrix[a]

	Component
	1
Academic	.840
Government	.924
Industry	.884
Media	.842
Community	.729

The analysis found that all sectors are correlated one another to support SMEs. This finding is similar to Vasconcelos and Nguyen's report that they found the relation between initial

conditions and the role of each other in the Penta Helix collaboration. The formation of Penta Helix derives from the needs of diverse expertise and knowledge from various sectors to establish and activate social innovation projects and organizations [28]. Based on the table of component matrix, the results of the study also show that of the five actors in the Penta helix, the government plays the most important role in the progress and success of SMEs in Bandung, which is then followed by industry, media, academia and the community. Based on the research finding, Ranga and Garzik revealed that in developing an SME strategy, local governments must take an essential role to maintain and support innovation, especially conditions that support the critical mass concentration of tangible and intangible assets [29]. It implies that government must be the key leading actor, which embraces all involving actors to collaborate in improving the quality of SMEs products and increasing their sales turnover. It indicates that this current research finding is similar to Ranga and Garzik's findings. The collaboration among other sectors play a significant factor to develop SMEs. Becker and Smith pointed out that cross-sector collaboration is regarded an increasingly influential strategy to solve global and societal challenges. It is also important due to the complexity of social barriers in this 21st century [30]. Addressing to this statement, Crosby and Bryson acknowledged that cross sector collaboration is the sharing power in the modern society and criticism of the effectiveness of governments' individual actions, which manage cross-sector collaboration become an existing growing trend [31].

In Indonesia, the role of media is highly required in introducing and promoting the products of SMEs. Government cannot do anything without the help of media that functions as a promotion agent. Based on the interview with one of the mentors, Department of Cooperatives and SMEs have done collaboration with Bibli.com to train SMEs. Carayanis and Campbell highlighted that integrating the point of view of the media based and culture based public is essential. They reported in their research that media-based and culture based public generates fractal knowledge and an emerging innovation ecosystem that are well configured for the knowledge economy and society [32].

Previous research shows that Penta Helix plays an imperative role in supporting shared innovation goals and contributing to the region's socioeconomic developments [18], [23]. It is even emphasized that strong collaboration and partnership among key leading sectors can best achieve innovation [26]. Agreeing with Stam, Halibas et al. also indicated that the Penta-helix stipulates a blueprint strategy to develop an effective network of innovation with strong collaboration among participating partners [18]. OECD even highlighted that the implementation of a strong system of innovation could have a positive impact on the growth of economy and economic development [33].

The implementation of the Penta Helix, which has begun since June 2017 in Bandung, encountered several inseparable obstacles. ABCGM coordinator stated that they encountered five obstacles, namely the change of officials in the government, dissimilar perceptions in the government, personal interest, institutional aspect and time, whereas

several SMEs, mentioned some problems in terms of their sales as presented in below dialogues.

The problem is the access to other countries, which we can introduce our good products. Access to sales abroad is very limited. The government needs to facilitate us through exhibitions conducted in other countries, so we can compete with other products. We need access to support sales abroad through exhibitions that are very popular abroad because their enthusiasm is very high. When I went to Milan, Paris and several foreign countries, they like products from Philippine and Thailand because of lower price. Production goods in Thailand and the Philippines are cheaper than Indonesian products, so that European markets prefer Thai and Philippine products. Please inform us if there is an exhibition abroad, to boost our economy. In the case of beauty salons, SMEs have international, traditional and conventional weddings at lower prices. So the government is expected to make a wedding exhibition that can be participated by SMEs. (SME 1)

While one female SME highlighted the importance of sending foreign people to Indonesia to buy our product.

What we need is not export access, but how the government sends foreign people to our country to buy our products. We can reduce budget by doing so. We have a lot of cheap food, good products; our leather bags are much better than European products, such as from Garut and Bandung. Please prepare to send them to us; they are developed countries, while we are developing country. I expect government to support us by sending the people from foreign countries to Indonesia. (SME 2)

Based on Focus Group Discussion held on 15 August 2018 and 21 October 2019 in Bandung, we can summarize several problems that all participating players encountered and the solution they have implemented so far.

Table 7. Obstacles and Solution in the Implementation of Penta helix

	Obstacles	Solution
Academics	1. Time 2. Commitment	1. Training programs, guidance provided through the Business Incubator Center 2. Relevant community service programs with study programs and get in touch with MSMEs.
Business	1. SMEs' motivation goes up and down 2. Lack of management	1. Become strategic partner 2. Provide a program of 3. Corporate Social 4. Responsibility (CSR) to MSMEs in the form of financing, marketing access and training. 5. Making SME digital villages 6. Equipment assistance, computer, education and the training 7. Provide training, exhibition and promotion facilities
Community of SMEs	Lack of motivation Commitment with time	1. Provide training 2. Give information about the exhibition 3. Assist the legal aspect
Government	Lack of motivation from SMEs Lack of commitment Lack of innovation	1. Training program that suits needs 2. SMEs 3. Policy on market access by linking to the market. 4. Policies that support licensing for MSMEs 5. Policies and programs that can link MSMEs to access to finance such as banks, CSR and PKBL programs owned by companies, especially State-owned enterprises 6. Policies that can synergize with central government programs (Ministry), provincial government programs up to cities / districts.
ABCGM coordinator	1. The change of officials in the government 2. dissimilar perceptions	1. The synergy of ABCGM to collaborate with all participating players

There are three key problems faced by SMEs, namely the entrepreneurial mindset, managerial quality and the ability of entrepreneurs to optimize every opportunity generated from the external environment, starting from the micro, macro and global external environment. For entrepreneurs, they need social capital, namely social capital in the form of information, market access, access to licenses, access to finance, access to business facilities and networks that can improve their business. This can be contributed by Penta helix, which has been initiated by Department of Cooperatives and Small Businesses of West Java Province since June 2017. As stated by Halibas et al that Penta Helix specifies a tactical blue print for developing the network of an effective innovation aiming to promote innovation culture and creative synergies of cross sector collaboration [18]. They also pointed out that the culture of innovation and synergy will be meant for social innovation since all players derive from various sectors to share common goals by means of their particular expertise and resources to tackle diverse social challenges. It is also suggested that the organization is required to develop the practice of innovation culture to achieve high innovation capability [25], [34]. Setser and Morris defined an innovation culture in the role of an created environment, which unceasingly enhances current

revolutionary innovations and a new way of thinking to solve problems and capture opportunities for advancement [35] Several countries in the world also experience the similar problems and obstacles in implementing the Penta Helix model. In the case of The Republic of Croatia, for example, the problems they face including stable legal framework and stimulation from government, and the cooperation of entrepreneurs, universities, research institution and civil sector [20]. Thus, The application of Penta Helix requires significant resources, a distinctive mindset and commitment from all participating actors. In terms of commitment, the study revealed that alliance partners can take full advantage of their profits by establishing relational norms through commitments, which are characterized by flexibility and solidarity [36]. To cope with one of the SMEs' problems related to the knowledge and significant resources, SMEs need to obtain through continuous training and education. According to Gordon, Hamilton and Jack, education for entrepreneurship contributes economic advantages not only for Small and Medium sized enterprises but also the area [37]. Through entrepreneurship education, SMEs will obtain both economic benefits and social benefits for their development. In addition, they will have the capability of creating innovation for their products as well. To actualize strategic plan for SMEs aiming at creating innovation, the five cross sectors of players must do collaboration. Hallibas et al emphasized that innovation efforts should be organized, orchestrated and established in order to implement the strategic plan [18] and provide the compulsory incentives schemes, professional development, reward systems, and ICT infrastructure to inspire its general public to take part in innovation practices [38].

4. CONCLUSION

The main objective of this study was to investigate the correlation of five actors in Penta Helix model so as to develop the performance of small and medium enterprises, predominantly. It is evidently acknowledged that cross sector collaboration of five actors in the context of ABCGM synergy correlate each other to support SMEs. With several limitation of the application, at least the number of SMEs increases somewhat significantly. As a strategic blue print of economic and social development, Penta Helix model stimulates an effective innovation network, promotes innovation culture and creative and productive synergies among five leading players. Additionally, the relationship of the resulting synergy will eventually form a competitive advantage for SMEs. Thus, the government as a catalyst and decision maker of policy cannot work alone; the other sectors must synergize to actualize the share common goal in the implementation of Penta Helix model, which each sector has a valuable contribution. Last but not least, the Penta Helix model of the synergism of ABCGM requires considerable resources, management skills, a distinctive mindset and commitment from all participating actors as to develop the SMEs and economic growth of a region. Given the importance of synergy in the Penta Helix model, more in-depth research needs to be conducted.

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