



The Development of Productive Economy Cluster through *Siparti 3-S* and Triple Helix in Lumajang Regency, Indonesia

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ABSTRACT

The low rate of productivity in agriculture sector potentially reduce its ability to provide welfare to farmers. Furthermore, it will preserve vicious circle of poverty. Thus, it is important to produce superior products of one region. Superior products, which made by local resources, potentially affect the community in a village. This research aimed to identify local resources and potential relationship that may be build. This research used mix methods, which is combine qualitative and quantitative methods, by using sequential exploratory strategy. This research is conducted in Kabupaten Lumajang, Indonesia. Some problems raised in our study area. They are asymmetric information, income disparity, and weak farming management. All of them persist from a long time ago, without no strong desire to overcome them. We propose two models to overcome the problem. The first is *Siparti 3-S*. *Siparti 3-S* involve synergy of the three basic resources: Human resources, natural resources, and social and cultural resources. The second models are Synergy Government-University-Industry into Triple Helix. It is important to work together with the university, local government, and local industry. Thus, by implement those models, citizens are able to produce superior products so that they can raise their welfare.

Keywords: Kabupaten Lumajang, *Siparti 3-S*, Triple Helix

JEL Classifications: G15, O112, O18

1. INTRODUCTION

Rural development has been central to the development effort (Ashley and Maxwell, 2001). But it seems less effort are successful in enhancing agricultural role in the economy. One indication can be seen from a low speed of agricultural output. Most factors affect the decreasing agriculture productivity, for example, land change (Van Vliet et al., 2014; Deng, et al., 2015). structural transformation (Bustos et al., 2015) gender (Aguilar et al., 2015), accessibility (Soseco, 2016), education (Soseco, 2015), and land property rights (Lawry, 2016). All of those studies have a significant correlation: The low productivity weakens agricultural role.

In Indonesia, the similar condition also exists. BPS (2015) recorded that paddy, the main commodity of Indonesian agriculture

sector, enjoyed significant repairment for almost 45 years. In 1969, the yield area of paddy was only 6.5 million hectare. In 2014, the number was increased to 12.6 million hectares. There also an increase in paddy production. In 1969, there was 23 million tons of rice production. While in 2014, the production reached more than 70 million tons.

Even though the number of area and production of agriculture is increasing, but its contribution is steadily decreased. BPS (2015) recorded that in the same period, the contribution of agriculture sector is decreasing from 49.27% in 1960 to 13.38% in 2014. From welfare economics perspective, Sen and Bhattacharya (2001) said that welfare economics is a rational process to deploy communities from obstacles to gain welfare. Social welfare can be measured from various aspects: Levels of living, basic needs fulfillment, quality of life, and human development.

From our preliminary study, we found that there is an unequal distribution of welfare among village people in our study area. Lumajang Regency is one of the three biggest paddy producers in East Java Province. The paddy productivity reached 61.4 quintal per hectare in 2015 BPS. (2015). Lumajang's Welfare Statistics 2015. Indonesia: BPS, which is categorized as high. More specific, Rowokangkung District, produced 251.091 quintals per hectare, which is the second biggest producer in Lumajang Regency after Sukodono District. The productivity reached 68.49 quintal per hectare, slightly above the Lumajang's productivity. Not only paddy, Rowokangkung District also produce other crops (e.g., corn, cassava, peanut, and soybean) and also fruits and vegetables (e.g., tangerine orange, banana, rambutan).

In contrast with the District of Rowokangkung's agriculture performance, most of the people who live in that area still live in subsistence condition. Their income is only sufficient to buy daily needs: Foods, education, and other minimal expenditure. We found that there is a small group of people who enjoy the high income. We identified them as high scale farmers who also play a role as traders. We identified a structural mistake in price creation in our study area. Thus, this research will explore the current situation, find the ideal condition, and propose solutions.

2. THEORETICAL FRAMEWORK

Firstly, we use local economic development (LED) concept to develop our research. After that, we try to involve people in our framework, by using community economic development (CED) concept. From that, we extract the concept into two models: *Siparti 3-S* and Triple Helix (TH).

2.1. LED

Many researchers make their definition of LED. Some of them are: LED is a process where the local actors shape and share the future of their territory. We could define it as a participatory process that encourages and facilitates a partnership between the local stakeholders, enabling the joint design and implementation of strategies, mainly based on the competitive use of the local resources, with the final aim of creating decent jobs and sustainable economic activities (Canzanelli and Giordano 2001).

LED offers local government, the private sector, the not-for-profit sectors and the local community the opportunity to work together to improve the local economy. It aims to enhance competitiveness and thus encourage sustainable growth that is inclusive. The purpose of LED is to build up the economic capacity of a local area to improve its economic future and the quality of life for all. It is a process by which public, business, and non-governmental sector partners work collectively to create better conditions for economic growth and employment generation (Swirburn, et al., 2006). LED is essentially a process in which local governments and/or community based groups manage their existing resources and enter into partnership arrangements with the private sector, or with each other, to create new jobs and stimulate economic activity in an economic area (Zaaijer and Sara 1993).

2.2. CED

CED is a spatial development which generated from community or people, which started from problems experienced by them, focused on the benefit which is limited to the closest area or directly related to the area where the community exists. Witjaksono (2009) said that CED is a process when a community has initiative by their own to find problems so that they can build adequate long term capacity and push an integrated economic, social, and environment purposes. CED is concerned primarily with the sustaining community and reducing its vulnerability, and although economic initiatives are considered an important aspect, they are viewed as means to various ends, not as ends in themselves (Ashton, 1999). CED can be implemented through two alternative models: *Siparti 3-S* and TH. *Siparti 3-S* is still internal to a particular location or industry (reaching-in), then the TH will be the external synergies (reaching-out) across three participants: Local government, universities, and local industries (Witjaksono, 2014).

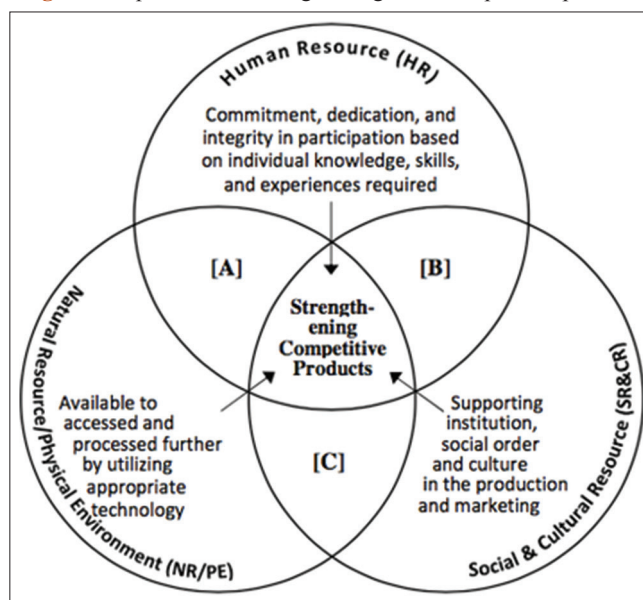
2.3. *Siparti 3-S* in Strengthening Local Competitive Product

Siparti 3-S is defined as the physical appearance and nature of how the synergy of the three basic resources functioning institutionally, organized and managed properly in the context of strengthening local competitive industry products. Within this context, *Siparti 3-S* perceived as a combination of different resources those providing additional positive effect (as positive synergy), not the negative one (Witjaksono, 2014) (Figure 1).

2.4. Synergy Government-University-Industry into TH

The basic concepts and principles of TH promoted by Henry Etzkowitz and Loet Leydesdorff (the early 1990s) departed from the notion and practice of the industry innovation involving universities (research and development) and the government (policy development). The concept of TH suggest strategies for universities, industry, and government to work together and

Figure 1: *Siparti 3-S* in strengthening local competitive products



Source: Witjaksono, 2014

promote innovations that can contribute to a growth economy (Figure 2).

The TH perspective has enriched the conceptual and empirical dimensions of innovation as a systemic phenomenon, thus potentially improving the effectiveness of innovation policies at regional and national levels, and in a system where knowledge production is being increasingly globalized (Leydesdorff and Zawdie, 2010).

Dzisah and Etzkowitz (2009), the dynamic of the TH is based on three basic elements:

1. The prominent role of universities in innovation, on par with companies and the government in a society based on knowledge;
2. The collaborative relationship between the three core institutional spheres; and
3. The helices taking the roles of others.

3. METHODS

This research used mix methods, which is combine qualitative and quantitative methods, by using sequential exploratory strategy. The reason is the main focus of the sequential exploratory strategy is to explore the phenomenon. This strategy involves data collection and qualitative data analysis in the first stage, followed by data collection and quantitative data analysis in the second stage, which is based on the first stage's results.

This research conducted in farmers, famers' group, local government, business units in Desa (Village) Kedungrejo, Kecamatan (District) Rowokangkung, Kabupaten (Regency) Lumajang, Province (Province) East Java, Indonesia which giving emphasis on agriculture aspect in a related area.

Data are collected through observation, indepth interview, and documentation. Qualitative data analysis is started since the beginning of the project, while quantitative data analysis is conducted through cost benefit analysis.

4. RESULTS

4.1. Situation Analysis

Agriculture is a main employment sector of the population in Kedungrejo Village, Rowokangkung District, Kabupaten Regency. There is 1.876 hectare agricultural area in Rowokangkung District. In Desa Kedungrejo itself, there is 253 hectare of agricultural area. Main commodities in Rowokangkung District are paddy, corn, cassava, sweet potato, peanut, and soybean. Figure 3 shows crop productivity in Rowokangkung District.

From Figure 3, cassava and sweet potato are the most crop commodities produced in Rowokangkung District in 2016. Besides crops, Rowokangkung District also produces fruits and vegetables, for example, papaya, tangerine, jackfruit, banana, rambutan, and avocado. Figure 4 shows the productivity of horticulture products of Rowokangkung District.

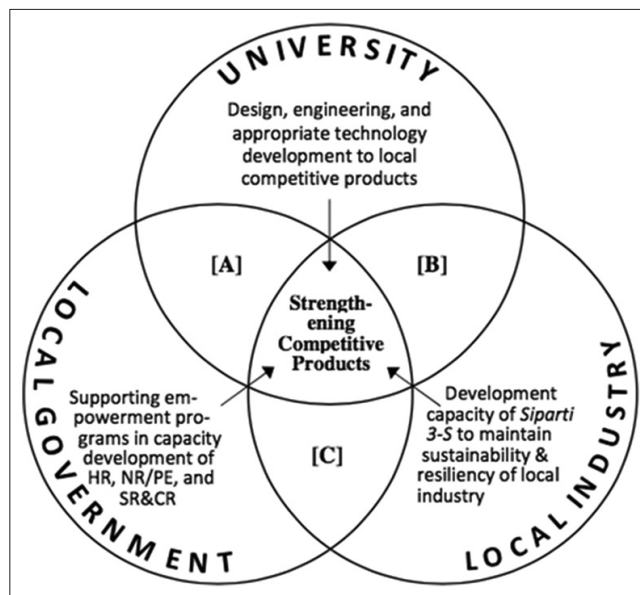
From Figure 4, tangerine and banana are two biggest horticulture commodities in Rowokangkung District.

4.2. Mapping of the Potencies

4.2.1. Paddy commodity

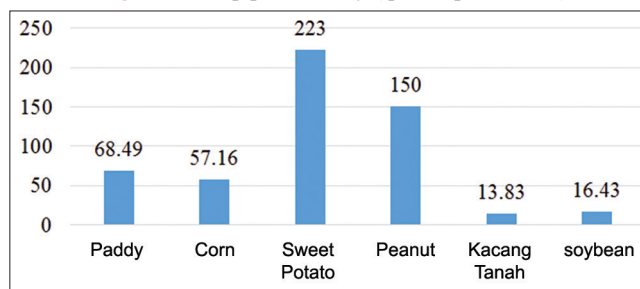
Even though agriculture is the main sector in Kedungrejo Village, the potency is not maximized yet. By giving emphasis on paddy commodity, we found that there is an absence of production line and continuous marketing strategy in paddy's production line. The current production line in Rowokangkung District is in Figure 5.

Figure 2: Synergy Government-University-Industry in triple helix



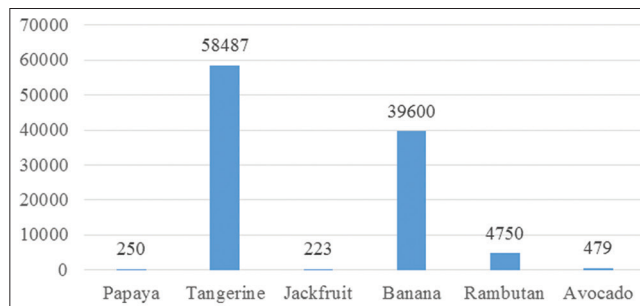
Source: Witjaksono, 2014

Figure 3: Crop productivity (quintal per hectare)



Source: BPS, 2016

Figure 4: Horticulture productivity (quintal per hectare)



BPS. (2016). Statistik Daerah Kecamatan Rowokangkung 2016. Indonesia: BPS, Source: BPS, 2016

From our observation, there are two issues rose among paddy’s farmer’s community. Firstly, paddy commodities in Kedungrejo Village do not have their own marketing strategy. We find that paddy’s farmers in Kedungrejo Village sell their crops in a paddy field, not in the market. Even though the market is easy to reach (approximately 15 min from the village, through asphalt roads), they prefer to wait for the traders to come to their fields. Farmers feel it will benefit them as they don’t need a lot of effort to bring their yield to the market. Also, they will get money as soon as possible, so that they can recirculate the money (for example to buy seed or pay off debt). This practice has negative implication: Farmers don’t have the bargaining power to determine the selling price. The price is always determined by the traders.

Secondly, farmers usually sell crops in raw form. They cannot rise the selling price by selling the commodity in unhulled rice form because most farmers don’t have drying facilities. Even people with drying facilities (e.g., in form of large space area in front of their house to drying paddy), they will need to pay hodge. Others, they face difficulties as paddy’s drying rely heavily on sunlight. In our visit, farmers complained that they cannot dry paddy in the sun because of the irregular and unpredictable season. Nowadays, rainy day also exist in the dry season, makes it impossible to dry paddy outside.

We find big potency here. People should integrate their village production lines. They must integrate planting stage, drying stage, price information, processing stage, and marketing. By this integration, farmers will receive higher value added and can involve more persons.

4.2.2. Fishery sector

Few people in Kedungrejo Village try to cultivate fish in their idle field. The varieties are catfish, gourami, parrot fish, and tilapia fish. They usually play in nursery area; buy a fish egg and then grow them up. Then, a few months later, they sell the fish to the higher trader. None of the people sell ready-to-consume-fish (in age or length aspects).

People faces a classical problem: Limited capital. The implication, they only able to maintain fish few months, then sell it to receive fresh money. The another problem is woof which is provided by the third party (factories). So, people rely on factories’ supply and price determined by factories. On the other hand, they do not have autonomy to select appropriate woof.

This makes unexplored potency. If people can produce their own woof, they can independent from factories. They should have their own breeding plants, woof factories, and better marketing strategies. The final result is they can improve their income.

4.2.3. Ecotourism

In the 1990s, orange is the favorite commodity in Kedungrejo Village. But the plant diseases insistenly atact healthy trees— together with long waiting time to harvest—creating a high cost for farmers to overcome the problem. Many farmers cut the trees down, shifting to other commodities. A few farmers who are stand with orange trees until now have to deals with the low selling price.

Few farmers have initiative to open their farms for ecotourism. Visitors can harvest orange directly from the farms and at the same time can learn everything about orange fruits. This is a potential revenue for farmers and villagers.

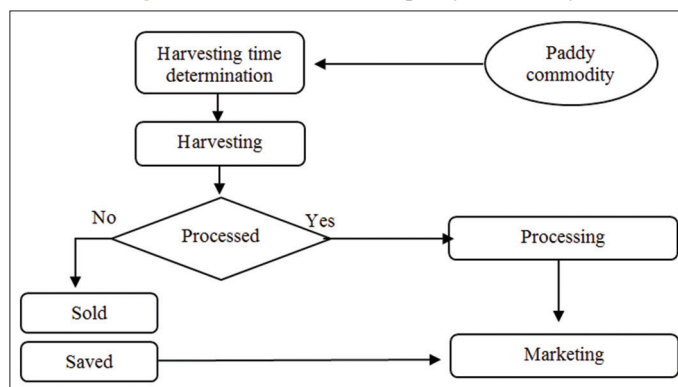
4.2.4. Obstacles

People in Kedungrejo feels the biggest obstacle for them in order to gain higher income is an asymmetric information. It means that they do not get enough information on market prices, trend, or latest news as the other farmers, especially rich, get. The implication is, related to traders, they do not have bargaining power. Selling prices are always determined by traders with no strong resistance from farmers. Selling prices usually below market prices, resulting in a higher margin for traders.

Figure 6 shows price creation between farmers and traders. Because every farmer conducts their own business for their own interests, they feel unimportant to have intense communication with other farmers especially relating to price creation. At this level, because of rationality to get income as much as they can, everyone feels allowed to exploit nature by their desire, for example by using uncontrollable fertilizer and chemical medication. They tend to obey the negative effect for the environment.

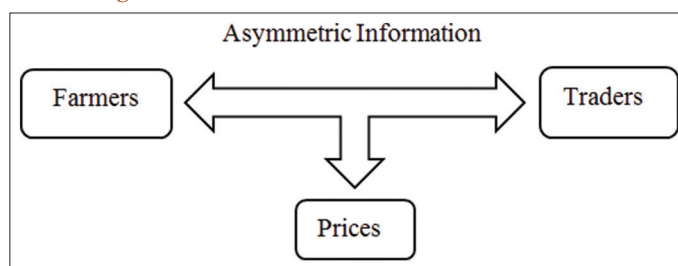
The second problem exists in Kedungrejo Village is wide income disparity among farmers. Rich farmers usually select horticulture commodities. Those may give higher margin comparing to crops. On the other side, horticulture trees usually need a longer period (3-5 years) to ready to be harvested and high potency to be attacked by diseases. For rich farmers, this “waiting time” is not a big issue for them. With their capital, they can fulfill their daily needs or even

Figure 5: Production line for paddy commodity



Source: Data processed, 2016

Figure 6: Price creation between farmers and traders



Source: Data processed, 2016

planting crops. Planting crops is the last choice for poor farmers, as planting them need fewer efforts and money. Furthermore, crops need a shorter period to ready to be harvested. So, poor farmers can obtain fresh money as soon as possible.

As poor farmers decided to plant crops, they rely heavily on the weather. With inconsistent and unpredictable rainy days, farmers will difficult to decide proper planting time, harvesting period, and drying time. Using technology is costly for them. For example, in dry season when irrigation cannot provide sufficient water, farmers must use water pump to watering their field. This costs a lot. In contrary, in the rainy season, harvesting must do in a shorter period, creating a higher cost for labor. As drying under the sunshine is impossible, they have to rent drying machine, which usually owned by rich farmers or village unit cooperation (KUD). Thus, they prefer to sell their harvest as soon as possible. By selling their harvest, they can avoid extra costs which rise from additional processing stages.

The third problem faced by farmers is weak farming management. Farming seemed as an inheritance activity, so they only need to follow ways of farming as their ancestors did. This is the source of the principle *nrimo* (take, as it is already given by God). It gives two consequences. Firstly, the farmers give the biggest orientation on final products (and selling price), not operational costs. They usually do not include labor costs (because they are usually small scale farmers), as all labour activity are conducted by themselves or their family. This is where the phrase *bondo bahu* (lay on their own shoulders) originated. Therefore, it is hard to enhance their household's income. Secondly, the farmers only have an orientation to planting seeds, growing them up, and harvesting them. There is no passion for exploring how to make derivative products from the harvest, even though they know that it can give bigger value added. Again, this is why they feel hard to increase their income. Both consequences bring bigger effect: As families difficult to raise their income, they prefer to employ their children in the farming field, not to send their children to schools. Children with inadequate education will work on informal sectors in cities, or work in a farming sector for the low rate of innovation. Again, they will face difficult to raise their income.

5. DISCUSSION

Structural transformation of the agricultural sector currently exists in developing countries (Divanbeigi et al., 2016). In Kedungrejo Village, agriculture plays an important role. Our findings indicated that there was a substantial problem among farmers. There is an asymmetric information exists among them. This creates income disparity. Then, low-income farmers cannot enhance their living condition. Thus, it may preserve vicious circle of poverty.

This will harmful for development. As economic growth is only supported by a few economic agents, it will hard to distribute equal development to all citizen. Thus, it is important to enhance citizen's ability to produce competitive products through strengthening their capacity and synergy with other parties.

We propose two models to support the idea. As developed by Witjaksono (2014), the models are *Siparti 3-S* and TH. *Siparti 3-S*

is the acronym for *Sinergi Partisipatori 3 Sumberdaya* (synergistic participatory of the 3 Resources). Witjaksono (2014) stated that *Siparti 3-S* is defined as the physical appearance and nature of how the synergy of the three basic resources functioning institutionally, organized and managed properly in the context of strengthening local competitive industry products. *Siparti 3-S* is still internal to a particular location or industry (reaching-in), then the TH will be the external synergies (reaching-out) across three participants: Local government, universities, and local industries.

Witjaksono (2014) elaborate *Siparti 3-S* in strengthening local competitive products briefly in Figure 7.

Intersections (A), (B), and (C) as a crossing synergy between resources in Figure 7 should ideally be able to produce the following synergetic effects:

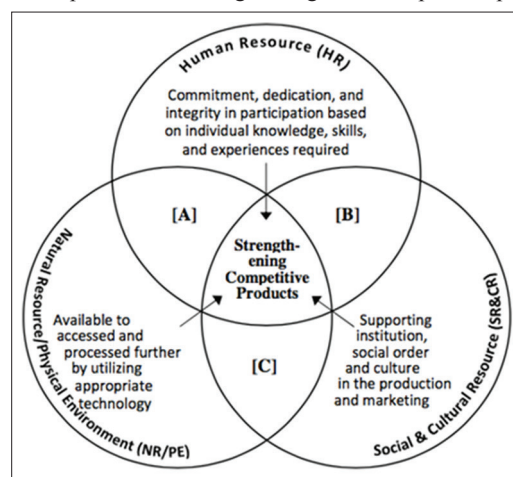
- [A]: Strengthening the capacity development of knowledge, skills, and technology literacy of HR related to system and process of NR/PE, in order to produce competitive products.
- [B]: Strengthening SR and CR in order to add to some degree of value to the local community economies.
- [C]: Strengthening the commitment and integrity of local communities (SR and CR) in the management and conservation of NR/PE as common-pool resources to achieve sustainable economic and community development.

When *Siparti 3-S* elaborated into TH (Figure 8) with the focus on strengthening local competitive products conceptually would be in the following collaboration forms:

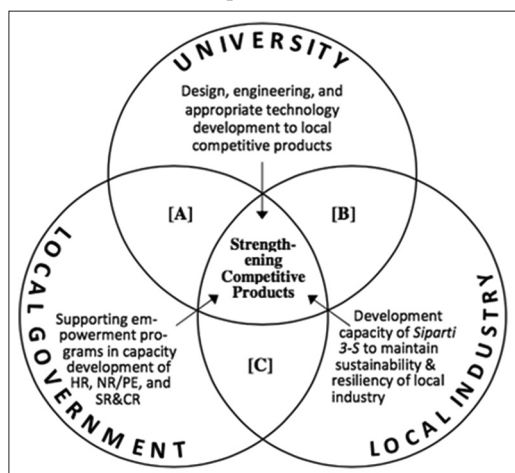
- [A]: Collaborative in various schemes in strengthening local HR, NR/PE, and SR and CR.
- [B]: Collaborative R&D in capacity development of *Siparti 3-S* of local industry.
- [C]: Collaborative in various programs to develop the capacity of local industry in building sustainable and resilience economy.

The implementation of this conceptual framework requires three conditions, in which each party: (a) Equal in position and role, (b) interdependent to achieve mutually beneficial for all, and (c) the

Figure 7: *Siparti 3-S* in strengthening local competitive products



Source: Witjaksono, 2014

Figure 8: *Siparti 3-S* as triple helix in strengthening competitive product

Source: Witjaksono, 2014

results have an impact on increasing the capacity of all parties. In other words, strengthening local competitive products of small industry under the TH paradigm generates mutual benefits for all parties.

5.1. The Prospect of *Siparti 3-S* and TH

In our observation, there are some notes for prerequisites for Kedungrejo Village to be a success in implementing the *Siparti 3-S* and Synergy Government-University-Industry into TH (from Figures 7 and 8). In *Siparti 3-S*, Kedungrejo Village has ideal starting points.

Firstly, from the human resource perspective, Kedungrejo has adequate human resource stocks. Some of the new generation farmers are highly educated, who are have close connections to new technologies and innovations. By keeping close to them, it is big chance to trigger their commitment and dedication. Also, by coordination among communities, they will able to diminish asymmetric information.

Secondly, from the natural resources perspective, Kedungrejo undoubtedly is a fertile area. The word Kedungrejo is composed of two Javanese words: *Kedung* and *Rejo*. *Kedung* means basin (noun) and *rejo* means prosperous (adjective). So, Kedungrejo means a prosperous basin area. The village has plenty of water. The irrigation canal built by the government since the 1970s also support agriculture sector in the area. Also, the village is not far from Mt. Semeru (3.856 m above sea level), the highest mount in Java Island.

Thirdly, from the social and cultural resources perspective, people of Kedungrejo are also known as “easy-going” with a high and solid “social capital.” By elaborating those three main resources (human, natural, and social-cultural) into the synergistic approach we believe that community in Kedungrejo Village will be able to develop competitive products.

Focusing on Synergy Government-University-Industry into TH, the success of Kedungrejo Village also depend on the synergy

of the university, local government, and local industry. First, the university plays an important role to introduce new ideas to overcome problems. We found various obstacles faced by farmers relating to, for example, how to maintain regular water flow to they paddy fields throughout the year. In the dry season, the irrigation canals cannot supply for all fields, so most farmers use a water pump, which is too costly for them. Therefore, it will the university’s duty to find affordable water solutions.

The second aspect is local government. In Kedungrejo, the head of the village and other village officers, besides get a salary from the government, they also get earnings from *tanah bengkok* (village-owned-land-area) which the harvest yield are dedicated from them. Therefore, local government also have interests in order to yield higher income.

The last is a local industry. In Kedungrejo, some of the villagers are entrepreneur. They have blacksmiths workshops, *warung makan* (small restaurant), motorcycle repair shops, internet kiosks, cellular shops, etc. It will benefit for them to use local resources. For example, *warung makan* receive stocks from local producers, for example, rice, fish, vegetables, and fruits. Then, earnings received by farmers can be used to pay blacksmiths to build some applied technologies which the ideas are downloaded through internet kiosks.

To sum up, Kedungrejo has a great opportunity to create competitive products through *Siparti 3-S*, and also reinforced through collaboration university, local government, and local industry.

6. CONCLUSION

The agriculture sector in Kedungrejo Village Rowokangkung District Lumajang Regency is potential to be developed. Some problems found in the village: Asymmetric information, income disparity, and weak farming management. By elaborating human resources, natural resources and social and cultural resources, into a synergistic approach, the communities are able to produce more competitive products. The success story is also contributed by collaborating university, local government, and local industry. Further actions needed are to formulate maps that show potency, capacity, and resources interrelationship in building superior products. The results will be basic principles for the development of communication system, interaction, and networks.

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