Quadruple Helix Model on Creative Economy Development in Bandung Regency

Ferry Hadiyanto, Bayu Kharisma, Sutyastie S. Remi and Ardi Apriliadi

Department of Economics, Universitas Padjadjaran, Sumedang, Indonesia

Abstract: This paper uses the quadruple helix model and creative economy as research variables. This study is conducted on the creative sector in Bandung Regency. The research process is mainly executed through focus group discussion (FGD) with all essential parties and interviews with stakeholders in regional work units. The FGD and interview procedure will generate accountable information related to (1) Potential map for the creative economy; (2) SWOT analysis and available partnership programs for the development of the creative economy; (3) a description of cooperation system between related parties in Quadruple helix; (4) Conception of a government partnership program activities. This study's significant result indicates that the role of government in Quadruple helix cooperation is 60 percent in 2016 and decreasing to 10 percent in 2019. The reduction of the governmental function is also accompanied by the increasingly dominant role of creative entrepreneurs each year, reaching 55 percent in 2019. This phenomenon shows that the development of the creative economy is becoming more independent every year.

Keywords: Quadruple helix, Model, Creative economy development, Bandung regency.

1. INTRODUCTION

In the era of immense change and globalization, it is understandable that the new economy is now powered by creativity and innovation. Organizations and even economic regions that promote innovation produce more substantially higher revenues and provide greater stability. (Pol, 2005). The idea of the creative economy has evolved as a way to focus attention on the role of creativity as a force in contemporary economic life, arguing that economic and cultural growth are not distinct but can be part of a wider development process. (Hidayat & Asmara, 2017). This principle can actually be implemented in developing countries, not just in advanced countries. This policy is part of economic policies that offer and provide new economic opportunities in these countries to boost and accelerate economic development. (UNESCO & UNDP, 2013) (UNCTAD & UNDP, 2008).

The creative economy has a close connection with the creative and cultural industries. The importance of the cultural economy and creative industries has increased significantly over the last years. Nowadays, cultural and creative industries support economic growth and global demand, which is also driven by the new economy. As it is recognized, the definition corresponds not only in the strict sense to the domain of culture, but also to cultural goods and services as the base of new robust and broad sectors that can be widely referred to as cultural areas. (Boccella & Salerno, 2016). According to UNESCO the essential pillar of modern post-industrial knowledge economies is creative industries through culture. They include creating and manufacturing intangible cultural products and services such as film, printing, crafts, etc. (UNESCO & UNDP 2013).

The creative economy is considered to be a multitude of varied local paths. Many of these paths can be found at the subnational level - in developing countries, cities and regions. (UNESCO & UNDP, 2013) Since creative industries emerged in the late 2000s, Bandung Region local policy instrument has been embracing the creative economy. Based on BEKRAF (Badan Ekonomi Kreatif) data, the creative economy shows a positive growth trend from year to year. For decades, small & medium enterprises (SMEs) have existed and significant in their establishments and contribution to Indonesia's global economy (Akira et al., 2011; Kuswanto, Rosli, & Kader, 2012). In the period of 2010-2015, the creative economy GDP (Gross Domestic Product) has increased from Rp525.96 Trillion to Rp852.24 Trillion. Creative economy GDP grew by 4.38% in 2015 compared to the previous year. This value contributed around 7.38% to the national economy in 2015, with the dominant sub-sectors, which is culinary, fashion, and crafts. This phenomenon is also accompanied by an increase in its labour workforce number. In 2015, 16.06 million people were actively engaged within the creative economy sectors. This number was an increase of 5.22% compared to the 2014's record, which is 15.46 million people. (Creative & Outlook, 2019)

^{*}Address correspondence to this author at the Department of Economics, Universitas Padjadjaran, Sumedang, Indonesia, behnoush.hamdel@gmail.com

The creative economy is expected to contribute significant GDP to Indonesia's economic growth because it gives alternative income solution both in the short and long term, such as increasing employment, reducing poverty, increasing export competitiveness, and strengthening the national cultural identity as a tool of diplomacy "Soft-Power" for Indonesia in the midst of the global society lives. It is also believed that the creative economy has a multiplier effect of stimulating the real sectors of the economy and other industries. The three sectors, which employed most of the workforce were agro-based industries (38.8 million or 43.7% workers), trading and hotels (22.2 million or 25.0% workers), and services (9.4 million or 10.5% workers) (Ministry of Public Welfare, 2007; Rosli, Raflis, & Omar, 2012). With respect to the agro-based industry, most SMEs were involved in simple traditional manufacturing activities, such as wood products (including furniture), textile, garments, footwear, and food and beverages, as raw materials for their products come mainly from the agricultural sector (Tambunan, 2000; Rosli et al., 2012).

From the description above, clearly, we can see the great potential for local governments to make the creative economy sub sector as an activity and the main product for West Java in order to increase PAD. The main problem is it isn't really able to involve all parties who can contribute to training and developing a creative economy. Hence the creative economy ecosystem can be made successfully. The decisions made before are not fully based on the potential map of West Java by strength, weakness, opportunity, and threats factor. Therefore, it is expected for this study's results to be truly able to provide give clear information so all parties can contribute properly to create a better creative economic system and at the same time capable of connecting and giving benefit between all parties involved.

2. LITERATURE REVIEW

In recent decades, in some countries, the rigid division of labor between universities and business has begun to fade. This second academic revolution integrates economic and social development missions, turning traditional Teaching and Research Universities into Entrepreneurial Universities (Colapinto & Porlezza, 2012). The Triple Helix model is a development strategy based on collaboration between universities, industry and government, where universities have a major role in innovation (Etzkowitz & Leydesdorff, 2000) and (Etzkowitz & Zhou, 2007). The Triple Helix model considers only three helices that intertwine and by this generate a national innovation system limited to a top-down approach: Universities, Industry, and Government, while in the Quadruple Helix framework, Carayannis and Campbell (2009) propose to add a fourth helix, identified as "media-based and culturebased public" and "civil society", thus introducing and incorporating the bottom-up approach (Carayannis, Goletsis, & Grigoroudis, 2018). The "Quadruple Helix" (four-helix) model adds to government, universities (higher educa- tion) and the economy as further fourth helix the "public", more precisely being defined as the "media-based and culture-based public": "This fourth helix associate with 'media', 'creative industries', 'culture', 'values', 'life styles', and perhaps also the notion of the 'creative class' (a term, coined by Richard Florida, 2004); (Carayannis & Campbell, 2010). Elias Carayannis and David Campbell originally conceptualized the Quadruple Helix model as a spiral with four strands (Schütz, Heidingsfelder, & Schraudner, 2019). The quadruple helix model consists of four elements, namely academia, industry, government, and society. They have significant roles to play in supporting shared innovation goals, and they contribute to the socioeconomic progress of the region (Halibas, Sibayan, & Maata, 2017).

Furthermore, the Penta Helix is a socio-economic development model that drives a knowledge economy to pursue innovation and entrepreneurship through

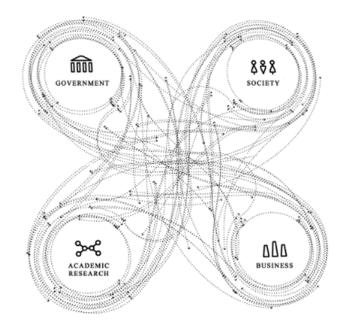
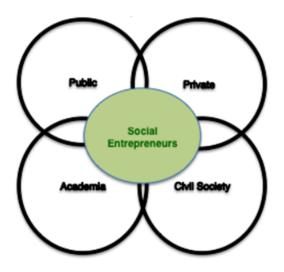
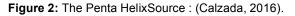


Figure 1: The Quadruple Helix Model dapted by Fraunhofer (2016), originally developed by Carayannis and Campbell (2009) Source: (Schütz *et al.*, 2019).

collaboration and beneficial partnership among the (REPEC, 2012); (Halibas *et al.*, 2017). The Penta Helix model has its roots in (Etzkowitz & Leydesdorff, 2000) Triple Helix, where a tri-lateral network of academe, industries, and government combine to take advantage of the innovative research projects that are cultured within educational institutions and transform these projects into viable commercial products or services. NGOs, civil society, and the social entrepreneurs were added to the Penta Helix.





1) Academic are the ones with main concern of finding satisfaction in cultivating arts and science over the metaphysical musings, and not about to seek practical goals; 2) The business has a role in the framework of an Exchange economy (Economic exchange relations) as well as the transformation of creativity into economic value in the digital world; 3) The Government has a role in terms of the mechanism of awarding of the intensive course, a conducive business climate control, educational, as well as referrals to society and the world of private sector to support the development of the digital industry (Effendi, Syukri, Subiyanto, & Utdityasan, 2016); 4) Society engage in social and economic development through active participation in regional development programs (Halibas *et al.*, 2017).

3. METHODS

The research method used in this study is the qualitative descriptive method. In the social sciences, qualitative research methods are developed to allow researchers to analyze social and cultural phenomena: observing the emotions, thoughts behaviors and beliefs of the mass society. Qualitative data sources include observation, interviews, questionnaires, and documents (Ramesh Babu, 2008). FGD Focus Group Discussion collects this study's data) and interviews with all related parties. Bandung regency is the scope of our research. They are considering that Bandung Region has many creative economic center and the SKPD potential to support the development of the creative economy.

This study implements SWOT analysis with Internal Strategic Factors Summary (IFAS) and External strategic Factors Summary (EFAS). The step to create EFAS and IFAS table is shown below (Rufaidah, 2014):

- a. Identify and arrange 5 to 10 items for each strength, weakness, opportunity, and threat at column 1.
- b. Give each items a value starting from 1.0 (most important) to 0.0 (most unimportant) for column 2
- c. Give rating for each factor starting from 5 (very good) to 1 (very bad), based on management response for each factor. This rating goes to column 3.
- d. Multiply the value for each factors on column 2 with rating from column 3, in order to get valued score for column 4
- e. Use column 5 to show how the selected factor choosed and how the evaluating works and how the evaluating done.
- f. Add all the valued score at column 4 to obtain total valued score for the company.

Total valued score show how well the company response to internal strategic factors and external strategic factor. Total valued score ranged from 5.0 (very good) to 1.0 (very bad) with 3.0 as an average score.

4. RESULTS AND DISCUSSION

4.1. Publishing and Printing

A creative activities related to content writing, book, newspaper, and digital content publishing. This sector includes issuance of stamps, banknotes, tickets and other special issues. Publishing photographs such as posters, painting printing, and micro-film footage are also considered to publish and print creative activities. This industries development in Bandung Regency is already well developed.

4.2. Crafts

Craft is a product created by an artisan or a craftsman. Craft is considered creative because the

creative thinking process is needed, starting from the first design until the finished product. Bandung Regency apparently has a developed craft sector. A variety of craft is made by the community, such as toy, handicrafts, fashion, etc. Baleendah is one of the subdistrict that have a developed painting craft industry and already took the attention of the foreign community.

4.3. Advertising

A creative activities related to advertising services, it consist of creative process, production, and advertising output, such as: pamphlet, brochure, poster, advertisement, etc. Advertising in Bandung regency can be seen in roadway and other particular places and considered to be quite progressive. There are a lot of advertising media and brochures shared in many places. The type of advertisement that can be seen in Bandung Regency is a billboard, led screen, sticker, etc.

4.4. Art exhibitions

Creative activities that are related to the development of performances, (e.g. ballet performances, traditional dances, modern dances, theater, classical music, theatrical music, opera, including ethnic tours). Various traditional arts such as sisingaan, kuda renggong, angklung buncis, seni debus, etc. Computer services, data processing, database development, software development, system integration, system design and analysis, software architecture design, software and hardware infrastructure design, and portal design including maintenance are included in creative sectors of computer or software. Bandung Regency community has a lot of creative people who works in computer or software sectors.

4.6. Research and Development

Research and development are creative activities related to innovative ways and supplying societies with science discovery or technologies and new knowledge for new creative products, methods, and new technologies that can fulfill market needs. Bandung regency have a special research and consulting that works in research and education consultation.

Publishing and printing, crafts, advertising, art exhibitions, computer or software, and research and development are considered the main potential for the creative economy in Bandung Regency. These six creative industry development is needed to be focused on as they are already showing its excellence. There are four criteria for creative sectors to be considered

| Table 1: Quadruple Helix of Creative Industry in Bandung Regence | andung Regency |
|--|----------------|
|--|----------------|

| Strategy | Program | Performance Indicators | Output/Income |
|--|---|--|--|
| Strengthening the quadruple helix cooperation | MoU government and academia | The ratio of creative entrepreneur communities that have a MoU with Academics to the total of creative entrepreneur community is 10% | There are 50,000 Government and Academia MoUs |
| | MoU government and association | The ratio of creative entrepreneur association that have a MoU with government to the total of creative entrepreneur association is 10% | There are 1 MoU of Government and Association |
| | MoU between government and Entreprenur | The ratio of creative entrepreneur business that have a MoU with government to the total of creative entrepreneur business is 10% | There are 50,000 Government and Entreprenur MoUs |
| Strengthening the entrepreneur network | MoU creative entrepreneur and raw material supplier | The ratio of creative entrepreneur business that have a MoU with raw material supplier to the total of creative entrepreneur business is 10% | There are 50,000 Entrepreneur and raw material supplier MoUs |
| | MoU creative entrepreneur and exporter | The ratio of creative entrepreneur business that have a MoU with exporter to the total of creative entrepreneur business is 10% | There are 50,000 Entrepreneur and Exporter MoUs |
| Steps | | | |
| Inventory of academia, ass | ociations, and communities | 3 | |
| Facilitate the Quadruple He | elix MoU | | |
| Documenting the type of M | oU | | |
| Legimitating the MoU by the | e government | | |

progressive. (1) creation and copyright, (2) responses to the market, (3) active environment development, and (4) passive environment development. All of the industries discussed above are considered mature and high based on the four criterias value and can also confront the harshness of development.

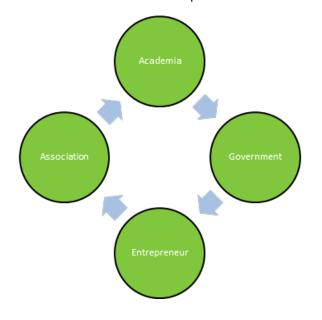


Figure 3: Quadruple Helix of Creative Industry in Bandung Regency.

The government's role in Quadruple Helix cooperation is 60 percent in 2016 and decreasing to 10 percent in 2019. The reduction of the governmental role is also accompanied by the increasingly dominant role of creative entrepreneur each year, reaching 55 percent in 2019. This phenomenon shows that the development of the creative economy is becoming more independent every year.

4.7. Government

The government discussed in this creative economic development plan study is central government and regional government-related to creative economy development, whether on substantial or administrationrelated. Regional government includes 1st level local government, 2nd level local government, down to lowest local government hierarchy. Good synergy between the central and local government and the department is needed to achieve the vision, mission, and goal of creative industry development. This happens because creative economy development is not only industrial development but also includes ideology, politic, social, and cultural development.

There are 3 service department in Bandung regional government involved on the development of creative economy. They aim to facilitate and regulate business development for creative industry. These 3 service department are the department of cooperatives, Industry, and trade (Diskoperindag), department of teenager, sports and tourism (Dispopar), and department of agriculture, plantation, and forestry (Distanbuthut).

4.8. Association

Association or community that supports creative economy development already matured and developed in Bandung Regency. One of the most noted community is KABACA. KABACA purpose is to assist and absorb all the idea and aspirations from the creative entrepreneur in Bandung Regency. In order to maximize their potential, KABACA cooperates with the government, especially BAPPEDA.

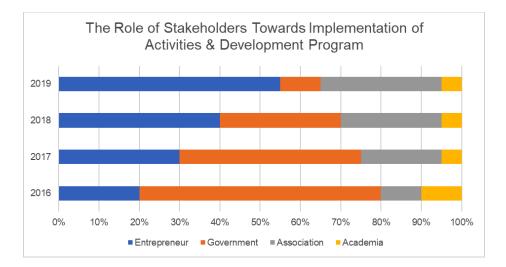


Figure 4: The Role of Stakeholders Towards Implementation of Activities & Development Program.

The goal of KABACA is to support developing creative economy policy. Therefore, KABACA becomes a place to discuss an idea or talent development, and creative ability and mediate between creative entrepreneur and government. KABACA aims to encouraging the district government of Bandung Regency to develop it industrial potential in INPRES no.6 2009, helping government in order to formulate policies on creative economy development, arrange a strategy and action plan as a reference on creative economy development, increasing purchasing power, enhance human development index (HDI) and local revenue (PAD).

4.9. Entrepreneur

Entrepreneur aim to generate financial revenue as their work results. Business arrangement is regulated by law on where its business comes from. The business forms are: sole proprietorship, partnership, corporation and cooperative. Business also can be based on manufacturing, services, retail and distribution, agriculture, minerals, finance, information, real estate, transportation, and utilities such as electricity, irrigation, which are usually associated with government agencies. Inside the organization. Business have work grouping such as marketing, sales, production, information technology, research and development. The function of management is implementing an efficient and effective operation on a business. Business also need

| Table 2: | Internal Factors Analysis Summary (IFAS) | |
|----------|--|--|

capitals sometimes that can be obtained from bank or informal loan or new investors. Business also need to be protected in order to prevent business competitor. The protection can be in a form of HKI that includes patent, copyrights, trademark, and design.

All businesses have names, logos, and imaging techniques. Because of the competition, businesses need to assign HKI from where the country here are competitors. Many HKI agreement has already been signed by most of the countries. All companies assigned in its countries must follow the country rules attached to this international agreement. Business can also be bought or sold. Business owners address this as an exit-plan. The most notable exit-plan is IPO or merger and acquisition.

4.10. Academia

Academia have a very large strengthening on formal and informal bases of innovation and can maturing innovation concept and have a capacity to disseminate information with international network. Academia in Bandung regency that ready to support and help the development of creative industry is Telkom University. Telkom University is one of the leading universities that have creative economics as a study program. The cooperation between government and Telkom University is expected to create more developed creative industry. Other university from out-

| Internal Strategic Factor | Value | Rating | Score |
|--|-------|--------|-------|
| A. Strength | | | |
| Diversity of Products | 0,13 | 4 | 0,52 |
| Distribution are well spread through in West Java | 0,10 | 4,5 | 0,45 |
| The government can do an investment loans as a financing instrument | 0,09 | 3,5 | 0,315 |
| Great amount of raw material and the prices are relatively affordable | 0,15 | 5 | 0,75 |
| Conducting a training and education | 0,07 | 3 | 0,21 |
| Strength Total (S) | 0,54 | | 2,24 |
| B. Weakness | | | |
| There are rarely advertisement for creative industries in flyer, television, and social media. | 0,07 | 3 | 0,21 |
| Limited access to international markets | 0,12 | 2 | 0,24 |
| Most of the population only take education until high school | 0,08 | 3 | 0,24 |
| Human resource that are not quite skilled yet | 0,14 | 1,5 | 0,21 |
| Many floods occur | 0,05 | 3,5 | 0,18 |
| Weakness Total (W) | 0,46 | | 1,08 |
| Score Total (S+W) | 1,00 | | 3,32 |

side the Bandung Region also helps the development of creative industry because the closeness of culture and history. Pasundan University and Padjajaran University were an example university that is located in Bandung City and helping Bandung Region in creative economy development.

4.11. SWOT Analysis

Internal Strategic Factors Summary (IFAS) can help the company to identify which strategic factors that poses as a strength and weakness strategy in organizational business function. IFAS analysis result on creative industry in Bandung Region is shown below.

4.12. Strength

1) Diversity of Products: Creative economy in Bandung regency has produced many good quality products, it includes: Advertising, Architecture, Art / antique markets, crafts, computers / software, design, fashion, interactive games, music etc.; 2) Distribution are well spread through in West Java : For the clothing production department, Bandung Regency is wellknown as a distributor of children's clothing, jackets, sandals, shoes, buckles, bags, and others. Distribution target are already includes districts in West Java; 3) The government can do an investment loans as a financing instrument : Local governments can apply for loans to several banks to provide goods related to the

| | Table 3: | External Factors | Analysis | Summary | (EFAS) |
|--|----------|------------------|----------|---------|--------|
|--|----------|------------------|----------|---------|--------|

maturity of the creative industries; 4) Great amount of raw material and the prices are relatively affordable : Due to the good strategic location of Bandung Regency and it provides a lot of raw materials, it can facilitate the well-being of the creative industry; and 5) Conducting a training and education : Organizing an education and training program through blusukan academy programs and creative villages in the creative community.

4.13. Weakness

1) There are rarely advertisement for creative Industries in flyer, television, and social media : Communities outside the Bandung regency is rarely know the creative industries products of Bandung Regency; 2) Limited access to international markets : The markets only covers domestic regencys and not yet been able to access the international market because the production volumes does not reach minimum import requirements; 3) Most of the population only take education until high school: The population of Bandung Regency has a total workforce of 515,133 high school education level or equivalent and 181,125 diploma education level; 4) Human resource that are not quite skilled yet : The research and development division contribution is not quite optimal yet so that some of the production is still using traditional methods; and 5) Many floods occur : Interest rates in 2016 is decreasing by 6.50% compared to 2015 which reaches 7.50%. The decrease interest rates will alleviate the burden of

| External Strategic Factor | Value | Rating | Score |
|--|-------|--------|-------|
| A. Opportunities | | | |
| INPRES No.6 / 2009 Creative Industry Policy that supports the creative economy policy in 2009-2015 | 0,13 | 5 | 0,65 |
| Cultural Richness | 0,11 | 4 | 0,44 |
| Increasing population growth | 0,07 | 3 | 0,21 |
| Using e-commerce technology for advantages | 0,15 | 5 | 0,75 |
| Decreasing interest rates | 0,09 | 4 | 0,36 |
| Opportunities total (O) | 0,55 | | 2,41 |
| B. Threat | | | |
| Price and quality competition with foreign product | 0,13 | 3 | 0,39 |
| Rupiah exchange rate against the USD in 2018 is weakening | 0,11 | 3 | 0,33 |
| Low morality level of Indonesian society | 0,07 | 2 | 0,14 |
| Natural Disasters | 0,09 | 2,5 | 0,22 |
| Climate change now become uncertain | 0,05 | 2 | 0,1 |
| Threat Total | 0,45 | | 1,18 |
| Total Score (O+T) | 1 | | 3,59 |

creative industries whenever borrowing capital from banks.

External Strategic Factors Summary (EFAS) can help the company to identify which strategic factors that poses as an opportunity and threat strategy in organizational business function. EFAS analysis result on creative industry in Bandung Region is shown below.

4.14. Opportunities

1) INPRES No.6 / 2009 Creative Industry Policy that supports the creative economy policy in 2009-2015 : Developing an economic activities based on the creativity, skills and talents of individuals to build creative power and enhance creativity of individuals who possess economic value and influence the welfare of society; 2) Cultural Richness : Cultural diversity can be a great material in the process of creativity and production of creative industries; 3) Increasing population growth : The population of Bandung Regency continues to increase each years. According to BPS in 2016 the population of Bandung Regency is 3,596,623 and in 2017 it increased to 3,657,701, This phenolmenon become an opportunity for industries to produce more goods; 4) Using e-commerce technology for advantages : Company that uses ecommerce as a marketing strategy led to an opportunity for the creative industries to develop their business; and 5) Decreasing interest rates : Interest rates in 2016 is decreasing by 6.50% compared to 2015 which reaches 7.50%. The decrease interest rates will alleviate the burden of creative industries whenever borrowing capital from banks.

4.15. Threats

1) Price and quality competition with foreign product: The product competition with imported goods are resulted in the perspective of Indonesian people consider foreign goods are more prestigious; 2) Rupiah exchange rate against the USD in 2018 is weakening: The weakening exchange rate of the rupiah against the USD are problematic. In 2017 rupiah exchange rates is Rp. 13,548 and in 2018 is Rp. 14,481. This occurrence led to an increase in raw materials prices which results to an increase in product prices; 3) Low morality level of Indonesian society : The Indonesian people low morality level poses a threat to the creative industry, because most of Indonesian people think that works that related to art/creativity will not guarantee wealthiness; 4) Natural Disasters : Natural disasters such as floods will increase production costs and losses; and 5) Climate change now become uncertain : The uncertainty of climate change create an extreme weather that disrupting the obtaining of raw material supplies and product distribution.

5. CONCLUSION

The map potential in Bandung regency includes publishing and printing, crafts, advertising, art exhibittions, computer or software, and research & development as a leading sector to focus on. The guadruple helix connects four parties to cooperate and coordinate with each other. It includes Government jobs to facilitate and regulate the creative industry's business development; Association jobs support developing creative economy policy, entrepreneur jobs to generate financial revenue, boost economic activity, and create academic jobs to create innovation and concept to ensure the creative industry runs smoothly. The IFAS factors are strengths and weaknesses. The strength of the creative economy in Bandung Regency are: (1) Diversity of products, (2) Distribution are well spread through West Java, (3) The government can do investment loans as a financing instrument, (4) Great amount of raw material and the price are relatively affordable, (5) Conducting training and education. The weakness is: (1) There is rarely advertisement for creative industries in flyer, television, and social media, (2) Limited access to international markets, (3) Most of the population only take education until high school, (4) Human resource that is not quite skilled yet, (5) Many floods occur. The EFAS factors are opportunities and threats. The opportunities of the creative economy in Bandung Regency are (1) INPRES No.6 / 2009 Creative Industry Policy that supports the creative economy policy in 2009-2015, (2) Cultural Richness, (3) Increasing population growth, (4) Using ecommerce technology for advantages (5) Decreasing interest rates. The threats are: (1) Price and quality competition with foreign products, (2) Rupiah exchange rate against the USD in 2018 is weakening, (3) Low morality level of Indonesian society, (4) Natural Disasters, (5) Climate change now become uncertain.

Theoretically, this research's usefulness is to add references and study material in the repertoire of knowledge, especially in the field of management. Practically, the usefulness of this research is (1) as information material for Creative Industry regarding the strategic partnership model on creative economy development; (2) as input material for preliminary studies for further researchers to understand the strategic partnership model on creative economy development. However, this study has several limitations: the number of respondents is only obtained in one city, namely Creative Industry in Bandung Regency, which of course is likely to be different from other cities.

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REFERENCES

- Boccella, N., & Salerno, I. (2016). Creative Economy, Cultural Industries and Local Development. Procedia - Social and Behavioral Sciences, 223, 291–296. <u>https://doi.org/10.1016/j.sbspro.2016.05.370</u>
- Calzada, I. (2016). Plugging smart cities with urban transfor mations: Towards multi-stakeholder city-regional complex urbanity. Journal of Urban Studies and Social Sciences, 6(2), 37.
- Carayannis, E. G., & Campbell, D. F. J. (2010). Triple helix, Quadruple helix and Quintuple helix and how do Knowledge, Innovation and the Environment relate to Each other? a proposed framework for a trans-disciplinary analysis of sustainable development and social ecology. International Journal of Social Ecology and Sustainable Development, 1(1), 41–69.

https://doi.org/10.4018/jsesd.2010010105

Carayannis, E. G., Goletsis, Y., & Grigoroudis, E. (2018). Composite innovation metrics: MCDA and the Quadruple Innovation Helix framework. Technological Forecasting and Social Change, 131, 4–17.

https://doi.org/10.1016/j.techfore.2017.03.008

- Colapinto, C., & Porlezza, C. (2012). Innovation in Creative Industries: From the Quadruple Helix Model to the Systems Theory. Journal of the Knowledge Economy, 3(4), 343–353. https://doi.org/10.1007/s13132-011-0051-x
- Creative, O., & Outlook, E. (2019). Opus creative economy outlook 2019.
- Effendi, D., Syukri, F., Subiyanto, A. F., & Utdityasan, R. N. (2016). Smart city Nusantara development through the application of Penta Helix model (A practical study to develop smart city

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based on local wisdom). 2016 International Conference on ICT for Smart Society, ICISS 2016, (July), 80–85. https://doi.org/10.1109/ICTSS.2016.7792856

- Etzkowitz, H., & Leydesdorff, L. (2000). The dynamic of innovation: from National System and "Mode 2" to a Triple Helix of university-industry-government relations, 109–123. <u>https://doi.org/10.1016/S0048-7333(99)00055-4</u>
- Etzkowitz, H., & Zhou, C. (2007). The entrepreneurial University in Various Triple Helix Models. https://doi.org/10.4324/9780203929605
- Halibas, A. S., Sibayan, R. O., & Maata, R. L. R. (2017). The penta helix model of innovation in Oman: An hei perspective. Interdisciplinary Journal of Information, Knowledge, and Management, 12, 159–172. <u>https://doi.org/10.28945/3735</u>
- Hidayat, A. R. T., & Asmara, A. Y. (2017). Creative industry in supporting economy growth in Indonesia: Perspective of regional innovation system. IOP Conf. Series: Earth and Environmental Science, 012031. <u>https://doi.org/10.1088/1755-1315/70/1/012031</u>
- Kuswanto, F., Rosli, M. M., & Kader, R. A. (2012). Innovation in Distribution Channel, Cost Efficiency & Firm Performance: The Case of Indonesian Small & Medium Enterprise Scales. International Journal of Business, Humanities and Technology, 2(4), 23–38.
- Pol, H. Van Der. (2005). Key role of cultural and creative industries in the economy Introduction: Increasing role of cultural and creative industries.
- Ramesh Babu, G. (2008). Research Methodology in Social Sciences. Concept Publishing Company Pvt. Ltd., New Delhi, India.
- Rosli, M. M., Raflis, A., & Omar, C. (2012). Competitive Strategies and Firm Performance: A Comparative Study of Malaysian and Indonesian Small and Medium Enterprises. 3rd International Conference on Business and Economic
- Rufaidah, P. (2014). Manajemen Strategik. Bandung: Humaniora.
- Schütz, F., Heidingsfelder, M. L., & Schraudner, M. (2019). Coshaping the Future in Quadruple Helix Innovation Systems: Uncovering Public Preferences toward Participatory Research and Innovation. The Journal of Design, Economics, and Innovation, 5(2), 128–146. <u>https://doi.org/10.1016/j.sheji.2019.04.002</u>
- UNCTAD, & UNDP. (2008). Creative economy report The challenge of assessing the creative economy: towards informed policymaking.
- UNESCO & UNDP. (2013). Creative economy report Widening local development pathways.